

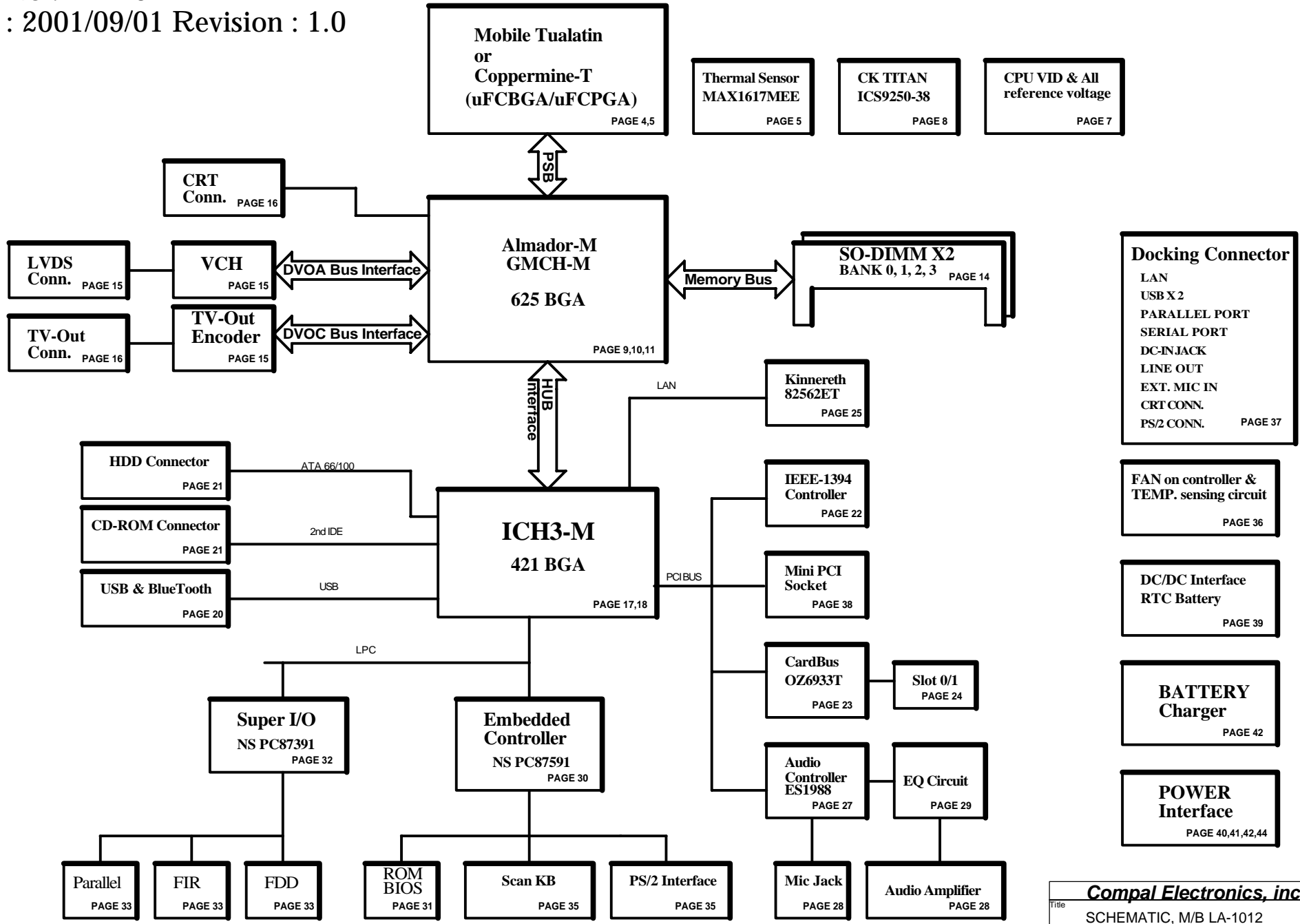
32N101 LA-1012 Rev1.0 Schematics Doc.
uFCBGA/uFCPGA Coppermine-T or Tualatin CPU
with Almador-M chipset
(Defeature)

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Model Name : N32N101
 PCB No : LA-1012
 Date : 2001/09/01 Revision : 1.0

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

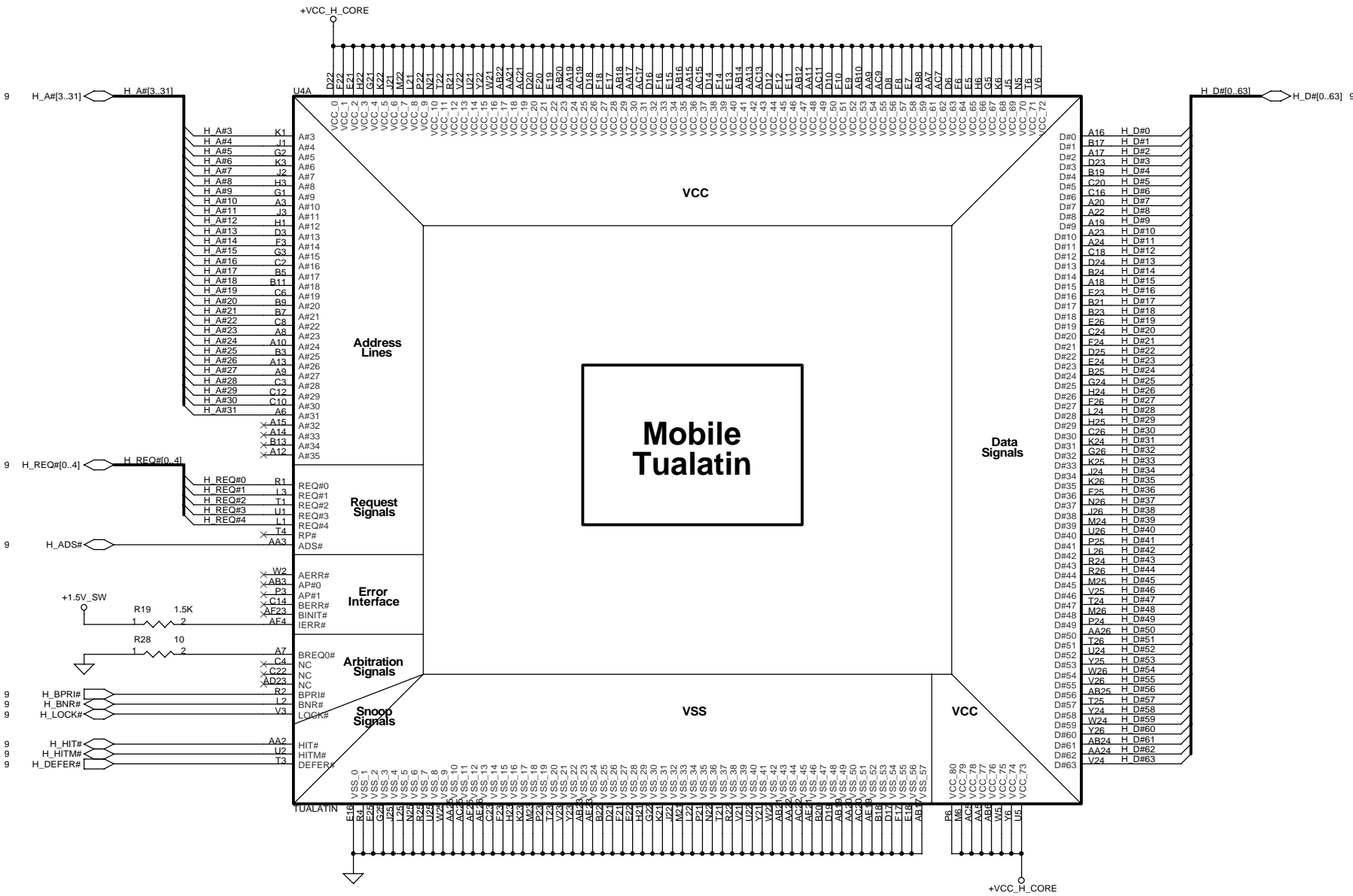
Device	Address
MAX1617MEE	1001 110X b
OZ163	0011 0100 b
Docking	0011 011X b
DOT Board	XXXX XXXXb

ICH3 SM Bus address

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

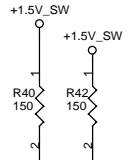
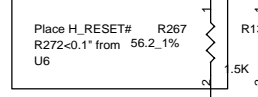
P.S:Default Resistor & Capacitor's package are 0402.
Default 8P4R package is 0402.

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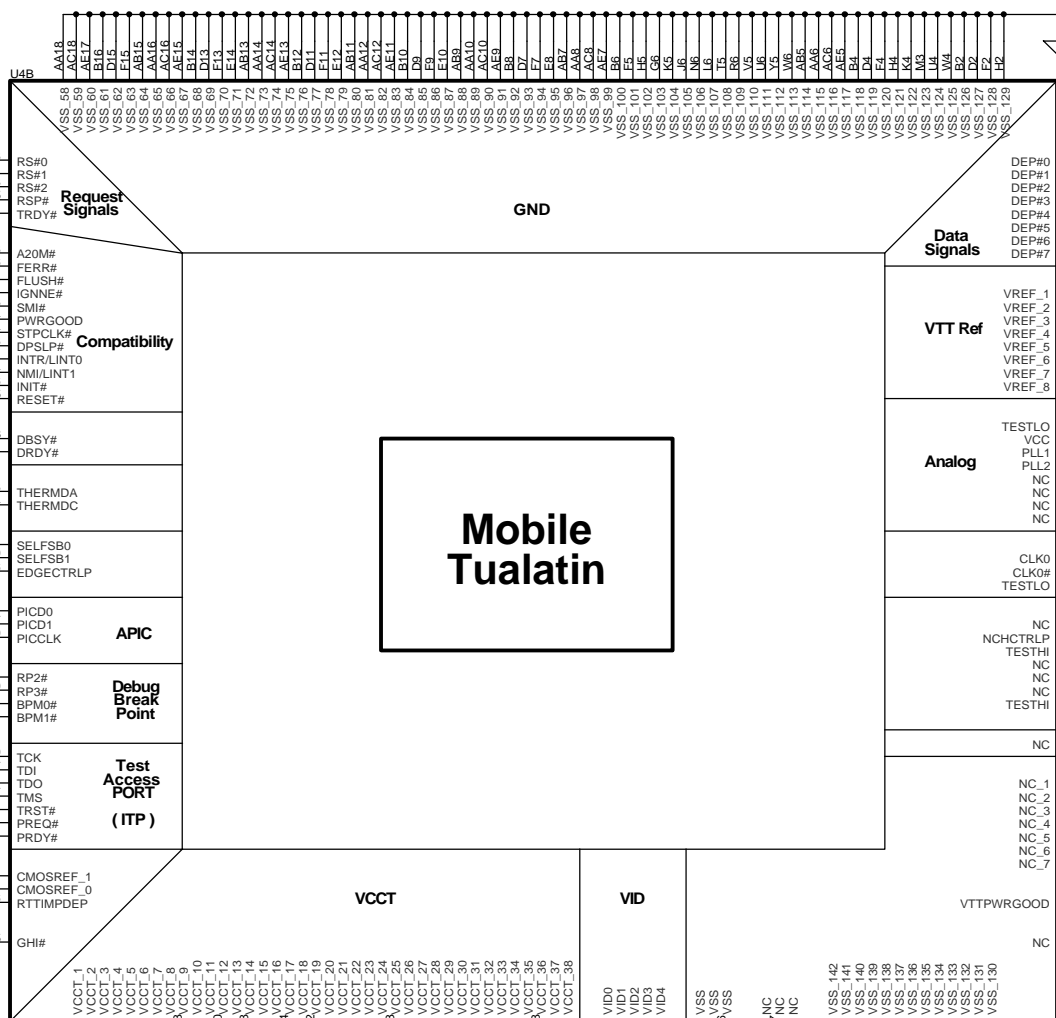
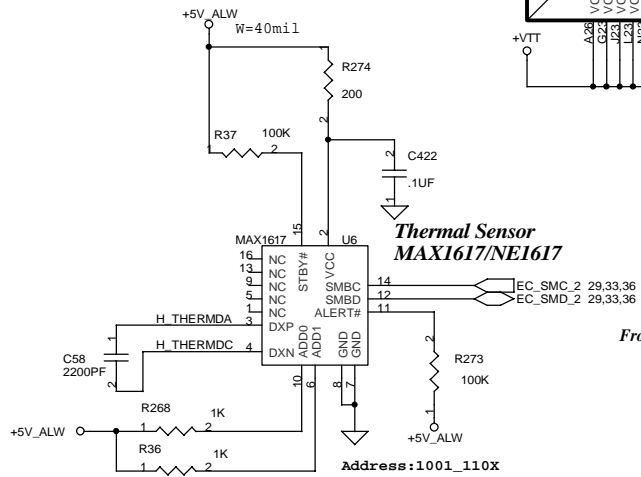


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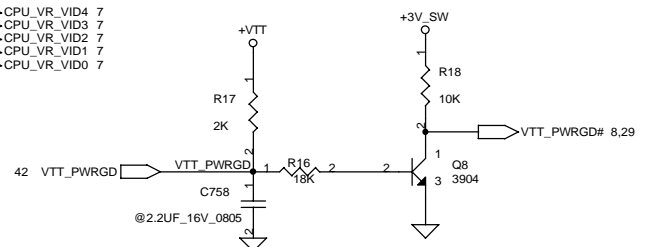
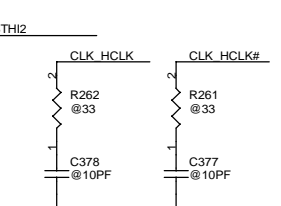
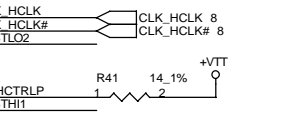
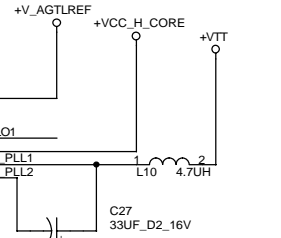
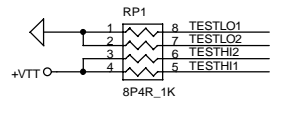
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Note :
GHIF# Pull-Up internally
But pull high too weak



Mobile
Tualatin



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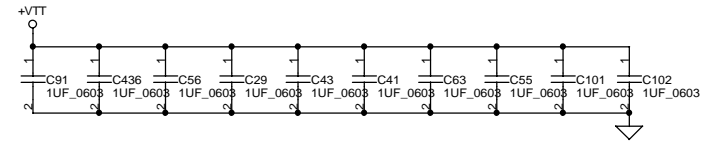
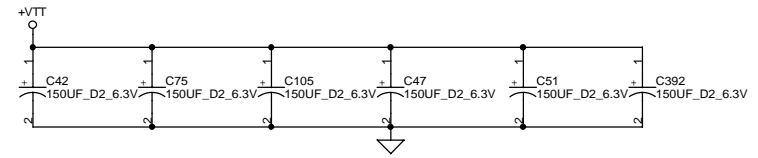
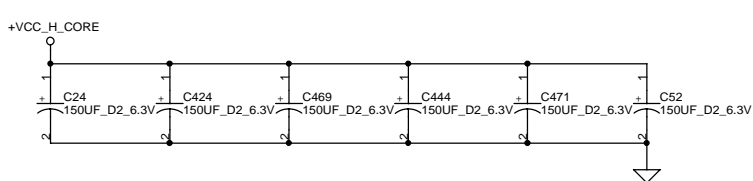
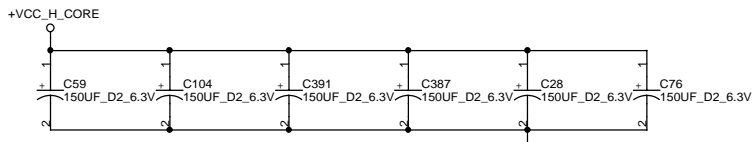
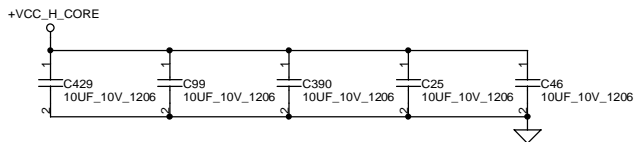
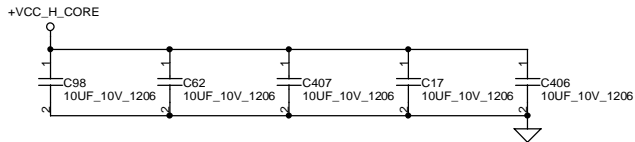
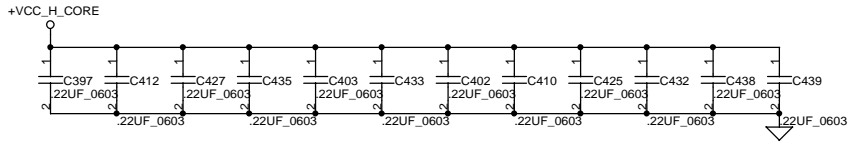
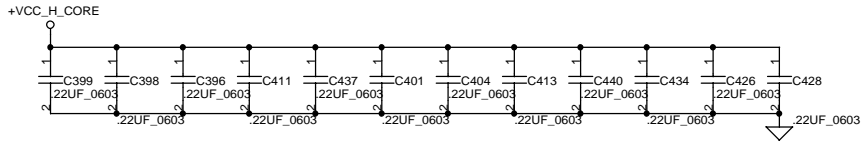
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Layout note :

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.



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

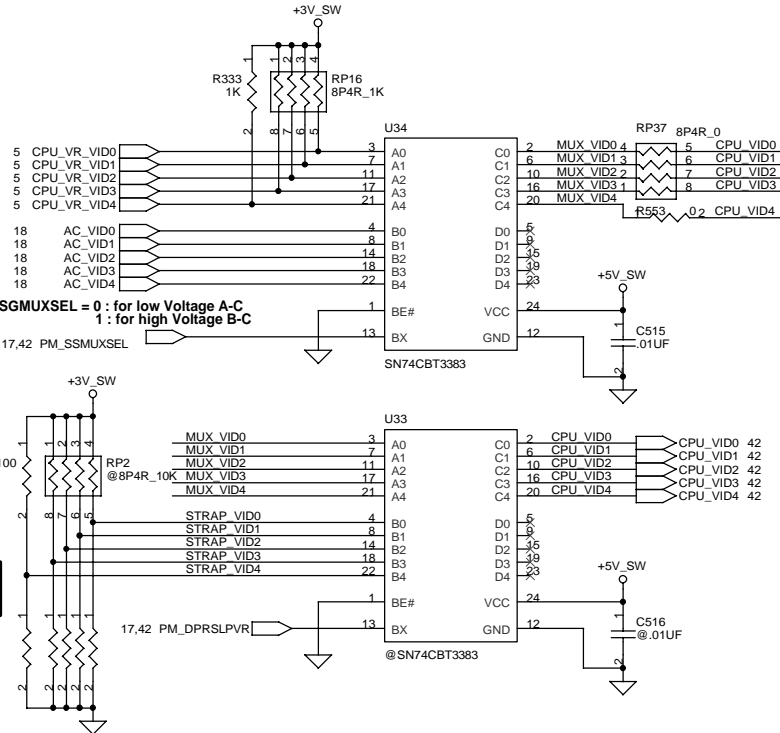
D4	D3	D2	D1	D0	CPU_Core(V)	ES(before MP)
0	0	0	0	1	1.70V	
0	1	0	0	0	1.35V	

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

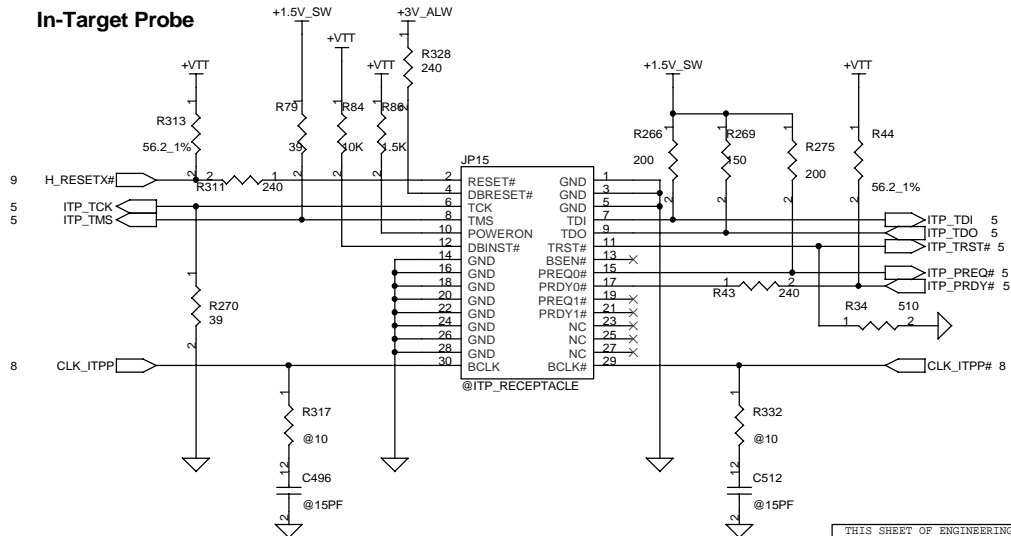
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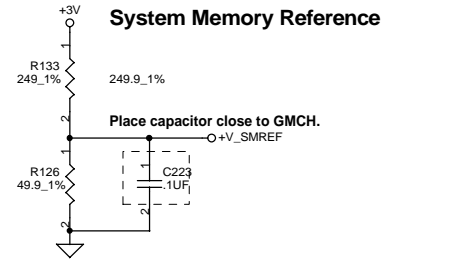
CPU Voltage ID



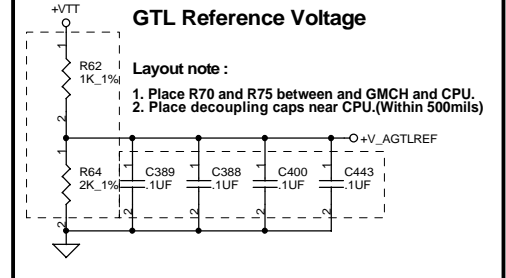
In-Target Probe



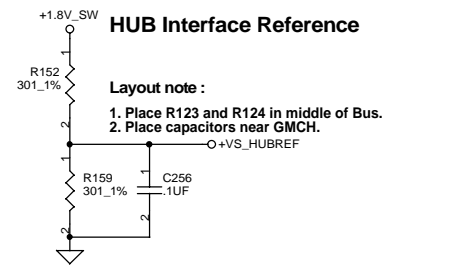
System Memory Reference



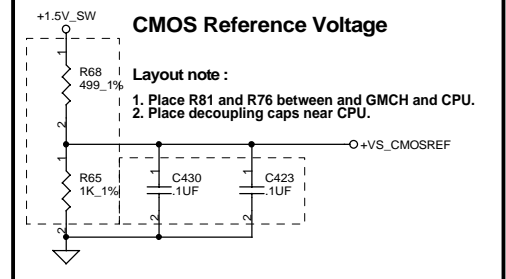
GTL Reference Voltage



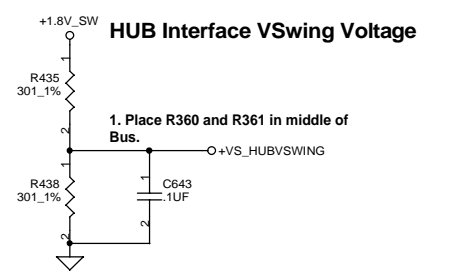
HUB Interface Reference



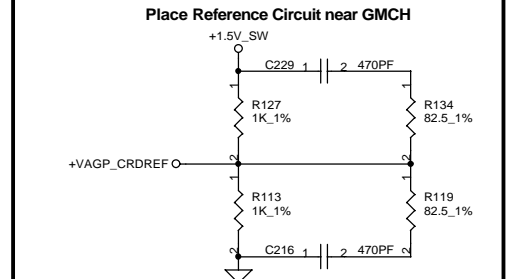
CMOS Reference Voltage



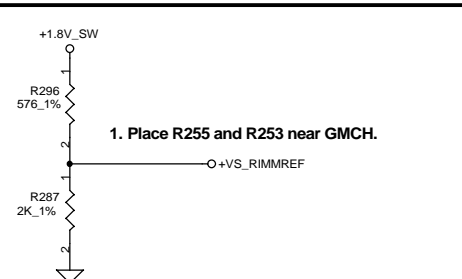
HUB Interface VSwing Voltage



Place Reference Circuit near GMCH

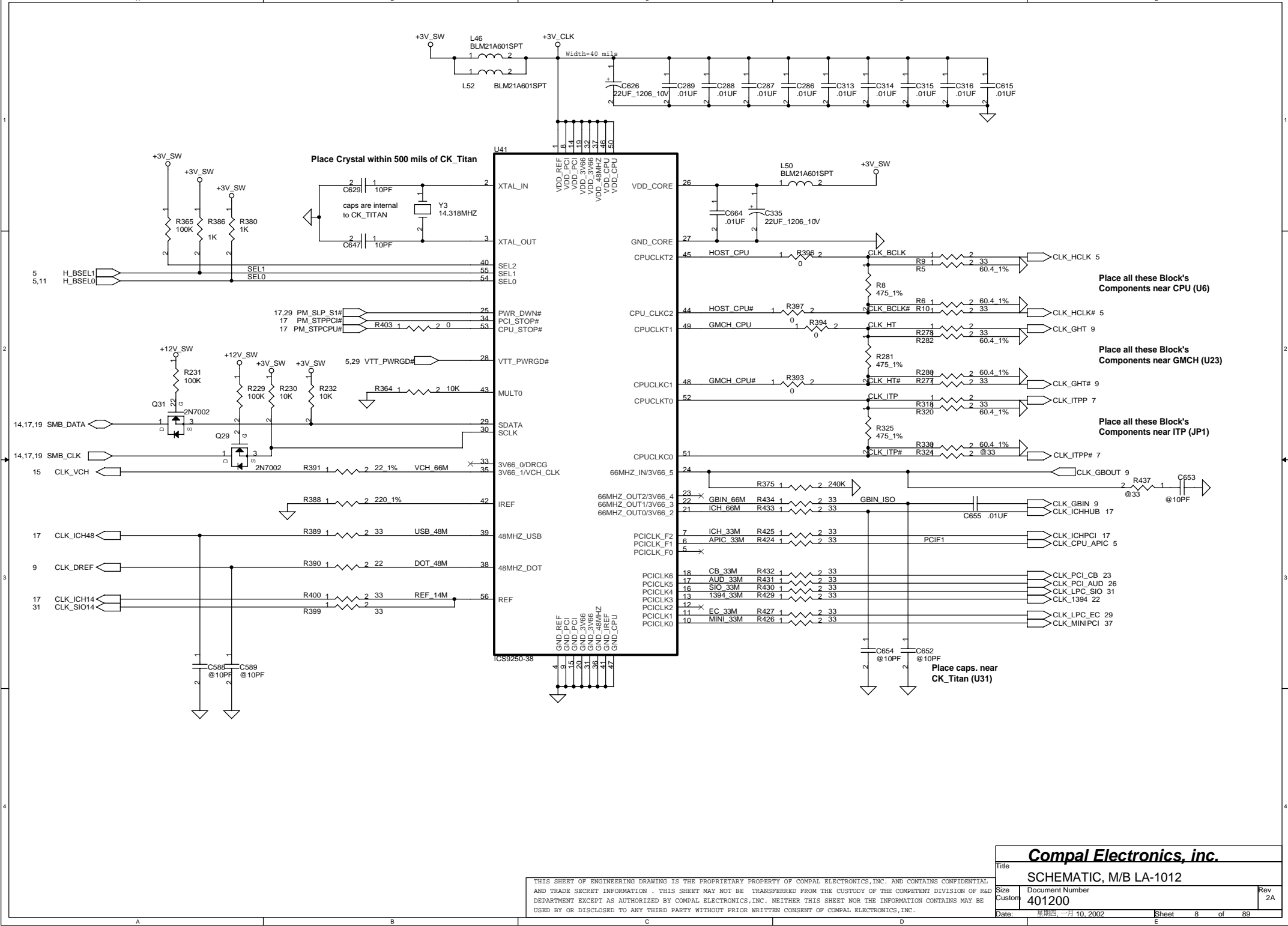


System Memory Reference



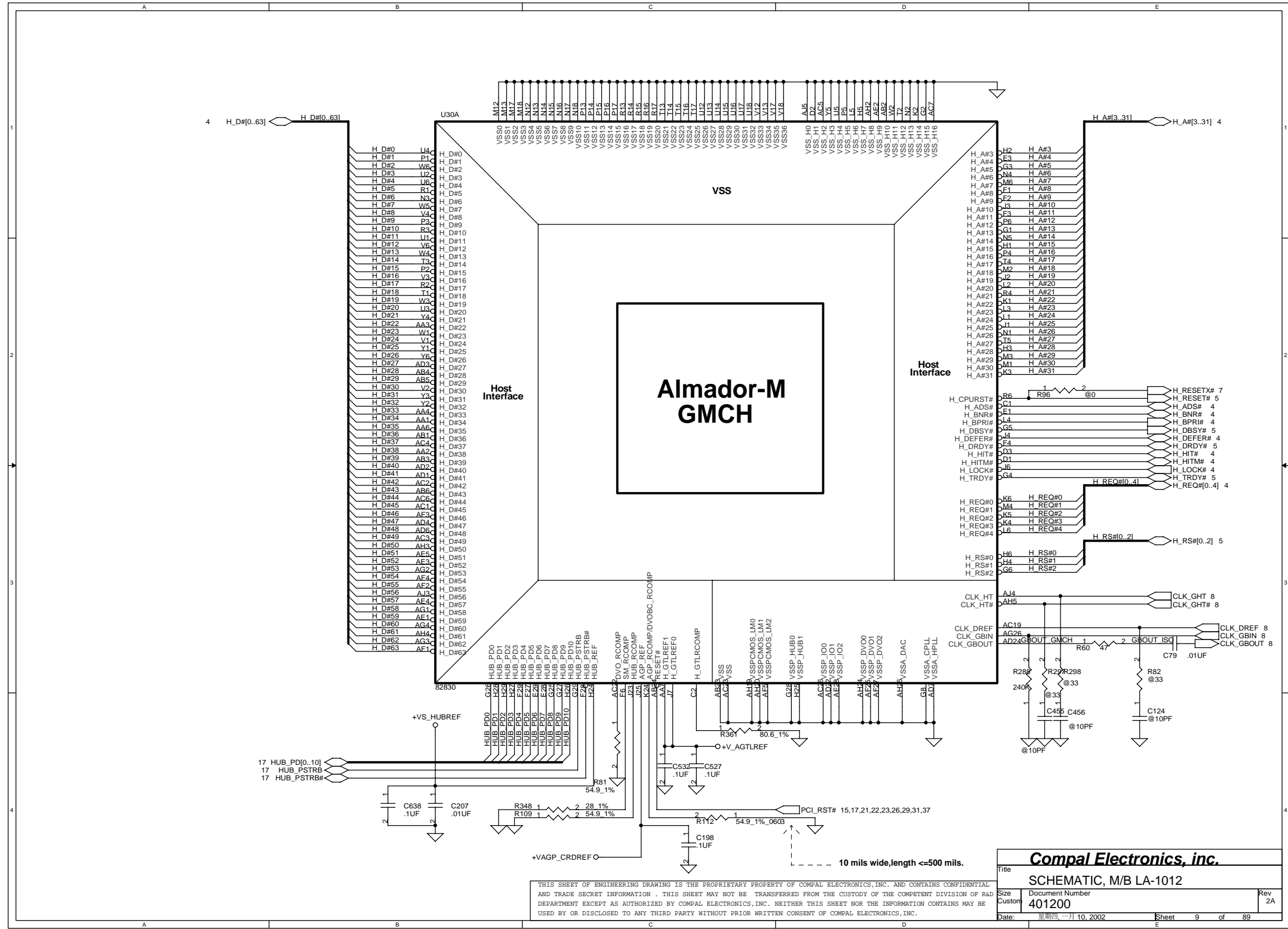
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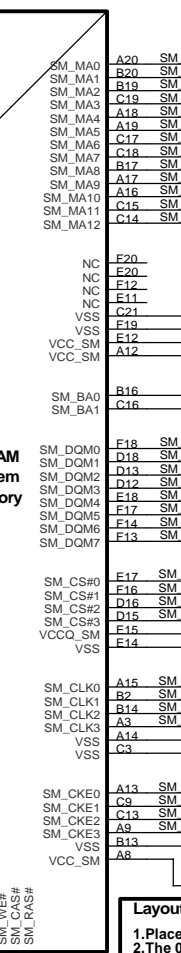
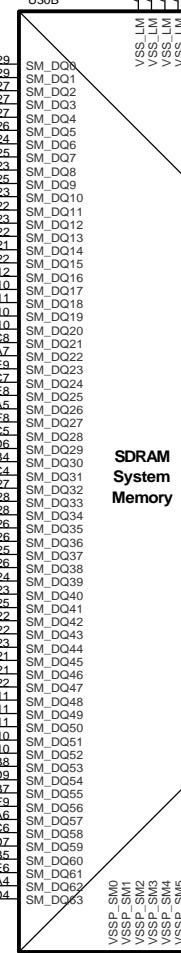
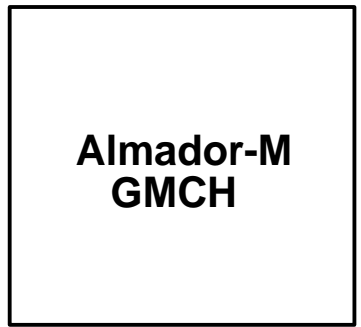
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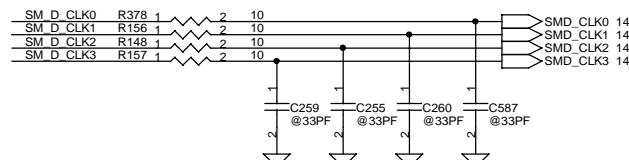
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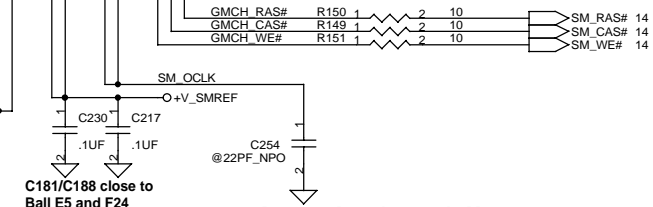


- SM_DQ0 D29 SM_DQ0
- SM_DQ1 C29 SM_DQ1
- SM_DQ2 D27 SM_DQ2
- SM_DQ3 C27 SM_DQ3
- SM_DQ4 A27 SM_DQ4
- SM_DQ5 B26 SM_DQ5
- SM_DQ6 E24 SM_DQ6
- SM_DQ7 C25 SM_DQ7
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- SM_DQ60 B5 SM_DQ60
- SM_DQ61 E6 SM_DQ61
- SM_DQ62 A4 SM_DQ62
- SM_DQ63 D4 SM_DQ63

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 implemented for Almador-M A3 stepping die.



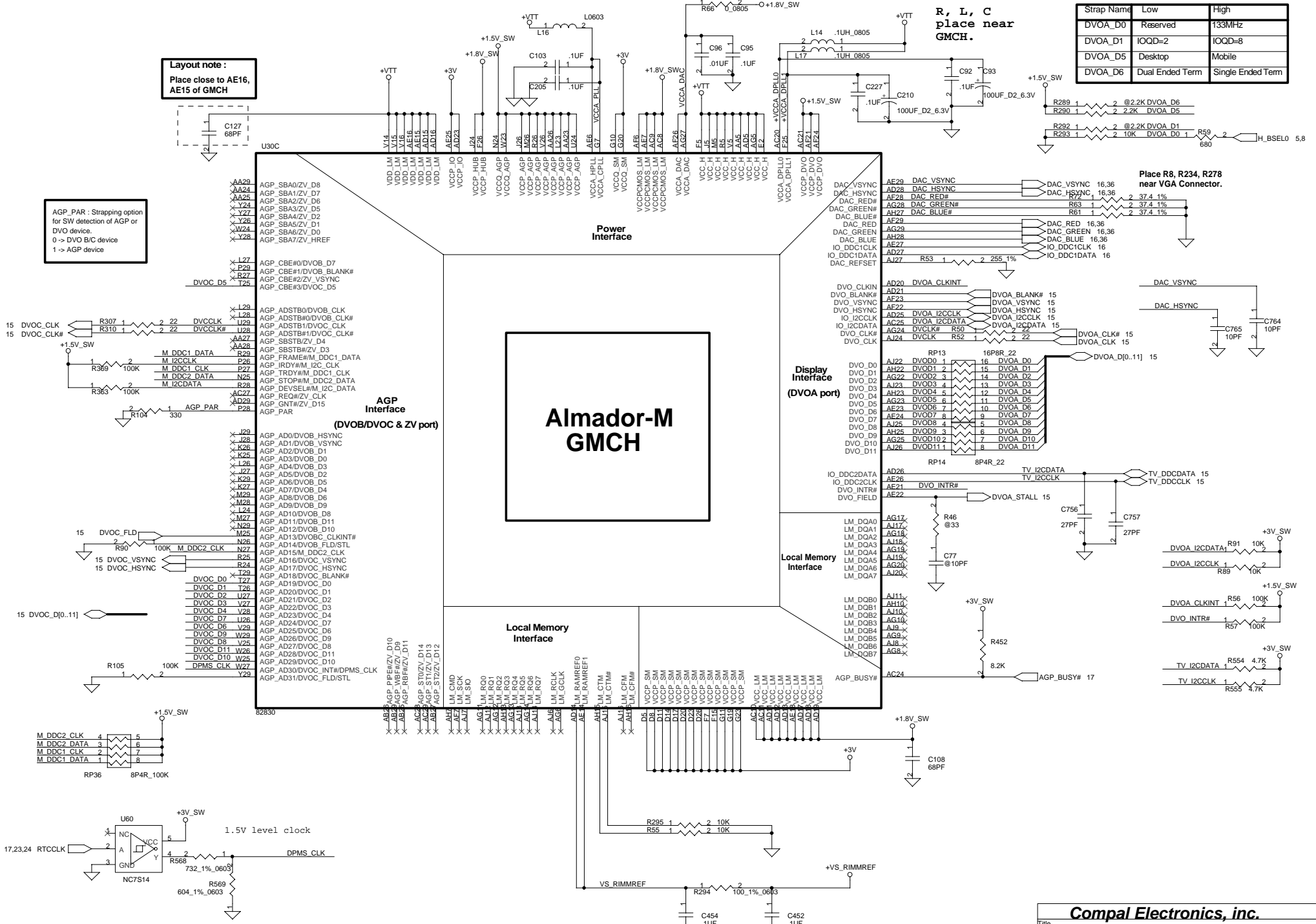
Total trace length from ball
C24 to A24 and C470 do not exceed 200mils.

Layout note :
Place close to AE16, AE15 of GMCH

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

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

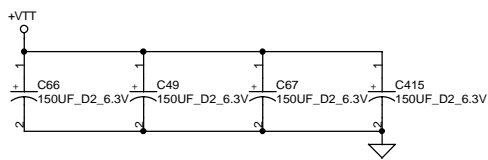
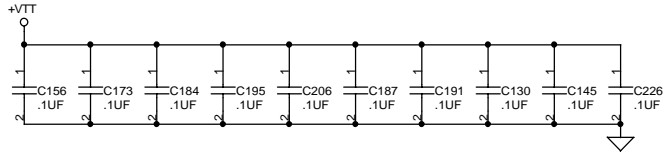
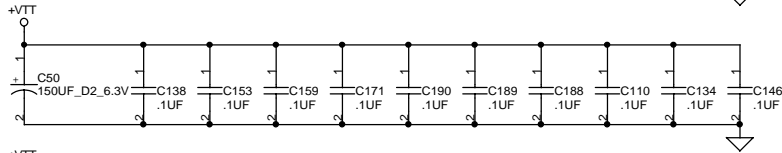
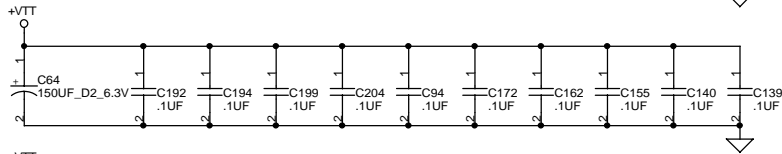
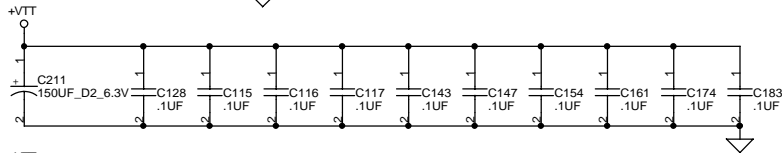
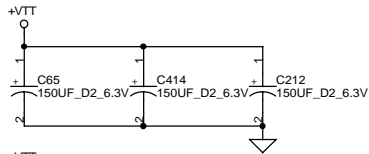
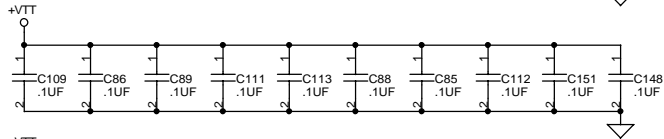
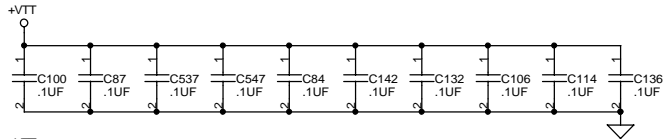
R, L, C place near GMCH.



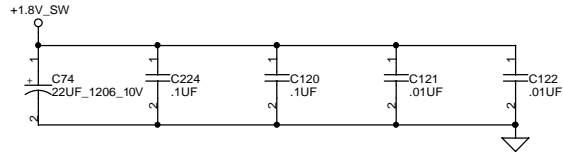
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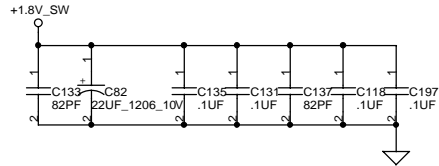
Layout note :
Distribute as close as possible to GMCH Processor Quadrant .



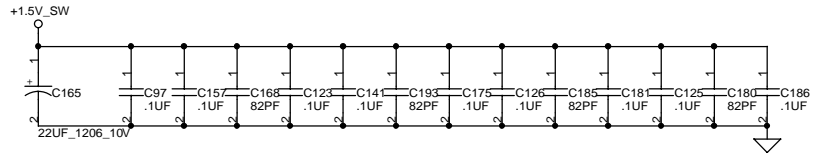
Layout note :
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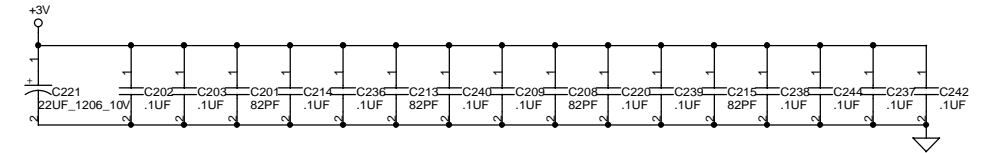
Layout note :
Distribute as close as possible to GMCH Local Memory Quadrant .



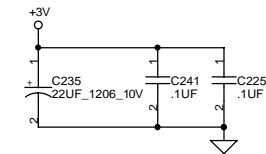
Layout note :
Distribute as close as possible to GMCH AGP/DVO Quadrant .



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

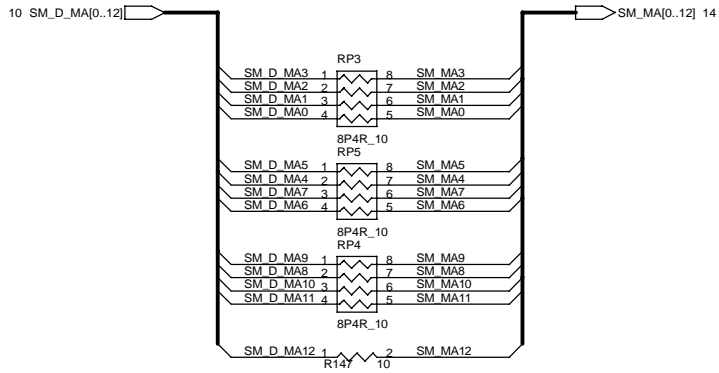


Layout note :
Distribute as close as possible to IO Quadrant .

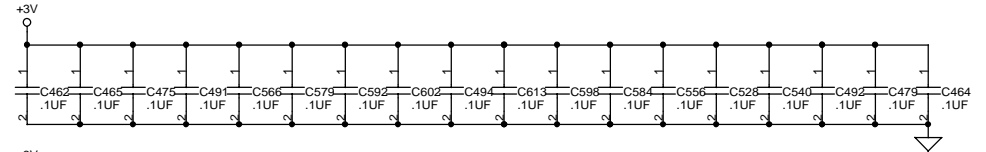


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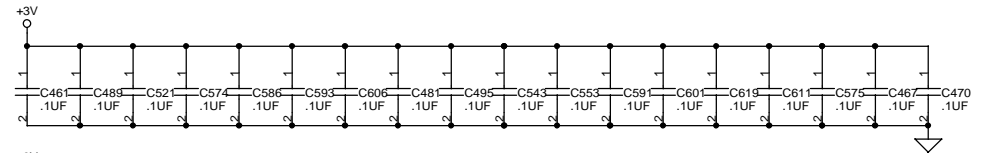
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Layout note :
 One .1uF cap per power pin .
 Place each cap close to SODIMM(DIMM 0) pin .

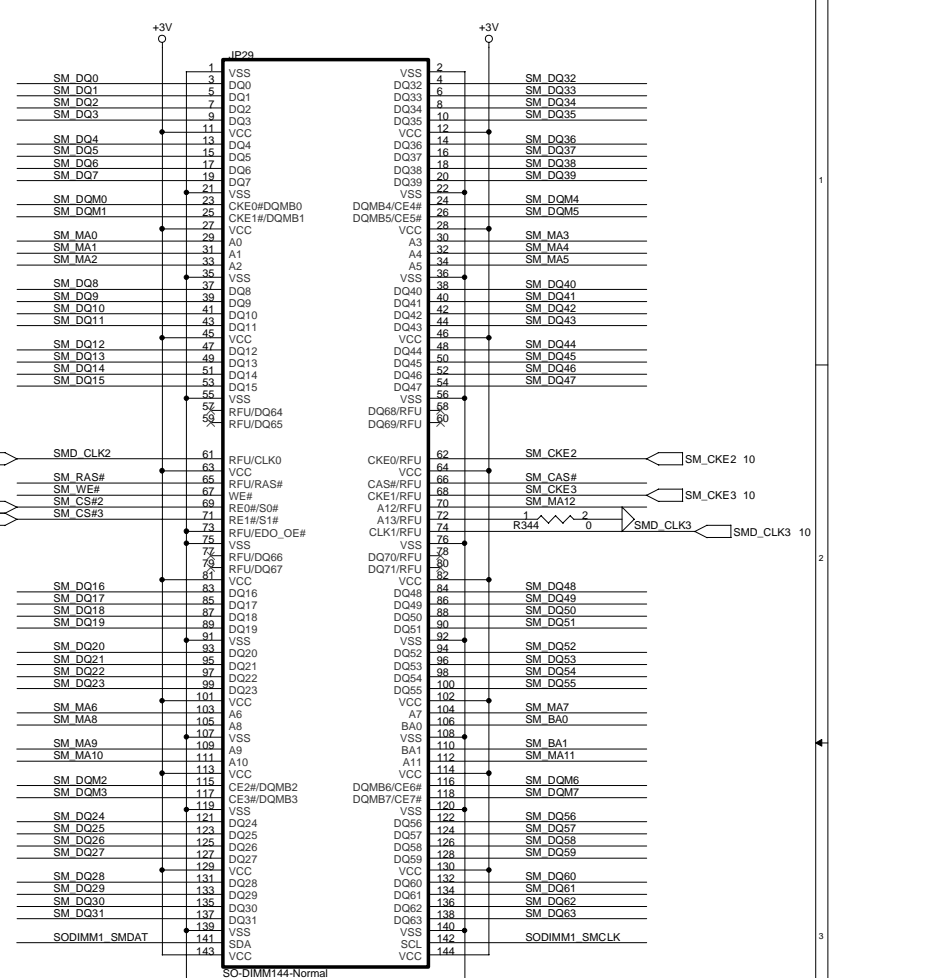
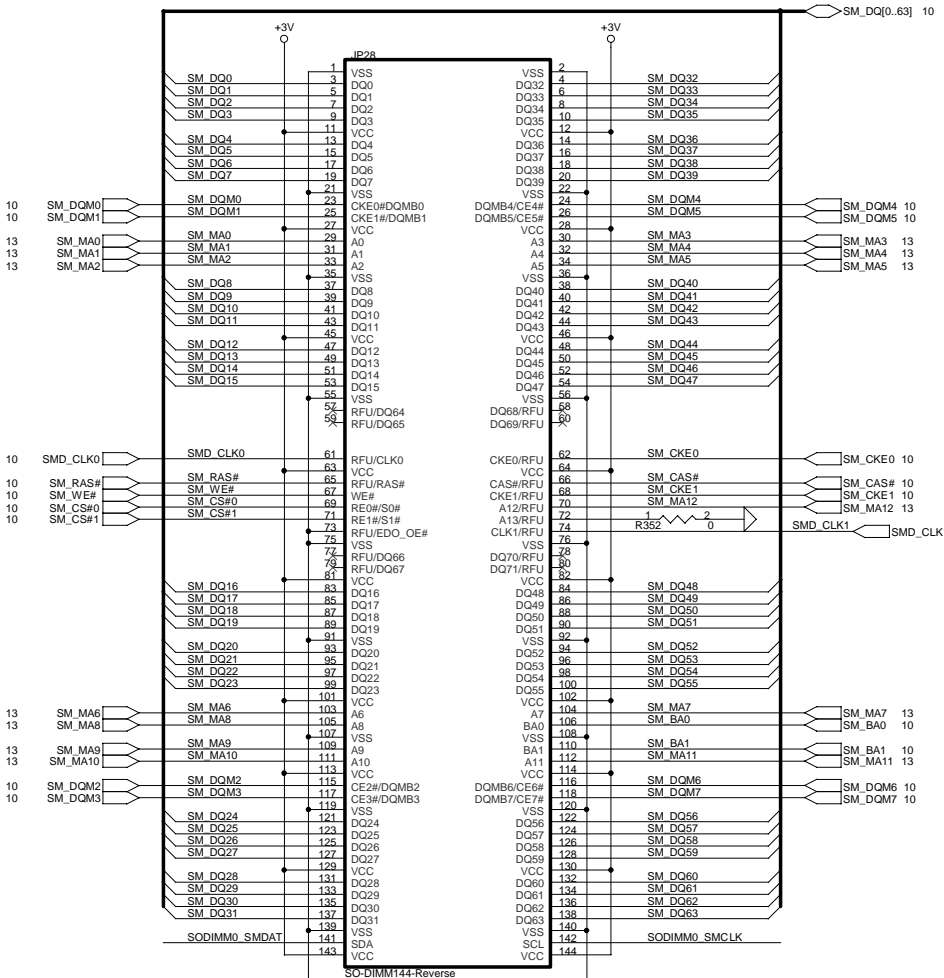


Layout note :
 One .1uF cap per power pin .
 Place each cap close to SODIMM(DIMM 1) pin .



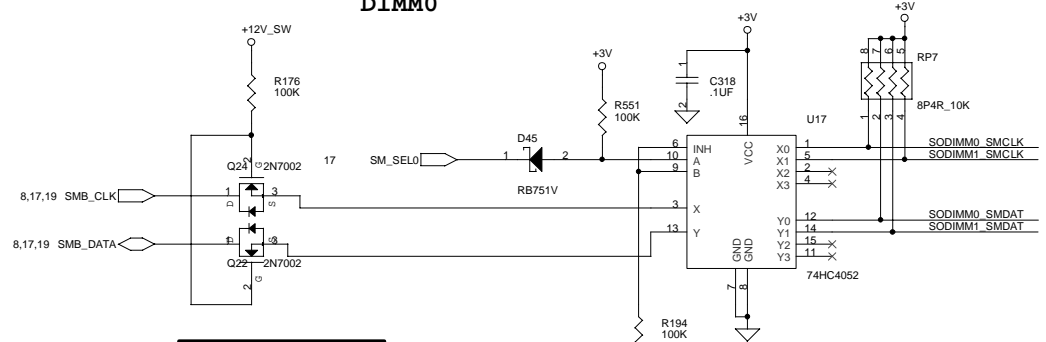
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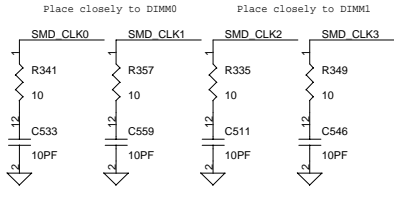
DIMM0

DIMM1



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

System SMBus Selector



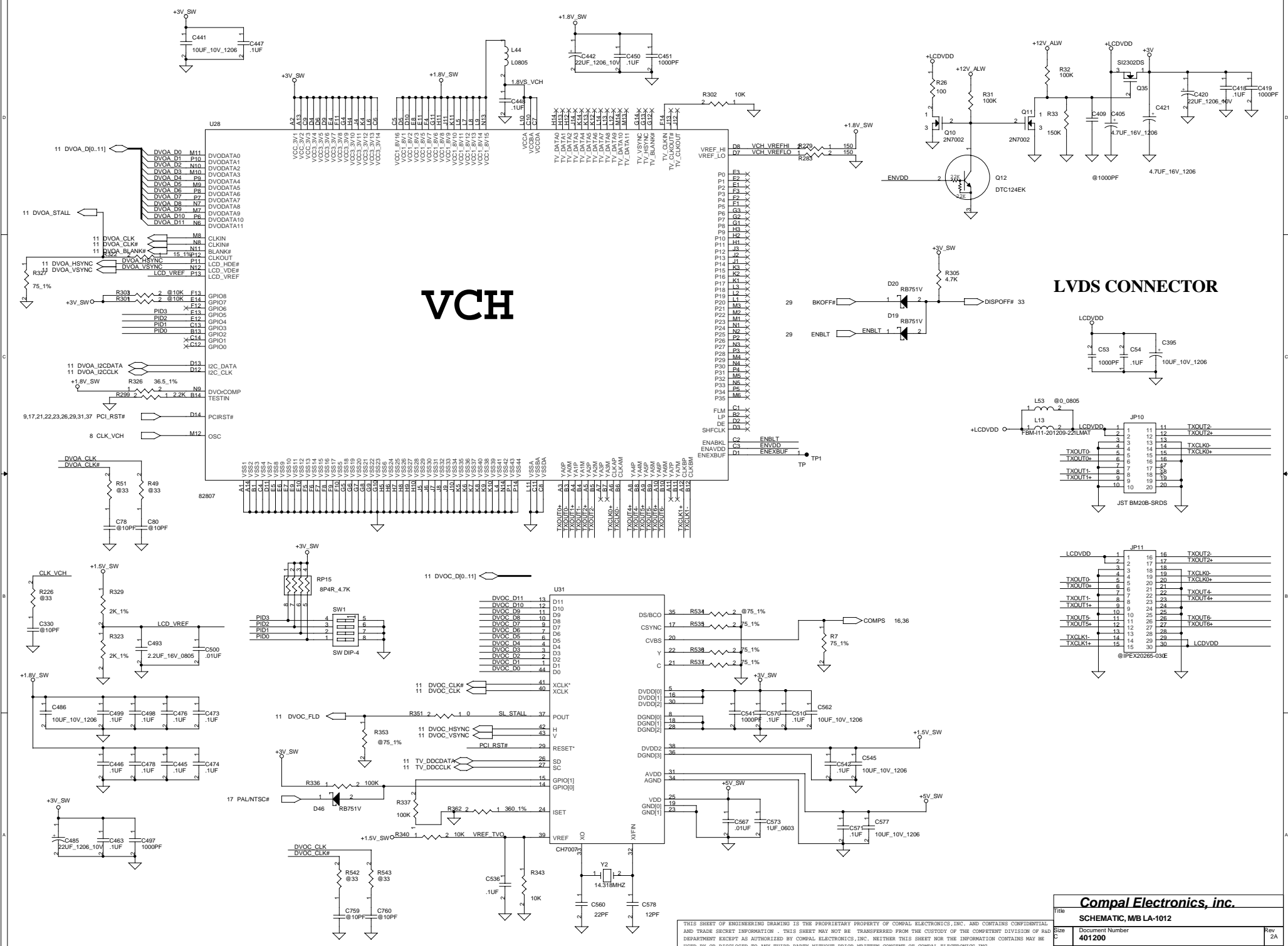
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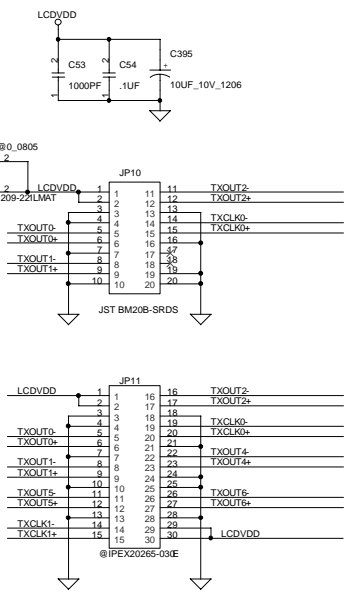
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VCH



LVDS CONNECTOR



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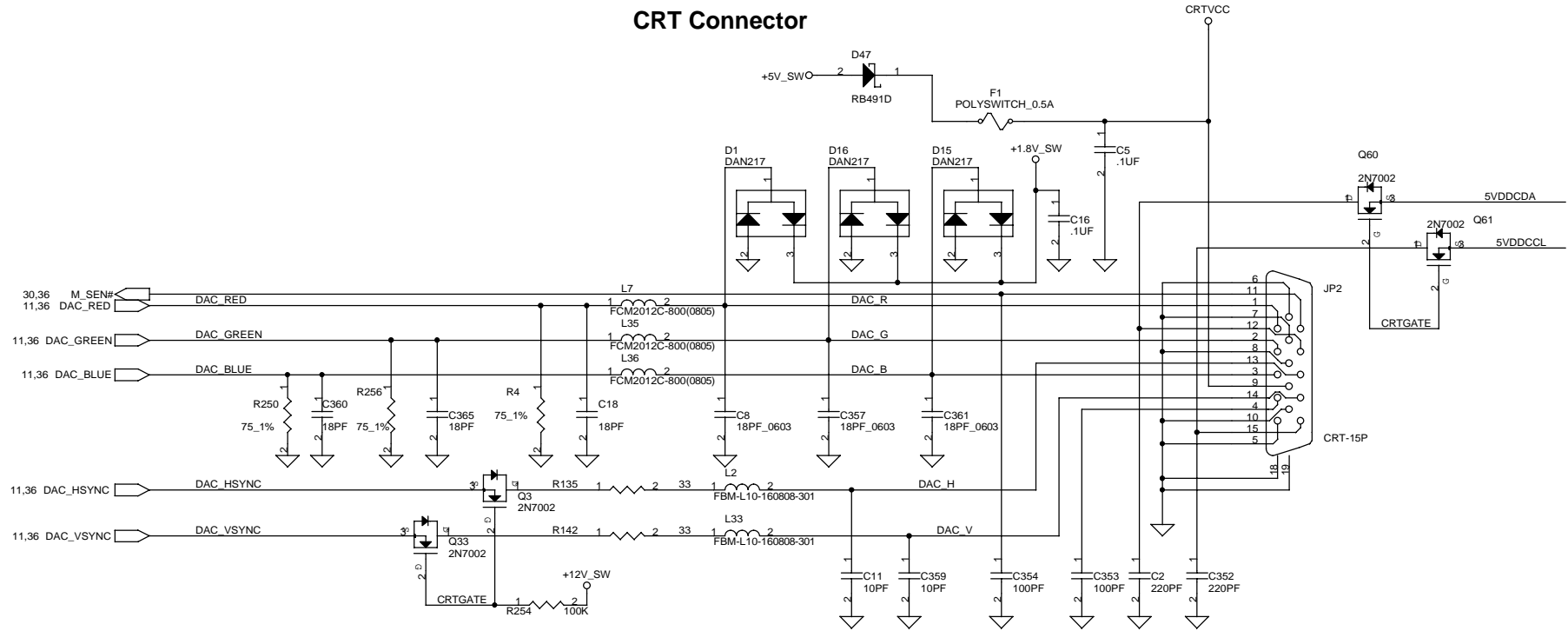
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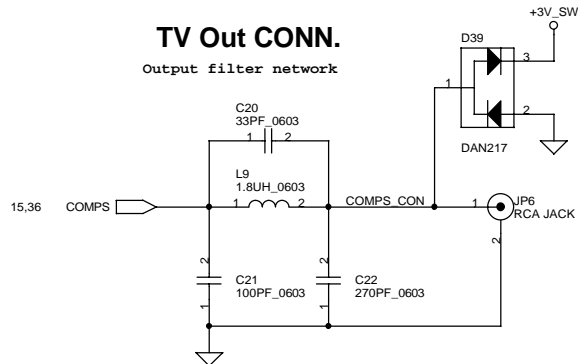
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CRT Connector

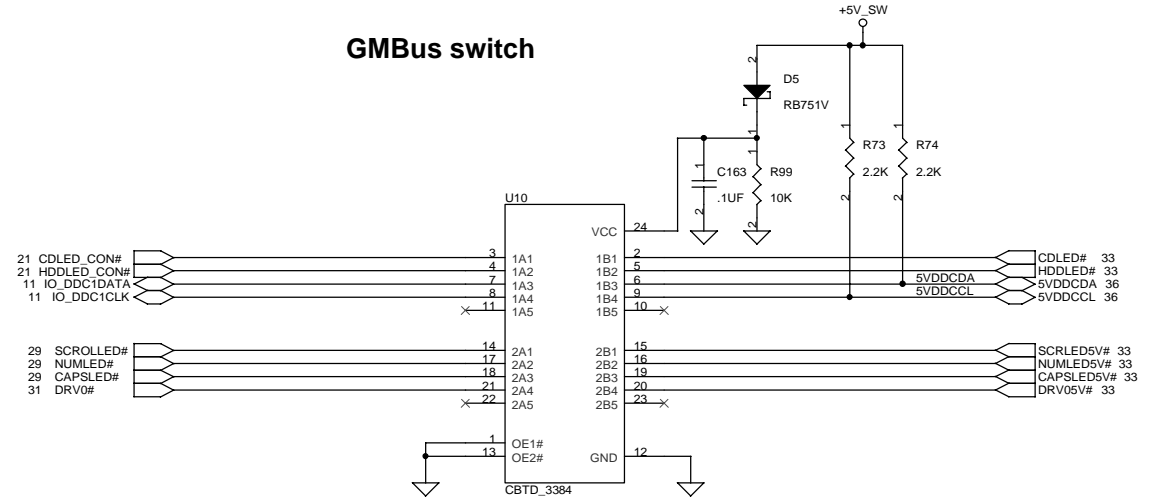


TV Out CONN.

Output filter network

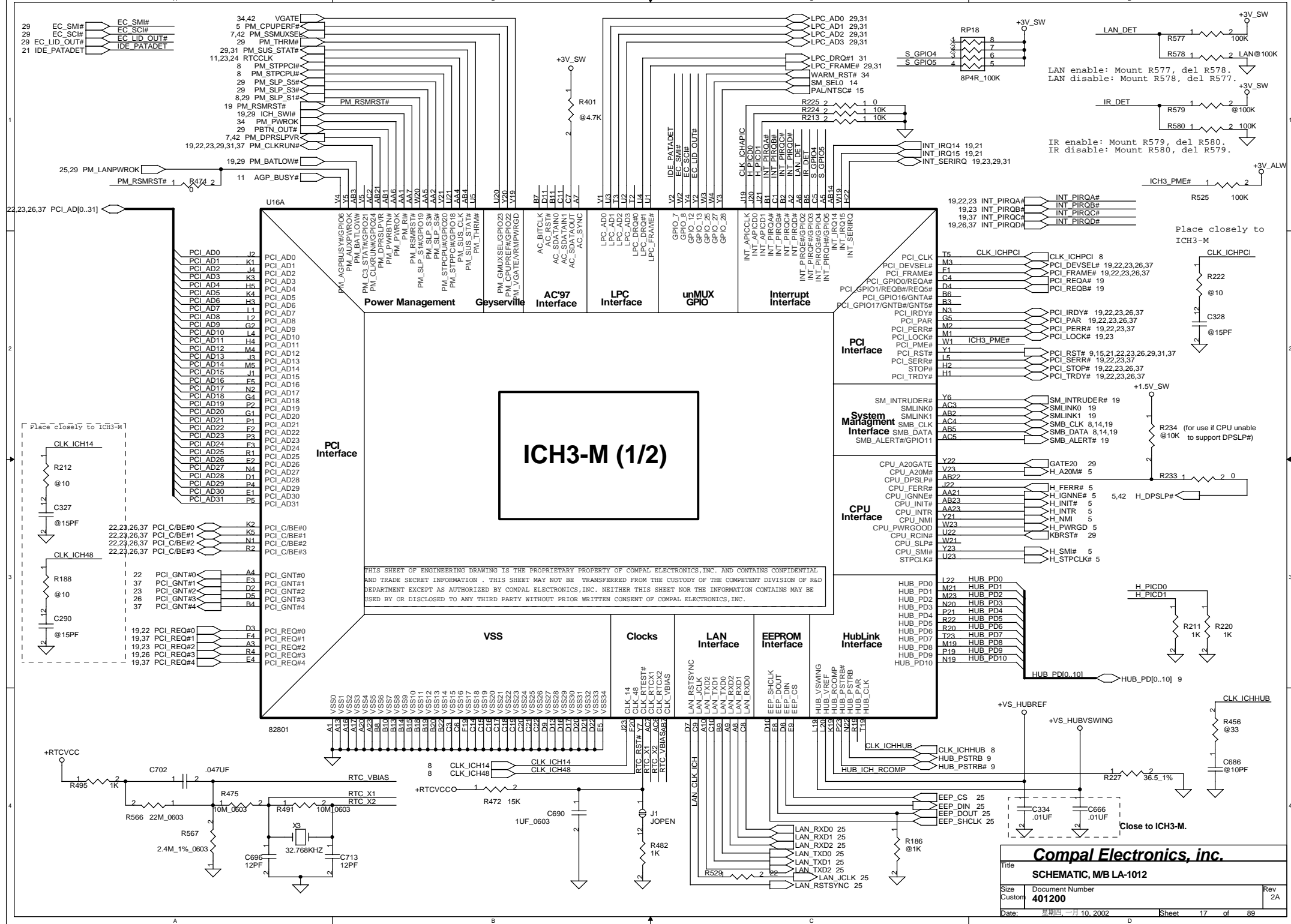


GMBus switch

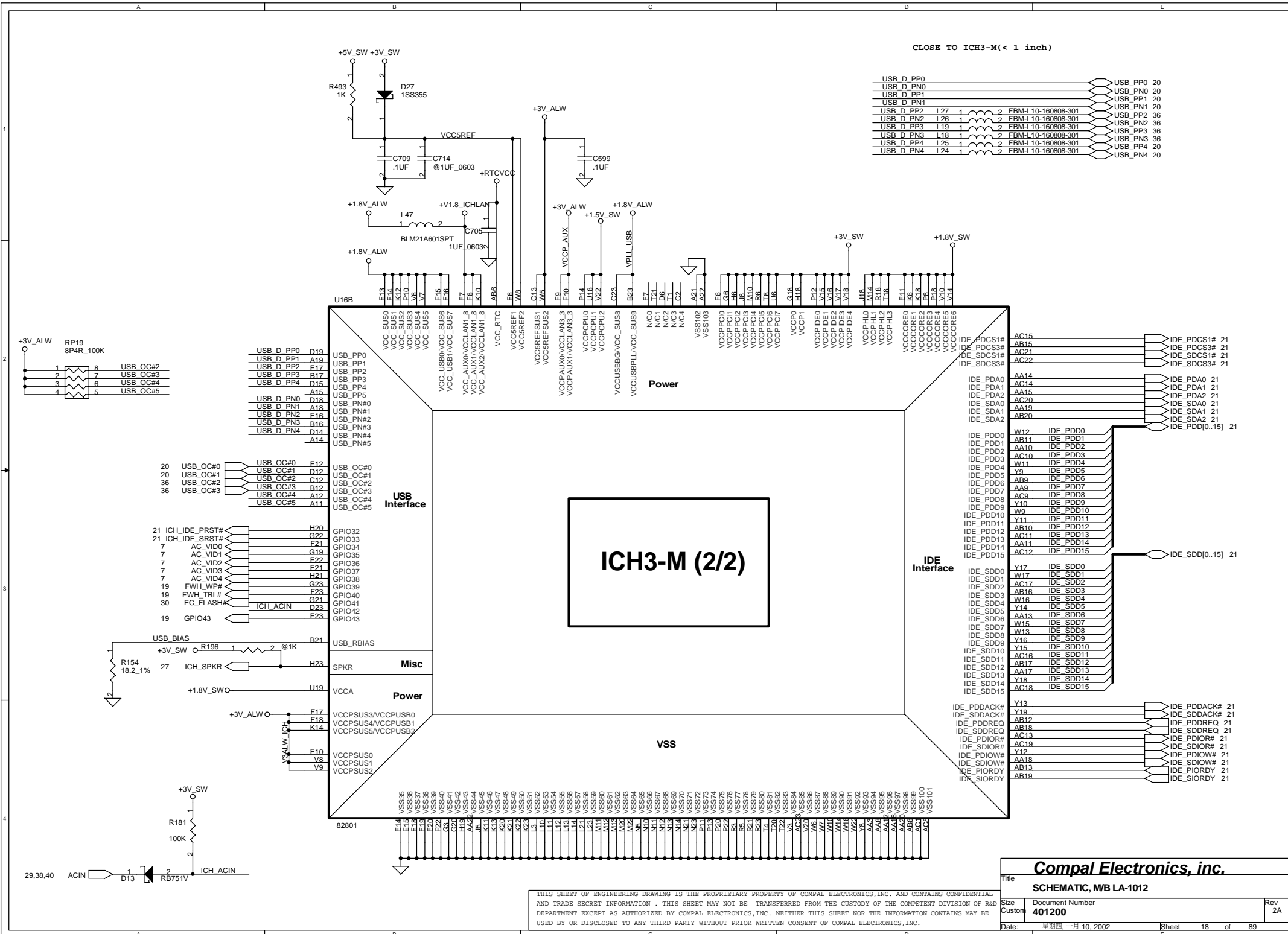


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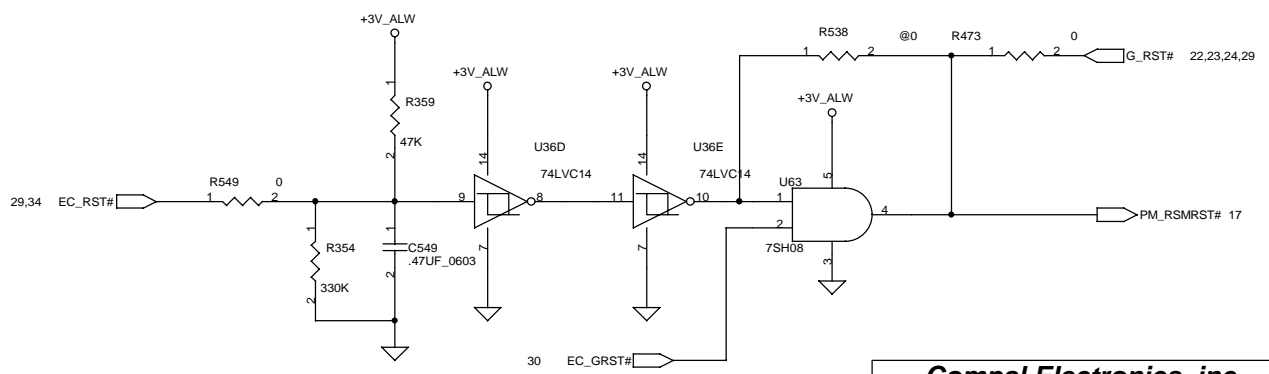
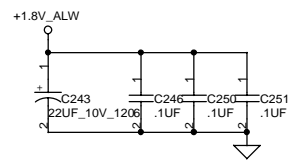
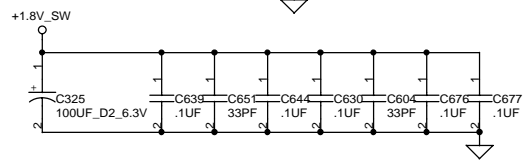
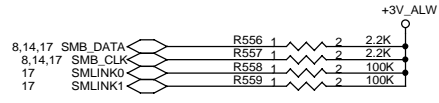
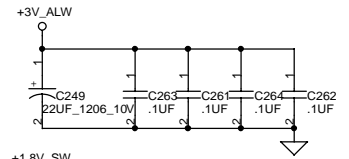
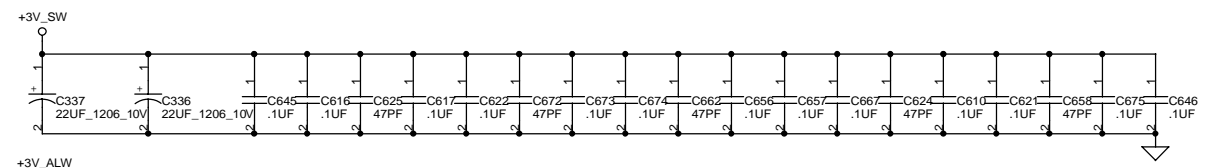
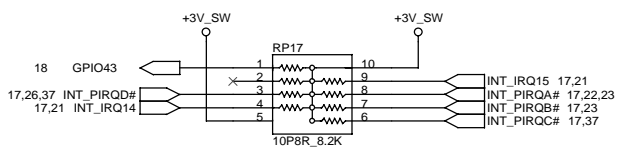
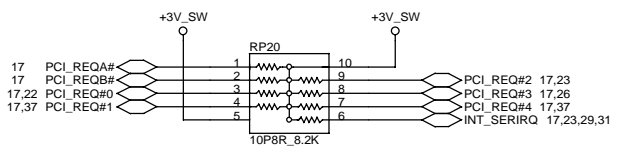
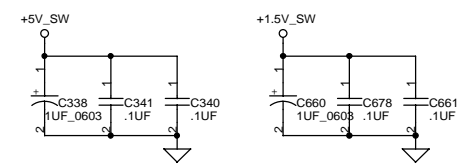
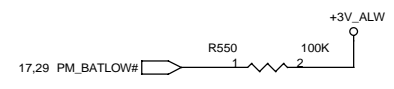
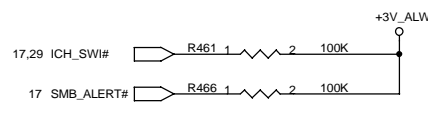
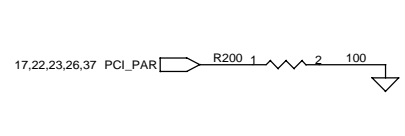
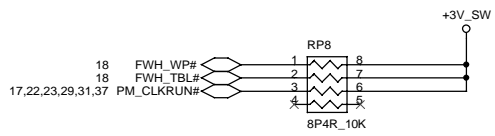
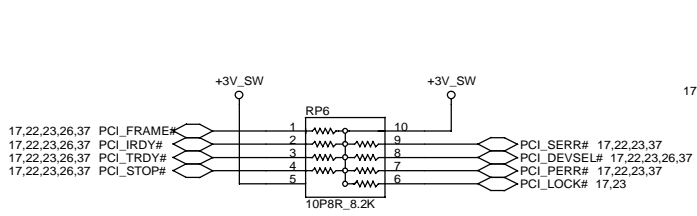


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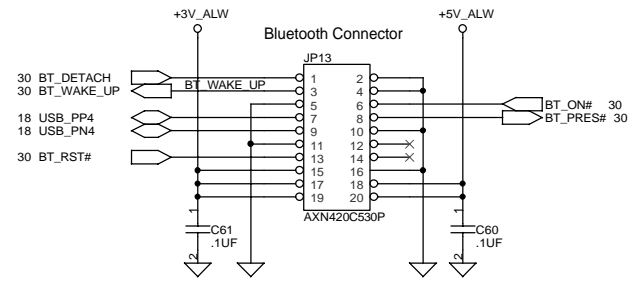
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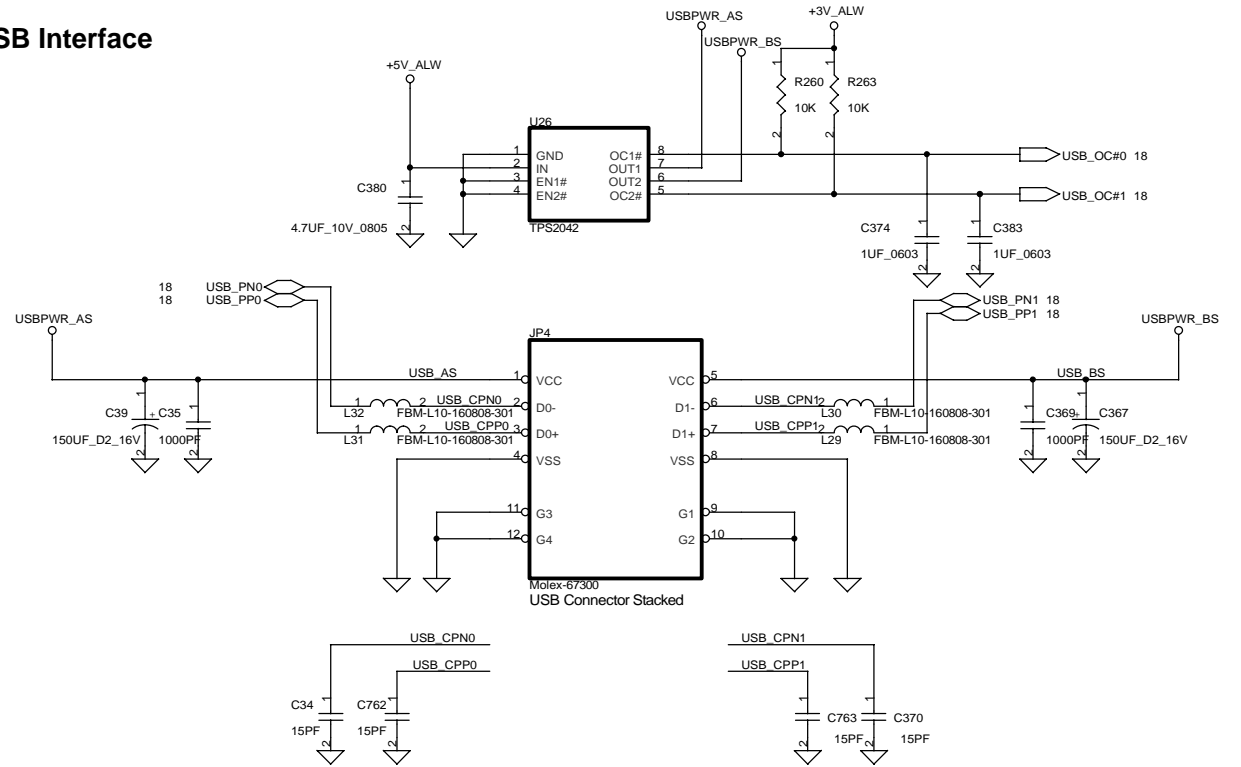
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BlueTooth Interface

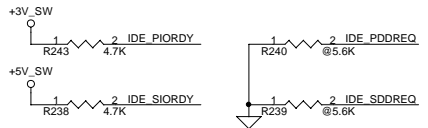
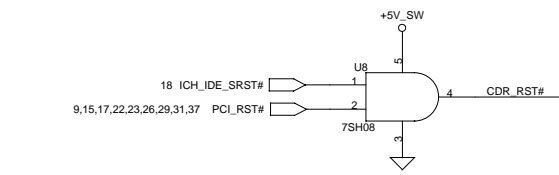
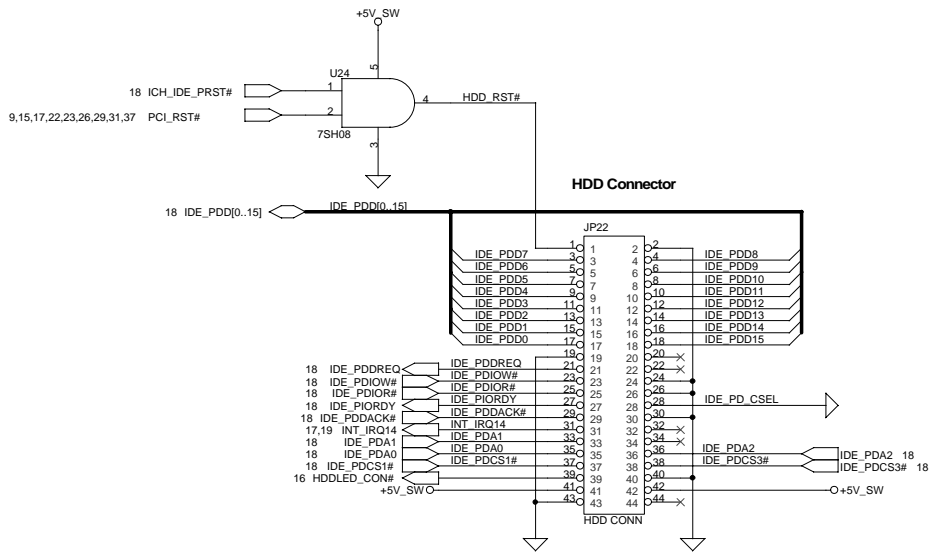


USB Interface

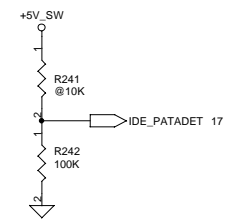


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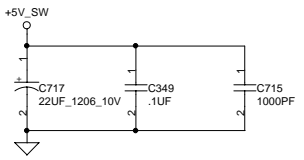
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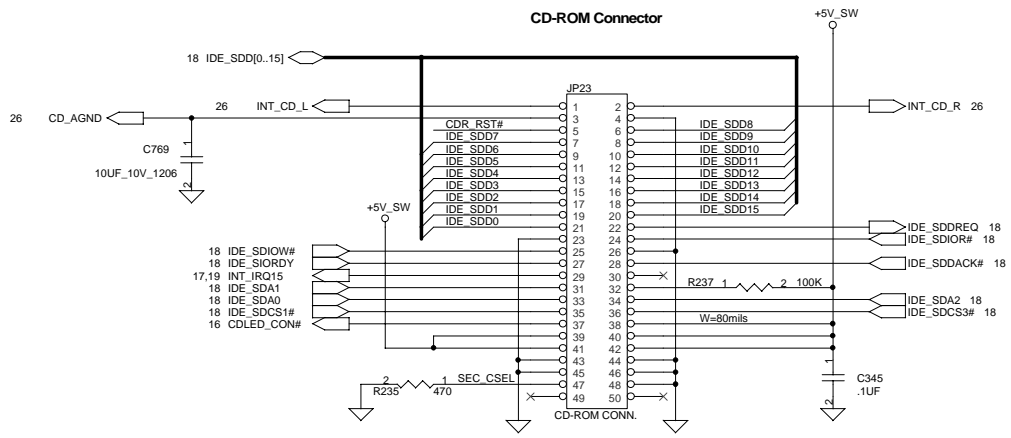
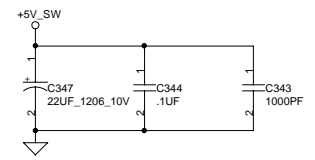
HDD Manual ATA Type Selection:
 ATA33 : populate R224, de-populate R225.
 ATA66/100 : populate R225, de-populate R224.



Layout note:
 Place capacitors near HDD connector .

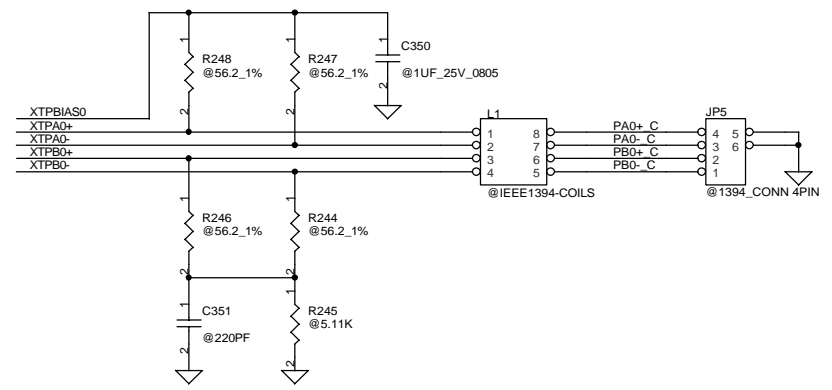
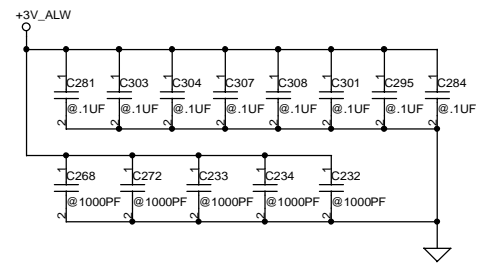
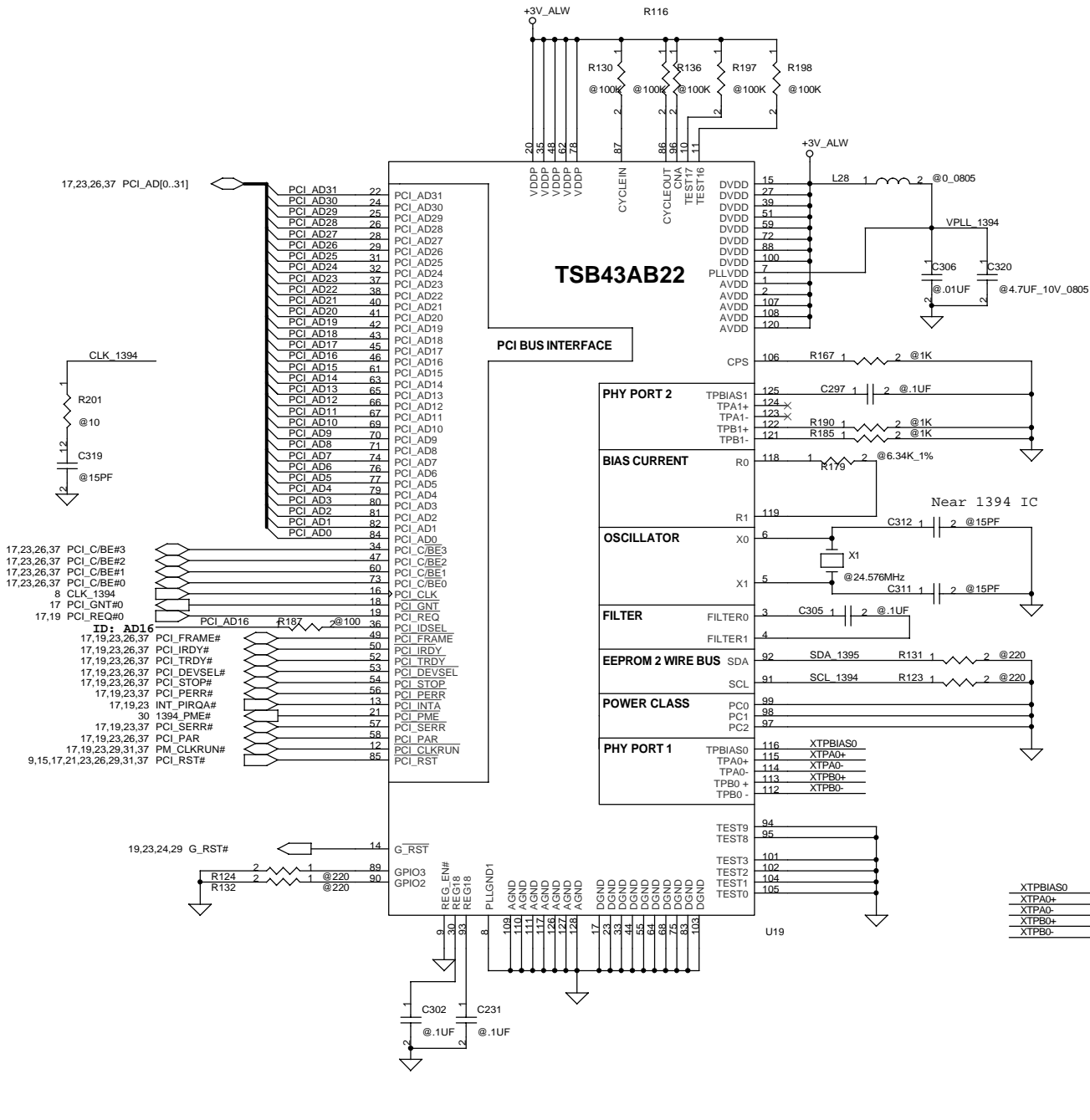


Layout note:
 Place capacitors near CD-ROM connector .



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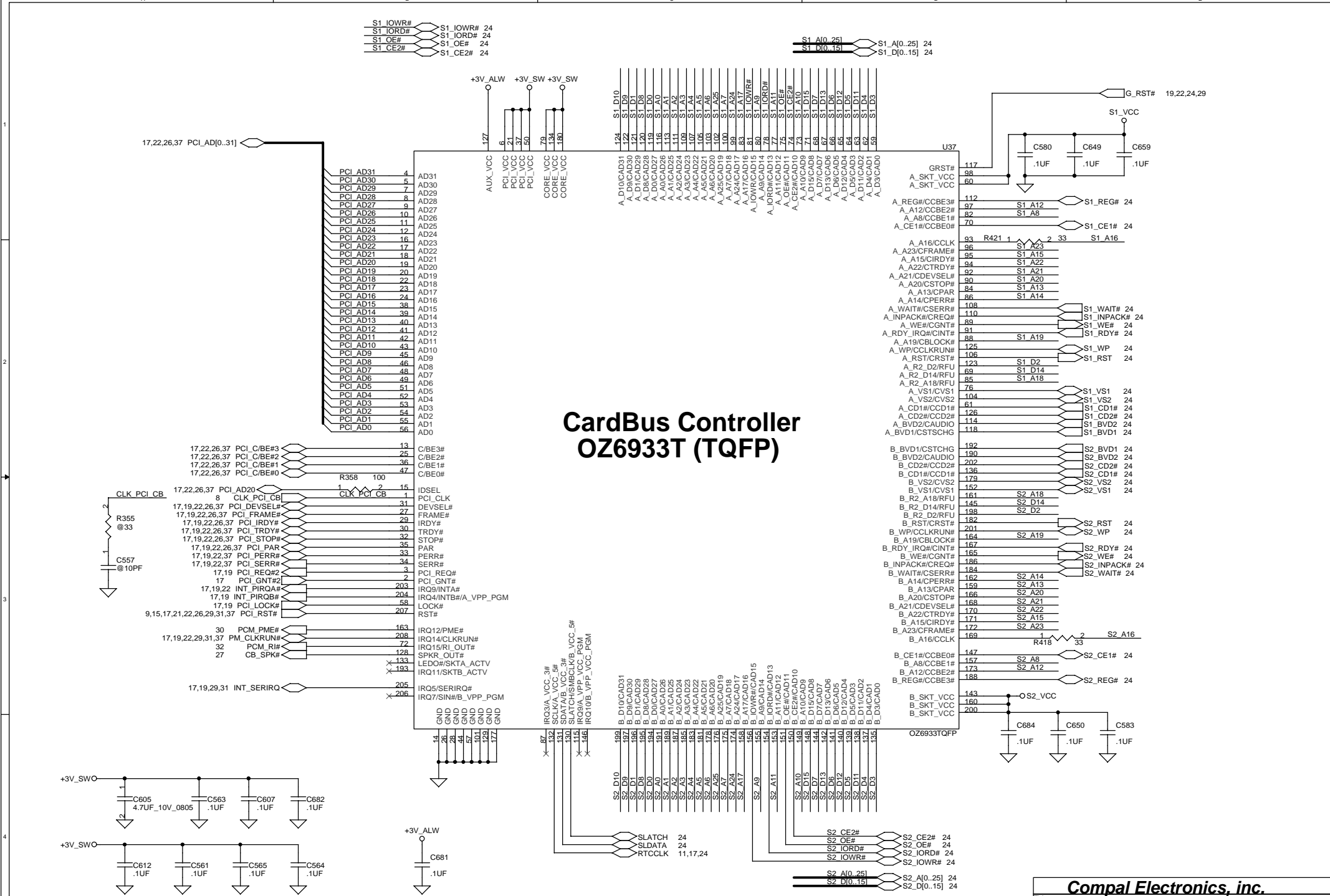
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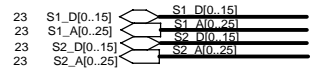
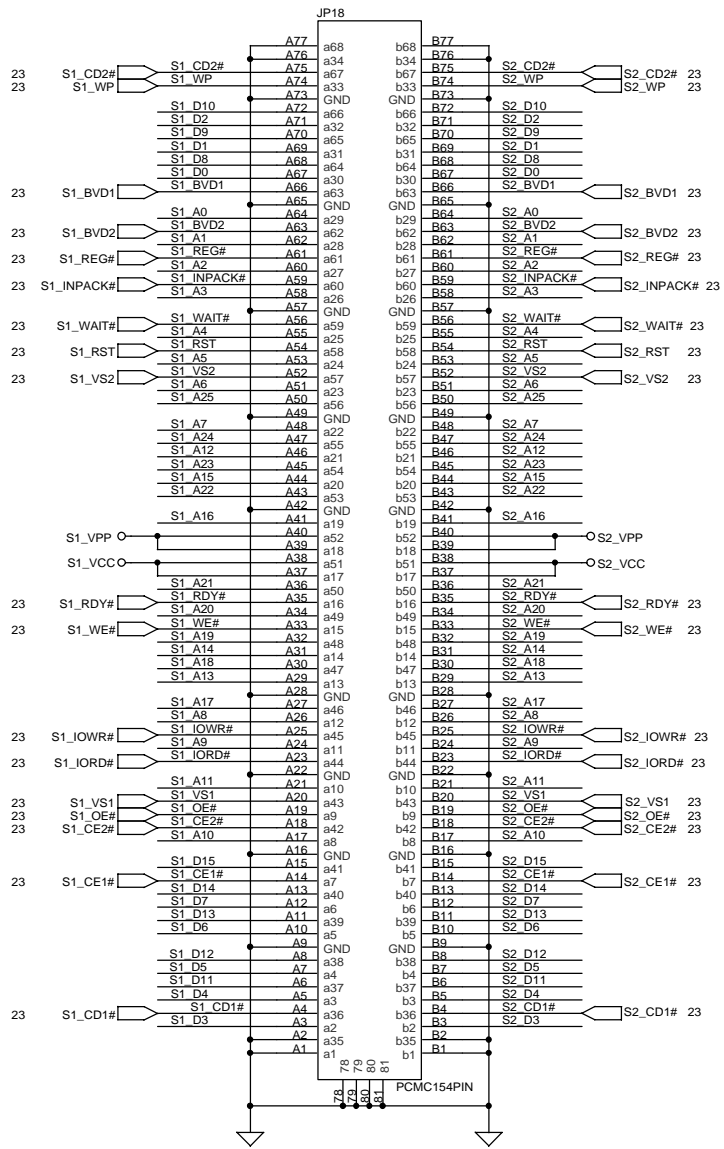
S1_IOWR# 24
 S1_IORD# 24
 S1_OE# 24
 S1_CE2# 24
 S1_IOWR# 24
 S1_IORD# 24
 S1_OE# 24
 S1_CE2# 24

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

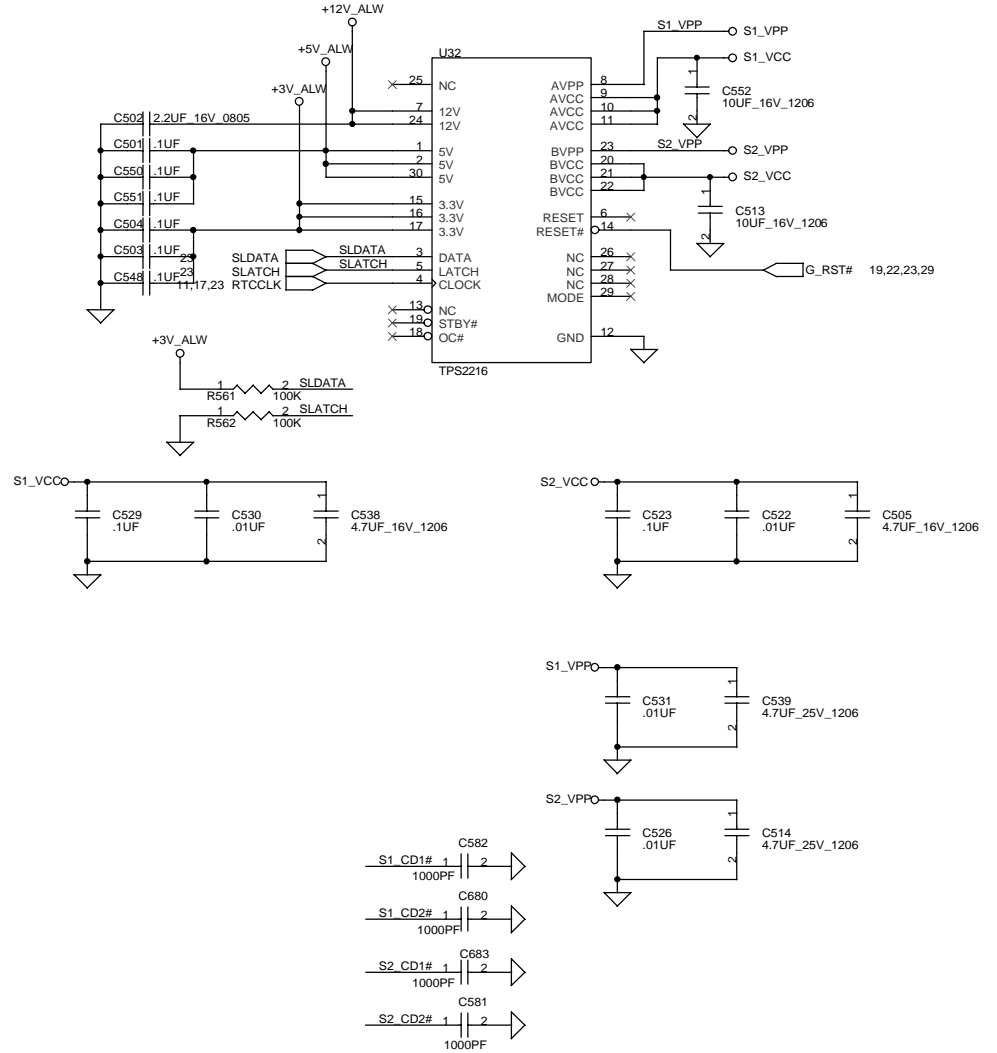
CardBus Controller OZ6933T (TQFP)



CARDBUS SOCKET



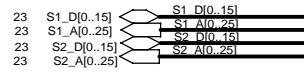
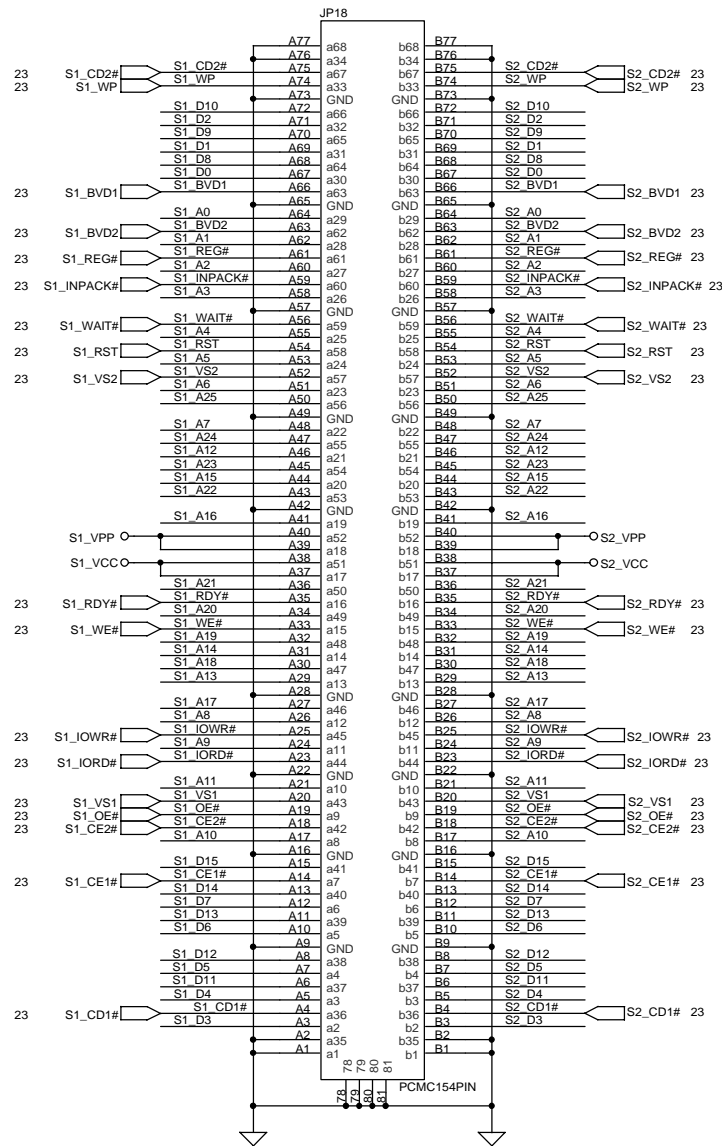
PCMCIA POWER CTRL.



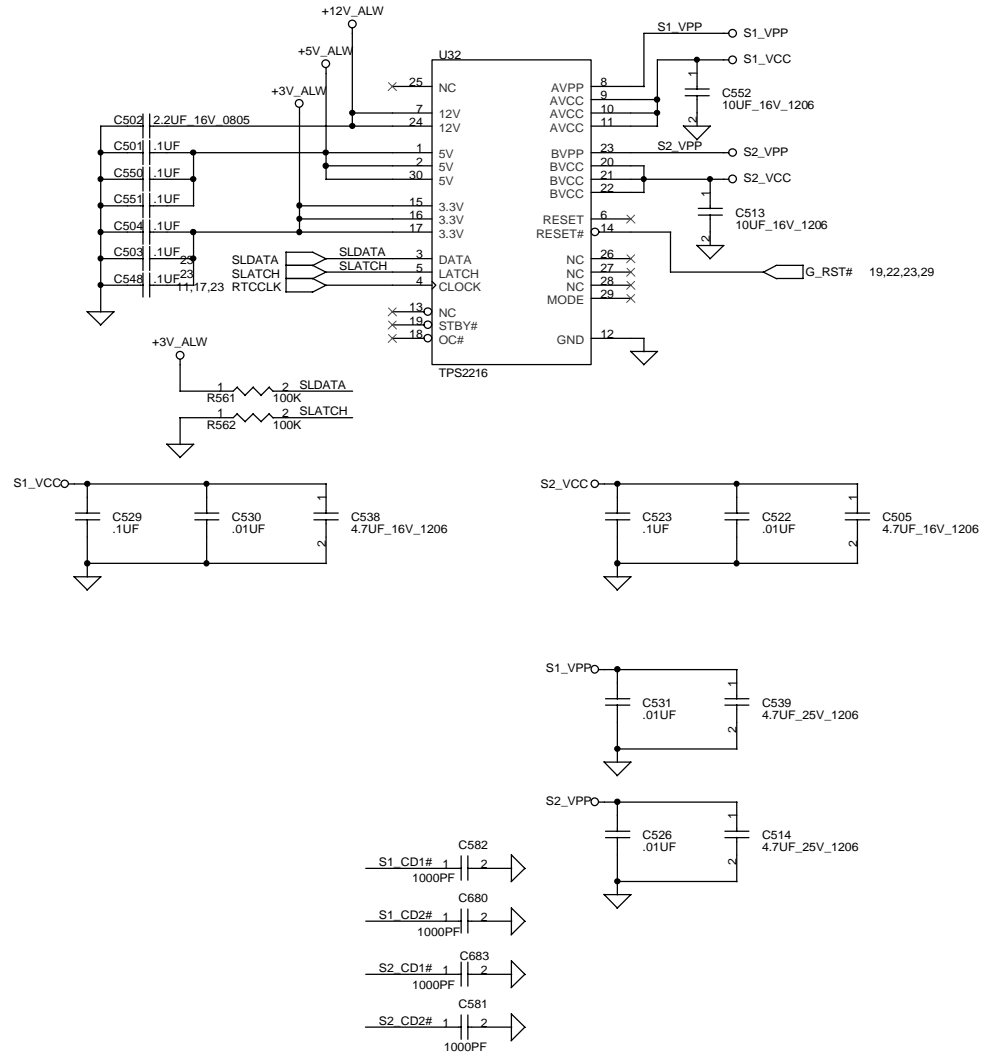
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CARDBUS SOCKET

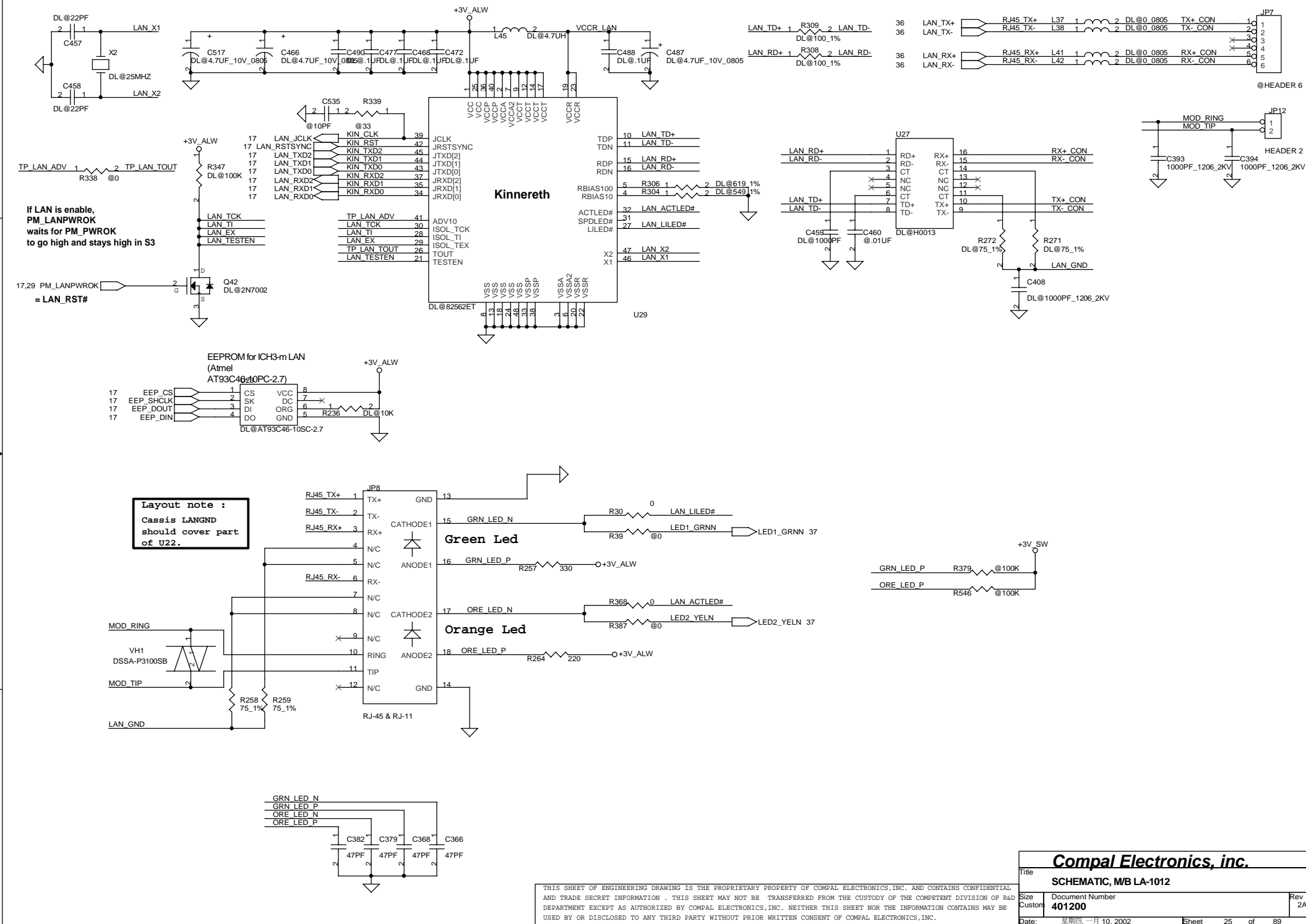


PCMCIA POWER CTRL.



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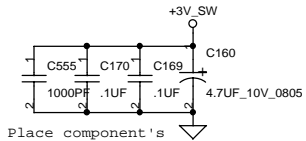
If LAN is enable, PM_LANPWROK waits for PM_PWROK to go high and stays high in S3

17,29 PM_LANPWROK = LAN_RST#

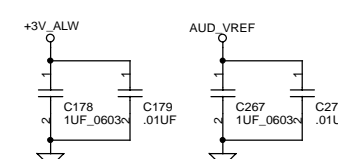
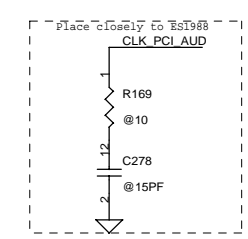
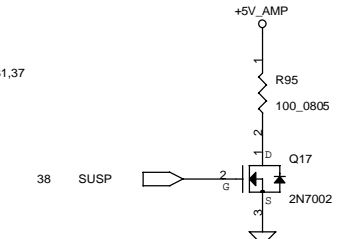
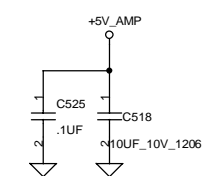
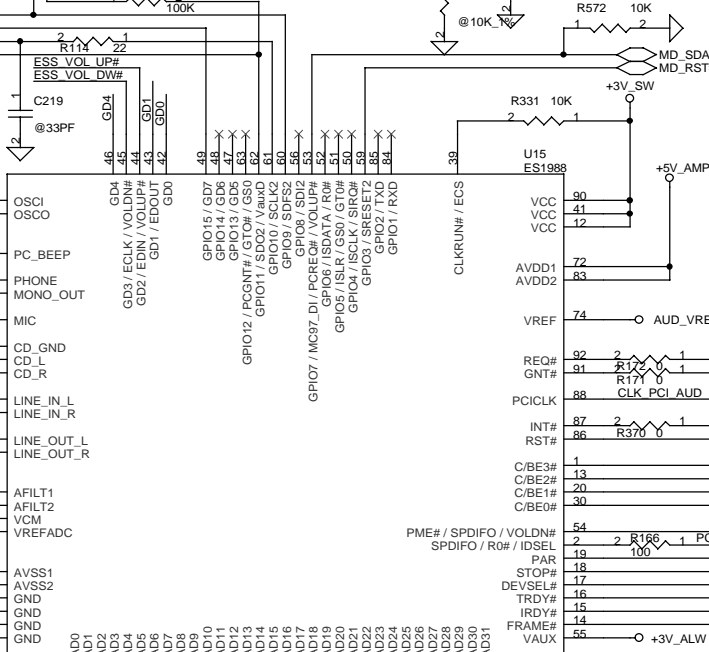
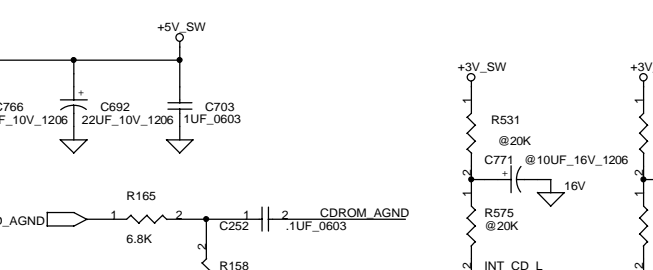
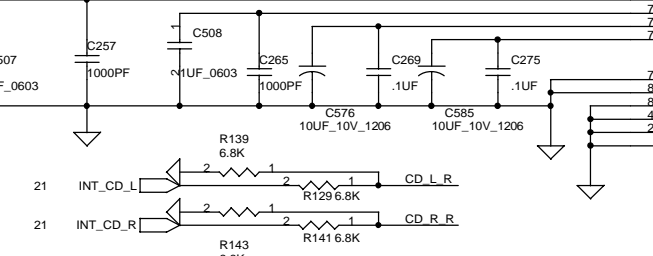
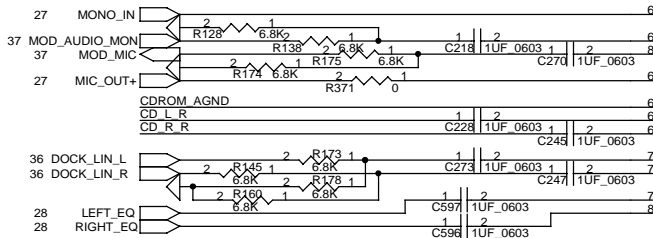
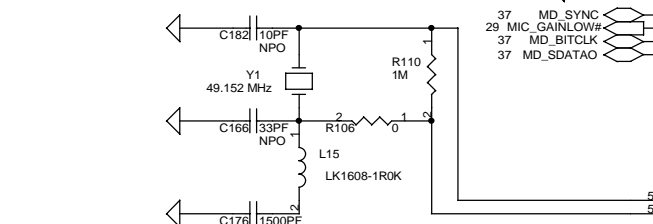
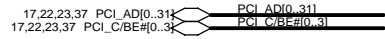
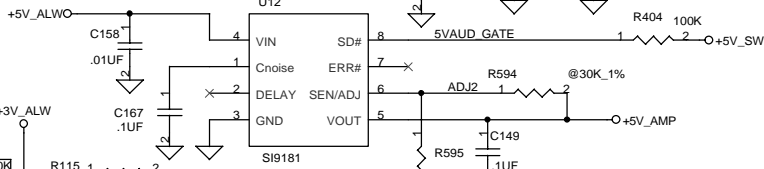
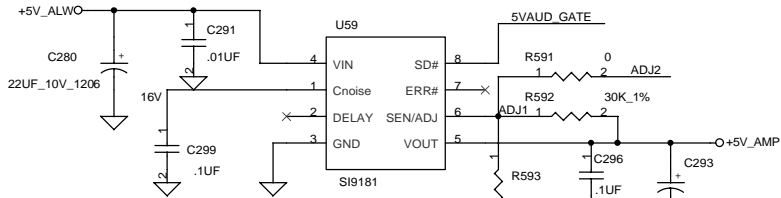
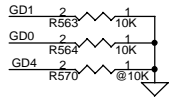
Layout note :
Cassis LANGND should cover part of U22.

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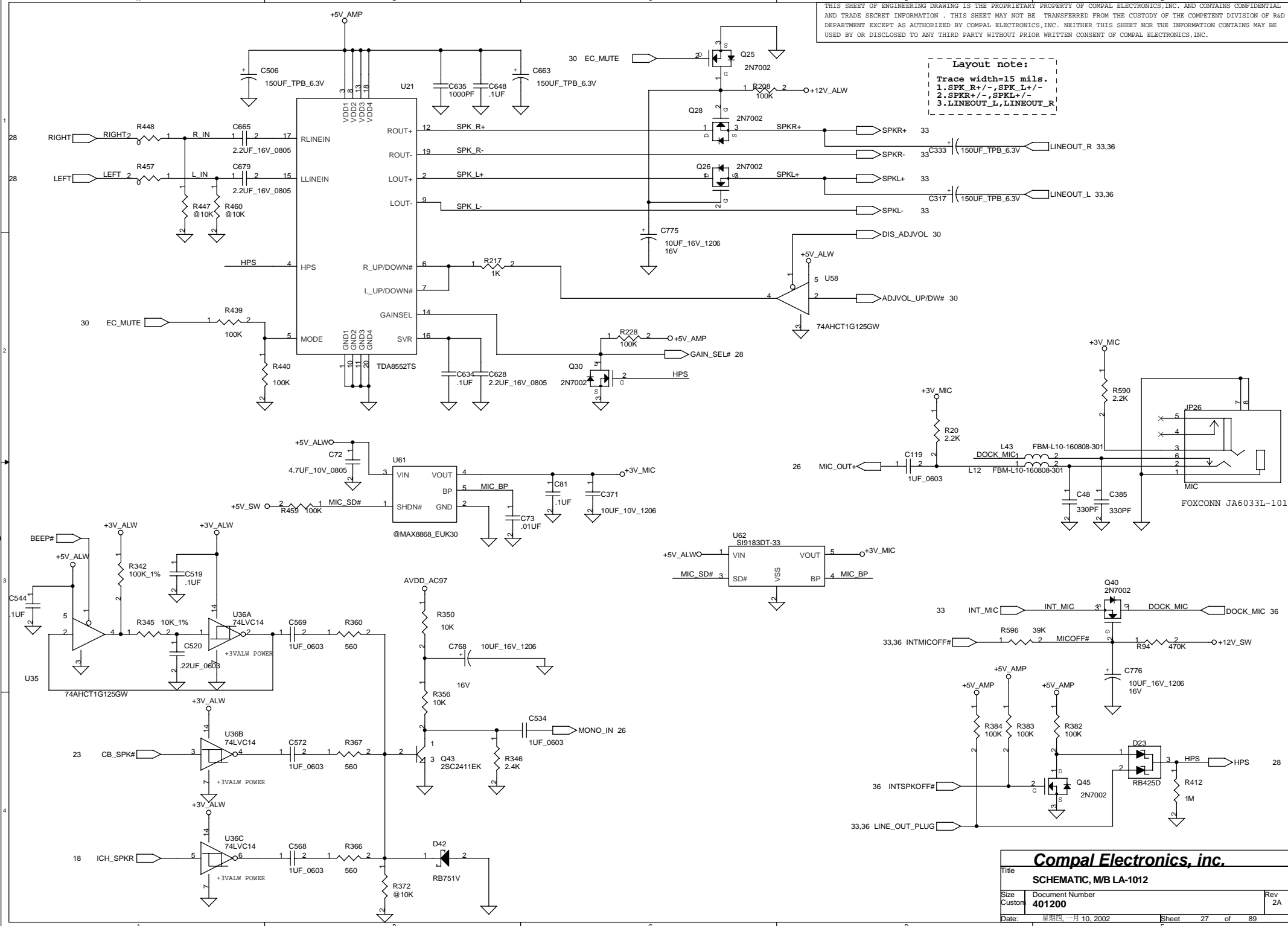


Place component's to ES1988



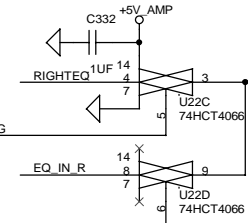
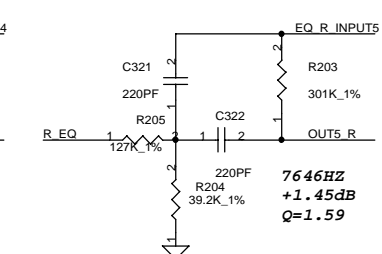
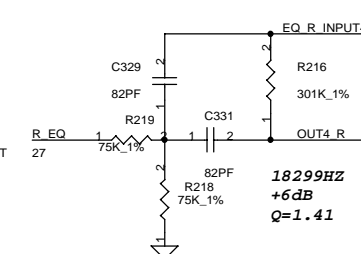
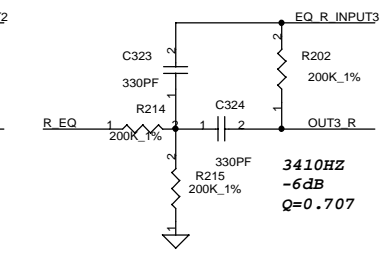
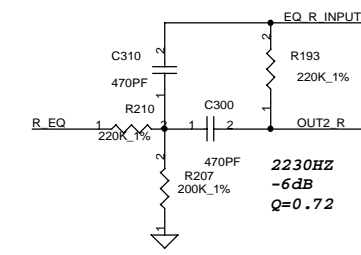
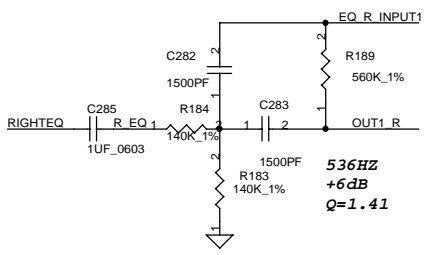
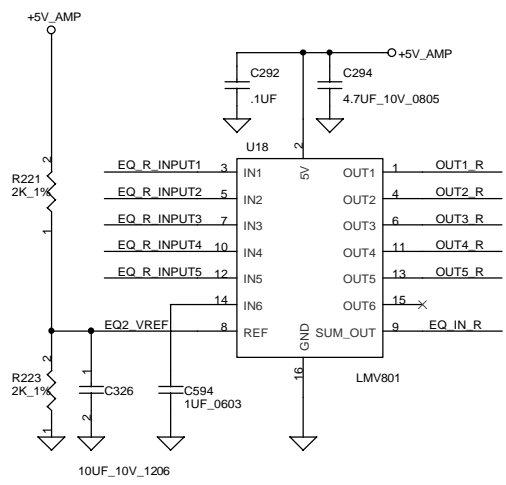
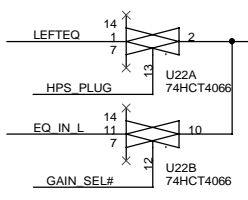
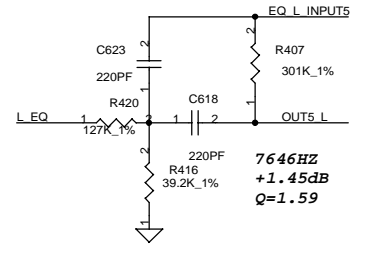
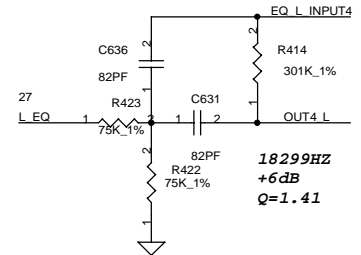
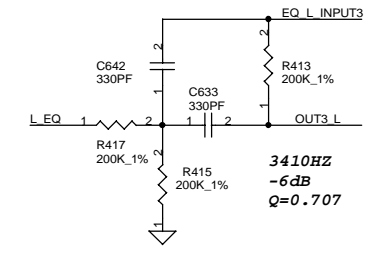
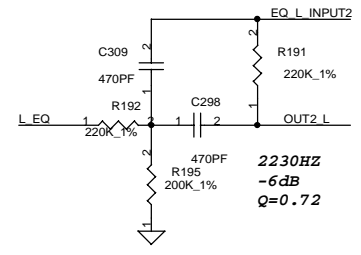
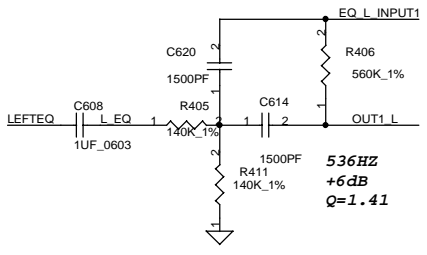
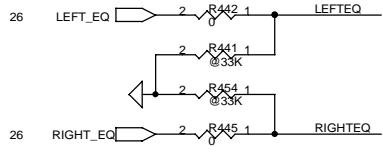
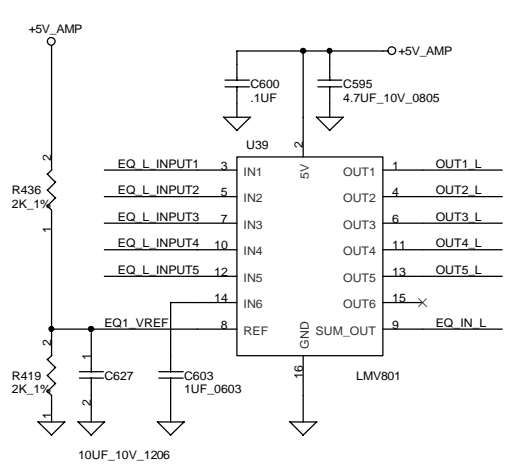
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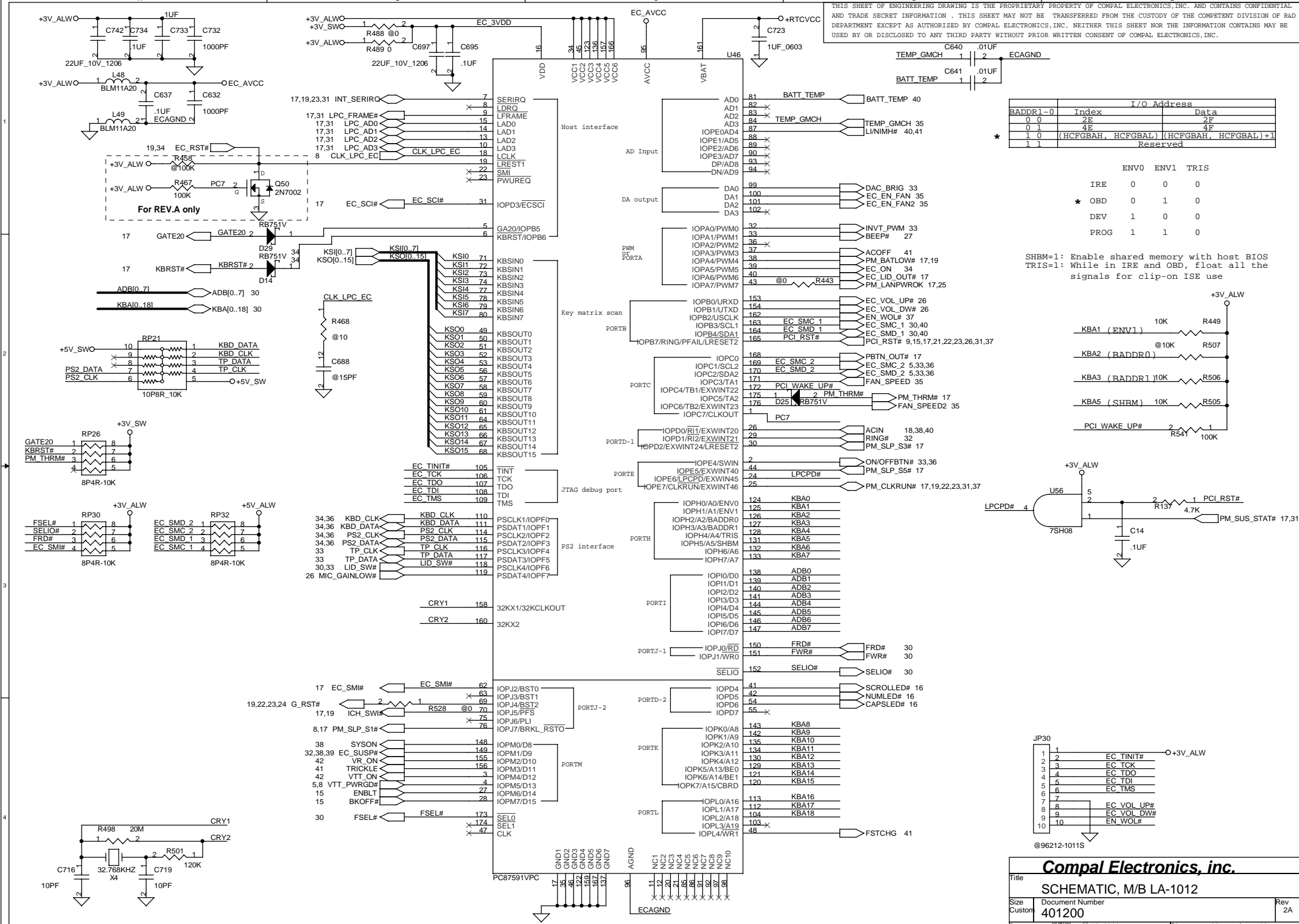
Layout note:
 Trace width=15 mils.
 1.SPKR+/-,SPKL+/-
 2.SPKR+/-,SPKL+/-
 3.LINEOUT_L,LINEOUT_R

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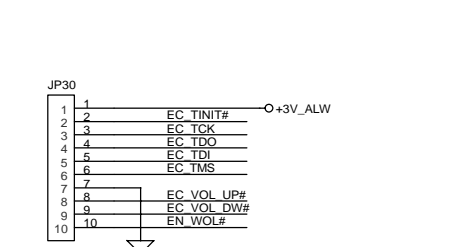
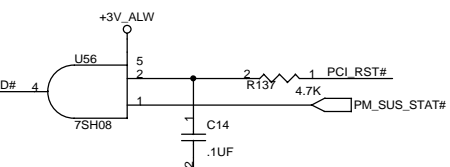
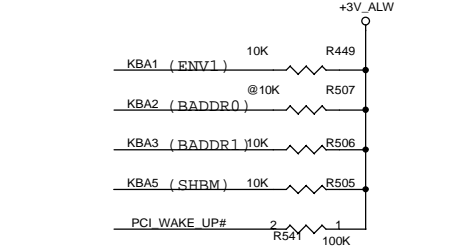
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I/O Address		
BADDR1-0	Index	Data
0 0	2E	2F
0 1	4B	4F
1 0	(HCFGBAH, HCFGBAL)	(HCFGBAH, HCFGBAL)+1
1 1	Reserved	

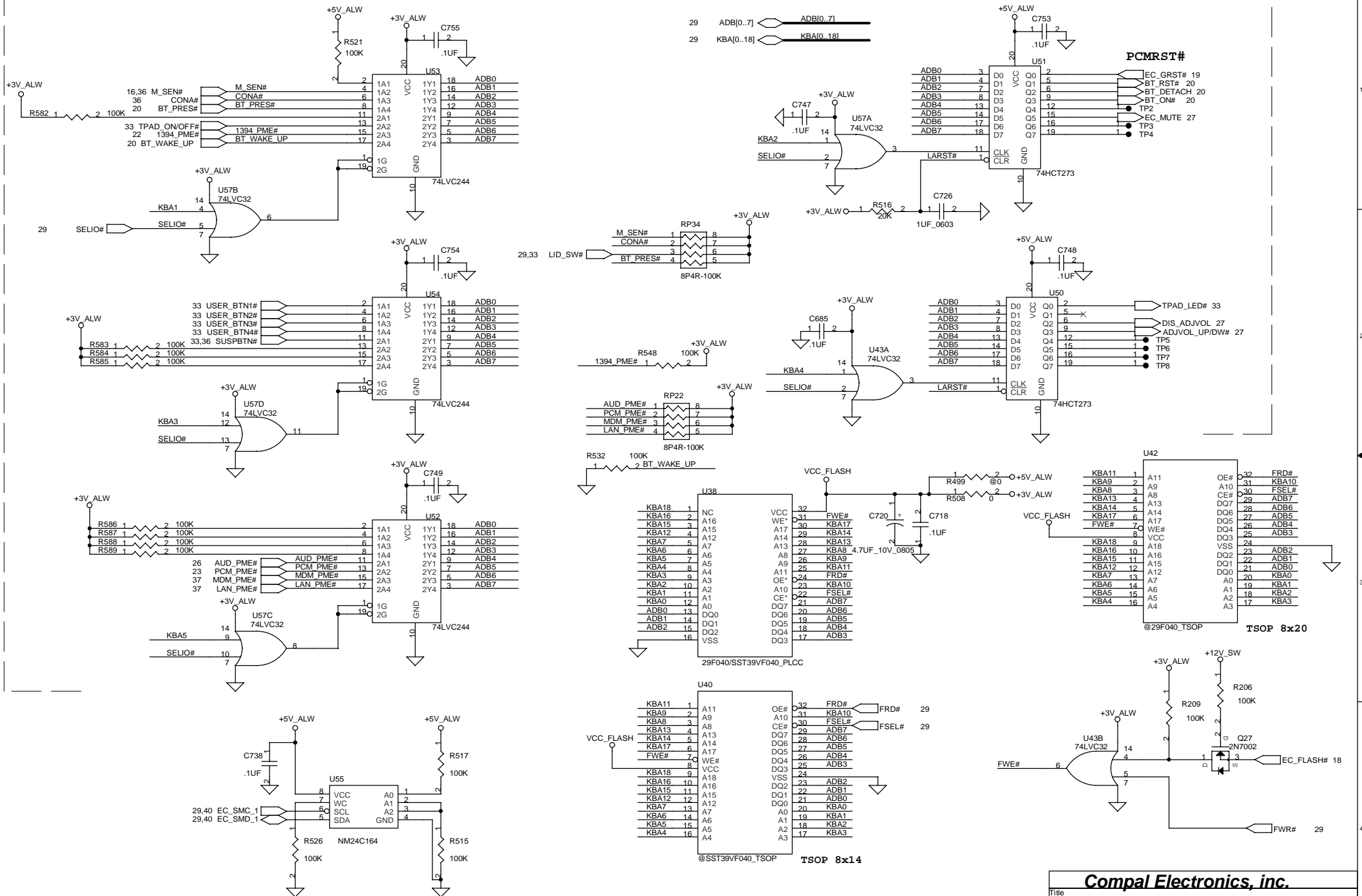
ENVO	ENV1	TRIS
IRE	0	0
OBD	0	1
DEV	1	0
PROG	1	0

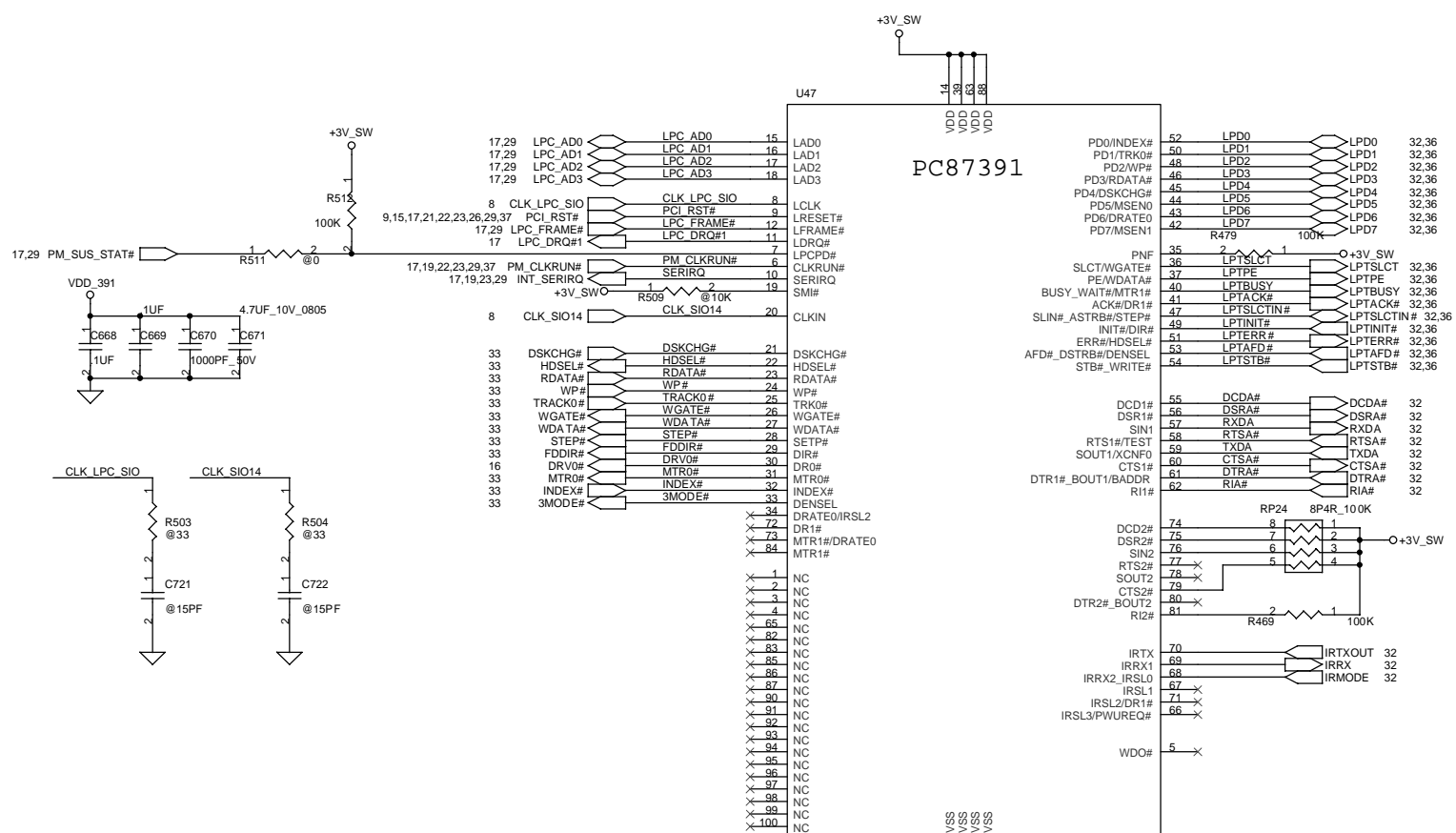
SHBM=1: Enable shared memory with host BIOS
 TRIS=1: While in IRE and OBD, float all the signals for clip-on ISE use



INPUT

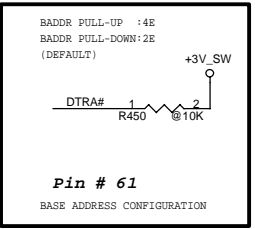
OUTPUT



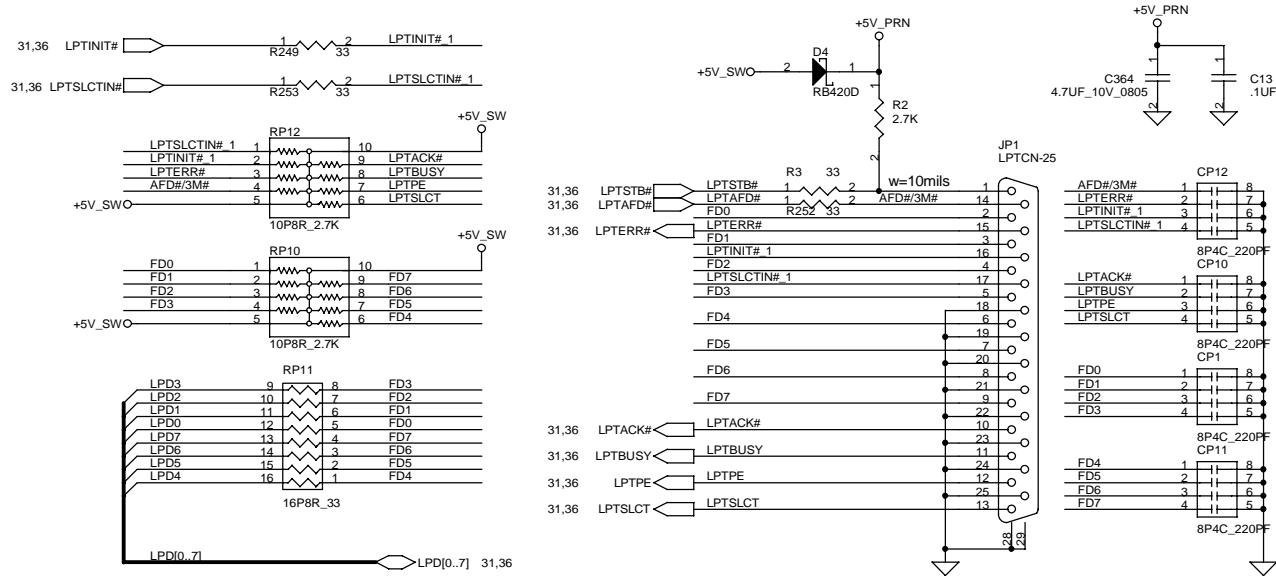


Signal	Pin #	Description
BADDR	61	BASE Address Selection "0": 2E~2F (Default) "1": 4E~4F
TEST	58	"0": Normal (Default) "1": Test Mode
XCNF[2:0]	90, 4, 59	2 1 0 Function
		x 0 0 No BIOS
		x 0 1 Normal Mode. XRDY disabled
		0 1 0 Latch Mode. XA12-19, XRDY enabled
		1 1 0 Latch Mode. GPIO10-17, XRDY enabled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

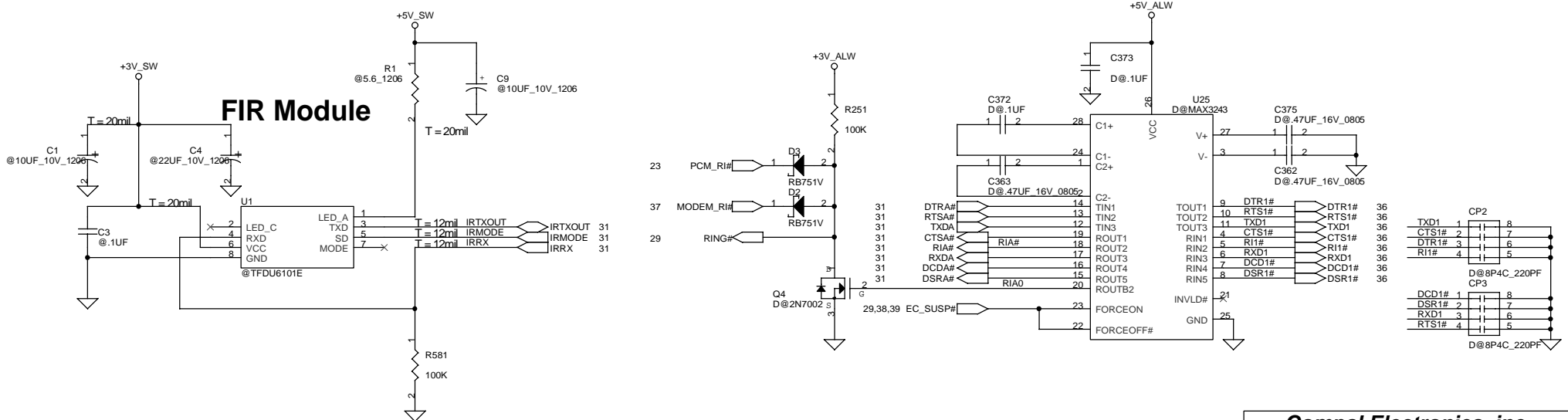
*1.ROM SOLUTION for PC87391
*2.ROM SOLUTION for PC87393



PARALLEL



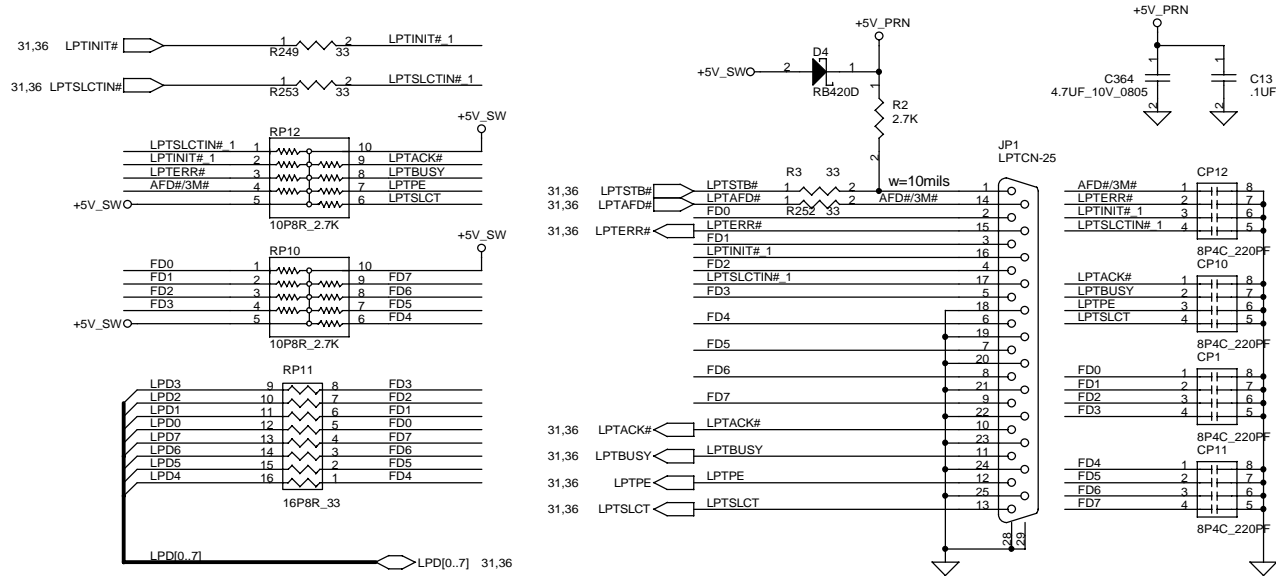
SERIAL



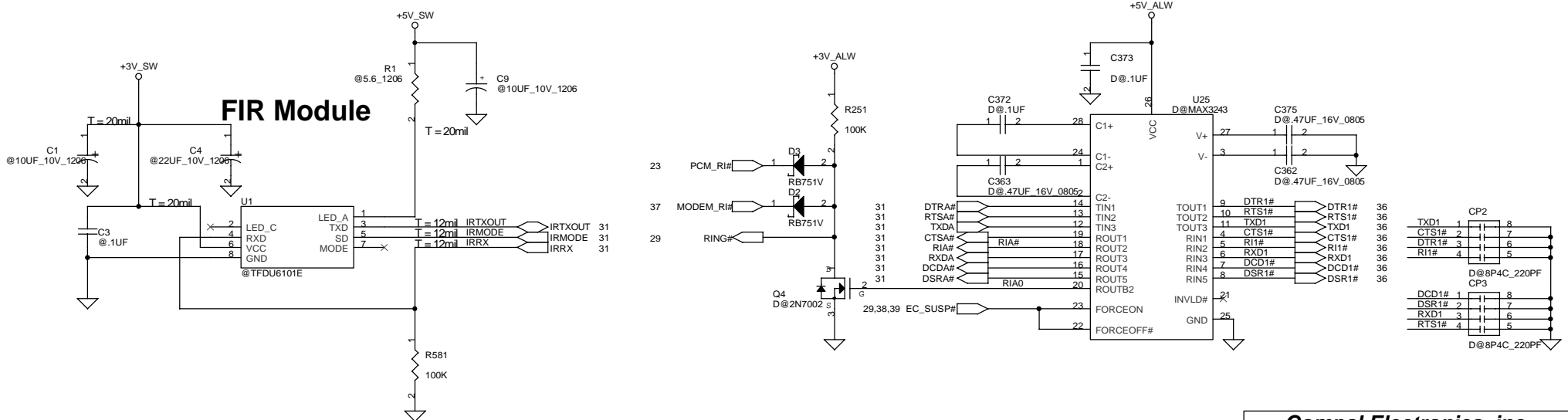
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PARALLEL



SERIAL

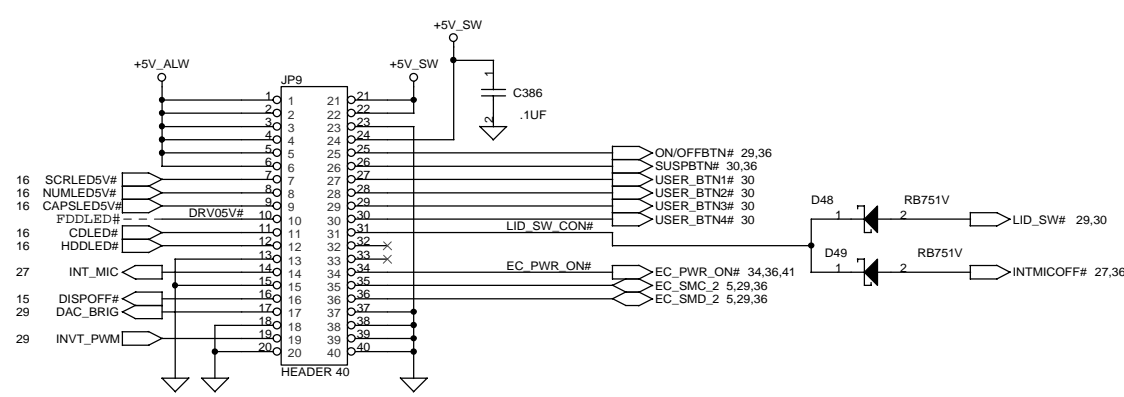
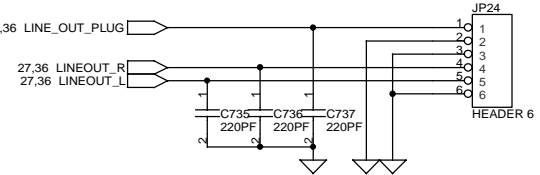
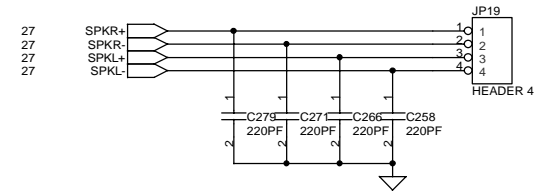
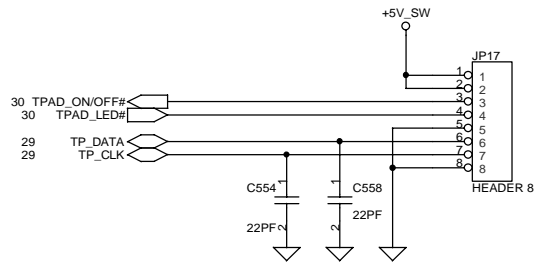
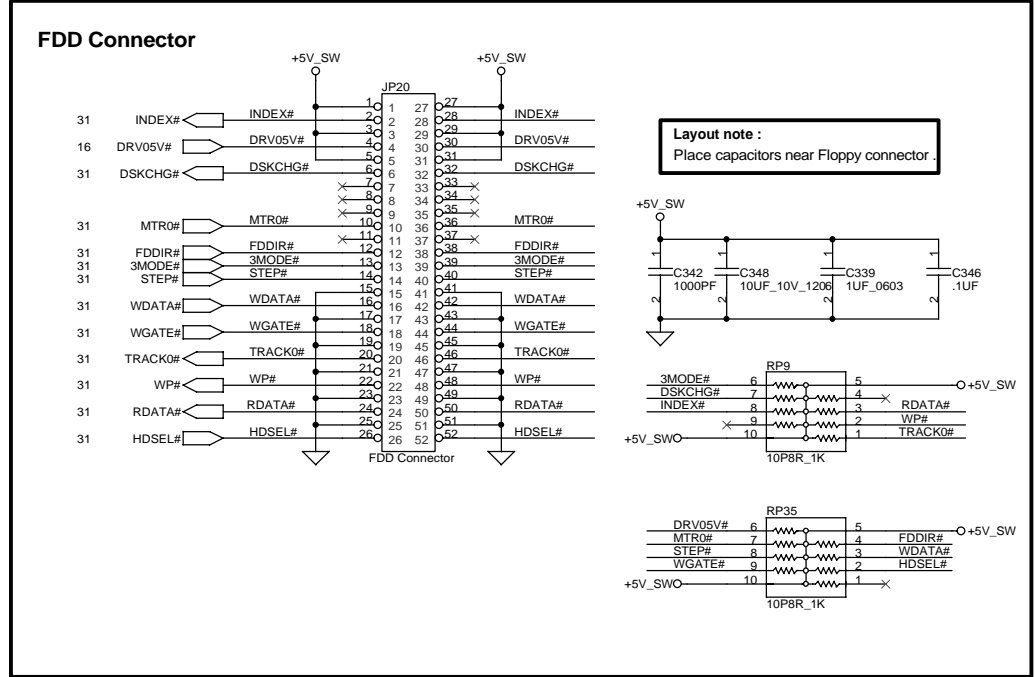


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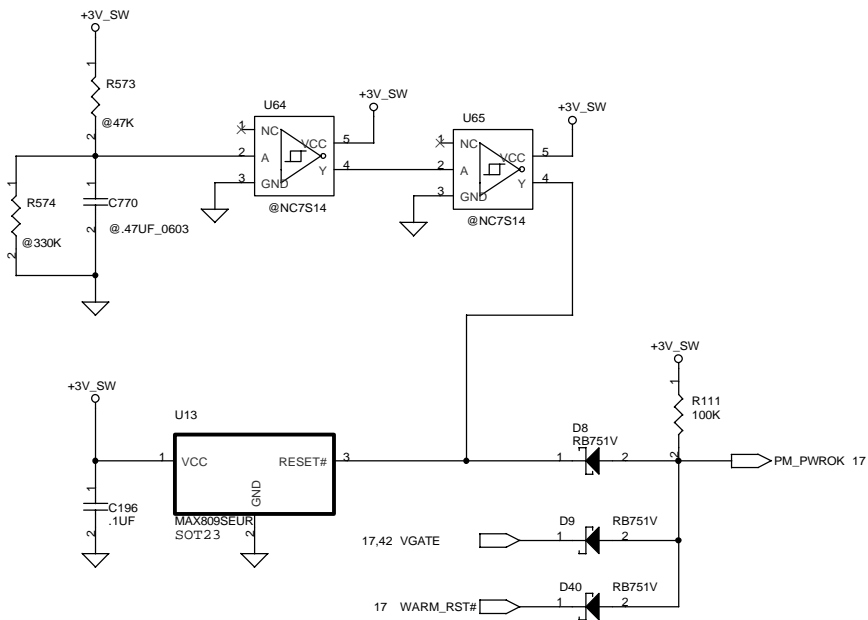
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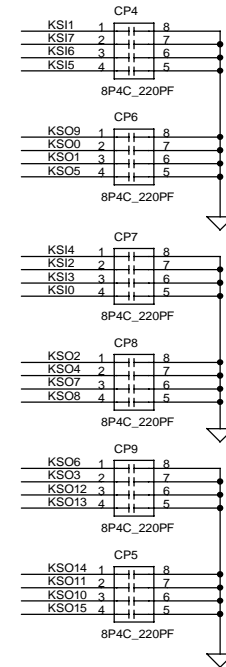
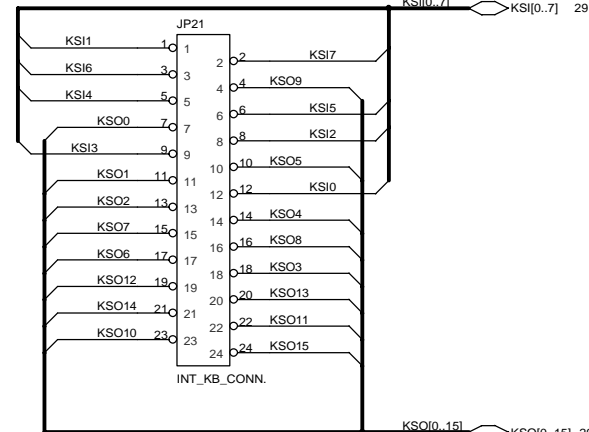


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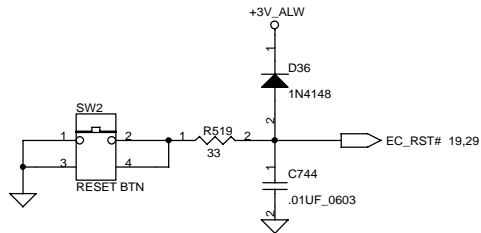
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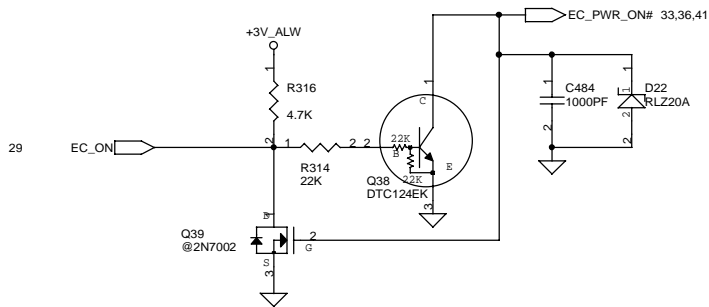
INT_KBD CONN.



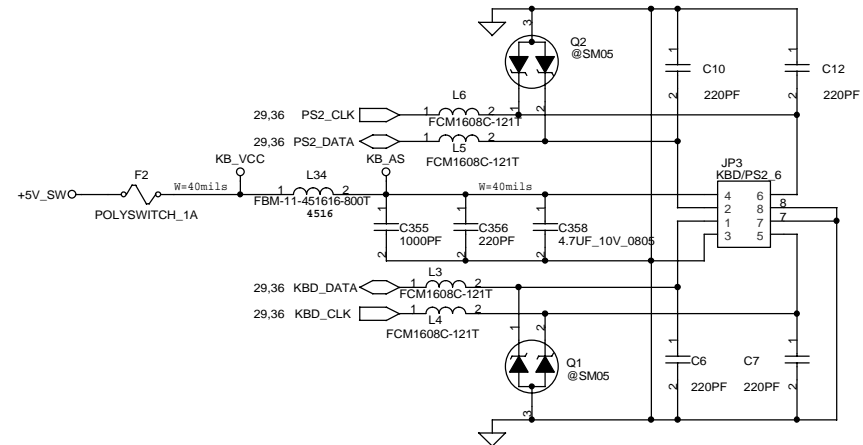
Reset Button



Power ON

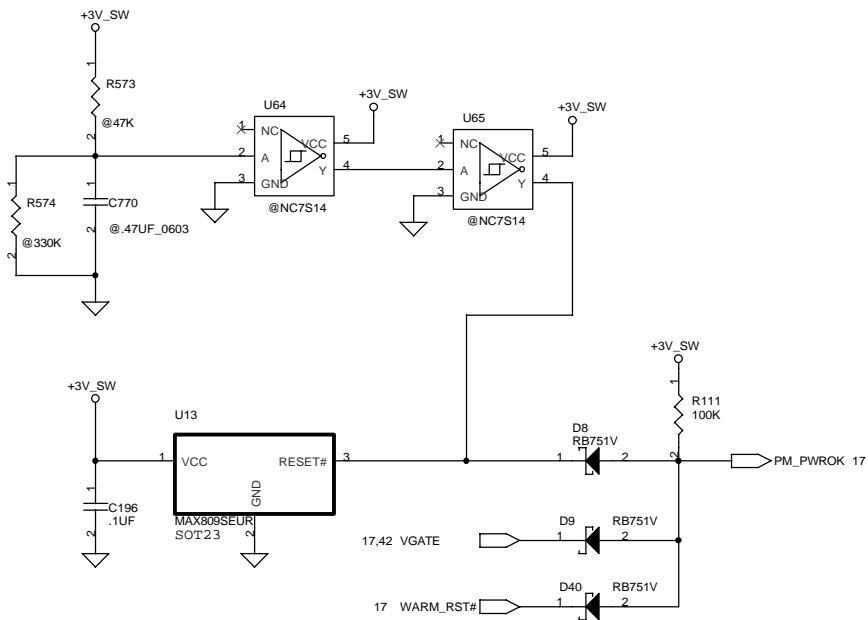


PS2 CONN.

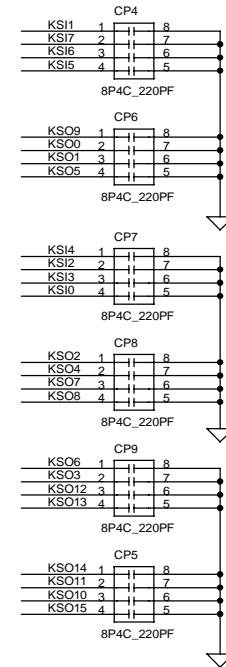
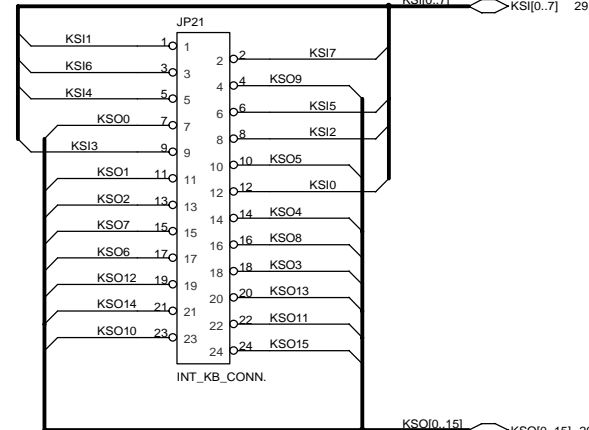


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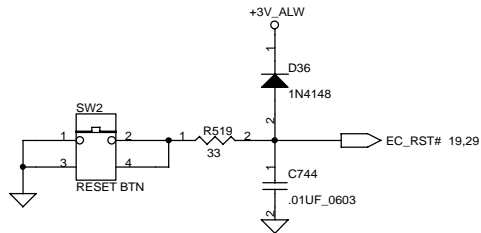
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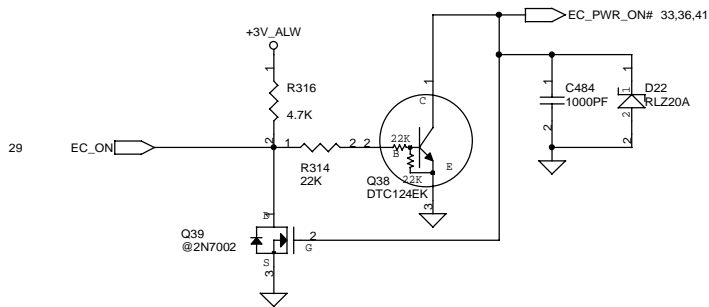
INT_KBD CONN.



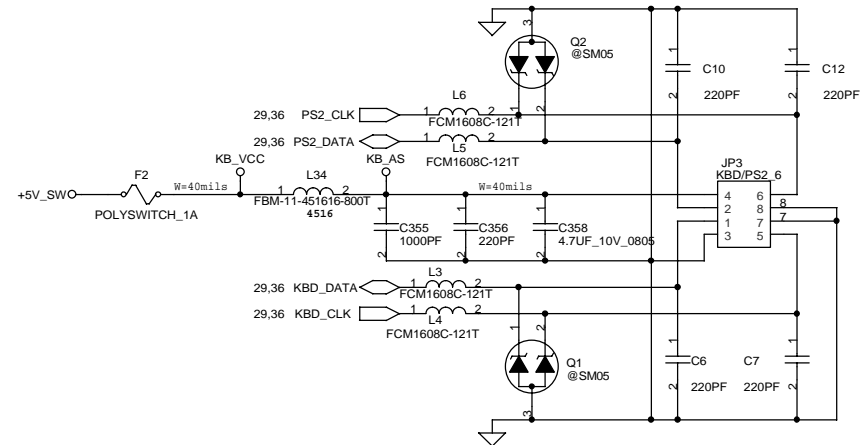
Reset Button



Power ON

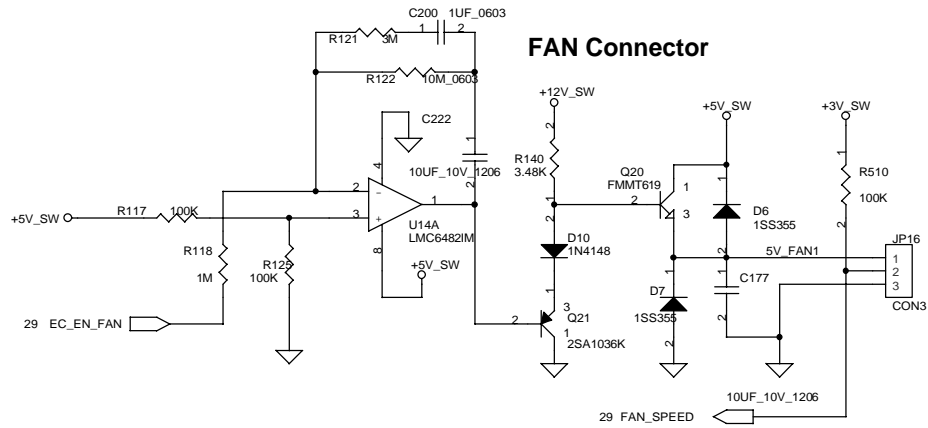


PS2 CONN.

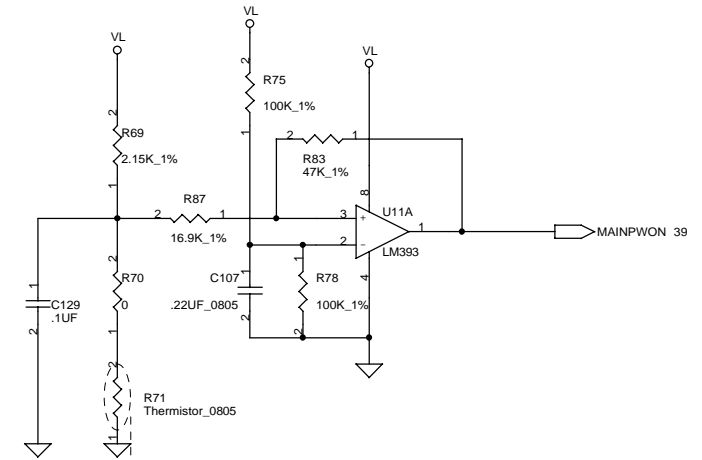


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FAN Connector

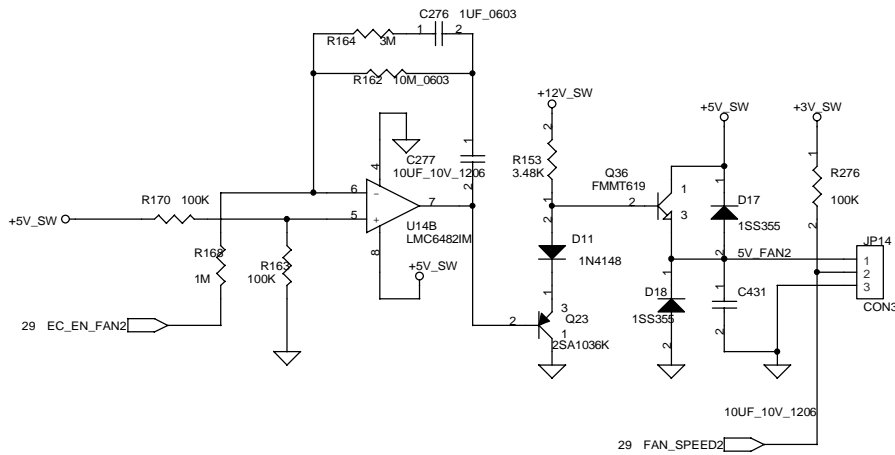


The temperature sensing and Over-Hot shutdown circuit.
Place this block circuit close to CPU.

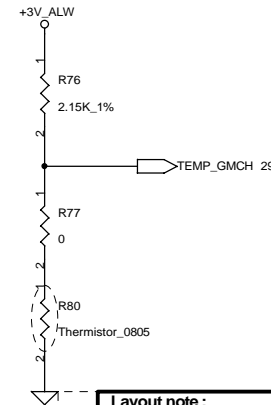
Layout note:
Place a copper ground plan from CPU and place the Thermistor upper this ground plan.

@

Secondary FAN Connector



The temperature sensing for GMCH.

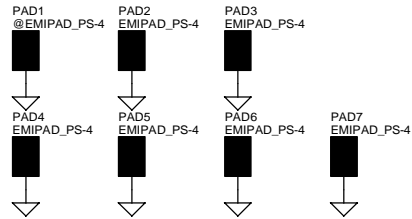


Layout note:
Place a copper ground plan from GMCH and place the Thermistor upper this ground plan.

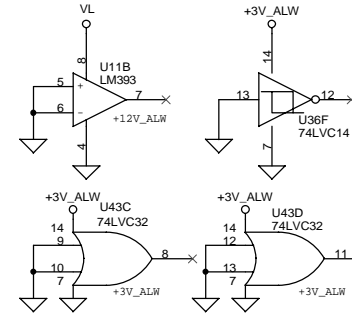
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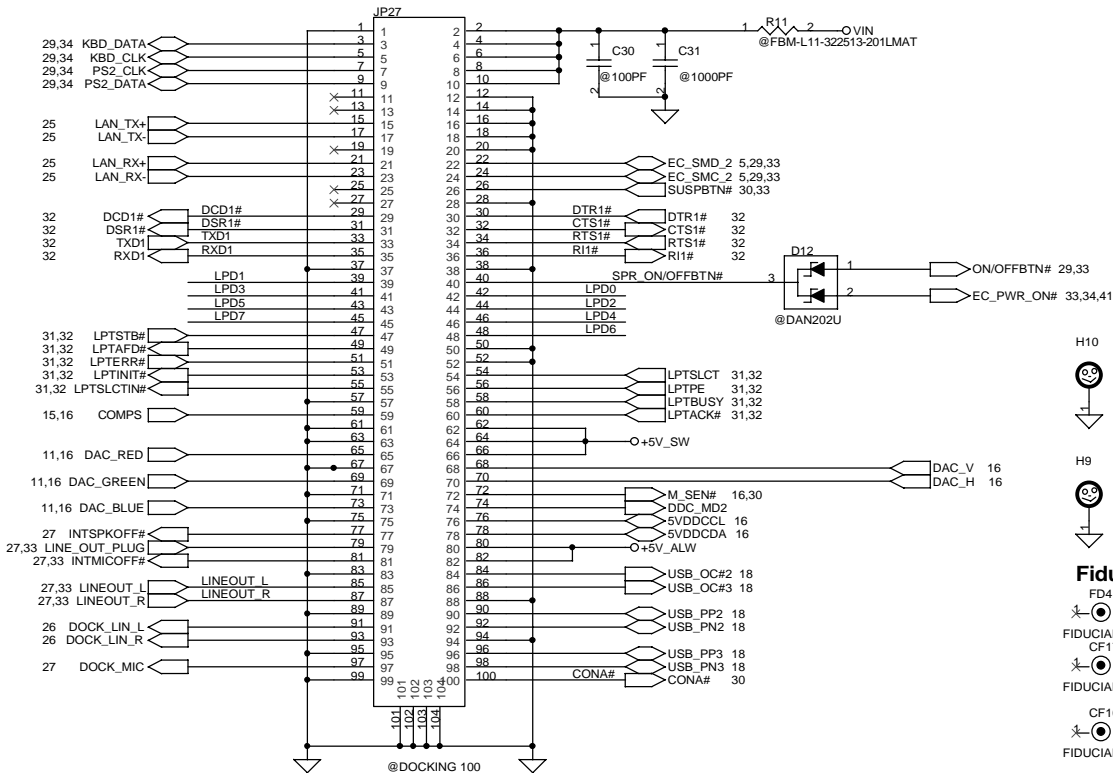
EMI Finger



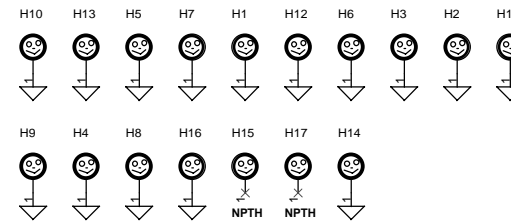
Unused IC parts.



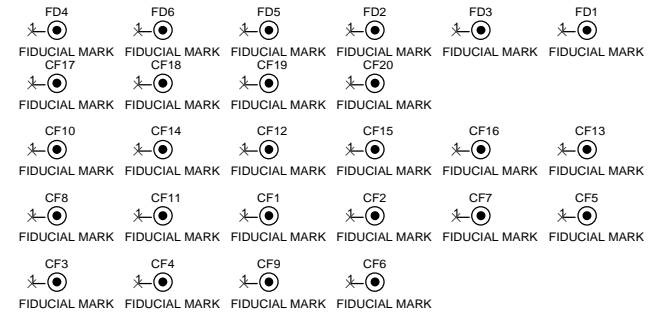
DOCKING 100 PIN



Screw Hole



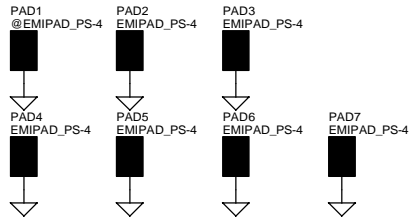
Fiducial Mark



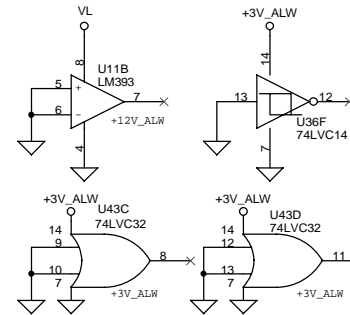
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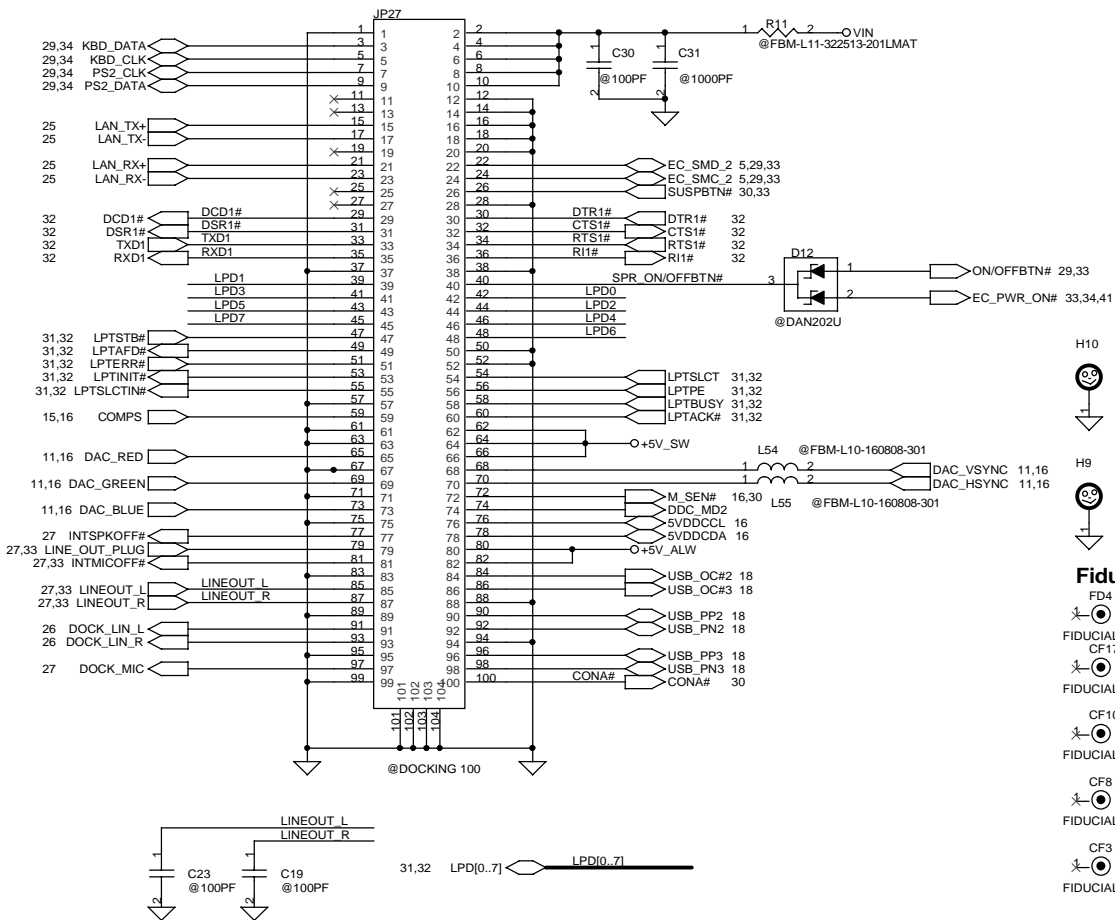
EMI Finger



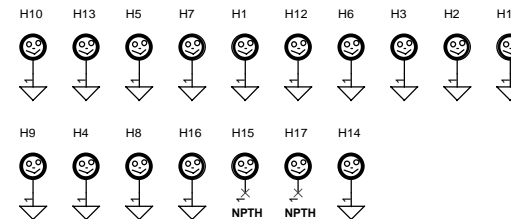
Unused IC parts.



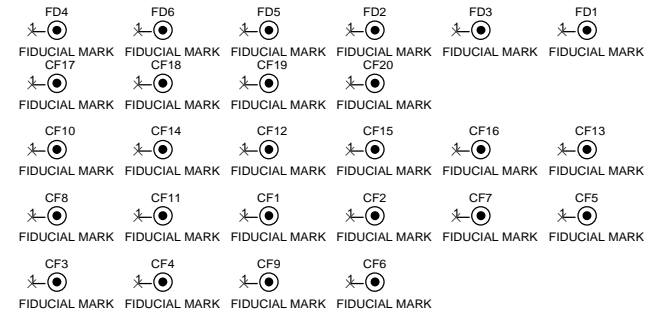
DOCKING 100 PIN



Screw Hole

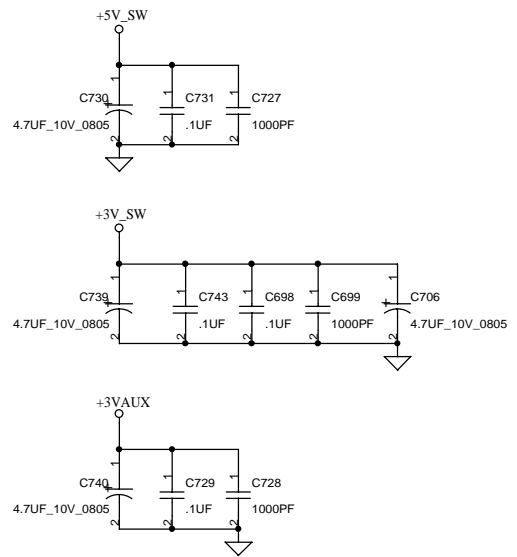
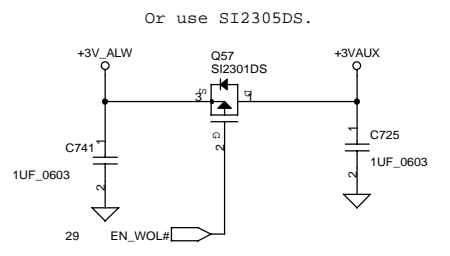
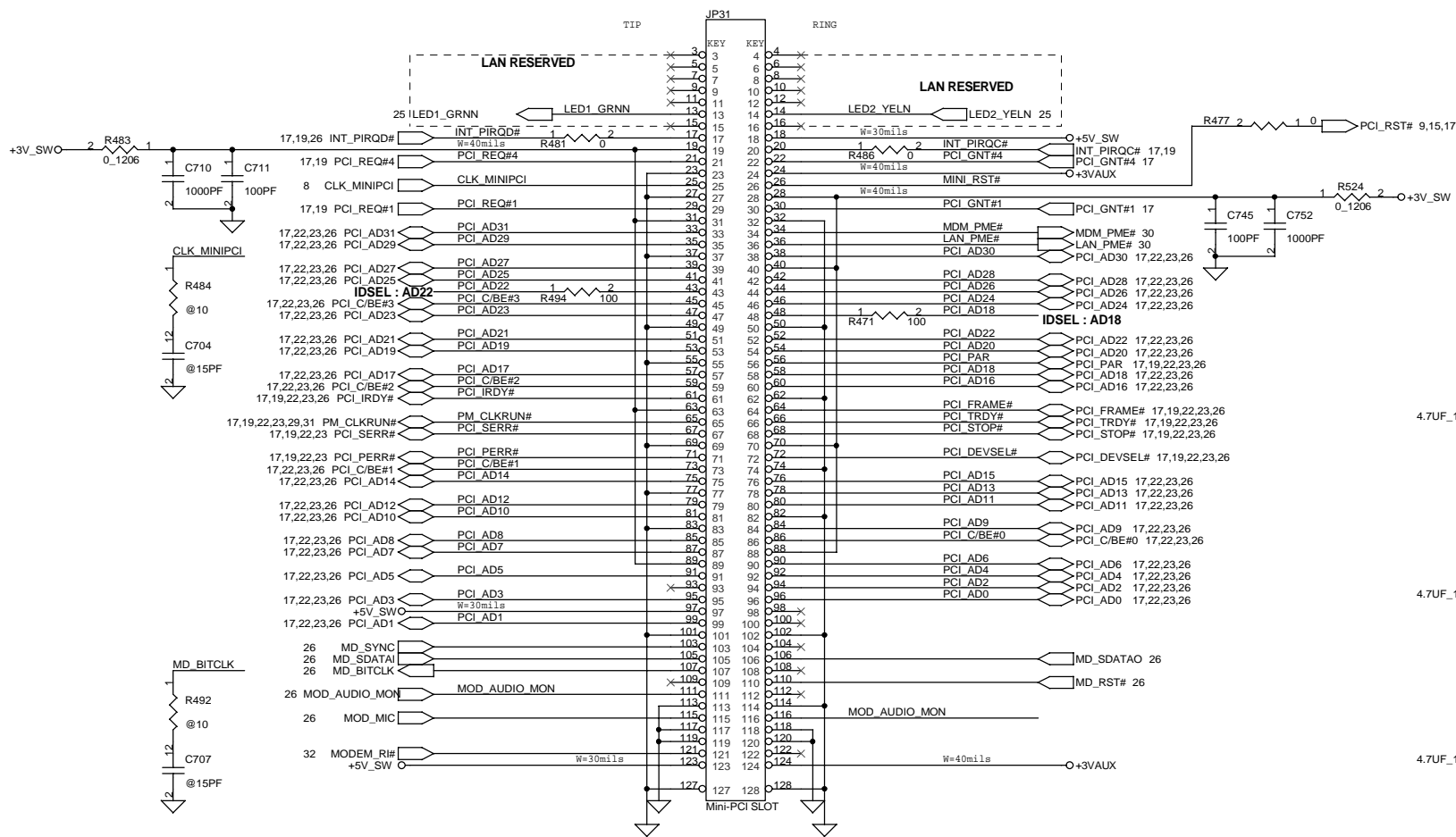


Fiducial Mark



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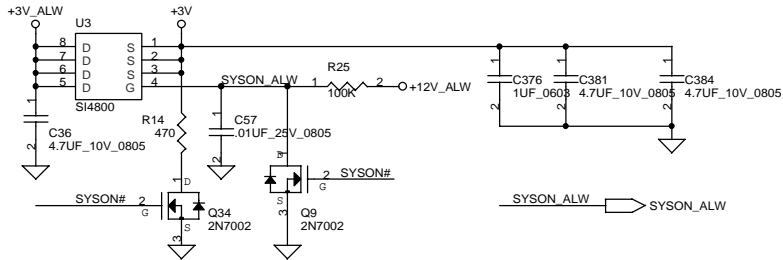
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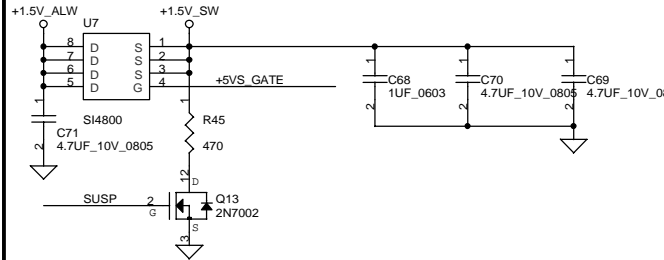
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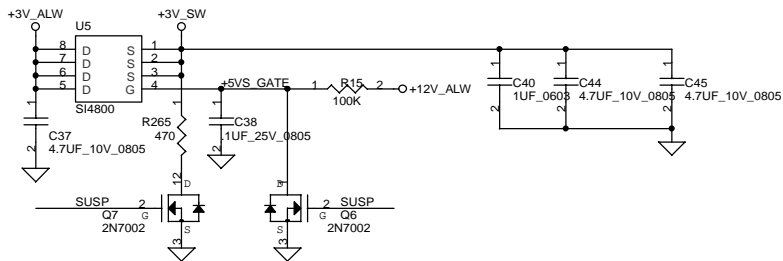
+3V_ALW TO +3V Transfer



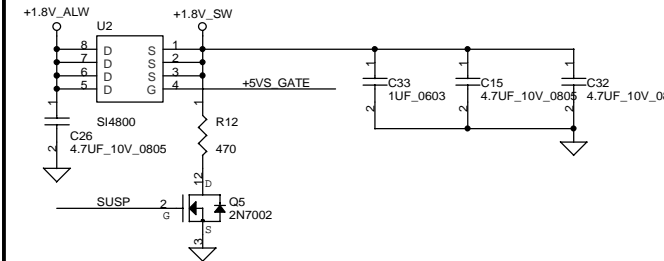
+1.5V TO +1.5V_SW Transfer



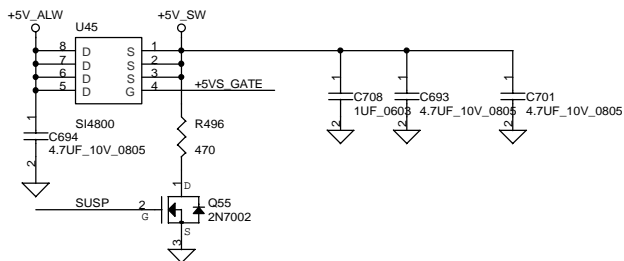
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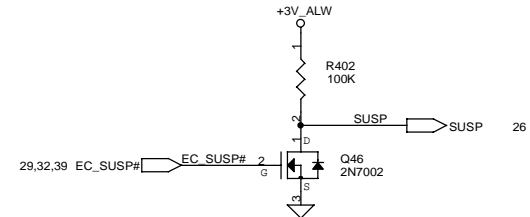
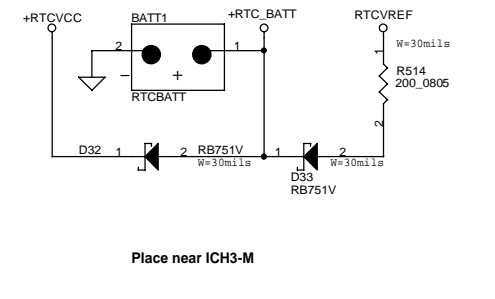
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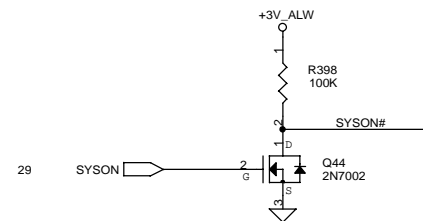
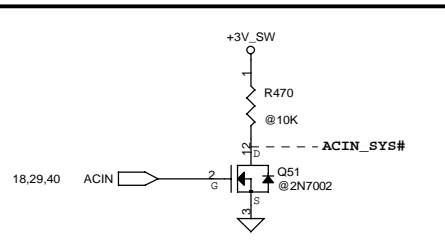
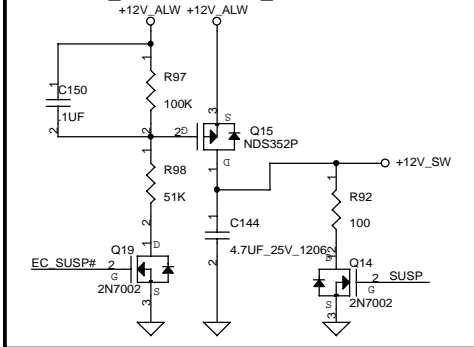
+5V_ALW TO +5V_SW Transfer



RTC Batt. Connector

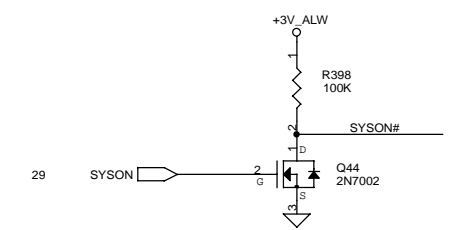
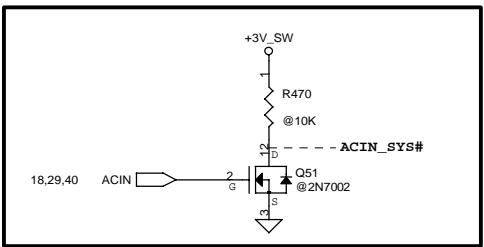
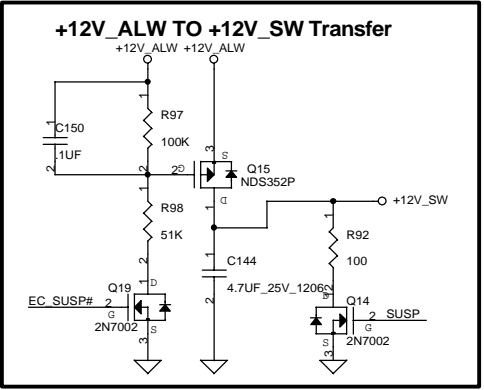
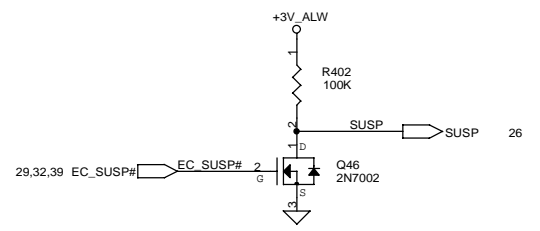
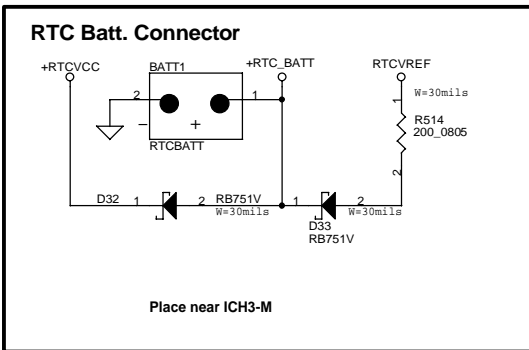
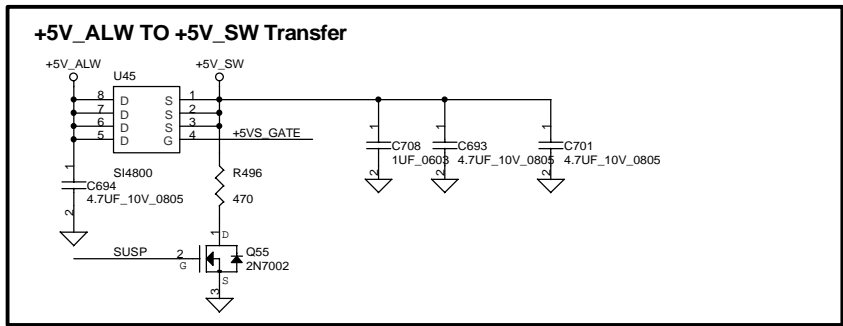
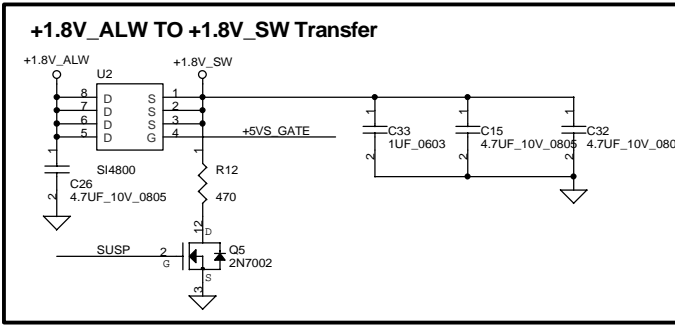
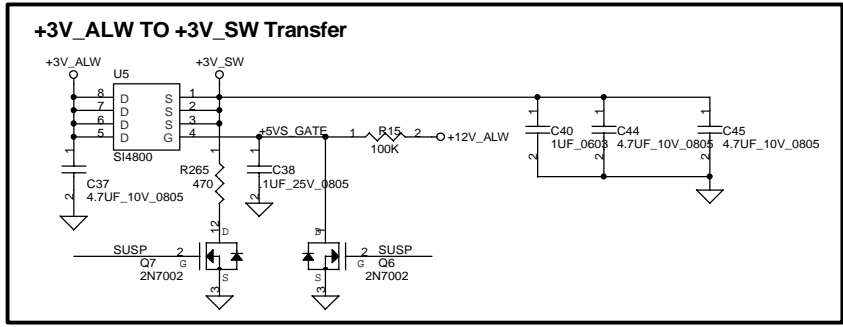
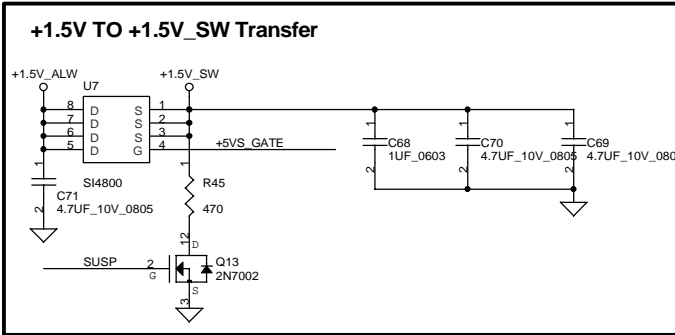
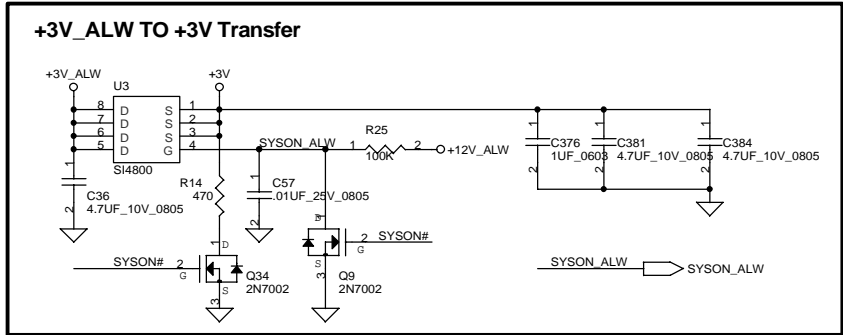


+12V_ALW TO +12V_SW Transfer



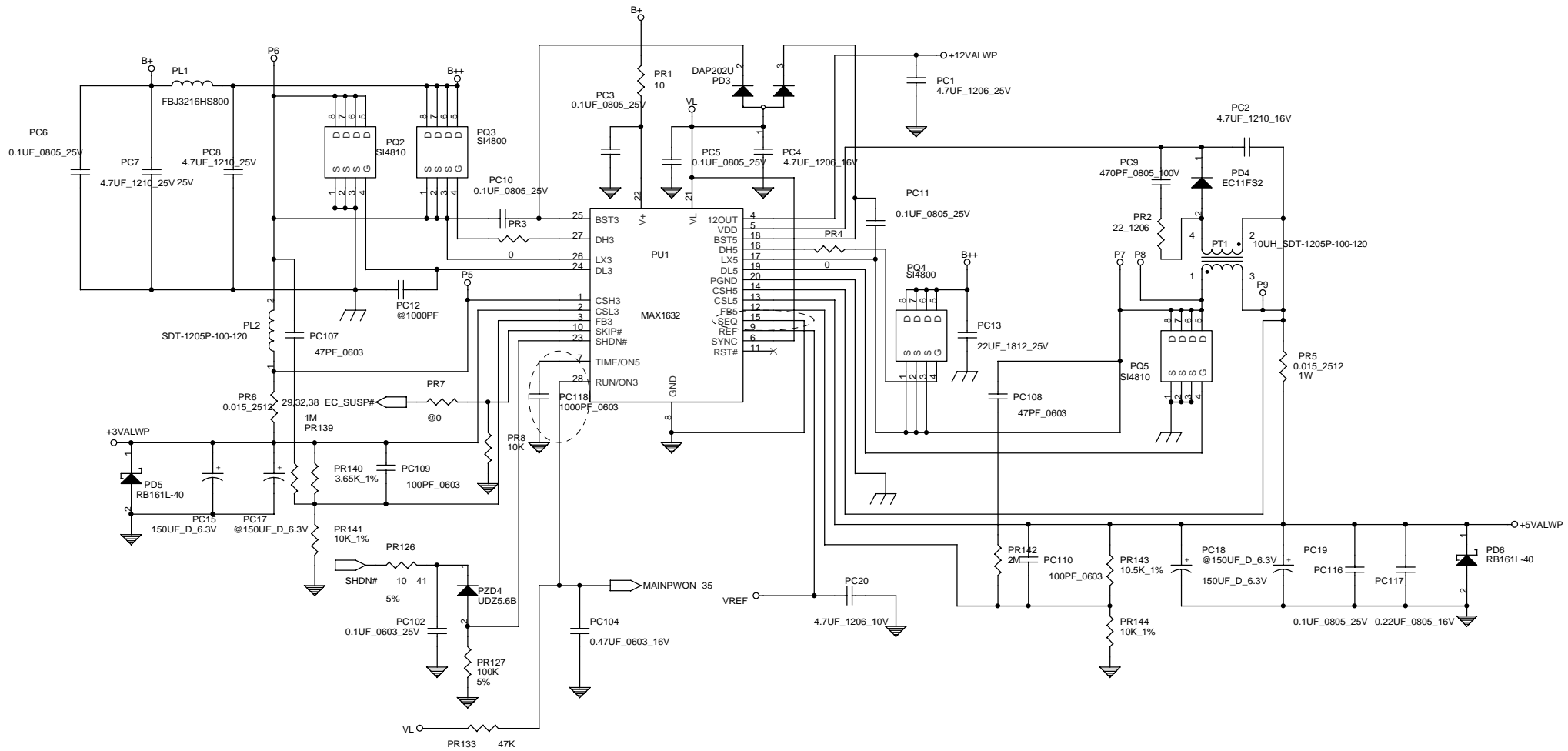
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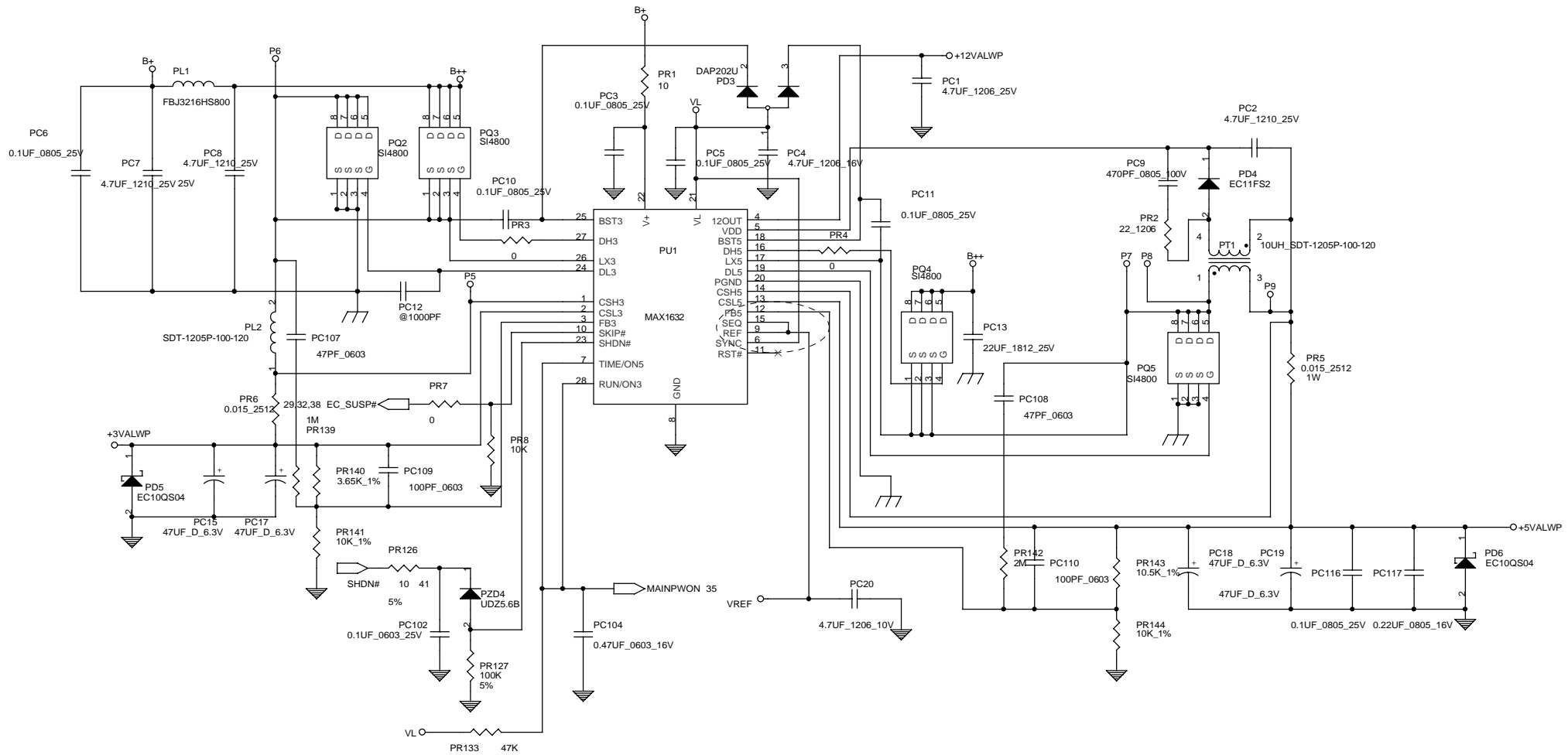
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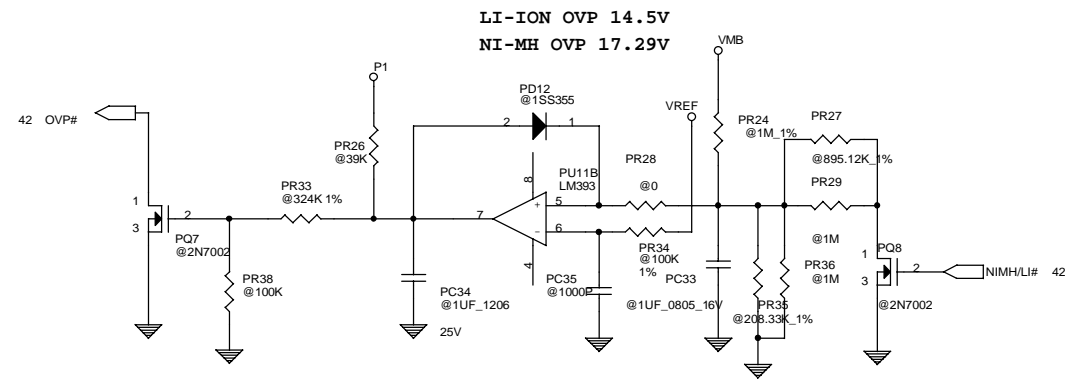
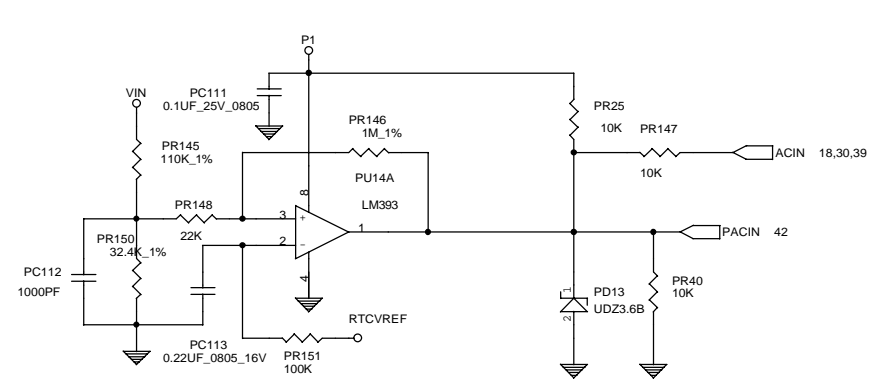
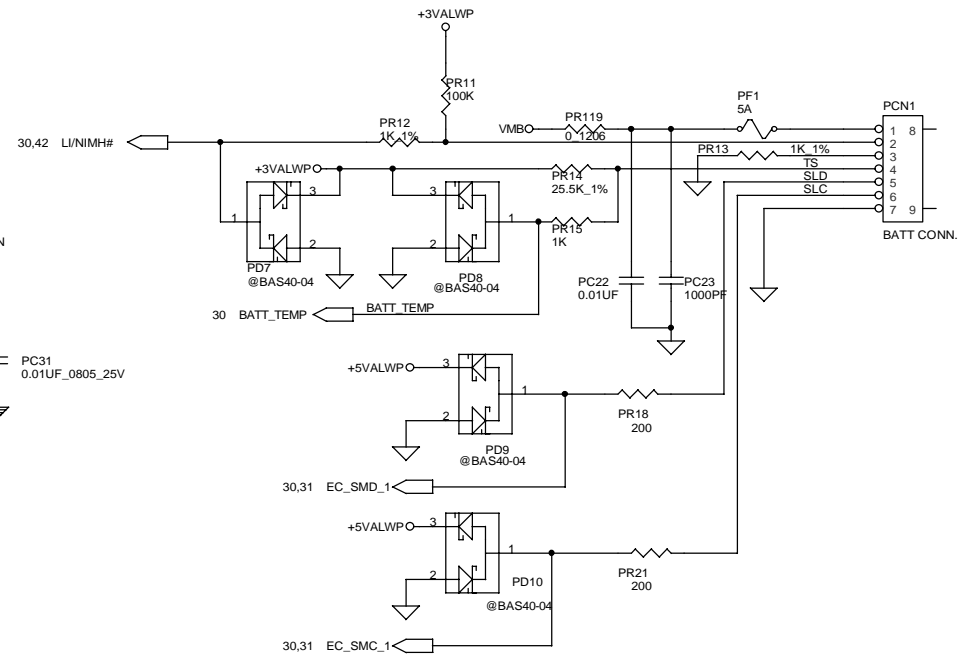
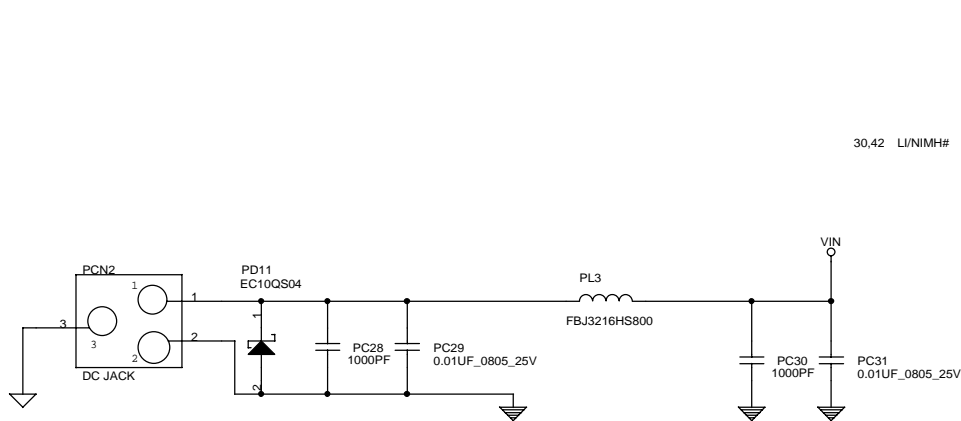
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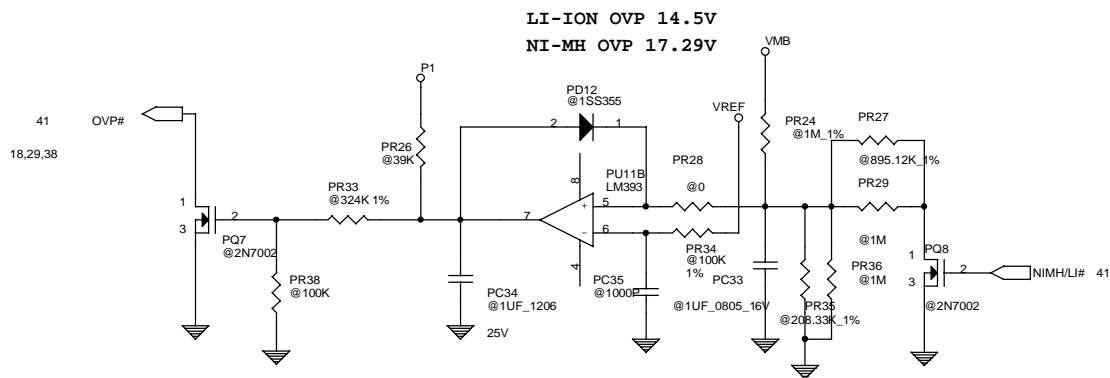
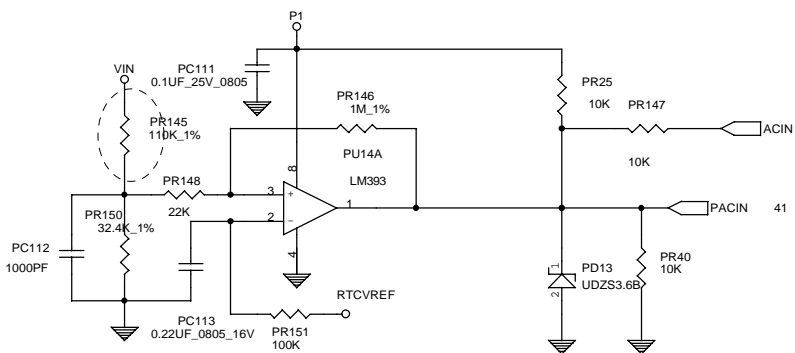
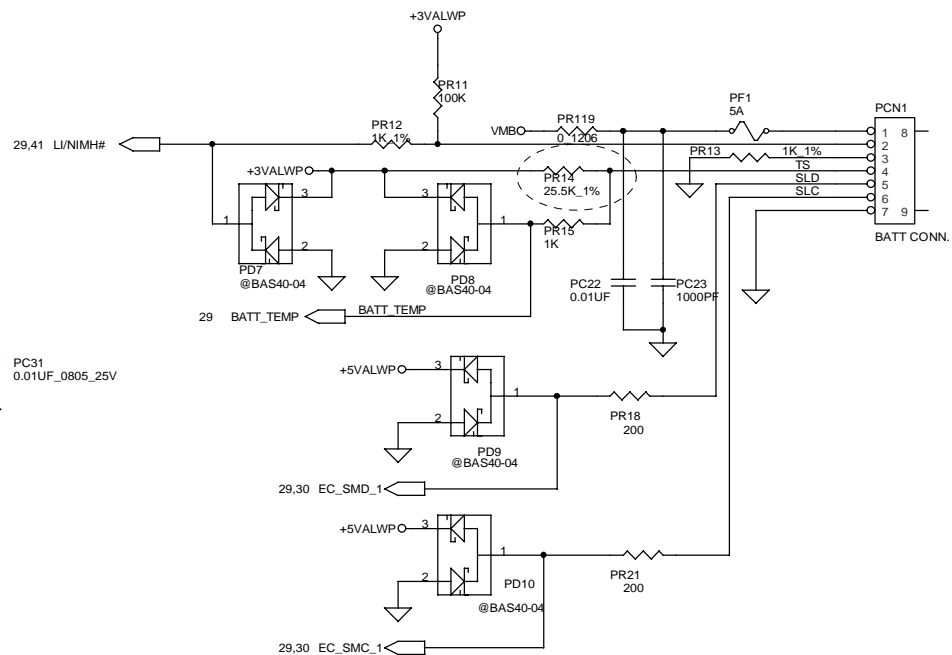
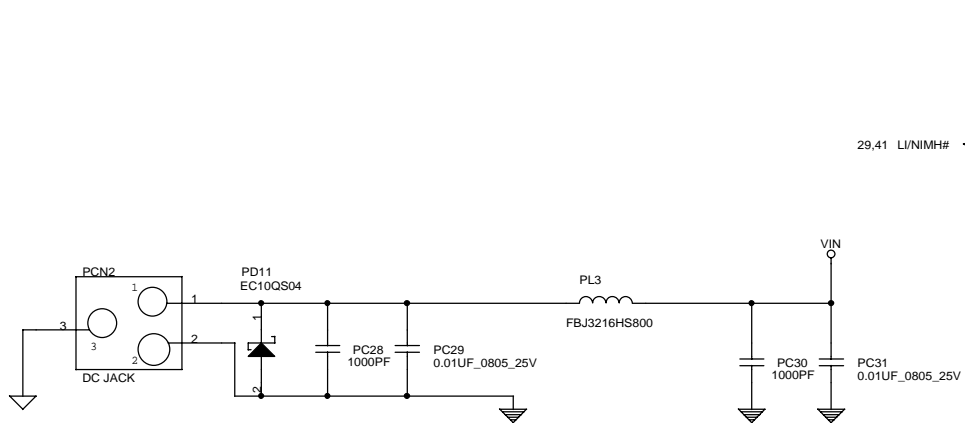
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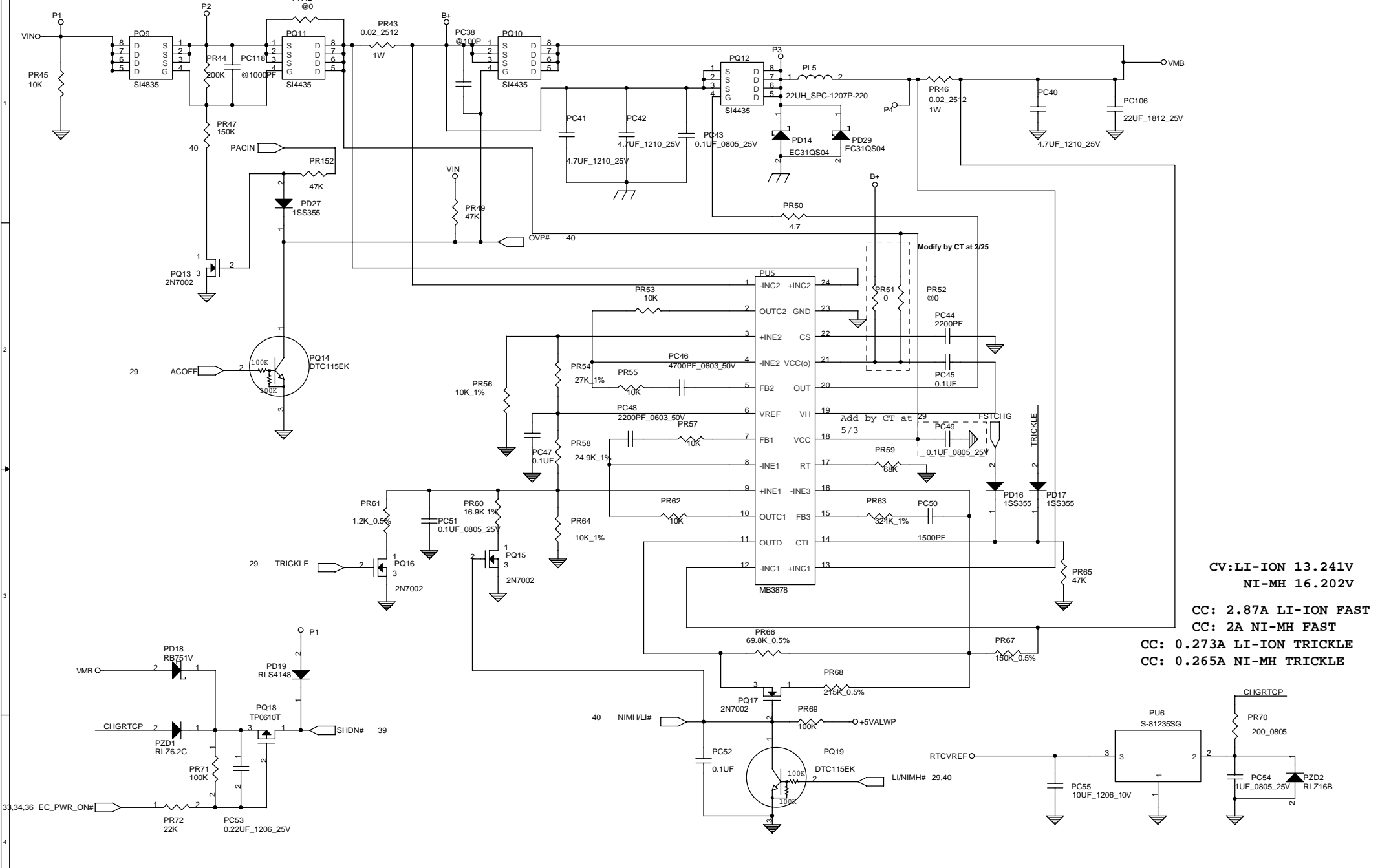


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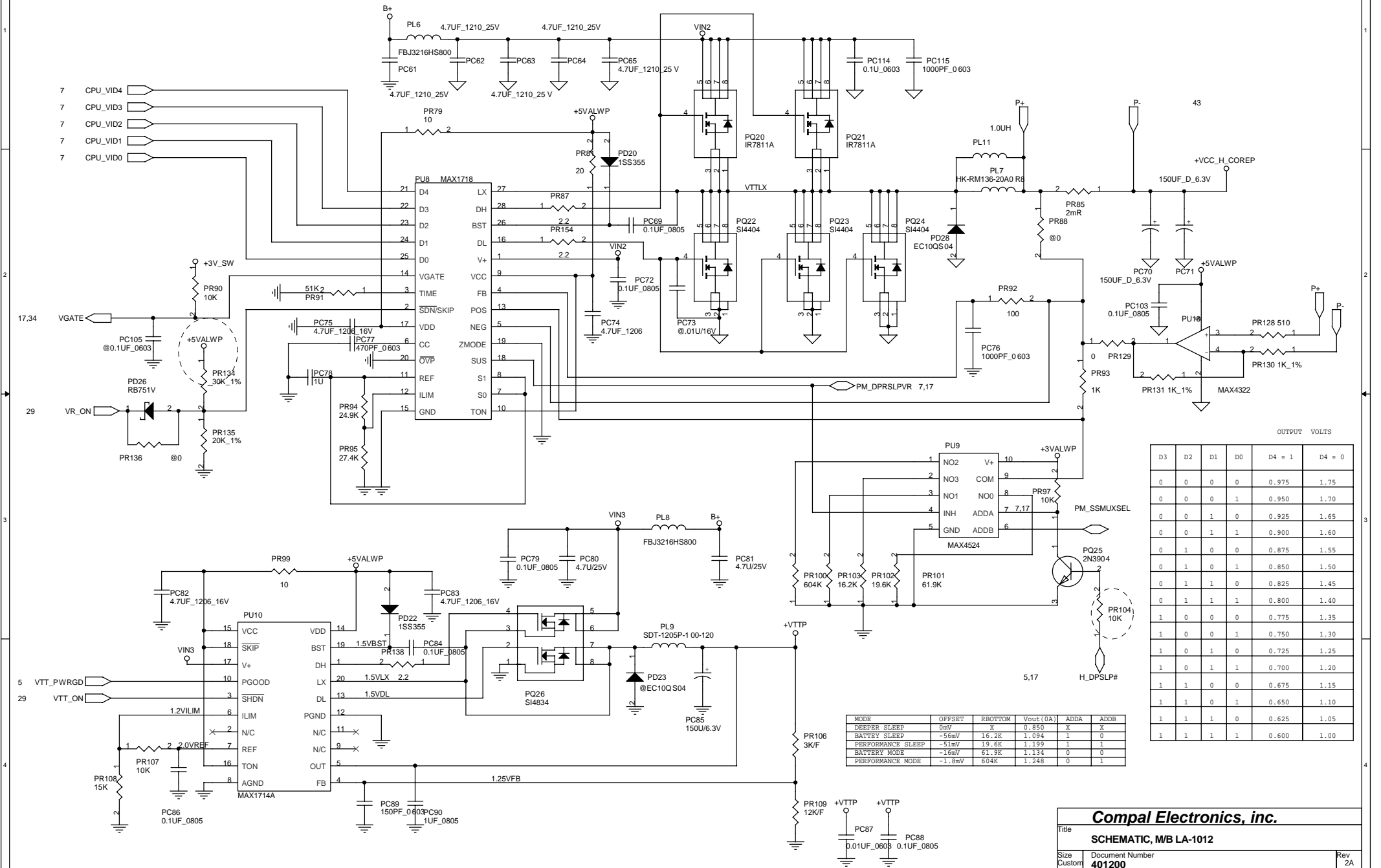
ADAPTER CURRENT 2.9A



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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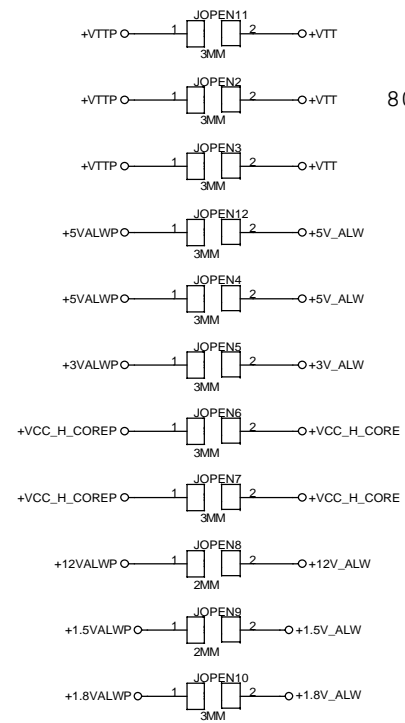
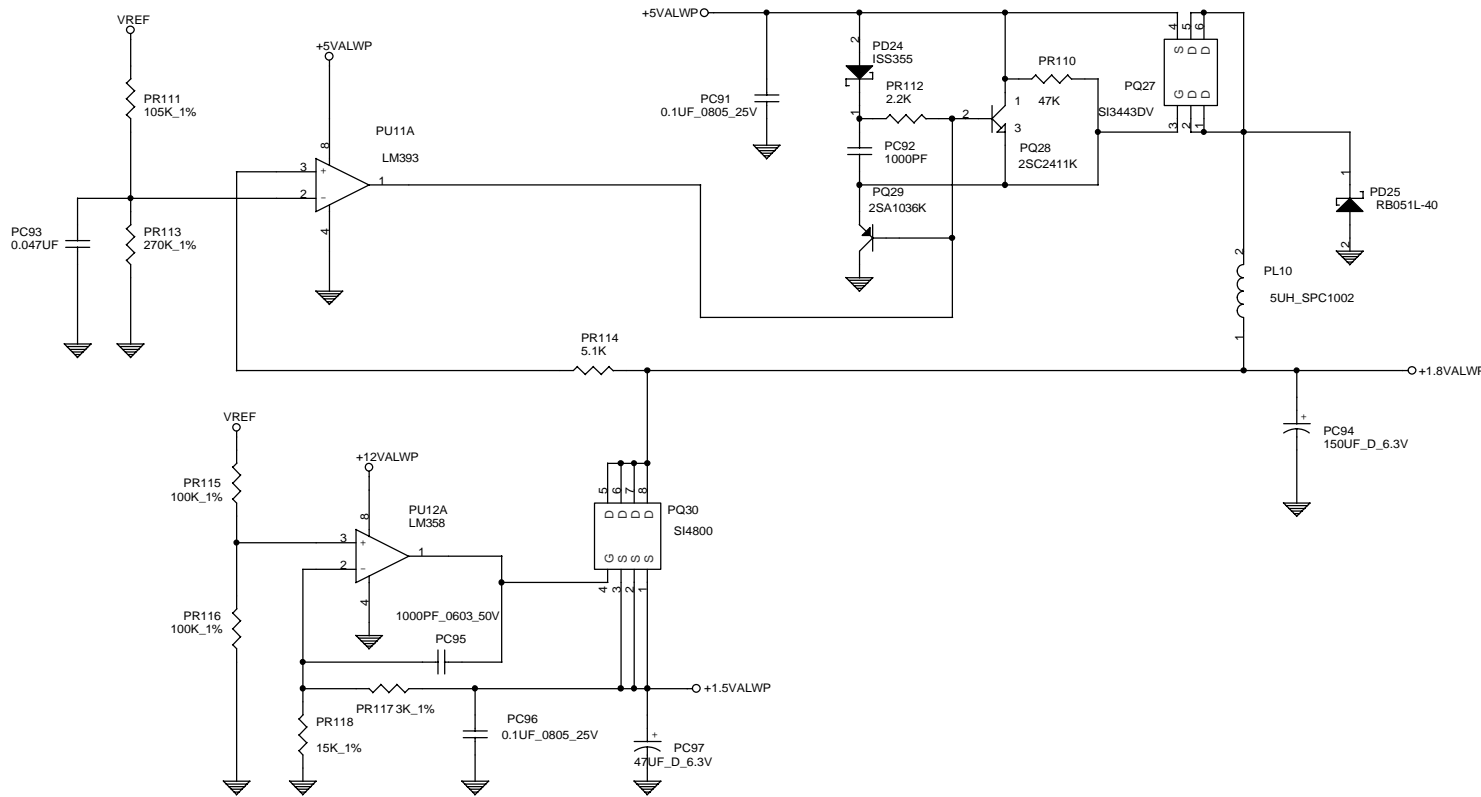
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OUTPUT VOLTS

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

MODE	OFFSET	RBOTTOM	Vout (0A)	ADDA	ADDB
DEEPER SLEEP	0mV	X	0.850	X	X
BATTERY SLEEP	-5mV	16.2K	1.094	1	0
PERFORMANCE SLEEP	-51mV	19.6K	1.139	1	1
BATTERY MODE	-16mV	61.9K	1.134	0	0
PERFORMANCE MODE	-1.8mV	604K	1.248	0	1



80mil

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4

3

2

1

Power PIR

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

D

D

C

C

B

B

A

A

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3

2

1

N32N101 LA-1012 Rev1.0 HISTORY LIST (PIR)

For C-Test 09/03/2001 Rev:1.0

Date	Page	Description
09/03	P26	Change SI9181(U12 & U59) from fixed to adjustable version. Add 30Kohm resistor R592(R594) and 10Kohm resistor R593(R595) to make output voltage at 4.8V.
	P27	Add a 39Kohm serial resistor R596, change R94 value from 100Kohm to 470Kohm and add a 10uF/16V parallel with Q40.2 and GND to solve pop sound when Int-MIC mute.
	P33	Change D48 from one DAN202U to two RB751Vs.
	P7	Change R68 from 1Kohm_1% to 499ohm_1% and R65 from 2Kohm_1% to 1Kohm_1% by Intel recommended.
09/05	P26	Change C167, C299 value from .01uF to .1uF.

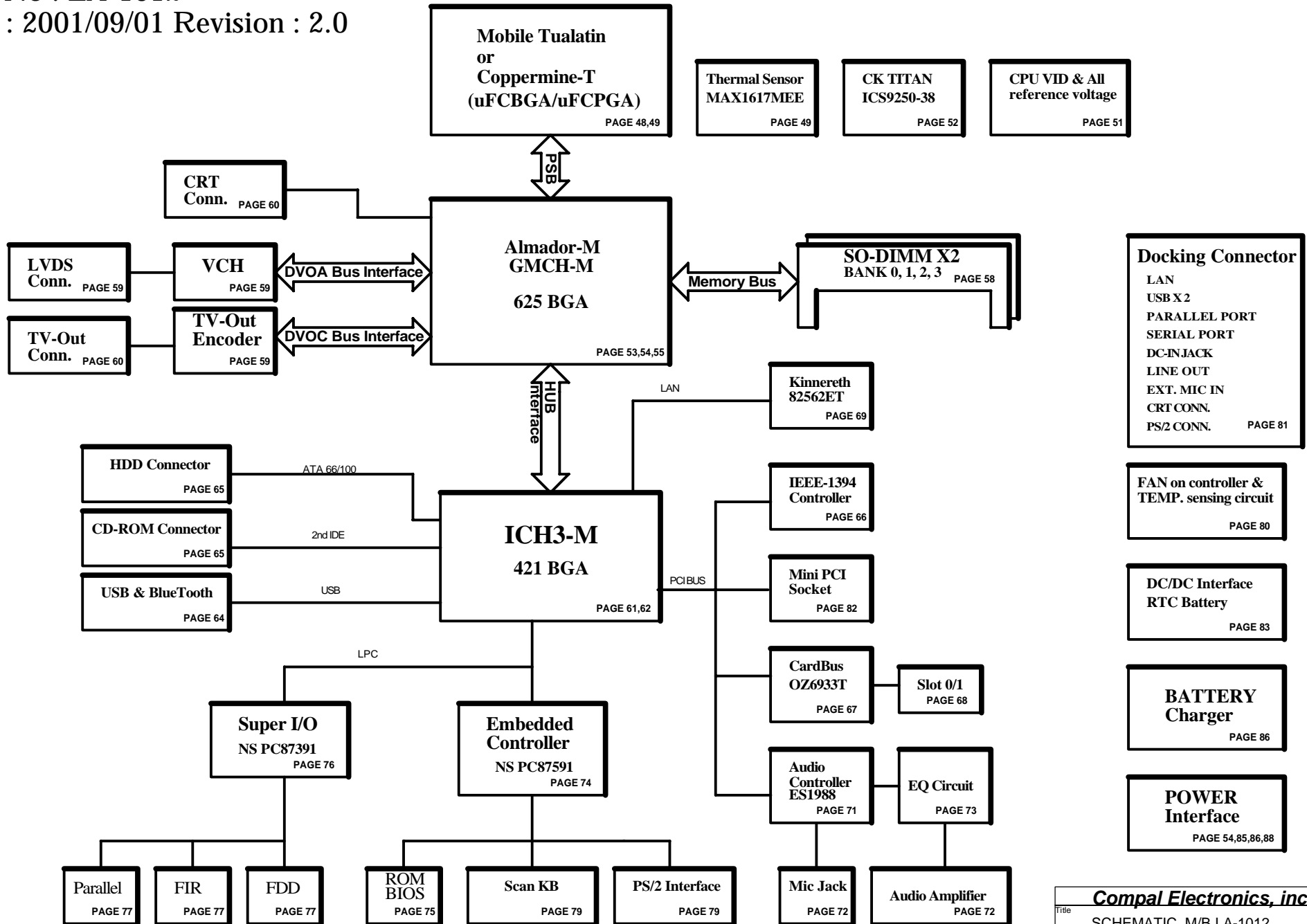
Date	Page	Description

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Model Name : N32N101
 PCB No : LA-1012
 Date : 2001/09/01 Revision : 2.0

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

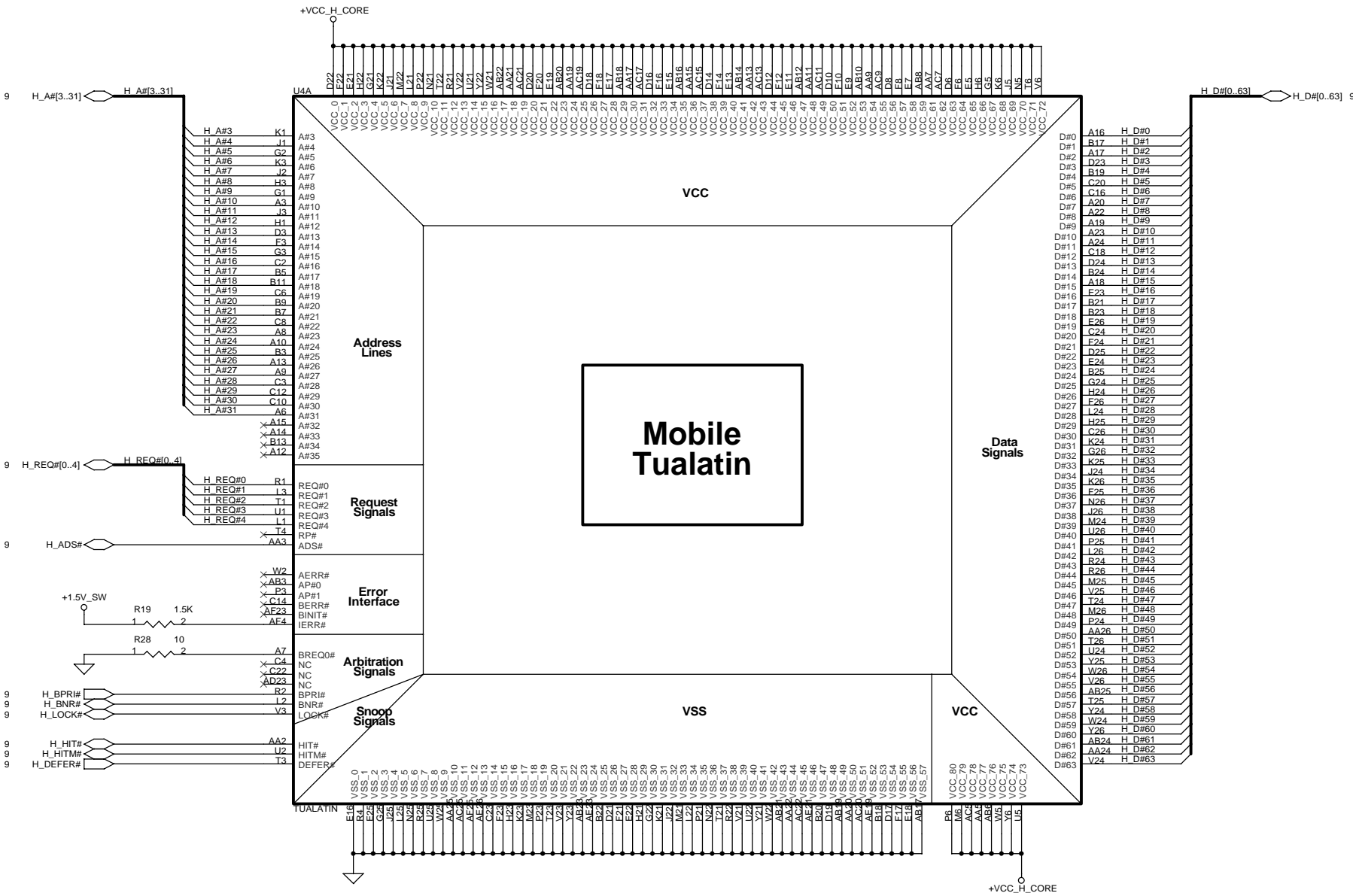
Device	Address
MAX1617MEE	1001 110X b
OZ163	0011 0100 b
Docking	0011 011X b
DOT Board	XXXX XXXXb

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.

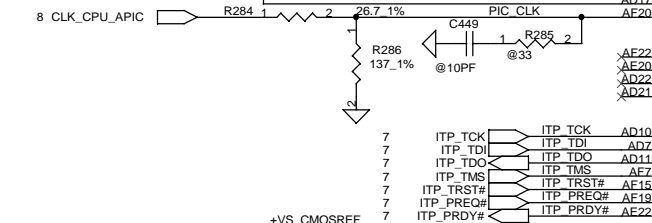
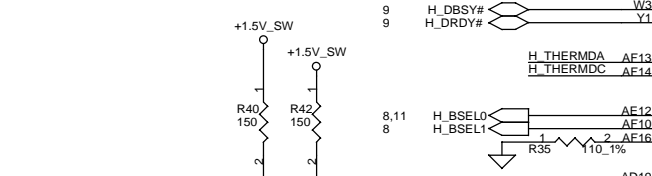
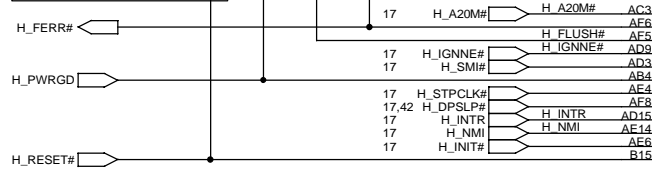
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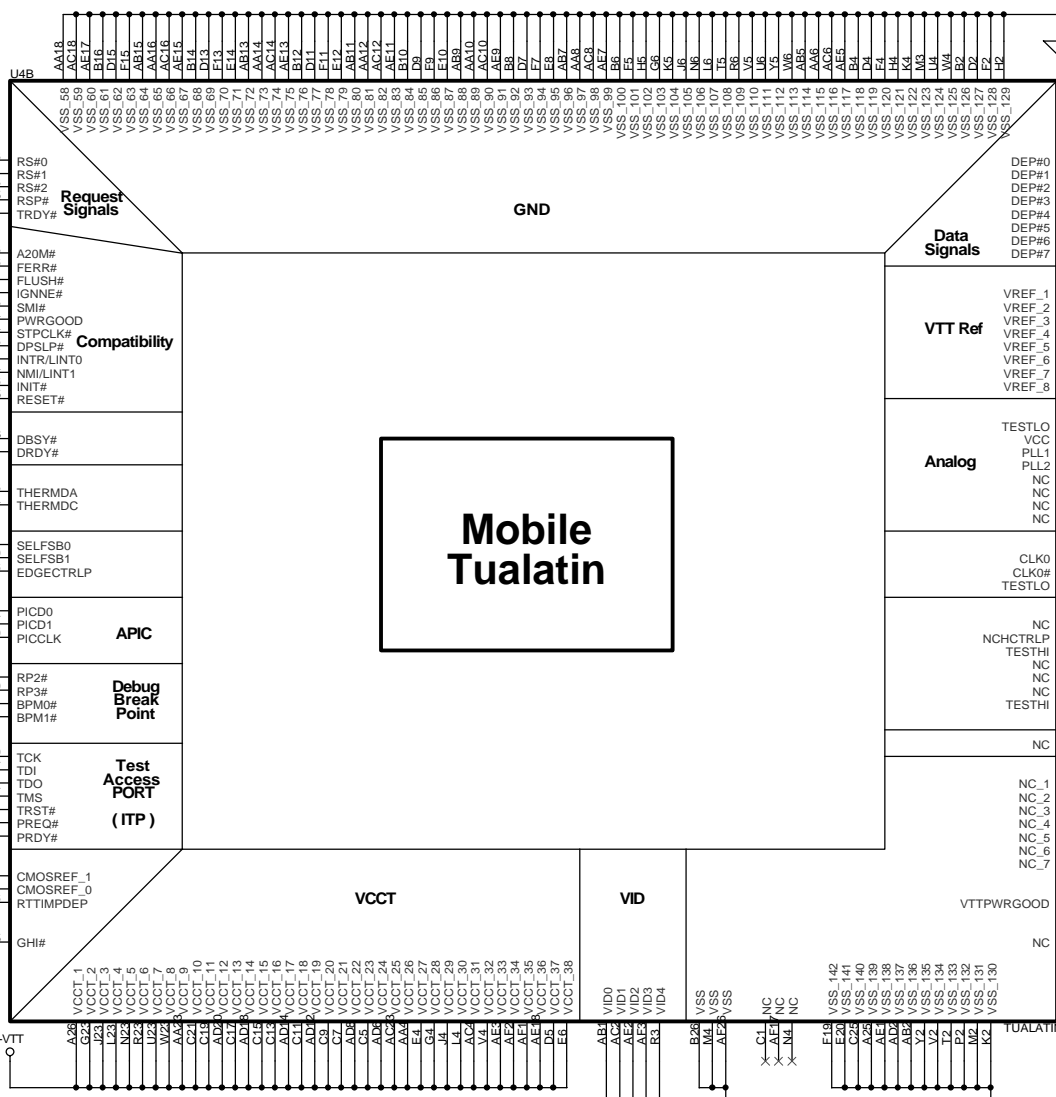
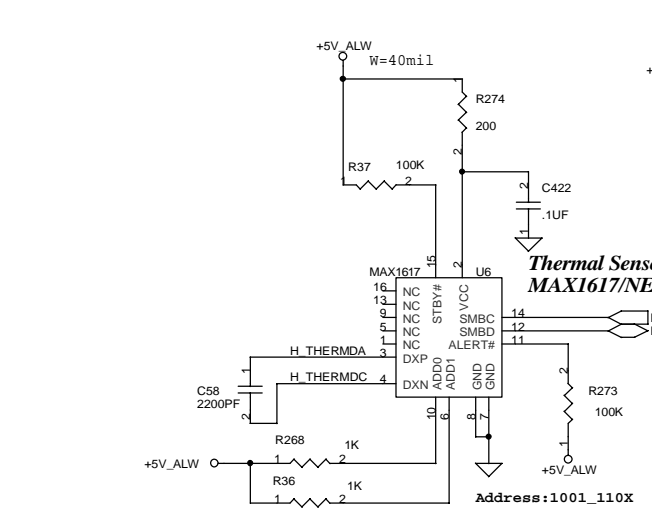
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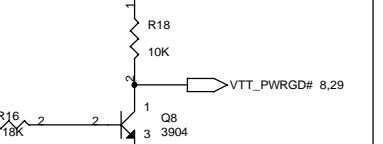
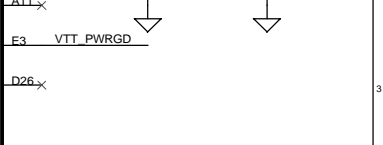
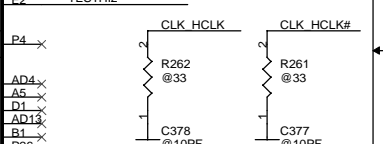
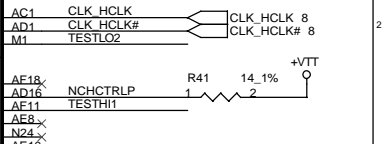
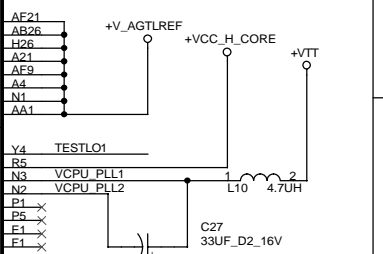
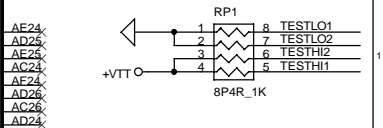
Place H_RESET# R267
R272<0.1" from 56.2_1%
U6



Note :
GHI# Pull-Up internally
But pull high too weak



**Mobile
Tualatin**



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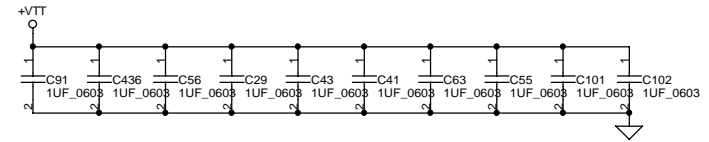
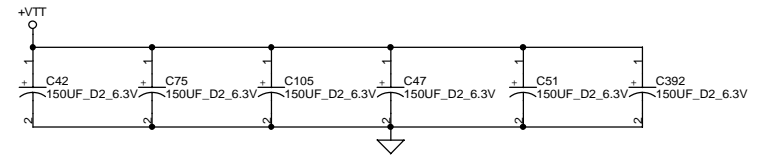
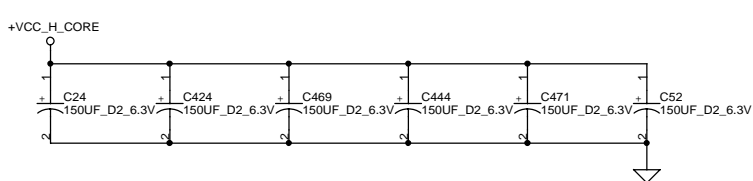
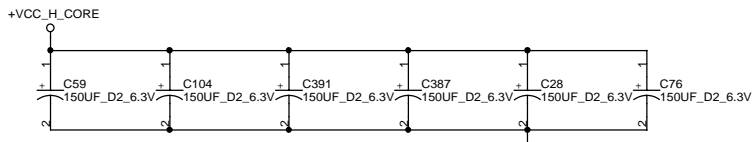
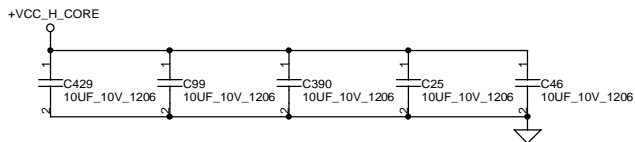
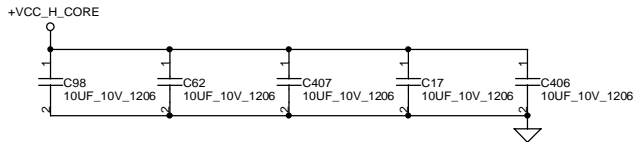
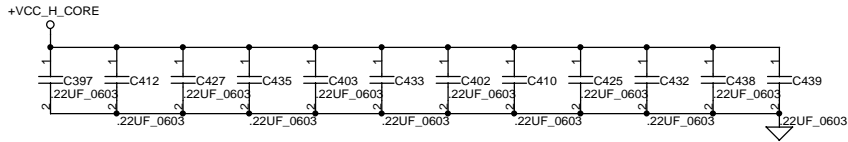
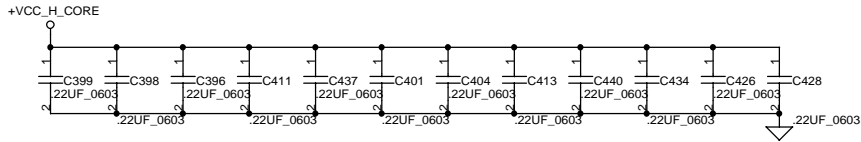
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Layout note :

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.



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

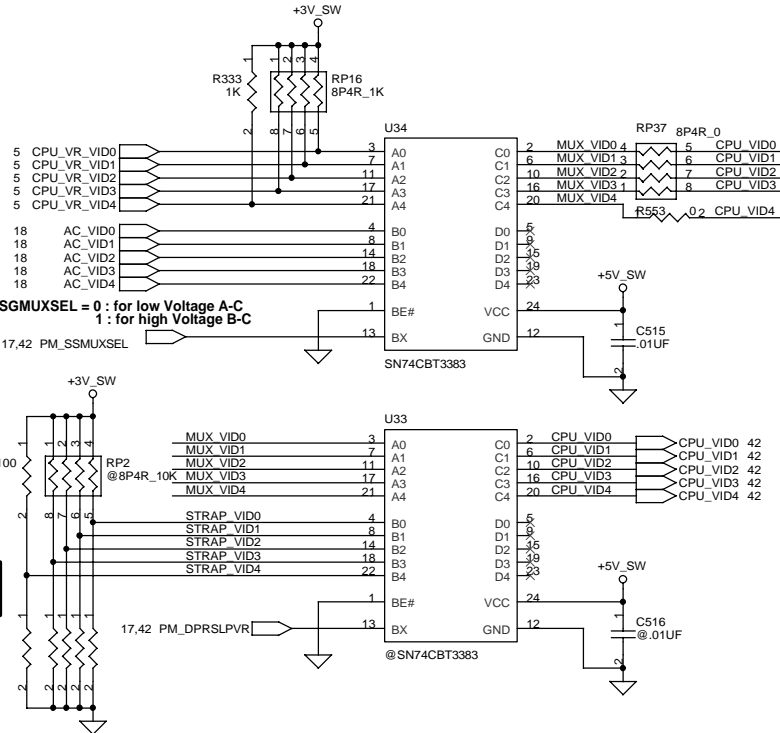
D4	D3	D2	D1	D0	CPU_Core(V)	ES(before MP)
0	0	0	0	1	1.70V	
0	1	0	0	0	1.35V	

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

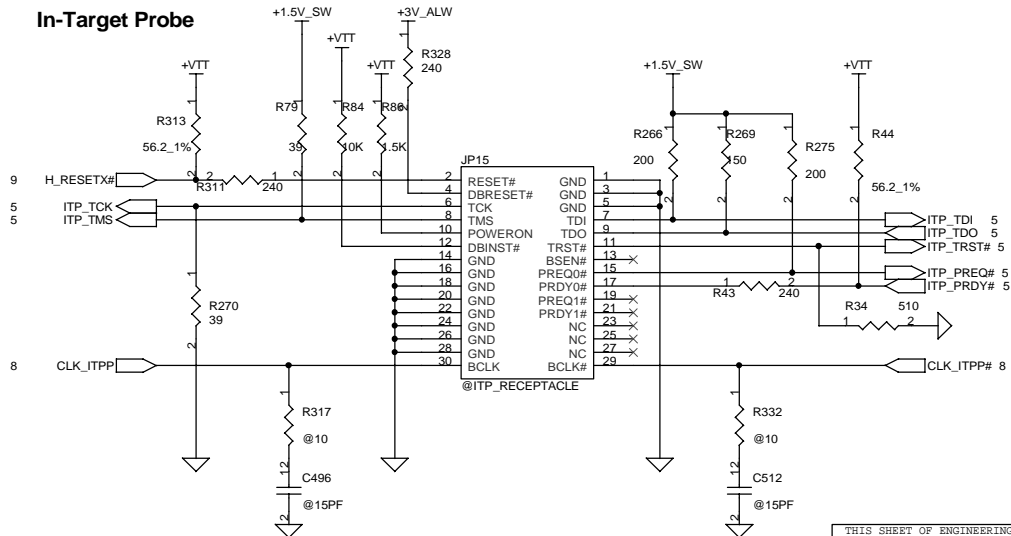
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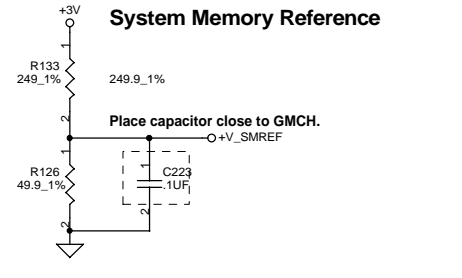
CPU Voltage ID



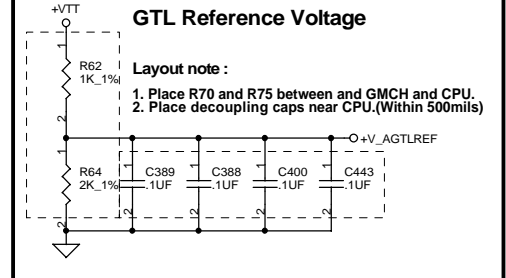
In-Target Probe



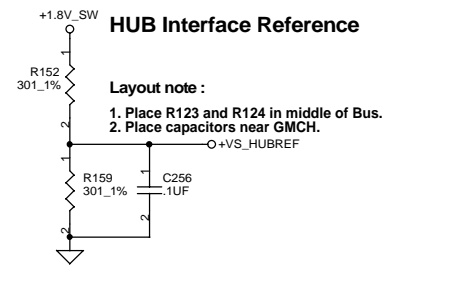
System Memory Reference



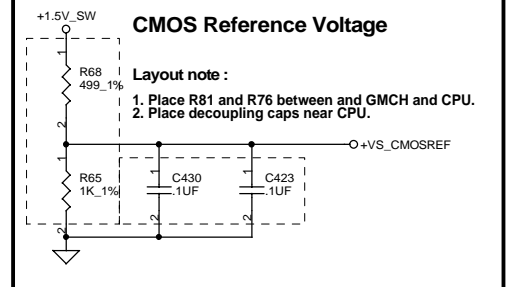
GTL Reference Voltage



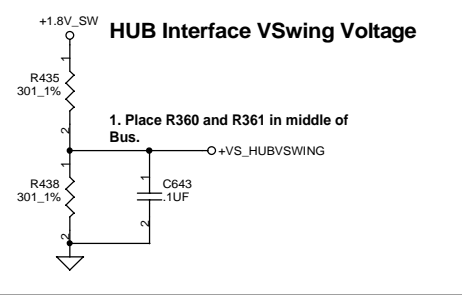
HUB Interface Reference



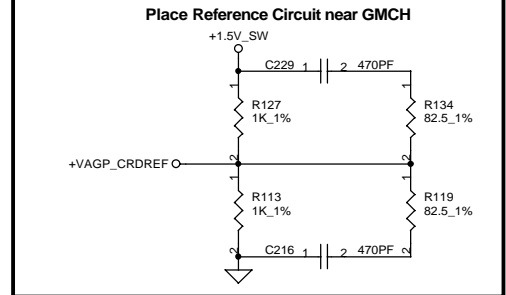
CMOS Reference Voltage



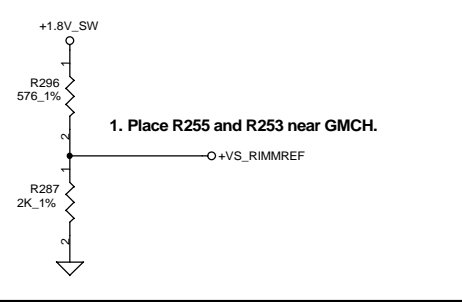
HUB Interface VSwing Voltage



Place Reference Circuit near GMCH

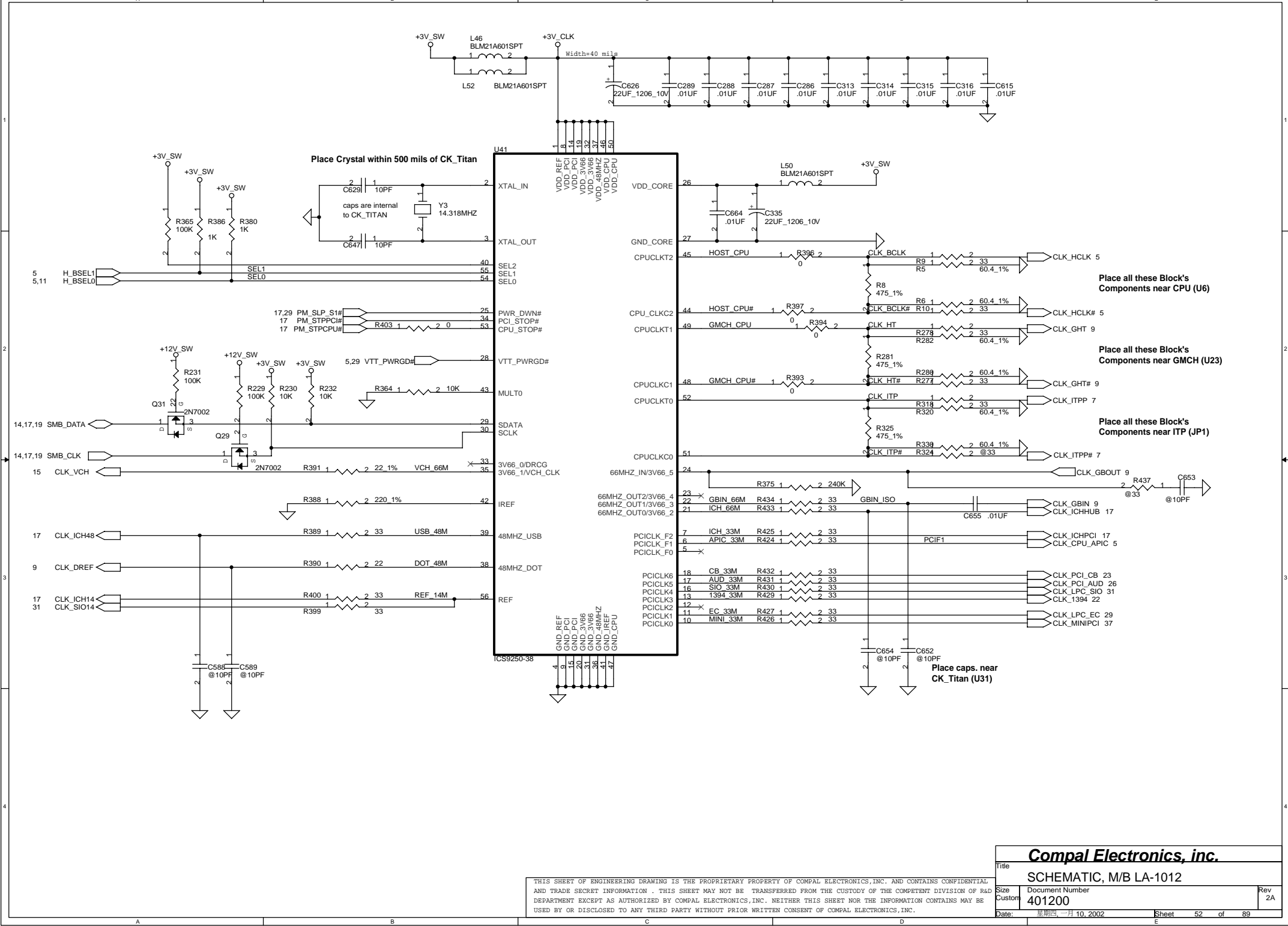


System Memory Reference



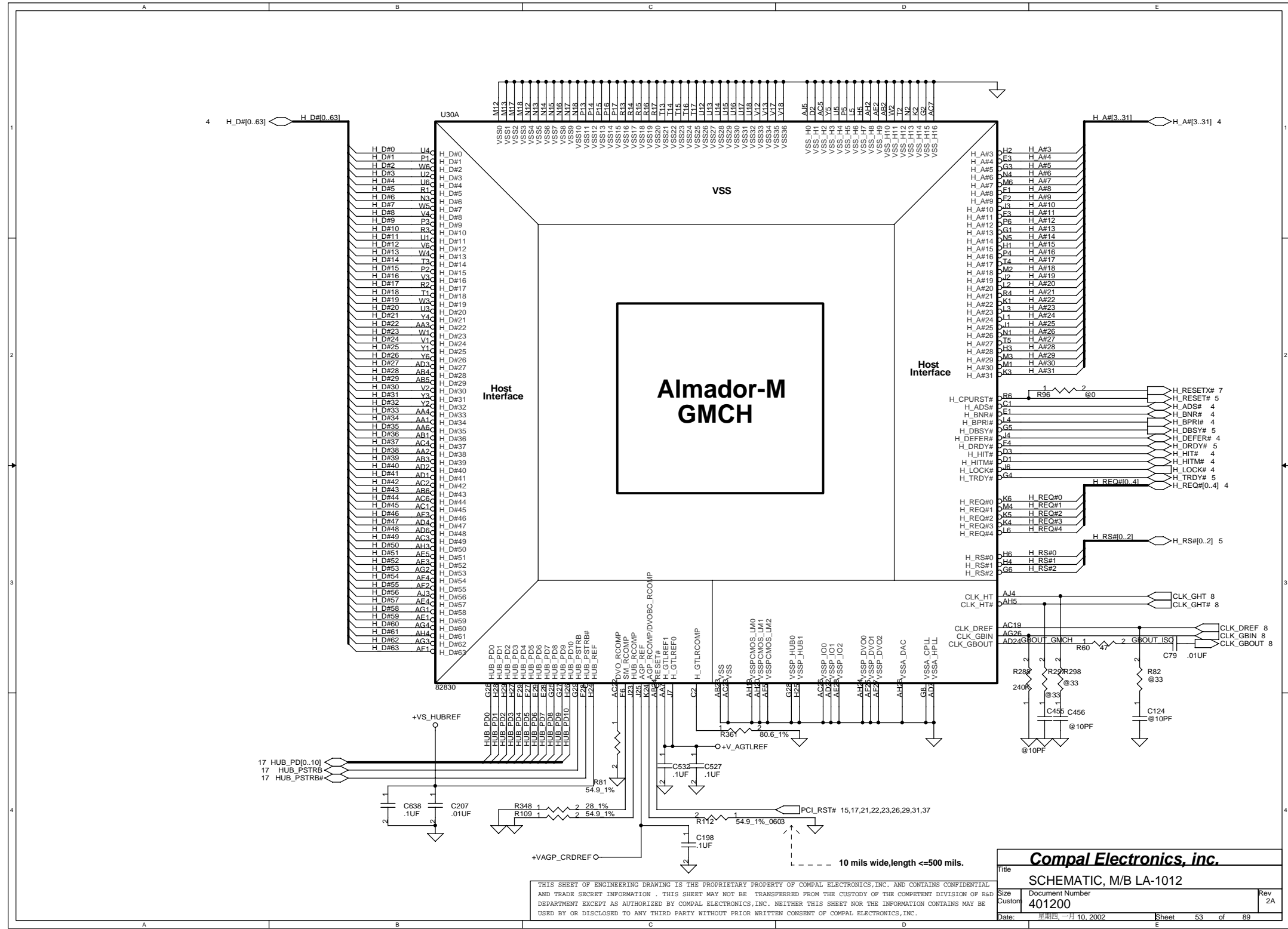
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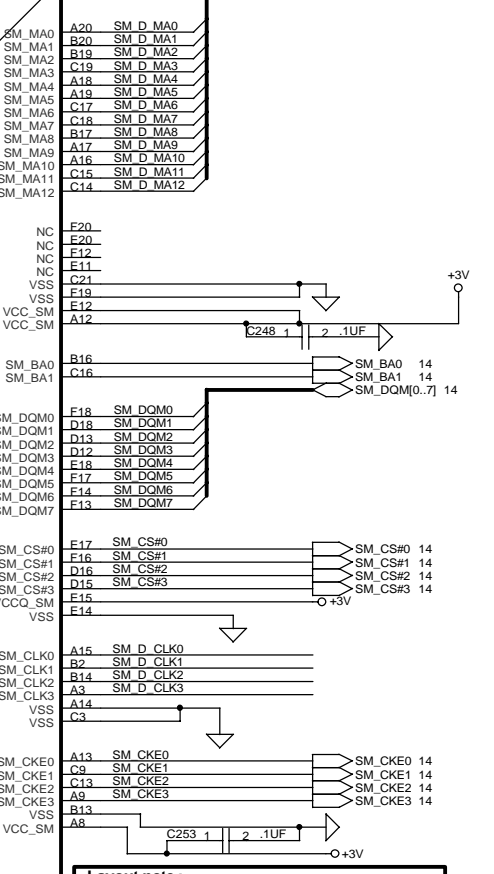
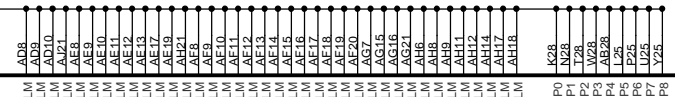
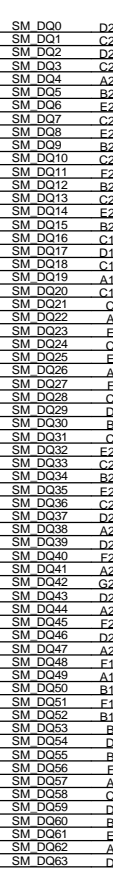
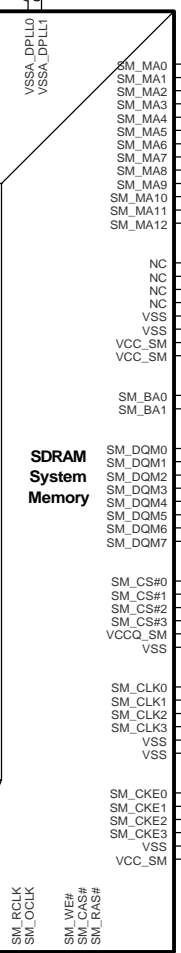
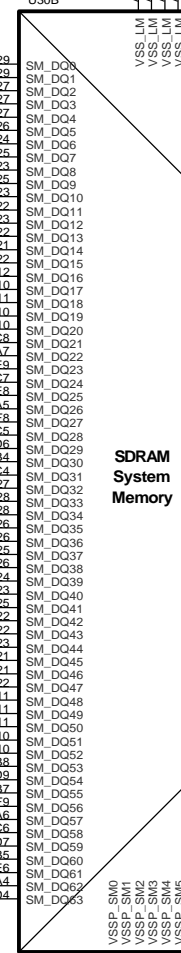
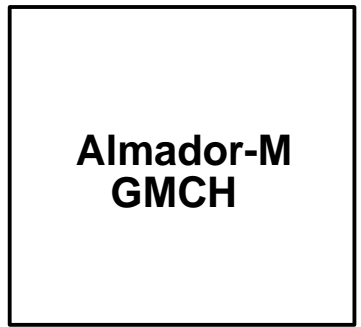
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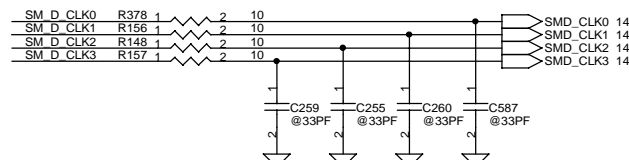
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Layout note:
Place resistors & capacitors near GMCH

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



C181/C188 close to Ball E5 and F24

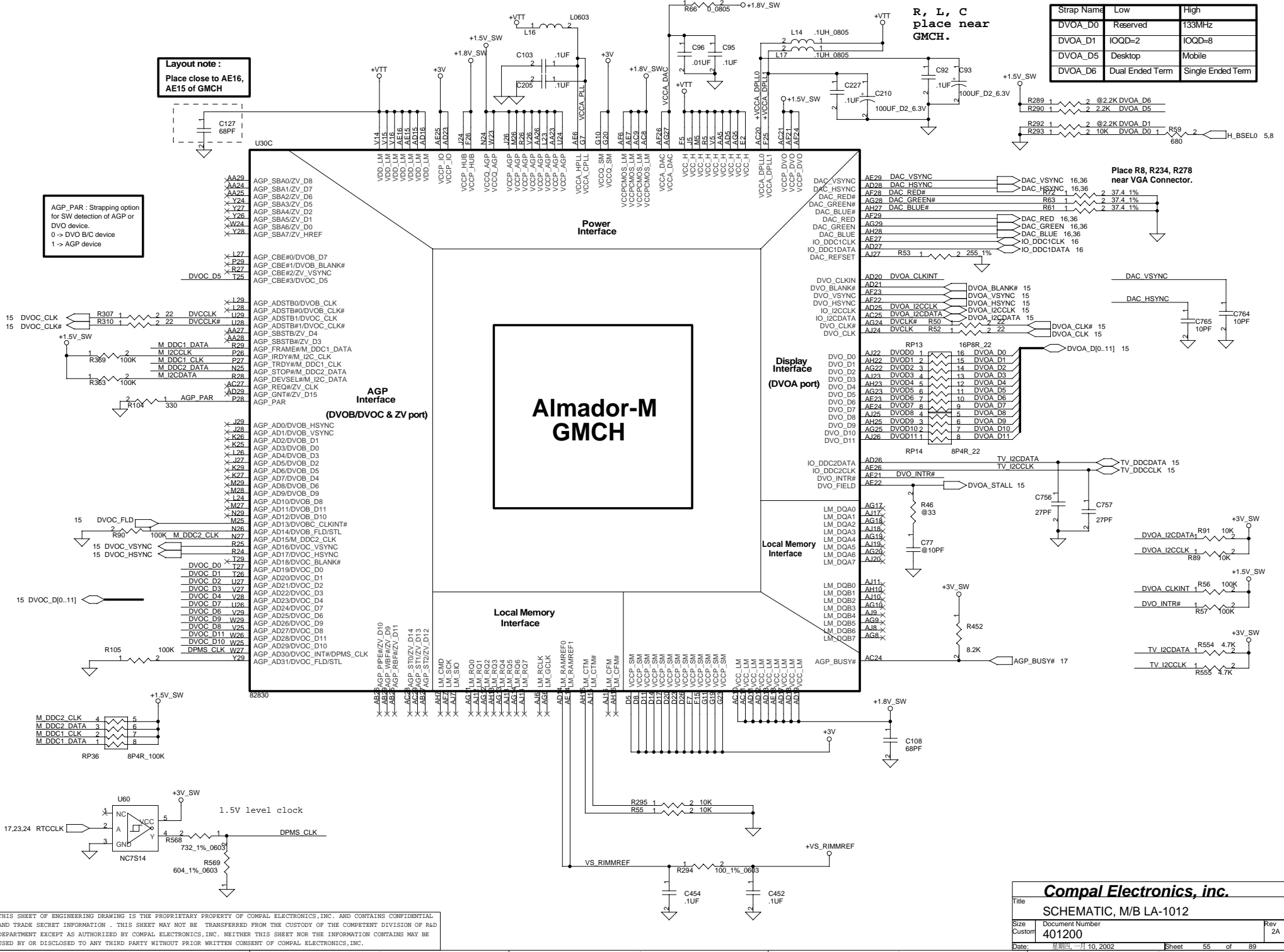
Total trace length from ball C24 to A24 and C470 do not exceed 200mils.

Layout note :
Place close to AE16, AE15 of GMCH

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

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

**R, L, C
place near
GMCH.**



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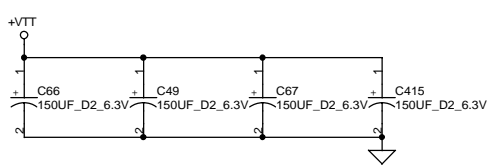
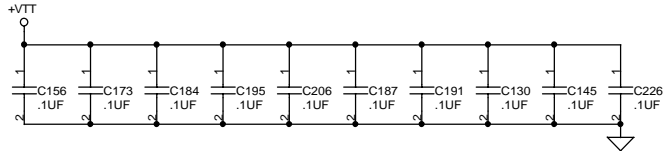
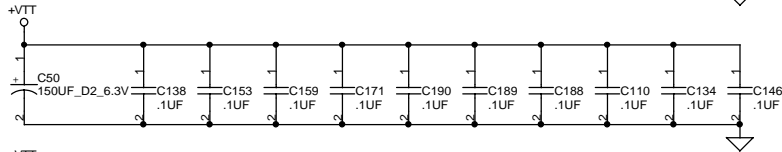
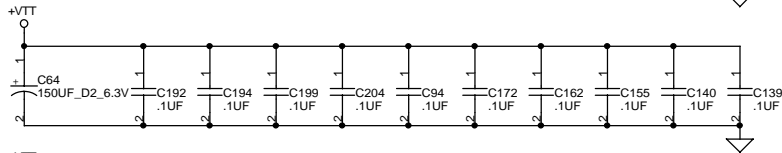
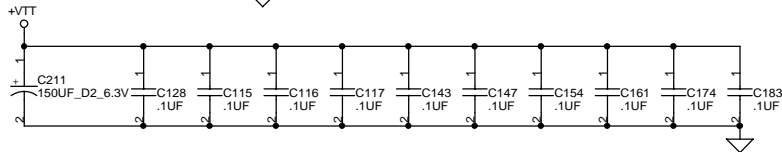
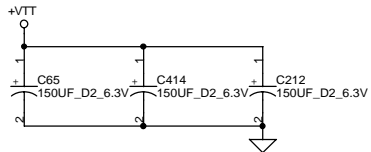
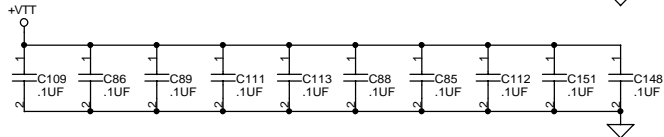
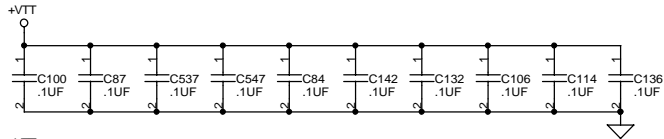
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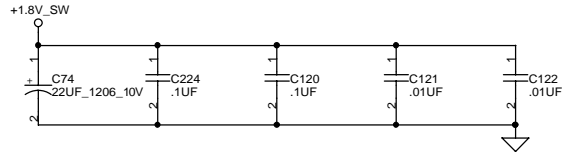
Layout note :

Distribute as close as possible to GMCH Processor Quadrant .



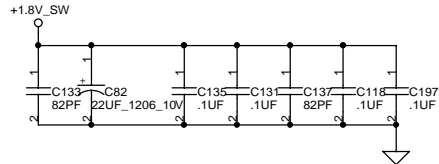
Layout note :

Distribute as close as possible to VCCPCMOS_LM .



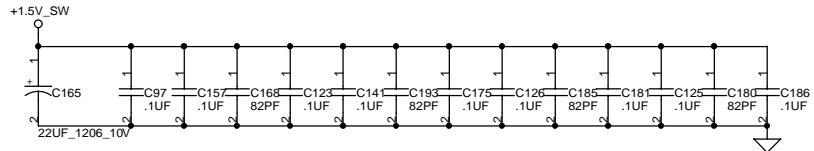
Layout note :

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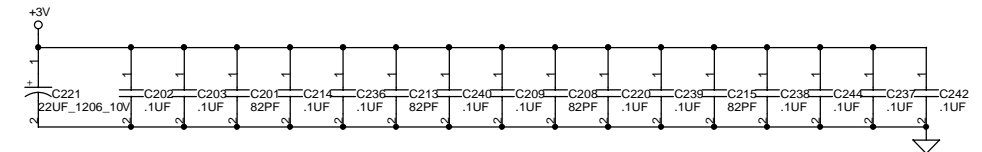
Layout note :

Distribute as close as possible to GMCH AGP/DVO Quadrant .



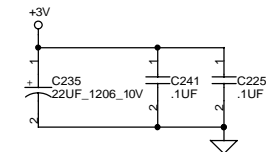
Layout note :

Distribute as close as possible to GMCH System Memory Quadrant .



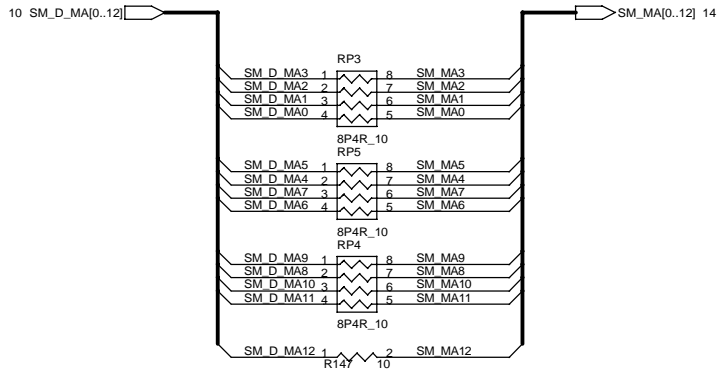
Layout note :

Distribute as close as possible to IO Quadrant .

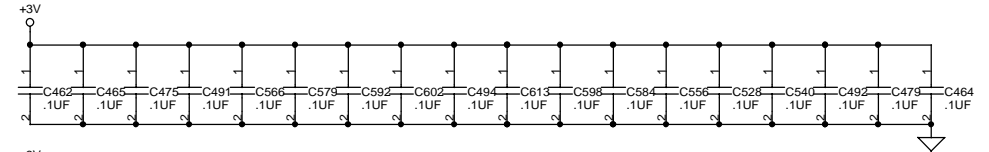


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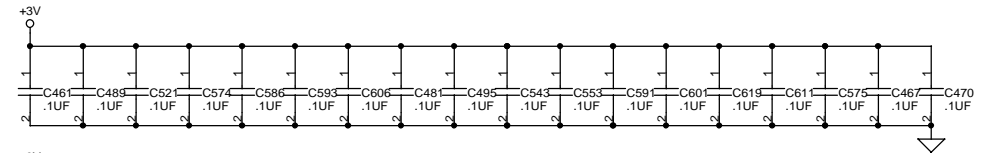
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Layout note :
 One .1uF cap per power pin .
 Place each cap close to SODIMM(DIMM 0) pin .

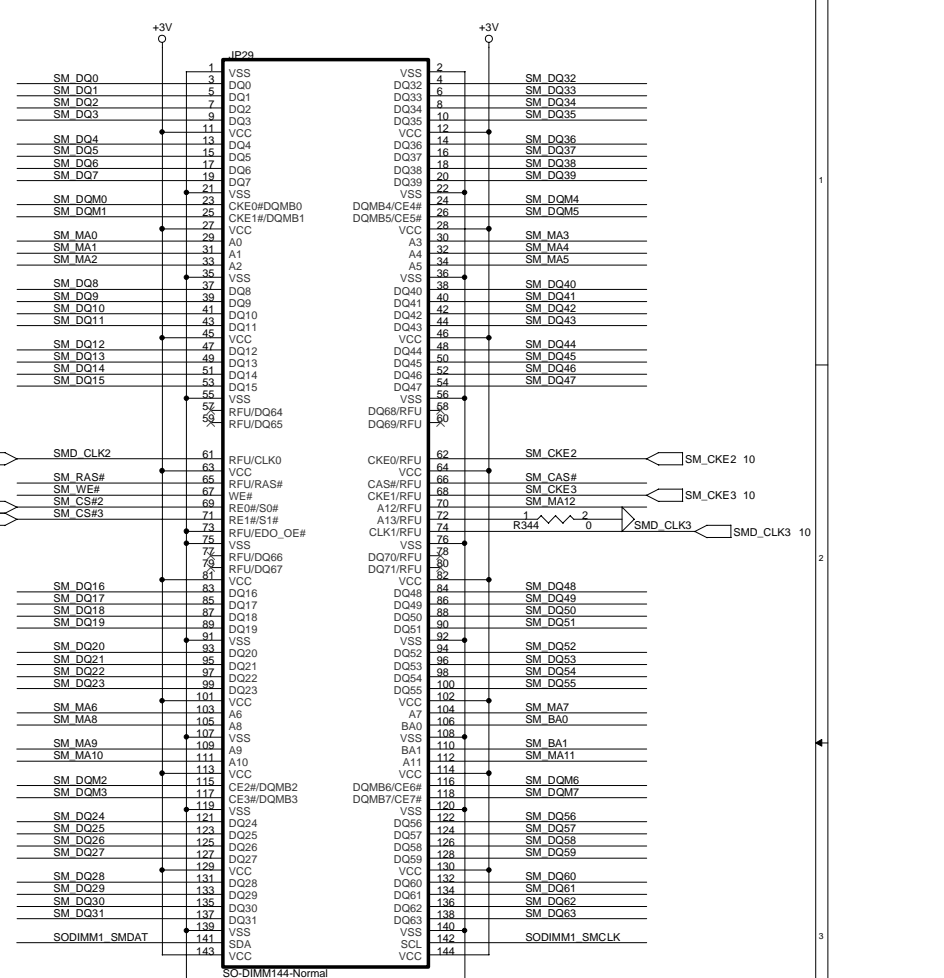
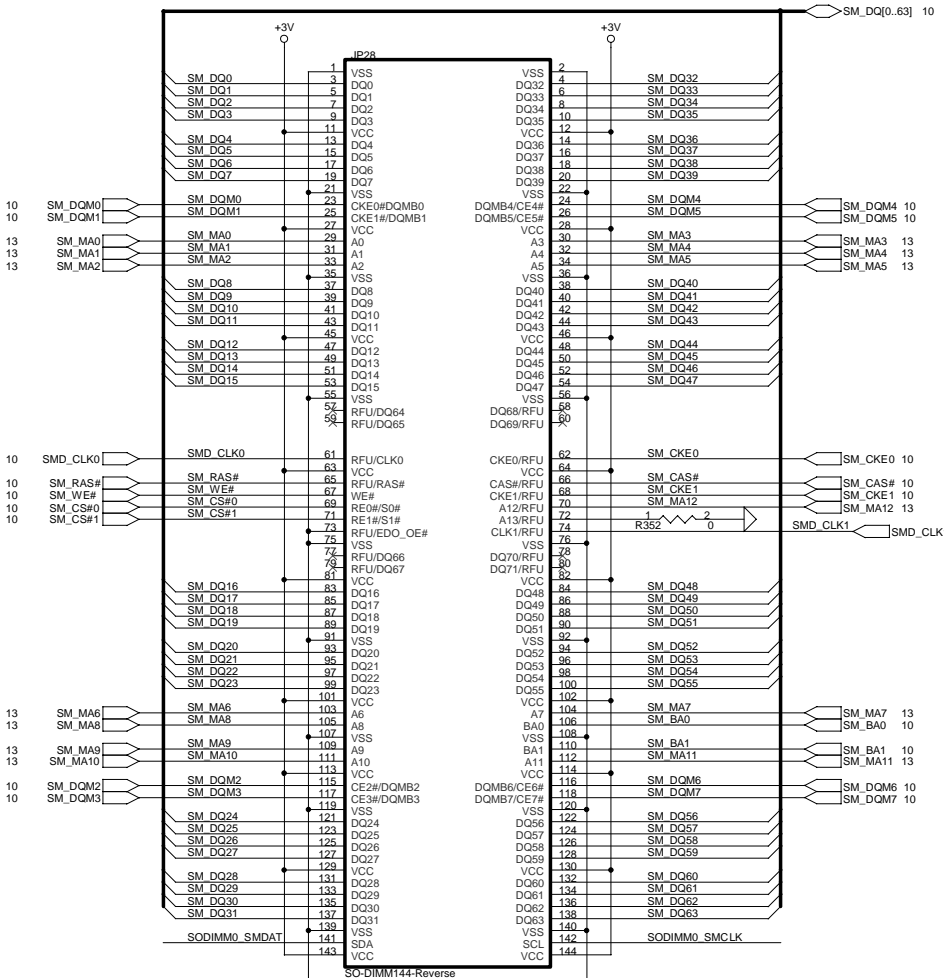


Layout note :
 One .1uF cap per power pin .
 Place each cap close to SODIMM(DIMM 1) pin .



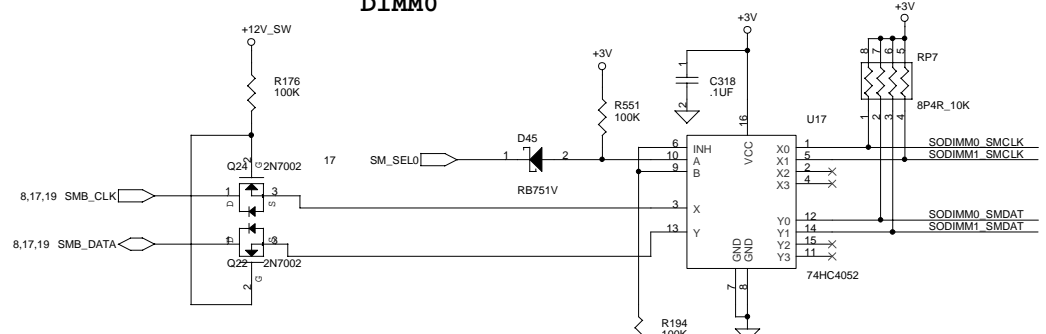
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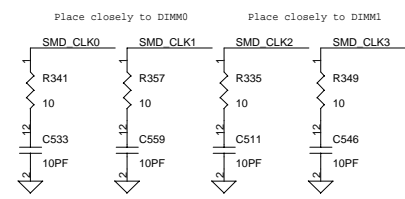
DIMM0

DIMM1



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

System SMBus Selector

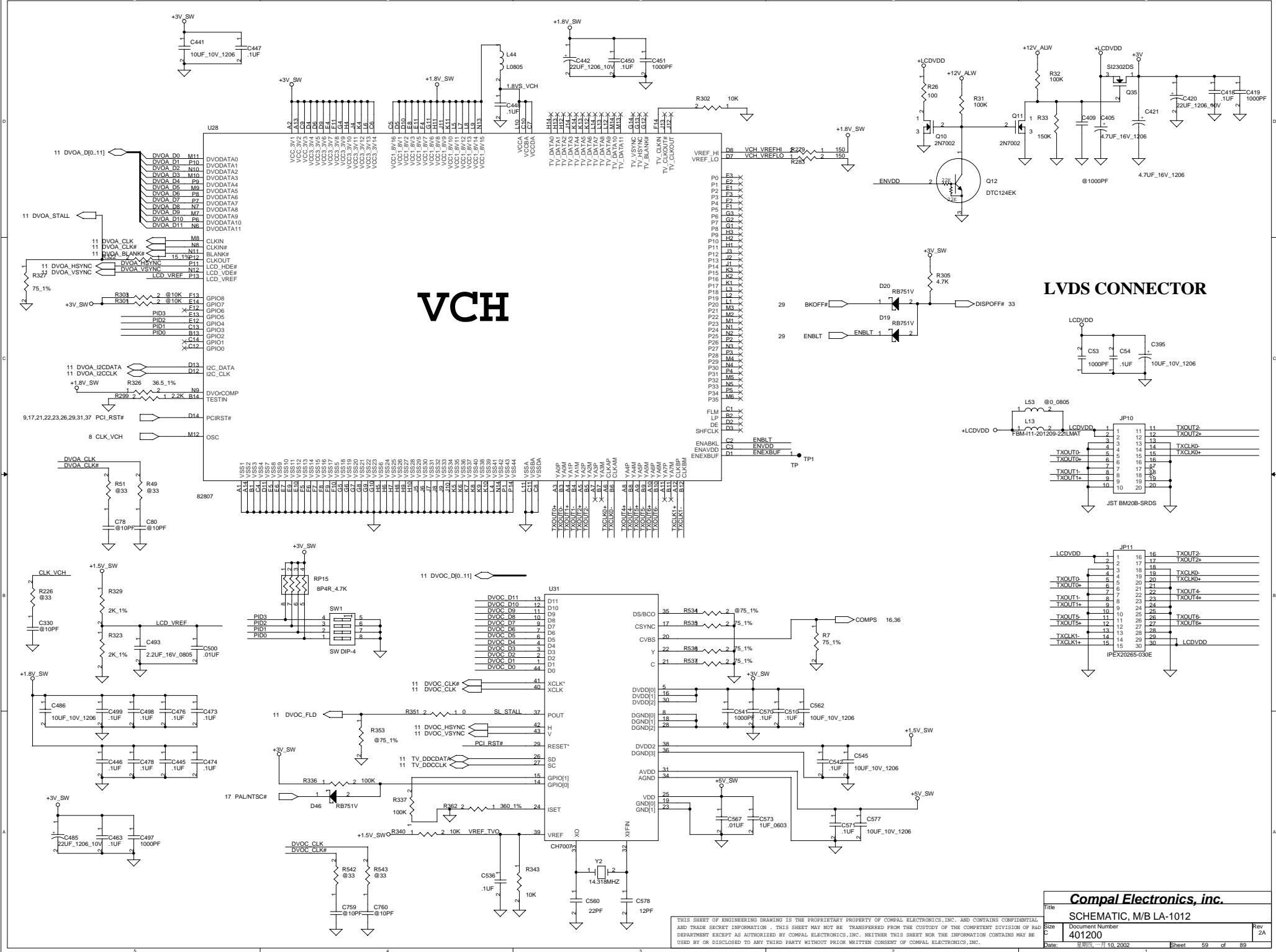


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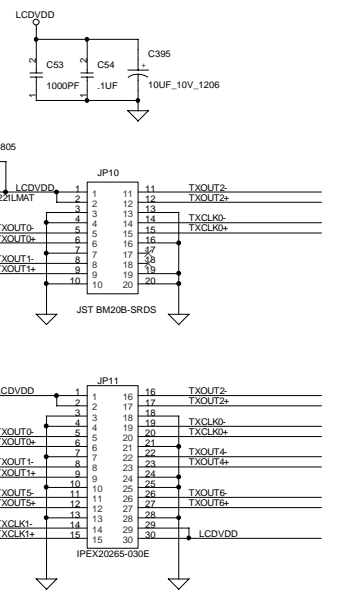
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LVDS CONNECTOR



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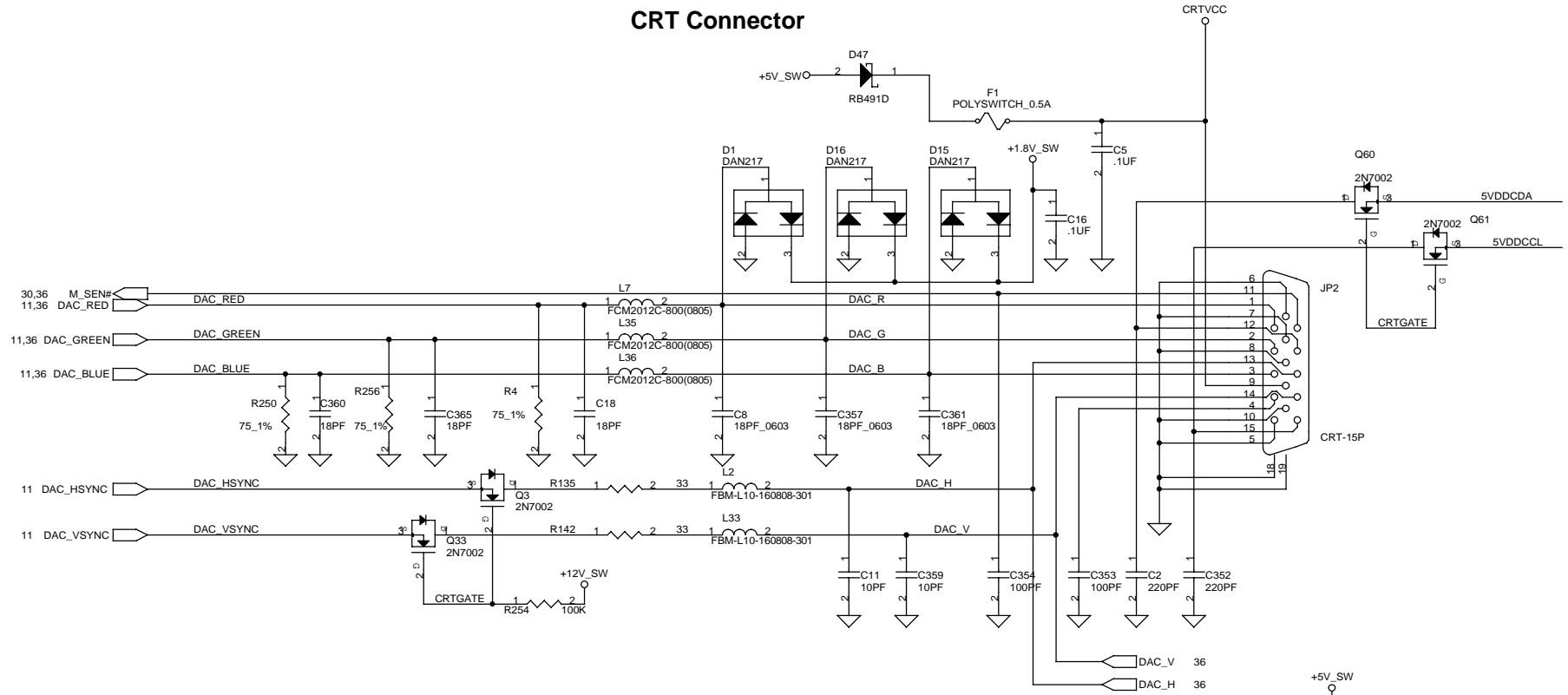
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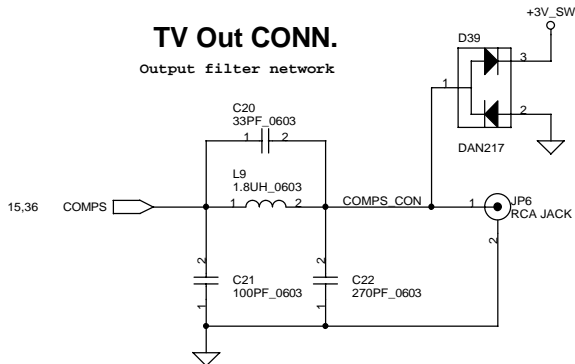
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CRT Connector

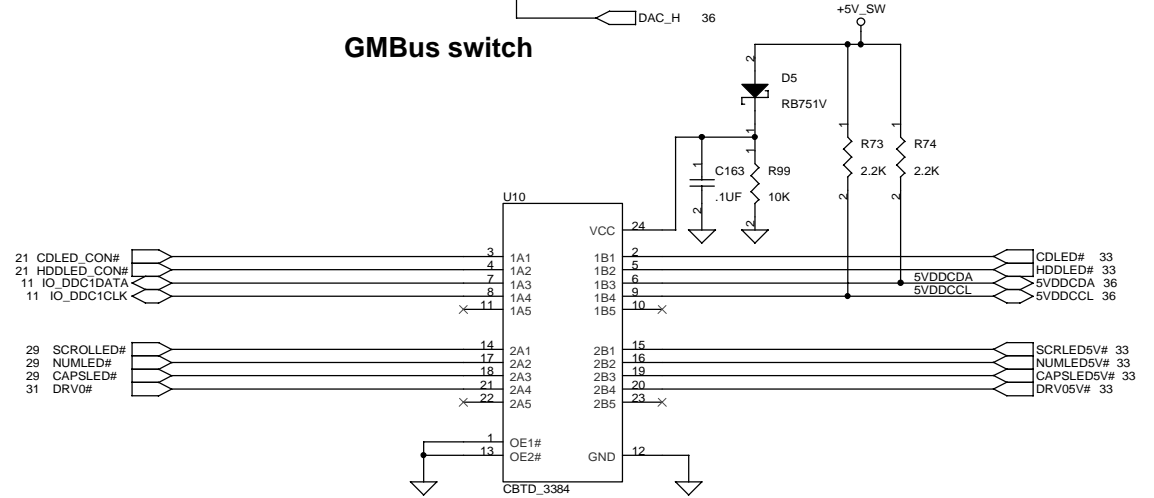


TV Out CONN.

Output filter network

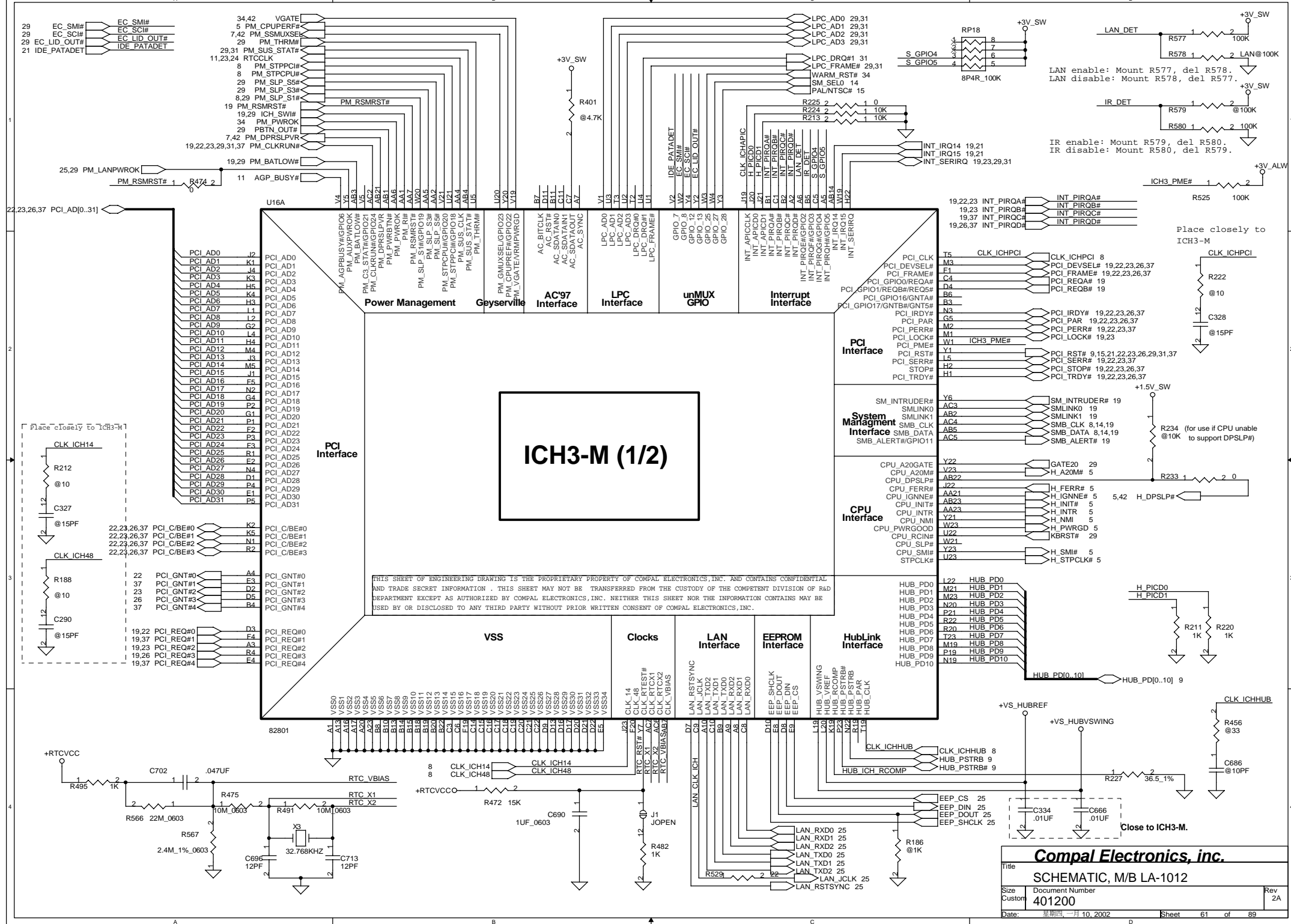


GMBus switch



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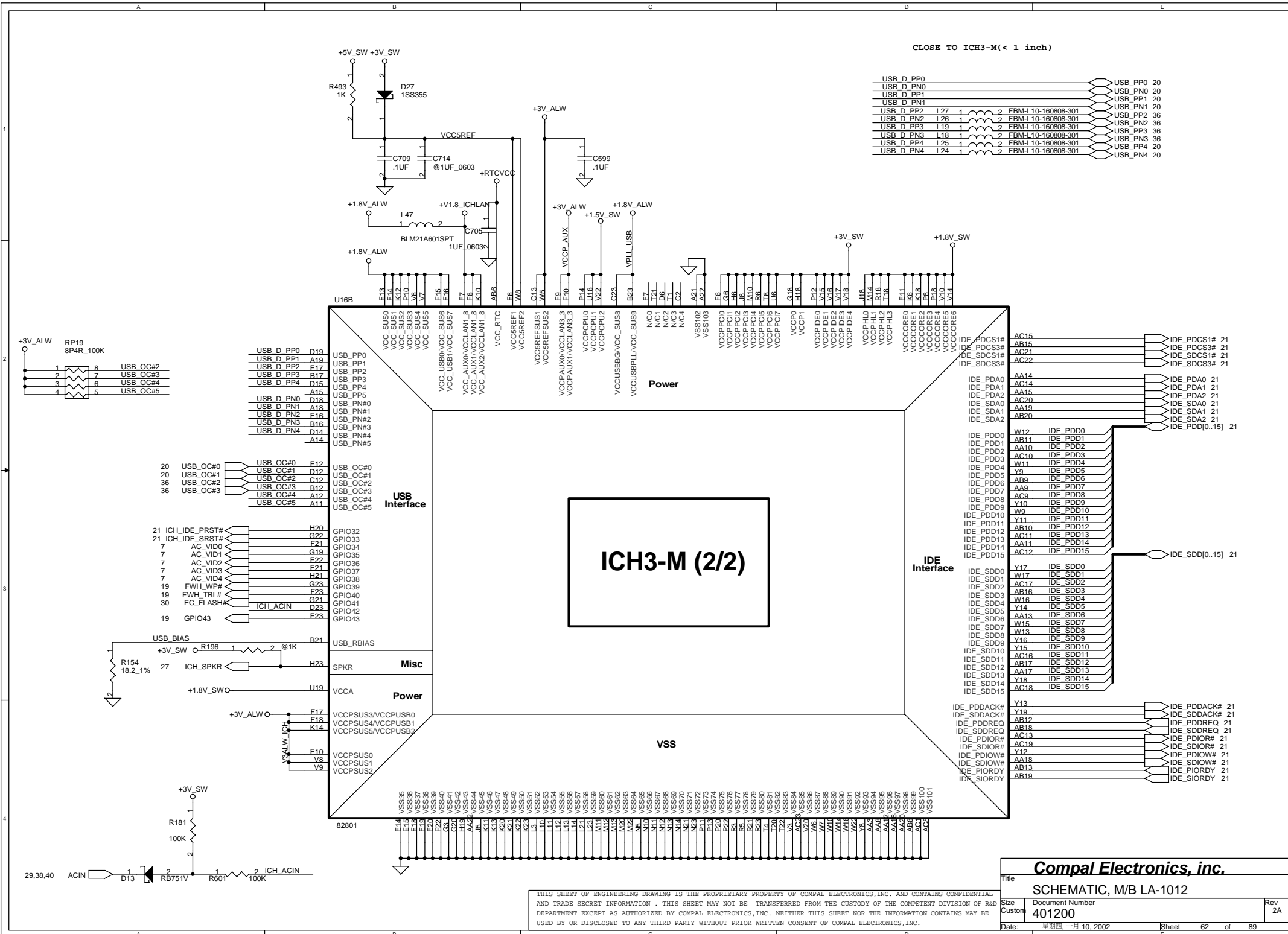


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CLOSE TO ICH3-M(< 1 inch)

USB D PP0		USB_PP0	20
USB D PN0		USB_PN0	20
USB D PP1		USB_PP1	20
USB D PN1		USB_PN1	20
USB D PP2	L27	FBM-L10-160808-301	2
USB D PN2	L26	FBM-L10-160808-301	2
USB D PP3	L19	FBM-L10-160808-301	2
USB D PN3	L18	FBM-L10-160808-301	2
USB D PP4	L25	FBM-L10-160808-301	2
USB D PN4	L24	FBM-L10-160808-301	2

USB D PP0	D19	USB_PP0
USB D PP1	A19	USB_PP1
USB D PP2	F17	USB_PP2
USB D PP3	B17	USB_PP3
USB D PP4	D15	USB_PP4
USB D PN0	D18	USB_PN0
USB D PN1	A18	USB_PN1
USB D PN2	F16	USB_PN2
USB D PN3	B16	USB_PN3
USB D PN4	D14	USB_PN4
	A14	USB_PN5

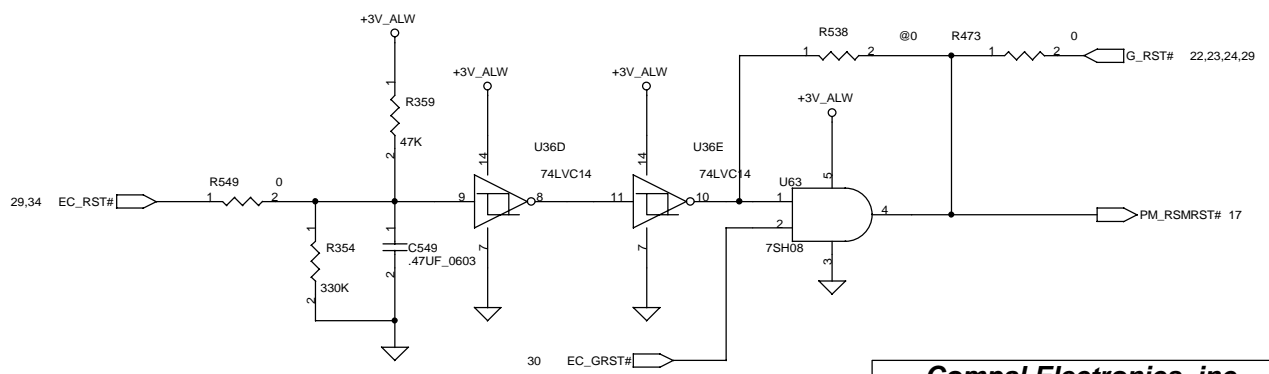
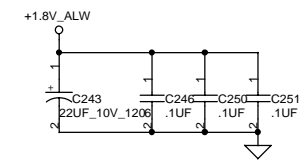
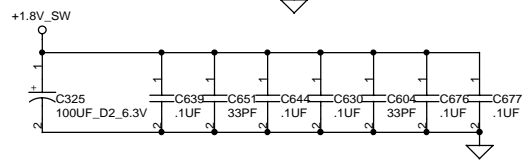
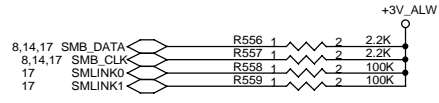
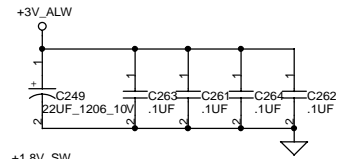
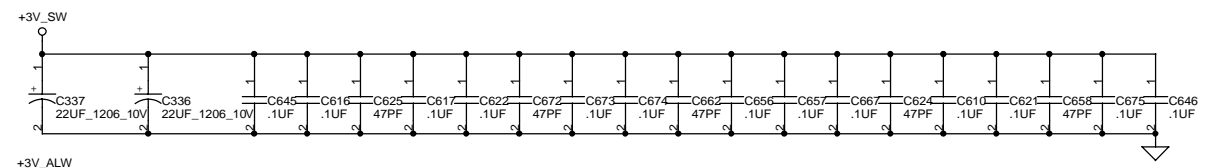
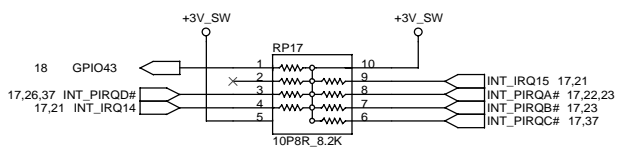
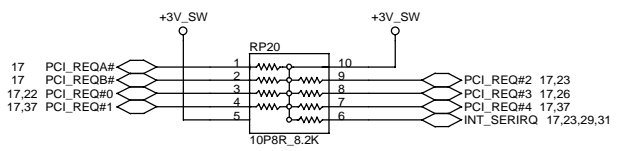
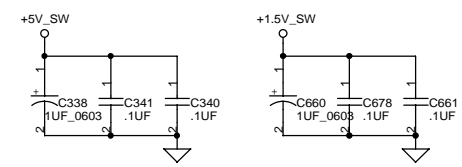
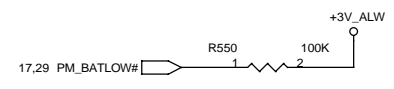
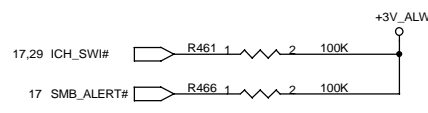
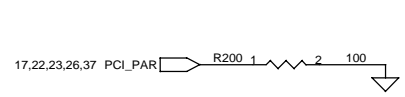
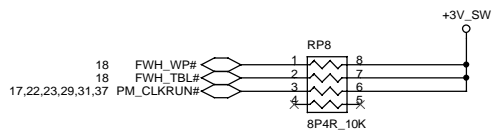
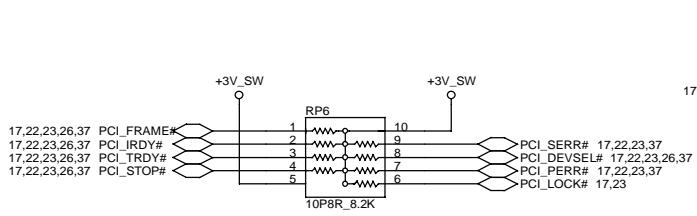
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USB_OC#1	D12	USB_OC#1
USB_OC#2	C12	USB_OC#2
USB_OC#3	R12	USB_OC#3
USB_OC#4	A12	USB_OC#4
USB_OC#5	A11	USB_OC#5

21	ICH_IDE_PRST#	H20	GPIO32
21	ICH_IDE_SRST#	F21	GPIO33
7	AC_VID0	G19	GPIO34
7	AC_VID1	F19	GPIO35
7	AC_VID2	F22	GPIO36
7	AC_VID3	F21	GPIO37
7	AC_VID4	G21	GPIO38
19	FWH_WP#	G23	GPIO39
19	FWH_TBL#	F23	GPIO40
30	EC_FLASH#	G21	GPIO41
		D23	GPIO42
19	GPIO43	F23	GPIO43

IDE_PDCS1#	AC15	IDE_PDCS1#	21
IDE_PDCS3#	AB15	IDE_PDCS3#	21
IDE_SDCS1#	AC21	IDE_SDCS1#	21
IDE_SDCS3#	AC22	IDE_SDCS3#	21
IDE_PDA0	AA14	IDE_PDA0	21
IDE_PDA1	AC15	IDE_PDA1	21
IDE_PDA2	AC20	IDE_PDA2	21
IDE_SDA0	AA19	IDE_SDA0	21
IDE_SDA1	AB20	IDE_SDA1	21
IDE_SDA2		IDE_SDA2	21
IDE_PDD0	W12	IDE_PDD0	21
IDE_PDD1	AB11	IDE_PDD1	21
IDE_PDD2	AA10	IDE_PDD2	21
IDE_PDD3	AC10	IDE_PDD3	21
IDE_PDD4	W11	IDE_PDD4	21
IDE_PDD5	Y9	IDE_PDD5	21
IDE_PDD6	AA9	IDE_PDD6	21
IDE_PDD7	AC9	IDE_PDD7	21
IDE_PDD8	Y10	IDE_PDD8	21
IDE_PDD9	W9	IDE_PDD9	21
IDE_PDD10	Y11	IDE_PDD10	21
IDE_PDD11	AB10	IDE_PDD11	21
IDE_PDD12	AC11	IDE_PDD12	21
IDE_PDD13	AA11	IDE_PDD13	21
IDE_PDD14	AC12	IDE_PDD14	21
IDE_PDD15		IDE_PDD15	21
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IDE_SDD10	Y15	IDE_SDD10	21
IDE_SDD11	AC16	IDE_SDD11	21
IDE_SDD12	AB17	IDE_SDD12	21
IDE_SDD13	AA17	IDE_SDD13	21
IDE_SDD14	Y18	IDE_SDD14	21
IDE_SDD15	AC18	IDE_SDD15	21
IDE_PDDACK#	Y13	IDE_PDDACK#	21
IDE_SDDACK#	Y19	IDE_SDDACK#	21
IDE_PDDREQ	AB12	IDE_PDDREQ	21
IDE_SDDREQ	AC13	IDE_SDDREQ	21
IDE_PDIOR#	AC19	IDE_PDIOR#	21
IDE_SDIOR#	Y12	IDE_SDIOR#	21
IDE_PDIOW#	AA18	IDE_PDIOW#	21
IDE_SDIOW#	AB13	IDE_SDIOW#	21
IDE_PIORDY	AB13	IDE_PIORDY	21
IDE_SIORDY	AB19	IDE_SIORDY	21

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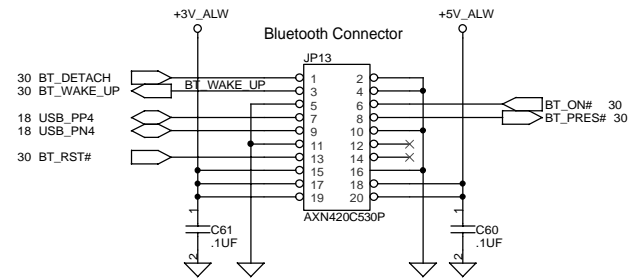
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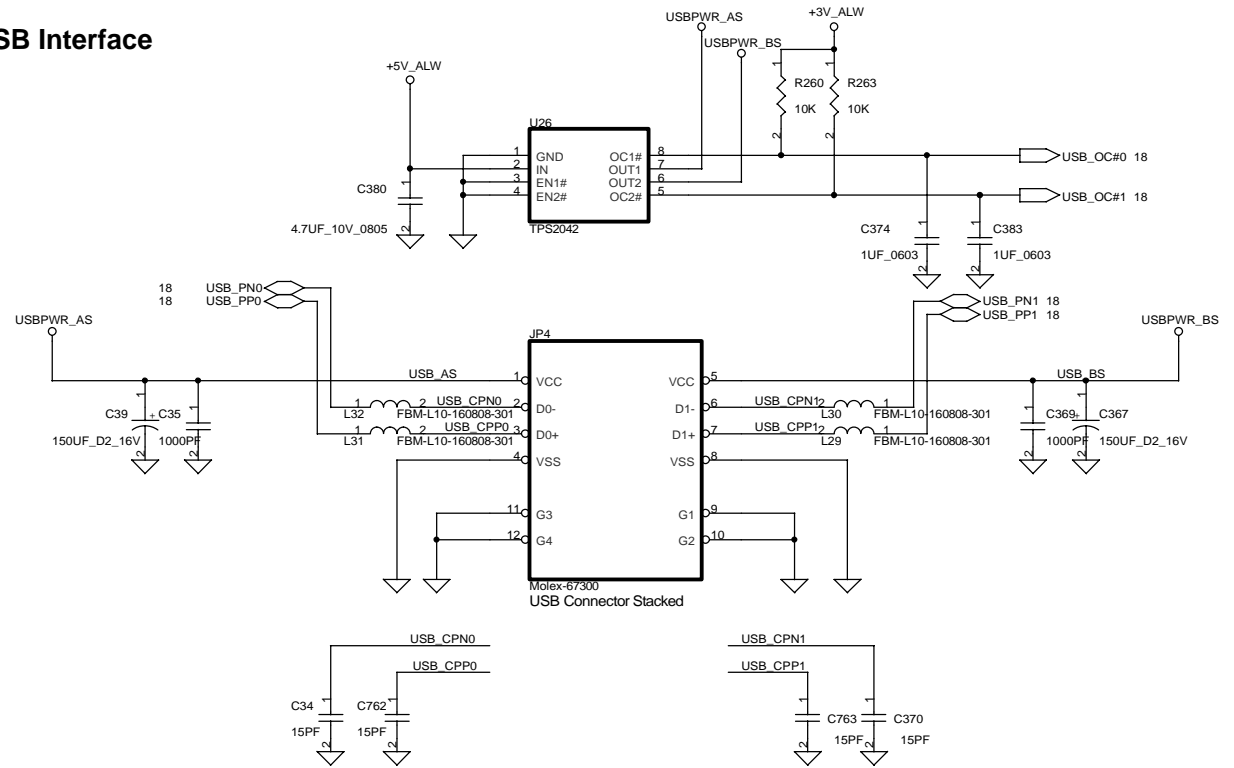
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BlueTooth Interface

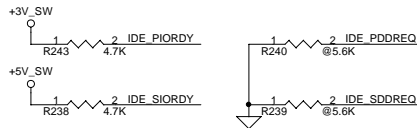
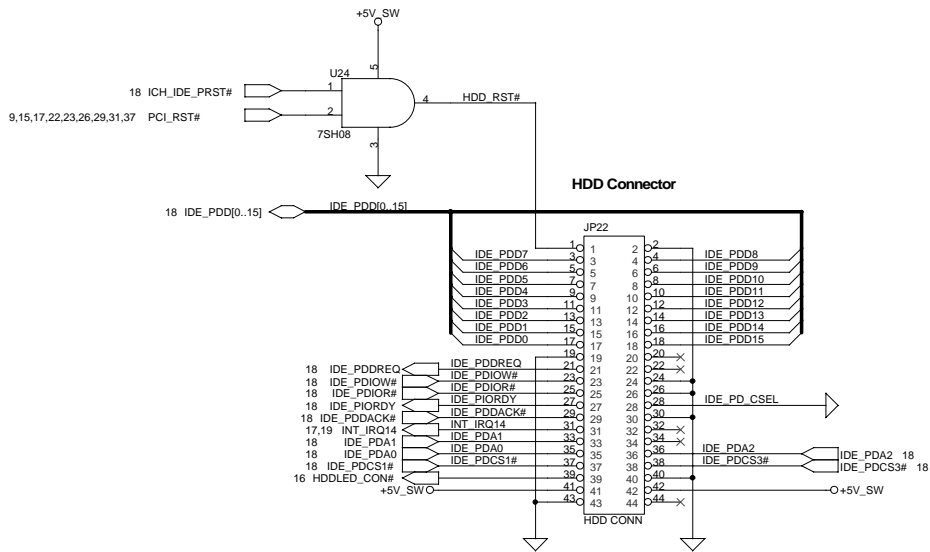


USB Interface

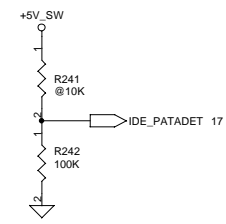


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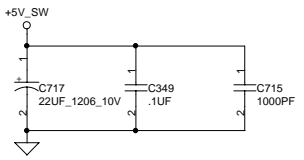
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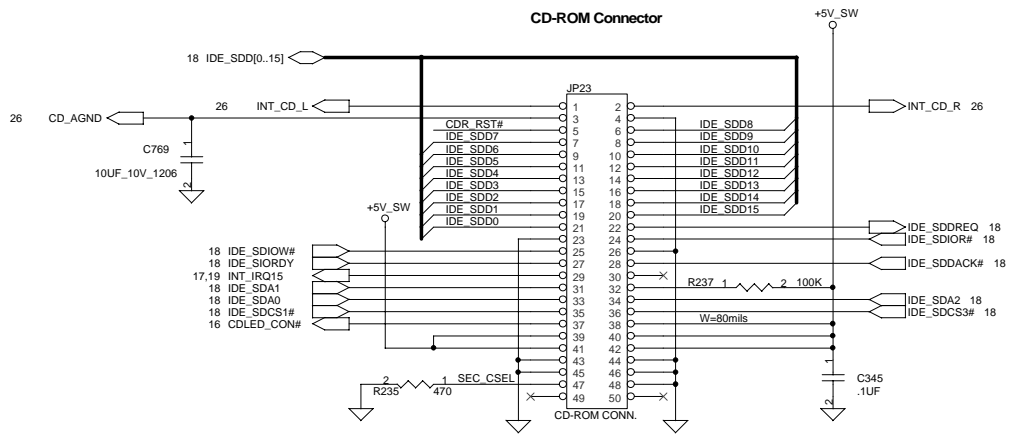
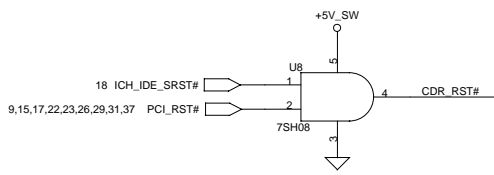
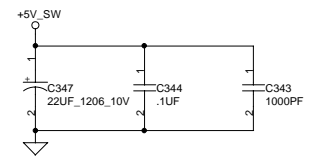
HDD Manual ATA Type Selection:
 ATA33 : populate R224, de-populate R225.
 ATA66/100 : populate R225, de-populate R224.



Layout note :
 Place capacitors near HDD connector .

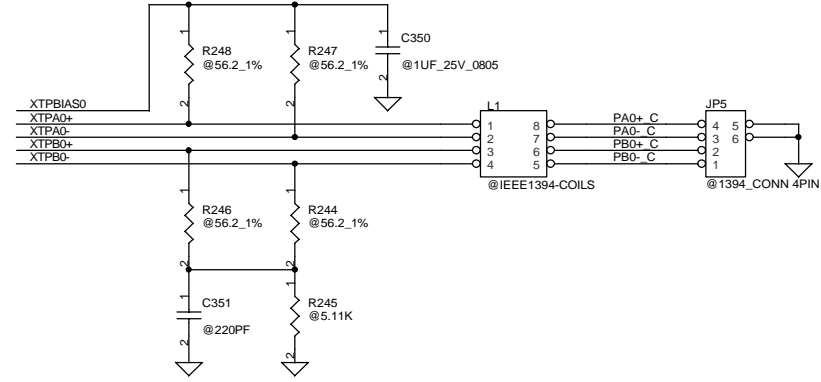
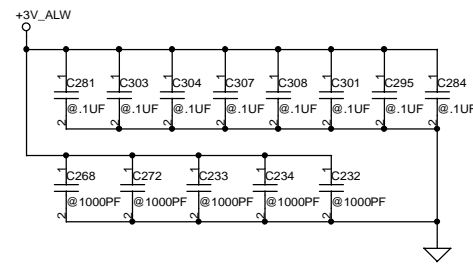
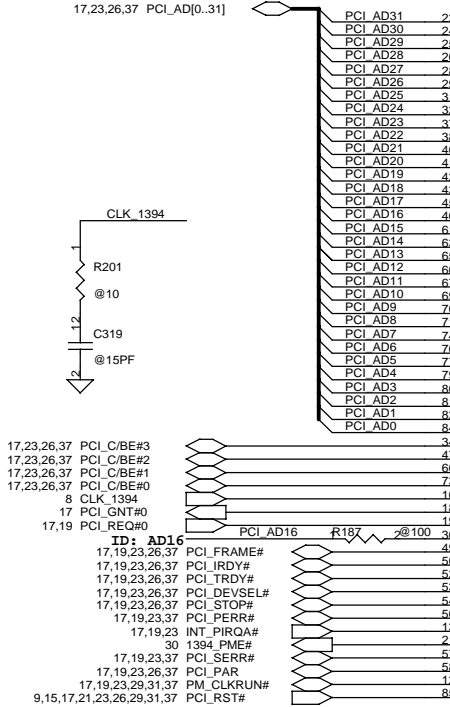
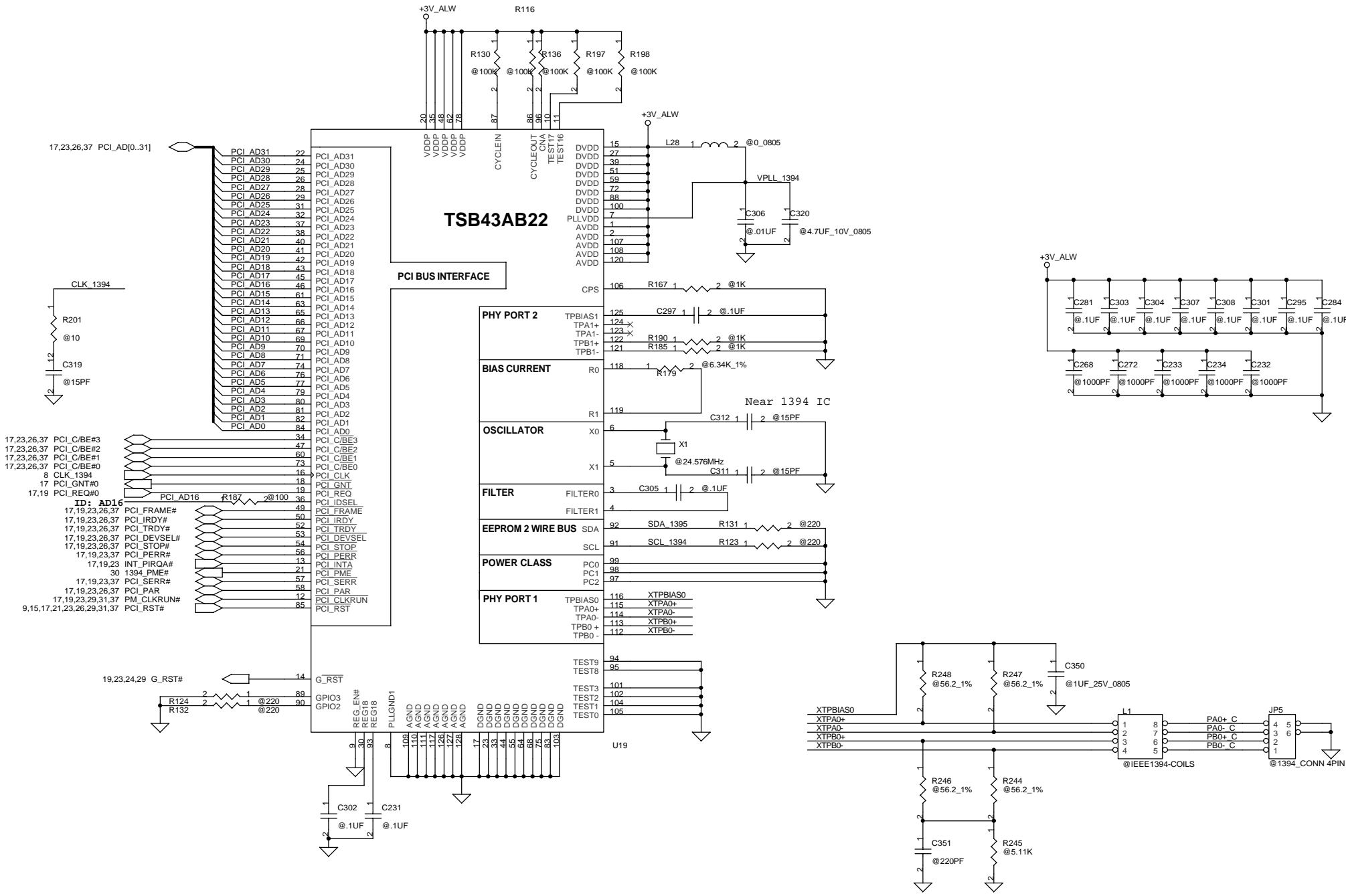


Layout note :
 Place capacitors near CD-ROM connector .



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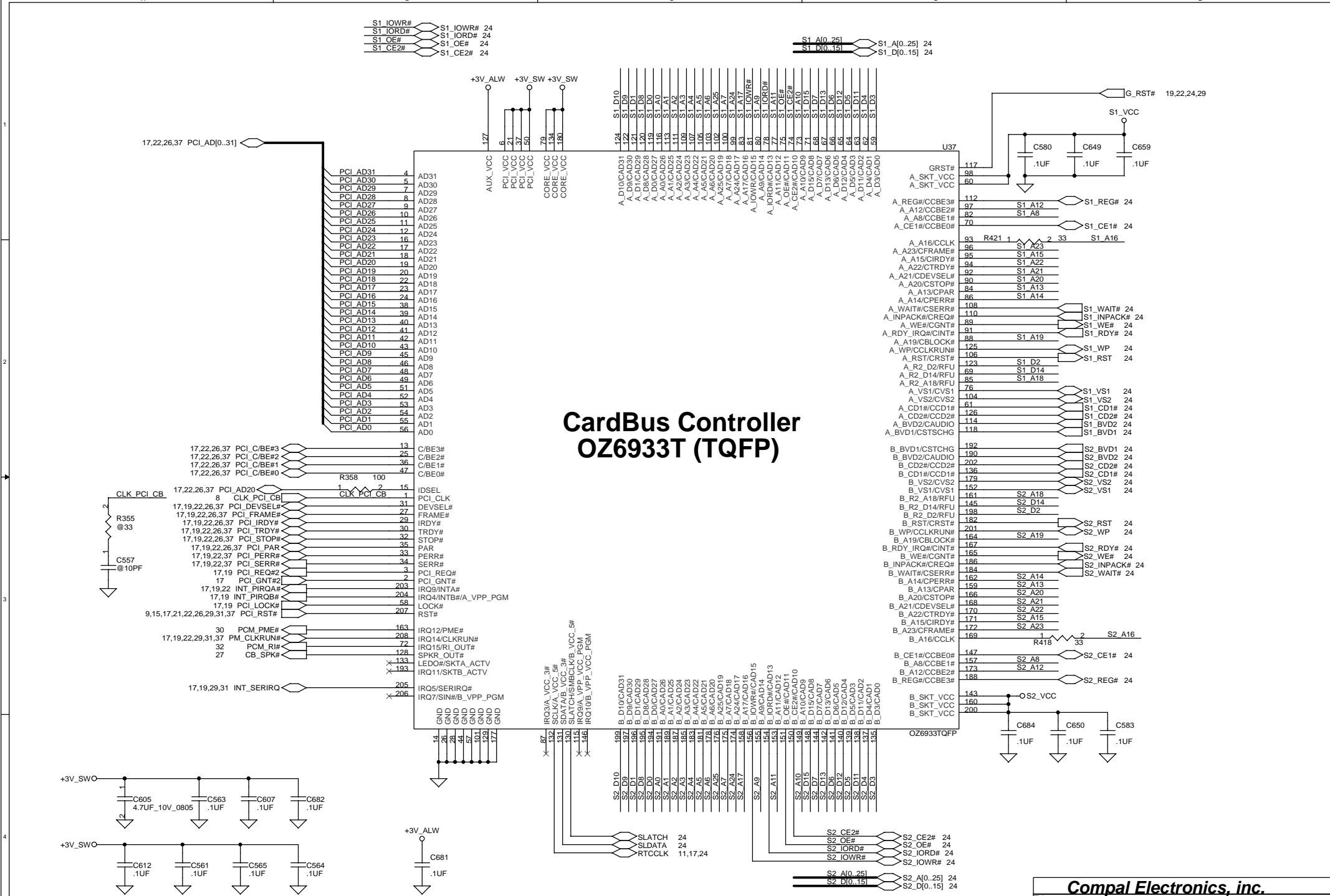
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D
C
B
A

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

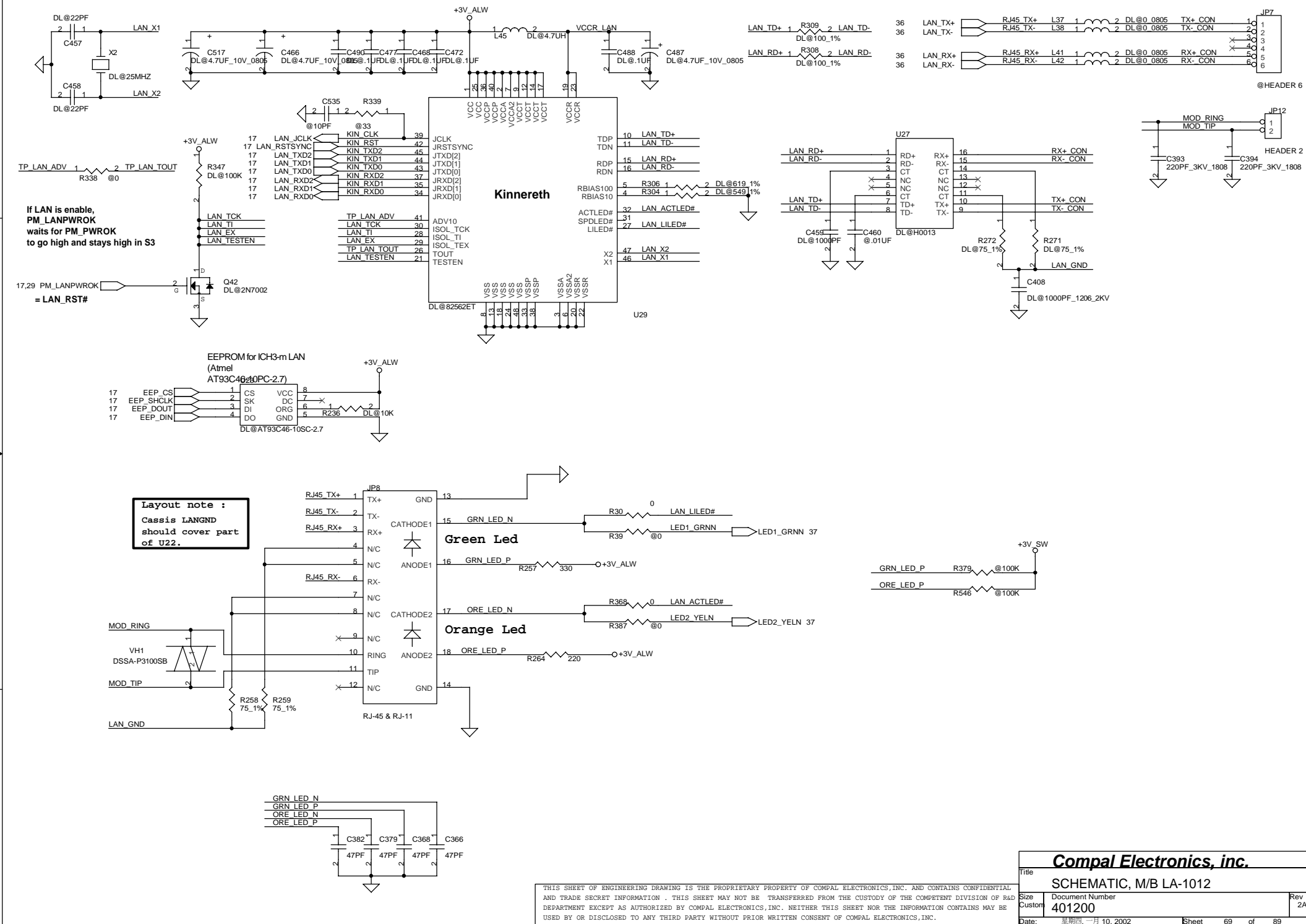
S1_A[0..25] 24
 S1_D[0..15] 24

CardBus Controller OZ6933T (TQFP)



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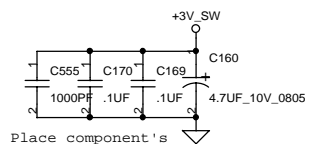
If LAN is enable, PM_LANPWROK waits for PM_PWROK to go high and stays high in S3

17,29 PM_LANPWROK = LAN_RST#

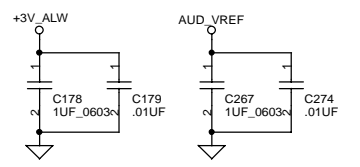
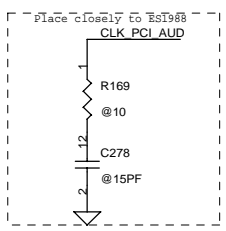
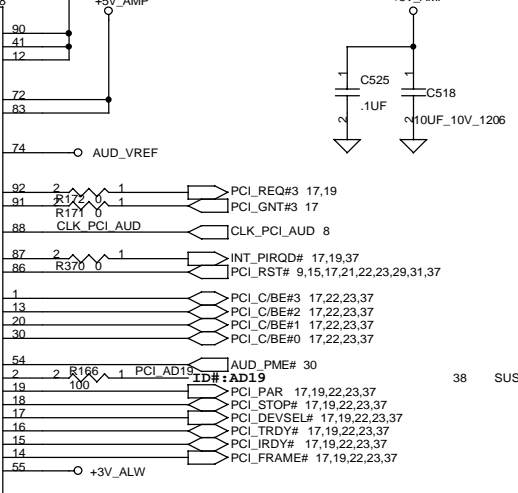
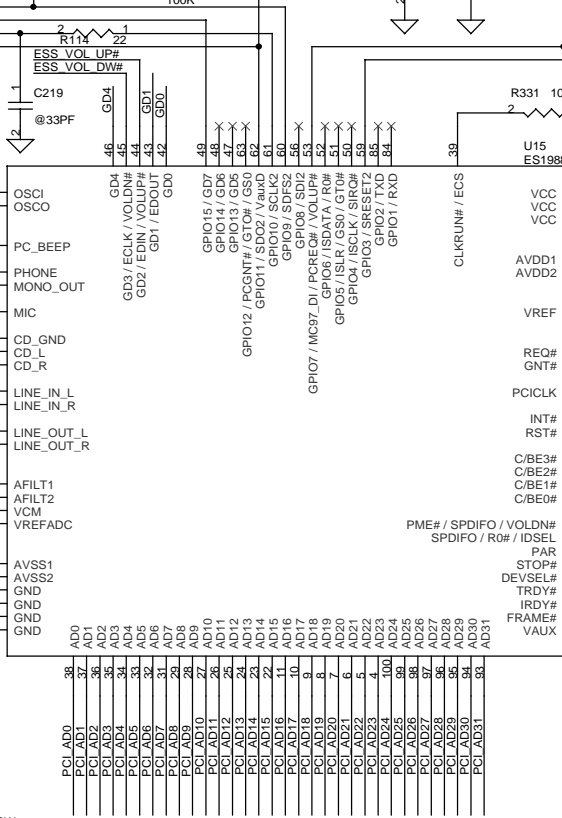
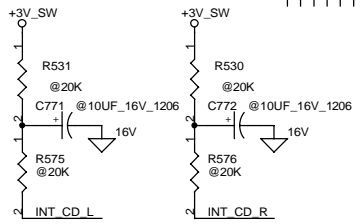
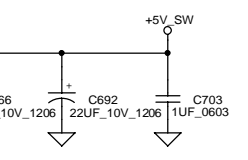
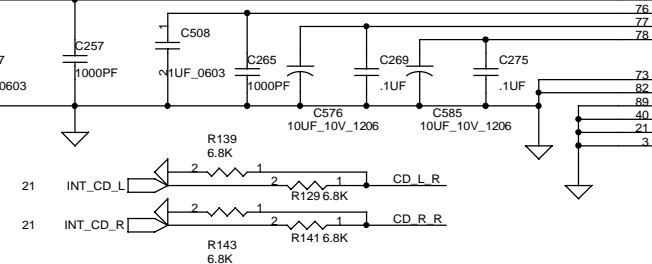
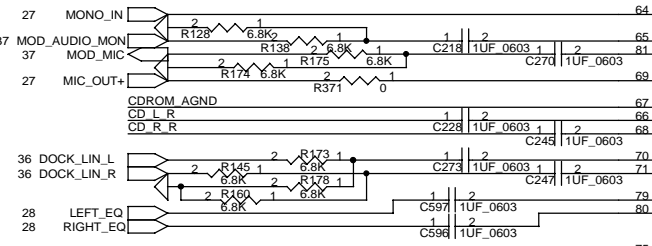
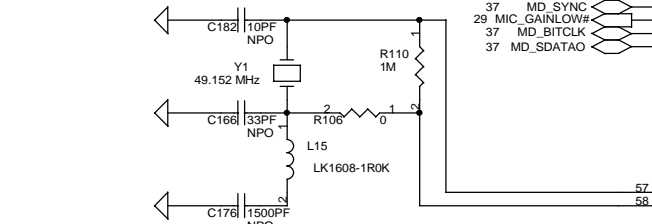
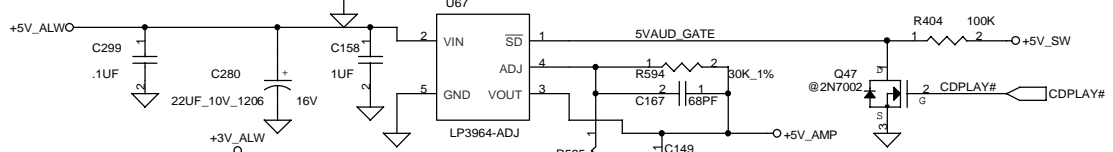
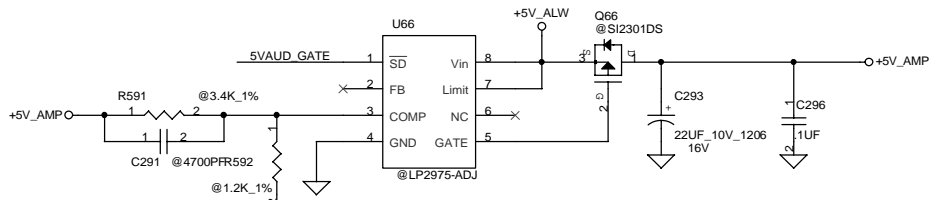
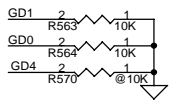
Layout note :
Cassis LANGND should cover part of U22.

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Place component's to ES1988

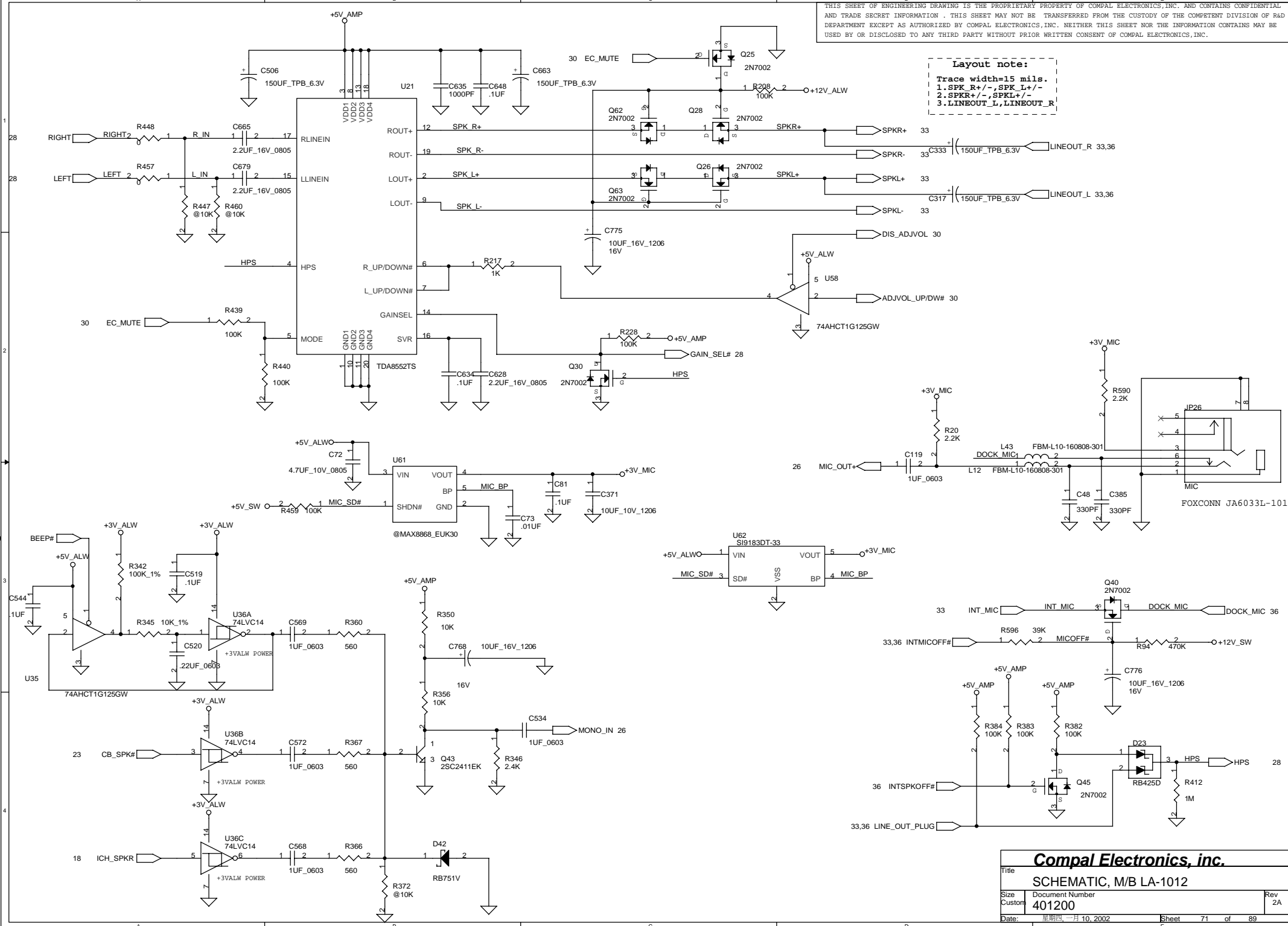


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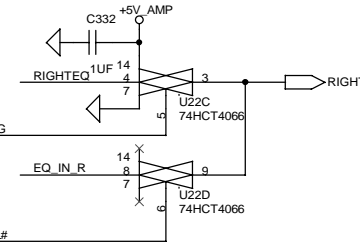
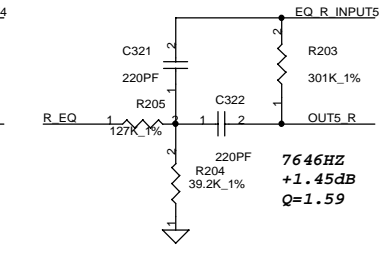
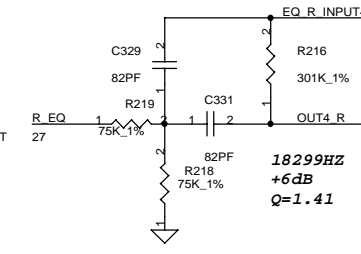
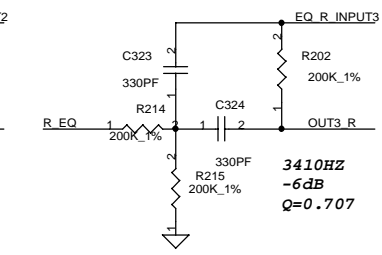
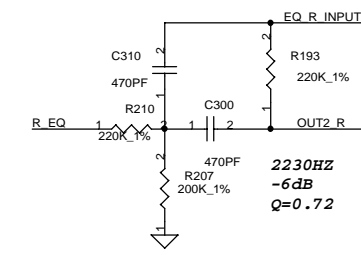
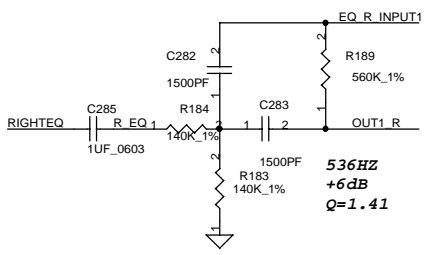
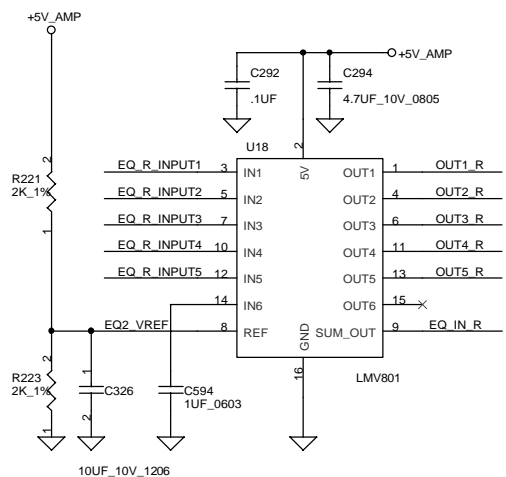
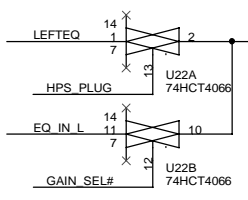
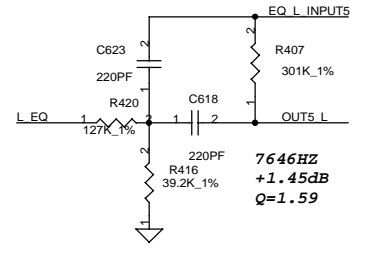
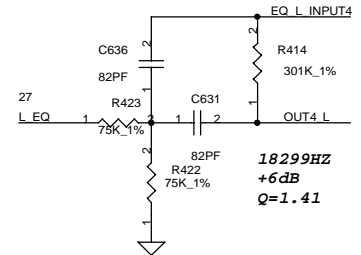
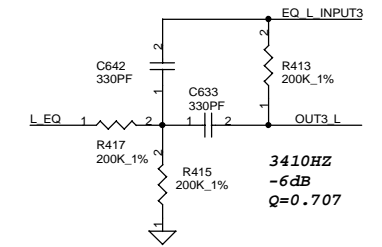
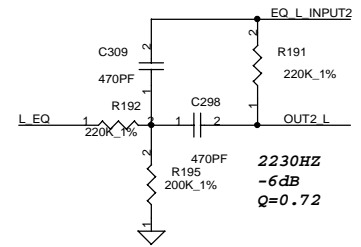
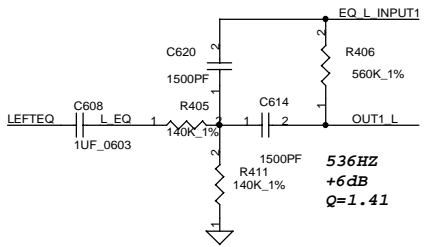
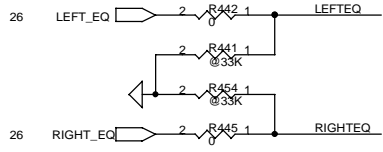
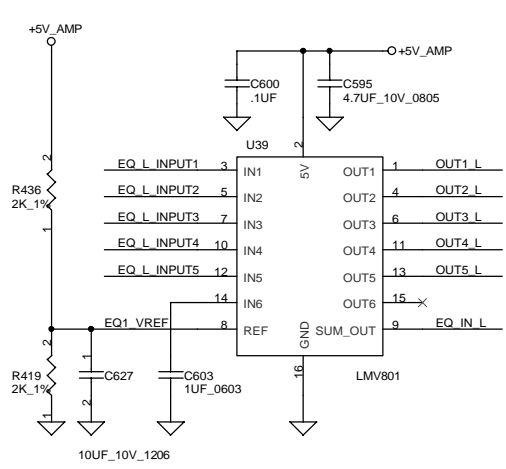
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Layout note:
 Trace width=15 mils.
 1.SPKR_R+/- ,SPKL_L+/-
 2.SPKR+/- ,SPKL+/-
 3.LINEOUT_L,LINEOUT_R

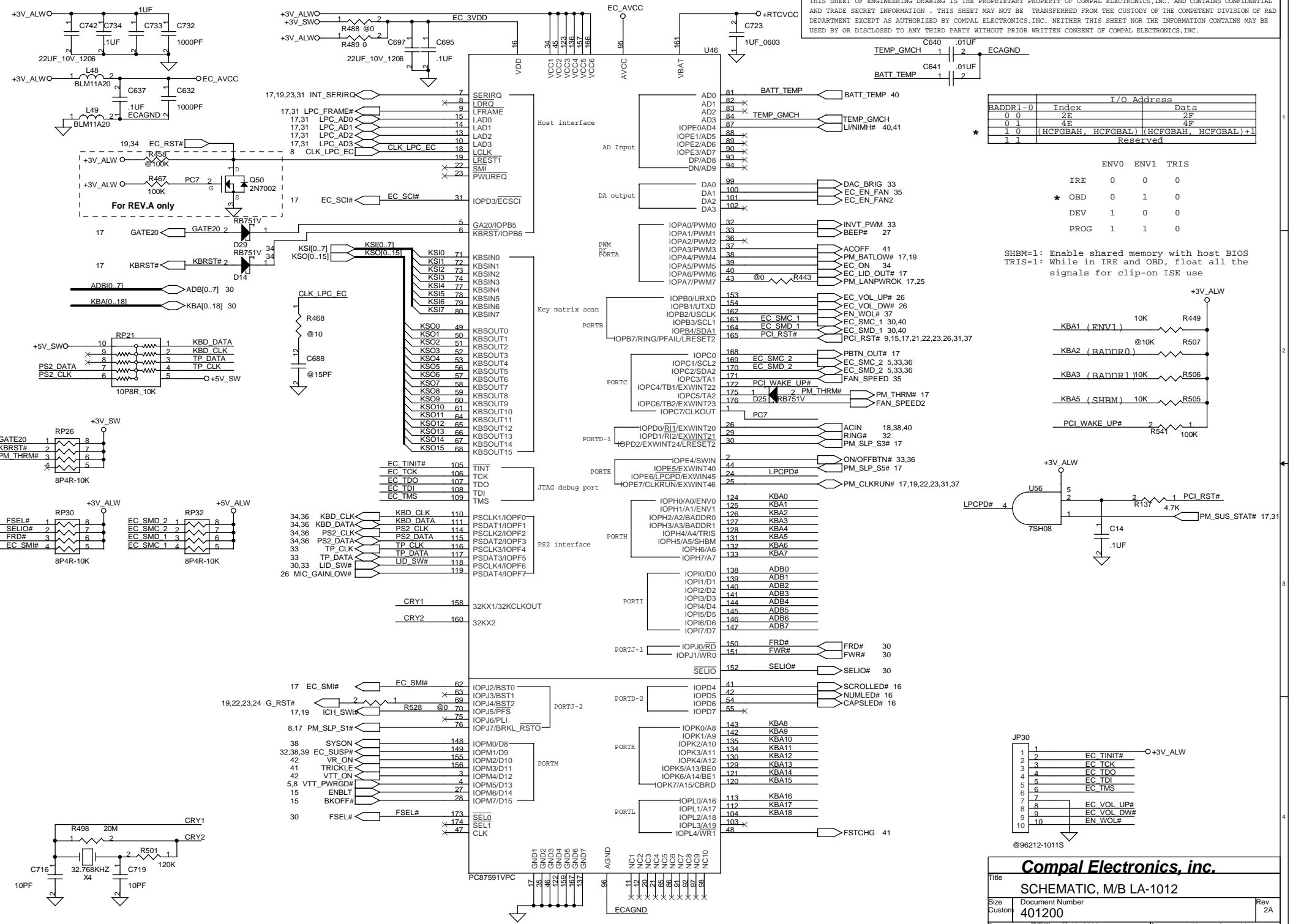


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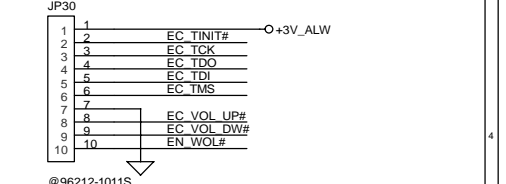
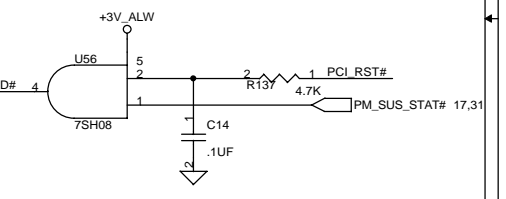
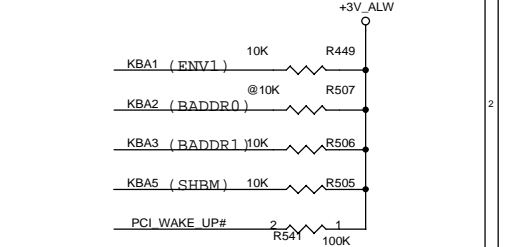
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I/O Address		
BADDR1-0	Index	Data
0 0	2E	2F
0 1	4B	4F
1 0	(HCFGBAH, HCFGBAL)	(HCFGBAH, HCFGBAL)+1
1 1	Reserved	

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

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



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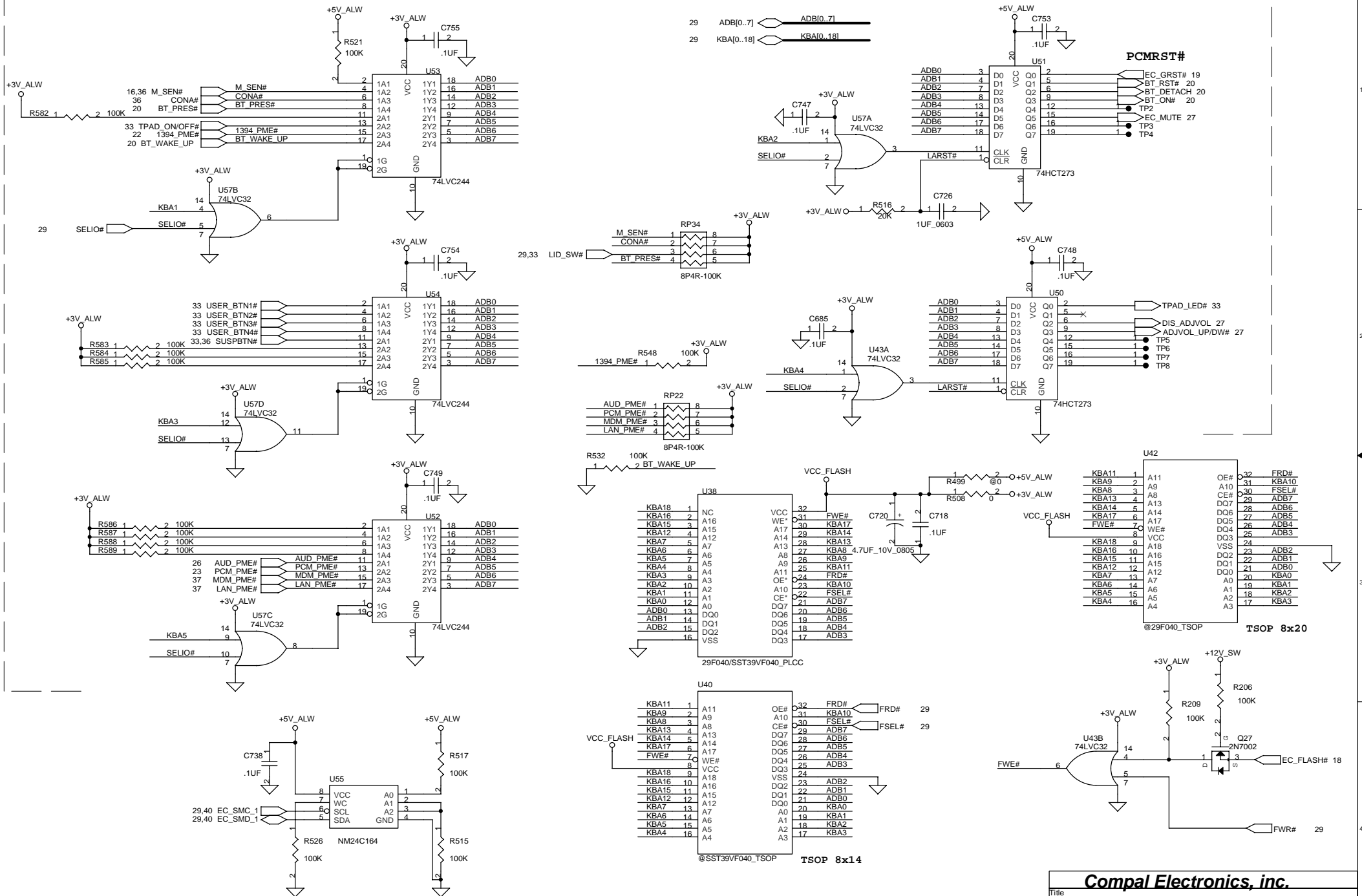
Schematic, M/B LA-1012

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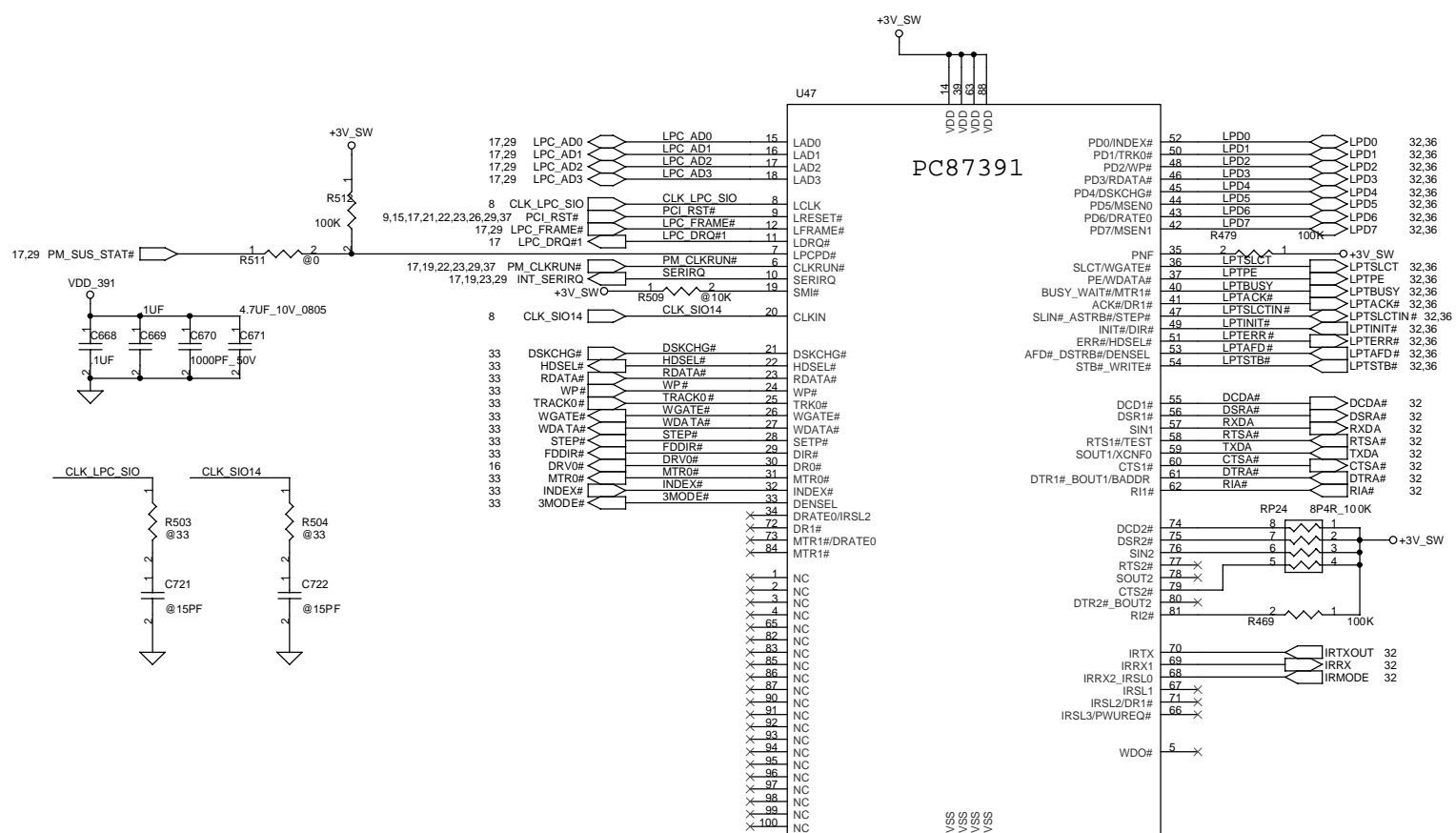
INPUT

OUTPUT



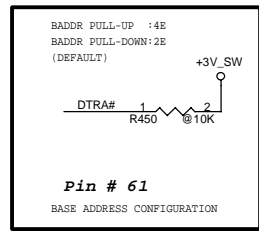
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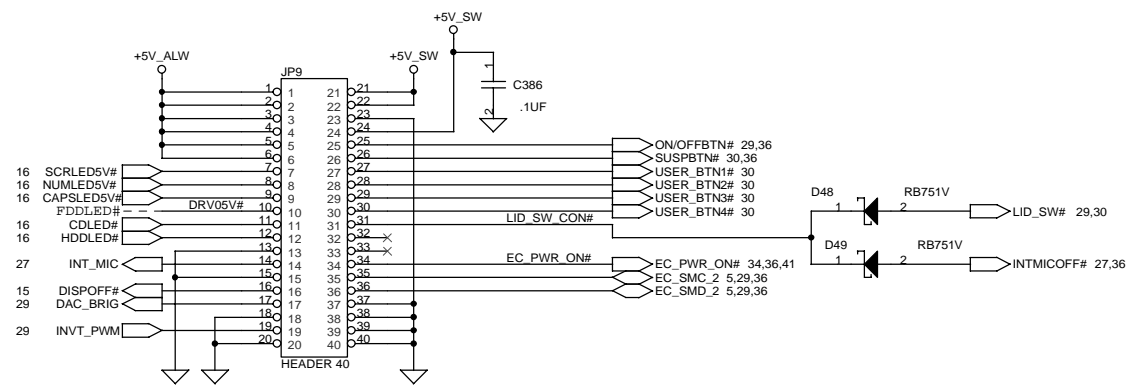
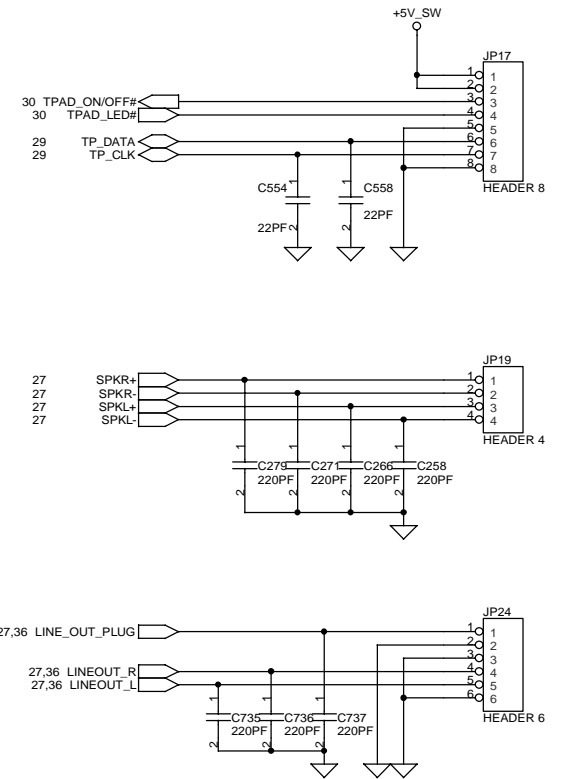
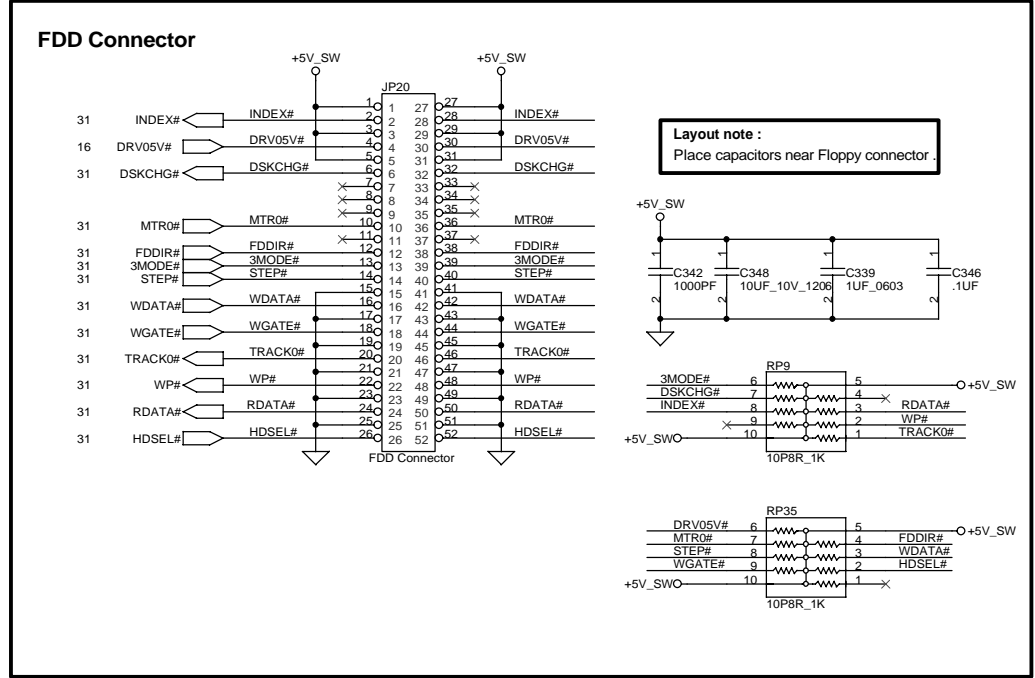
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Signal	Pin #	Description
BADDR	61	BASE Address Selection "0": 2E~2F (Default) "1": 4E~4F
TEST	58	"0": Normal (Default) "1": Test Mode
XCNF[2:0]	90, 4, 59	2 1 0 Function
		x 0 0 No BIOS
		x 0 1 Normal Mode. XRDY disabled
		0 1 0 Latch Mode. XA12-19,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

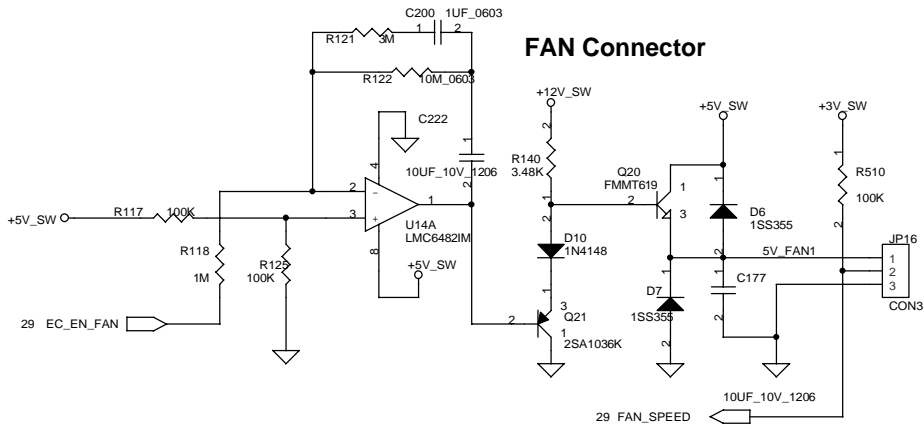
*1.ROM SOLUTION for PC87391
*2.ROM SOLUTION for PC87393





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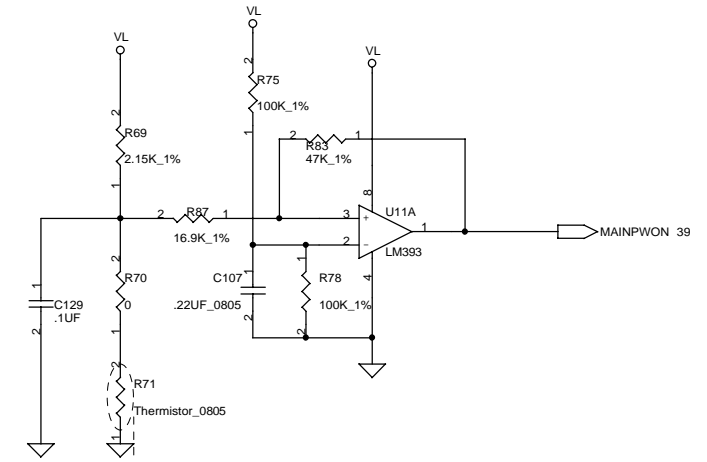
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FAN Connector

The temperature sensing and Over-Hot shutdown circuit.

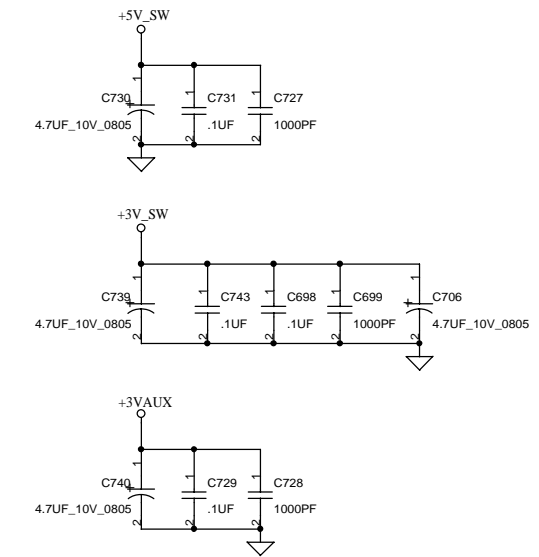
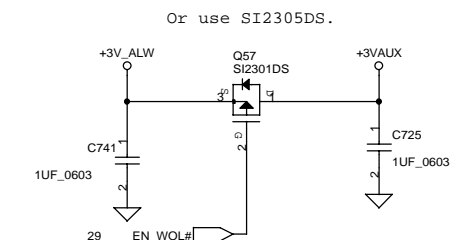
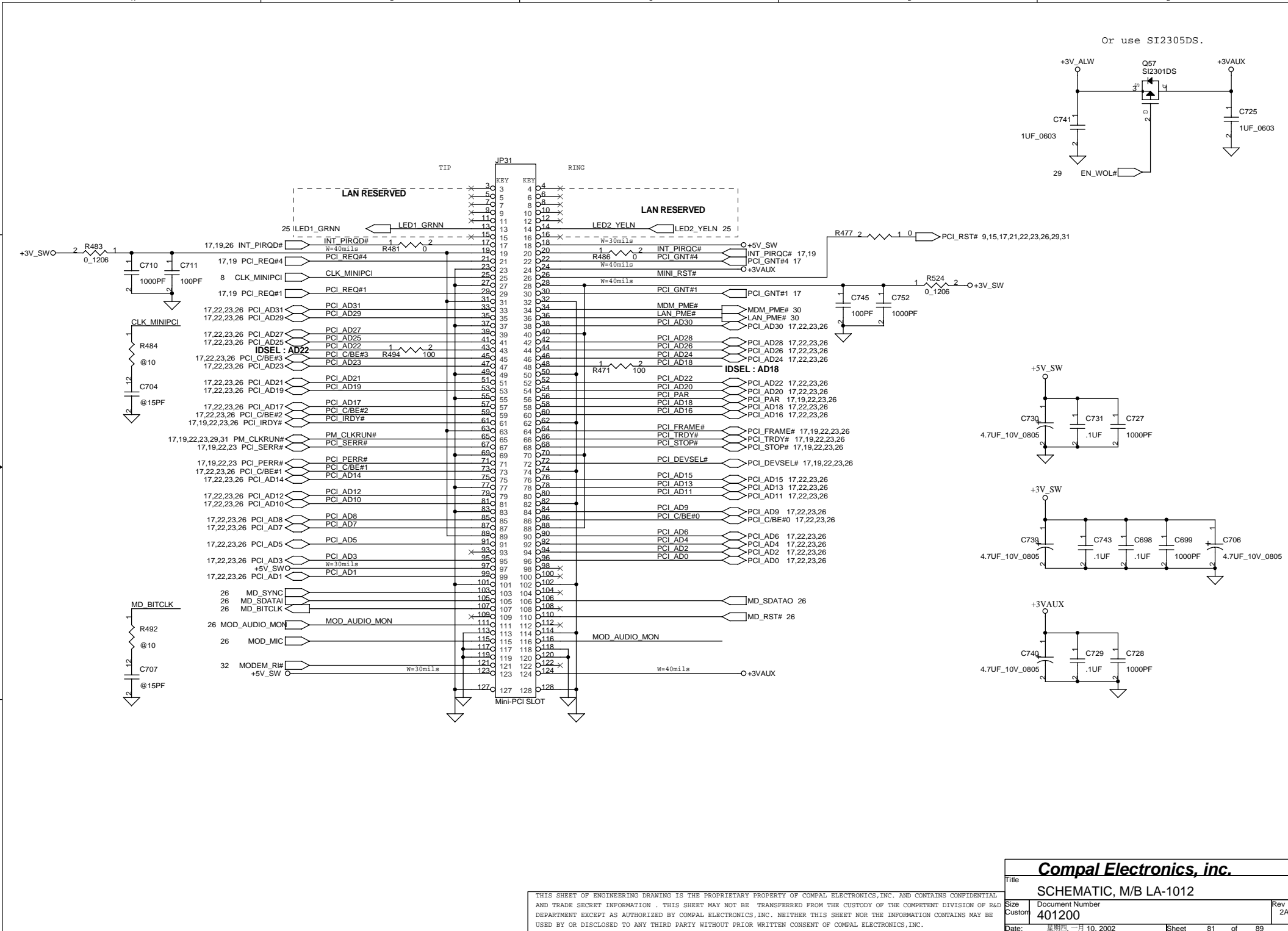
Place this block circuit close to CPU.



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

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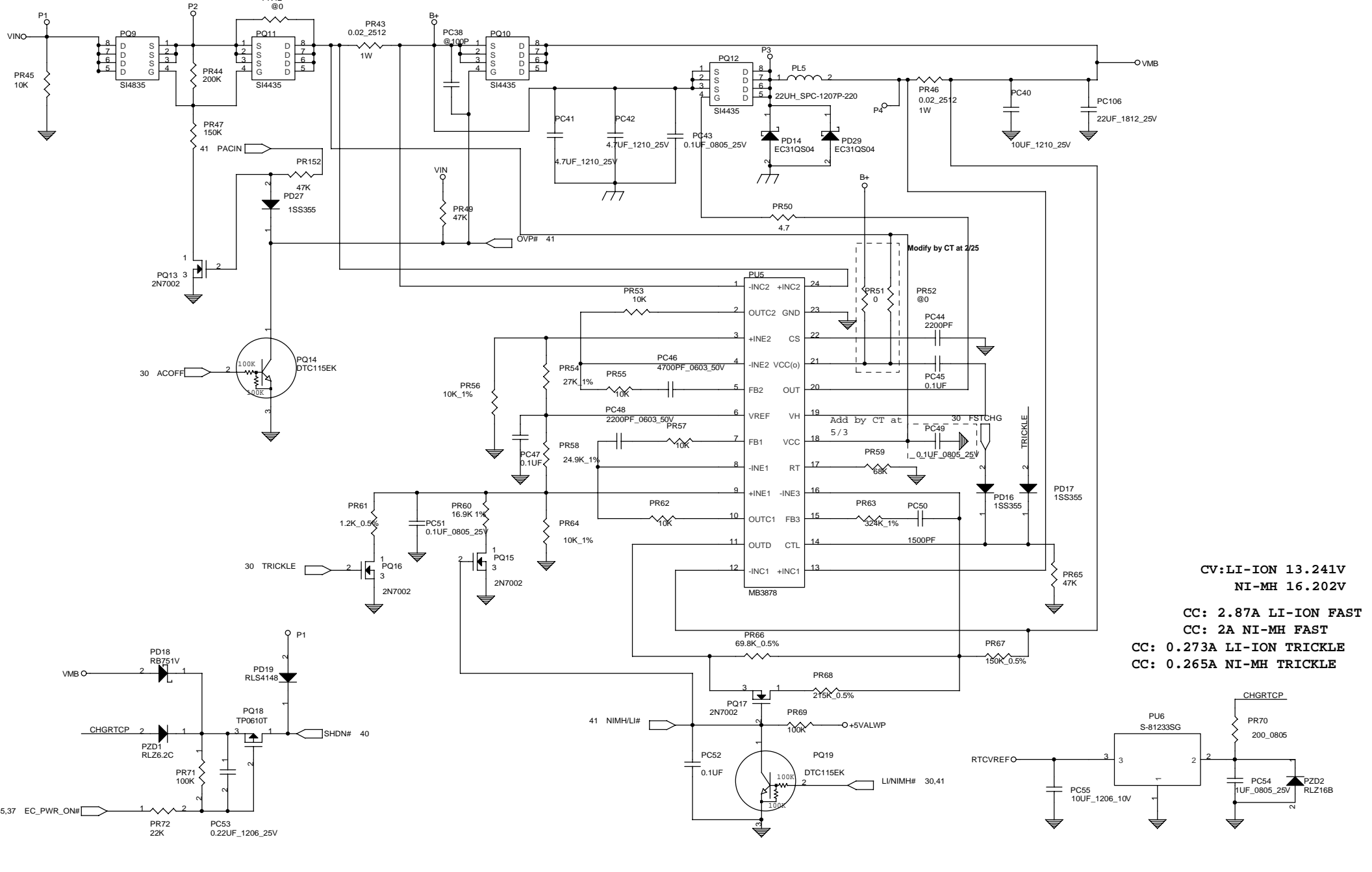
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ADAPTER CURRENT 2.9A



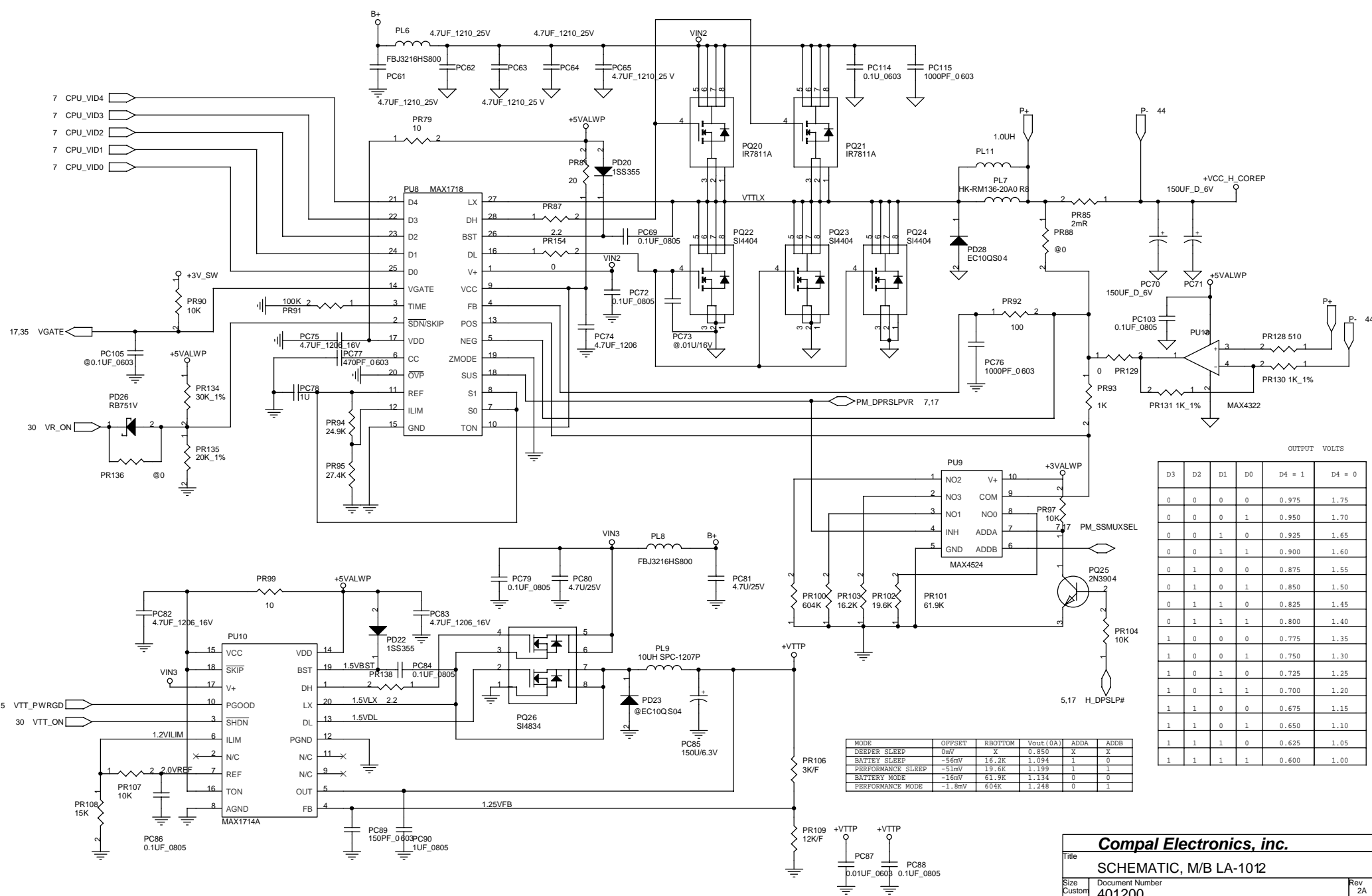
CV: LI-ION 13.241V
 NI-MH 16.202V
 CC: 2.87A LI-ION FAST
 CC: 2A NI-MH FAST
 CC: 0.273A LI-ION TRICKLE
 CC: 0.265A NI-MH TRICKLE

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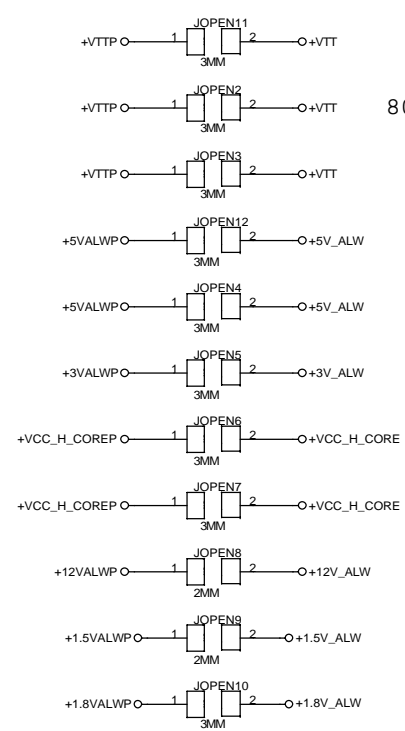
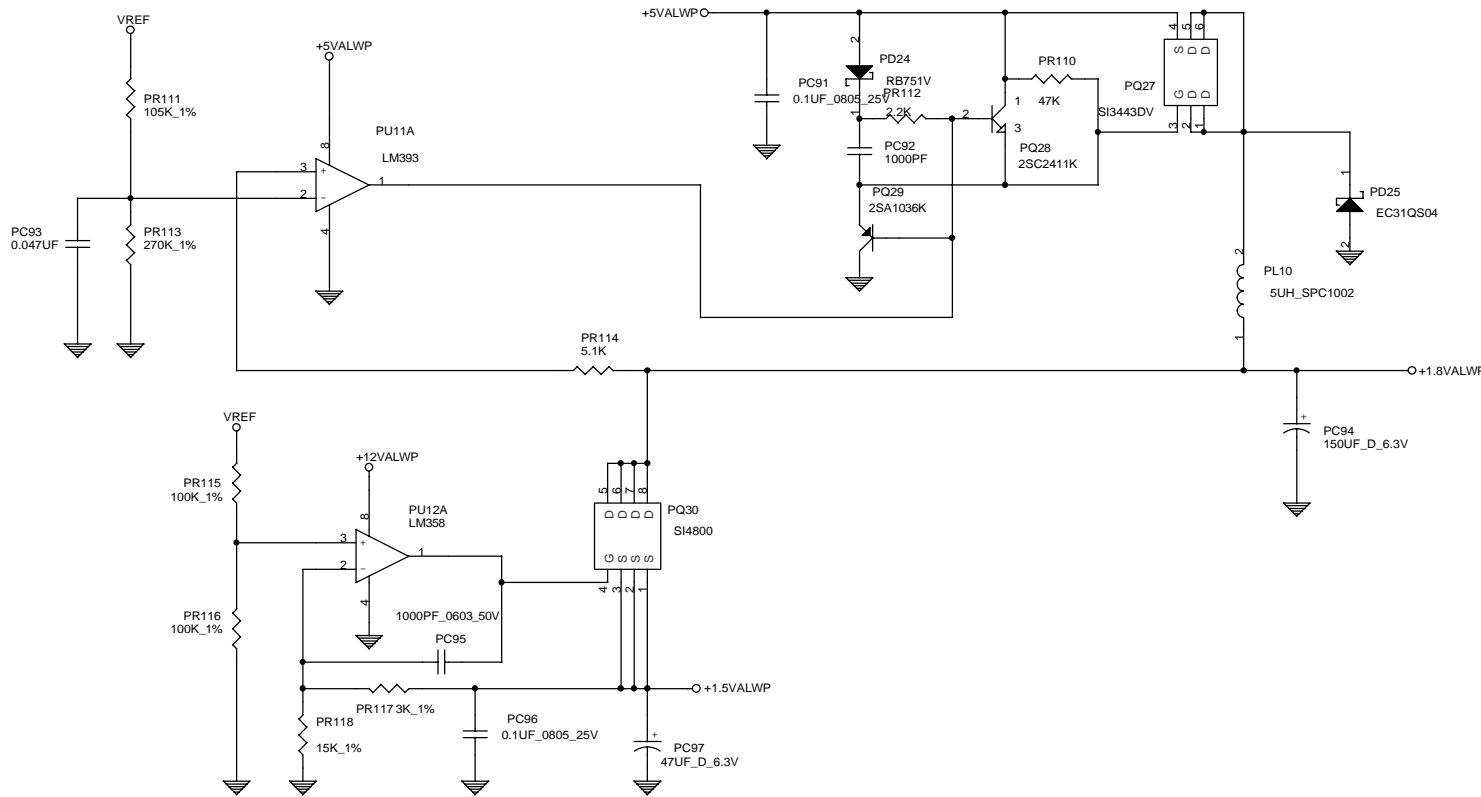
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OUTPUT VOLTS

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

MODE	OFFSET	RBOTTOM	Vout (0A)	ADDA	ADDB
DEEPER SLEEP	0mV	X	0.850	X	X
BATTERY SLEEP	-5mV	16.2K	1.094	1	0
PERFORMANCE SLEEP	-51mV	19.6K	1.139	1	1
BATTERY MODE	-16mV	61.9K	1.134	0	0
PERFORMANCE MODE	-1.8mV	604K	1.248	0	1



80mil

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Power PIR

Item	Fixed Issue	Reason for change	Page	Modify item	MB_Ver.	Phase
1		System shutdown	41	Add PR126,PC102,PZD4,PR127	0.2	EVT
2		Modify OTP function	41	Add PR132,PR133,PC104	0.2	EVT
3		Improve cpucore thermal and efficiency	43	Add PR128,PR129,PR130,PR131,PC103,PU13	0.2	EVT
4		Change VTTP OCP protect point	43	1.Change PR107 from 15K to 10K 2.Change PR108 from 10K to 15K	0.2	EVT
5		Eliminate +2.5VP	44	Delete PQ33,PQ34,PR122,PR121,PR123,PR124 PC99,PC98,PC100,PC101,PQ32	0.2	EVT
6		Change VTTP output voltage from 1.2V to 1.35V	43	Change PR106 from 2K to 3.57K	0.2	EVT
7		Change cpucore offset voltage	43	1.Change PR100 from 402K to 604K 2.Change PR101 from 64.5K to 61.9K 3.Change PR103 from 16.9K to 16.2K	0.2	EVT
8		Change cpucore deeper sleep mode output voltage	43	1.Connect S0 to REF 2.Connect S1 to REF	0.2	EVT
9		Avoid Vgate going low when cpu make speedstep transition	43	Add PR134,135,136 &PD26	0.2	EVT
10		EC can't detect the BATT. by PC87591	41	Change TS pin pull high voltage from +5VALWP to +3VALWP	0.3	DVT
11		Improved cpucore efficiency	43	1.Eliminate PR120 2.Change PR85 from 4m to 2m 3.connect Ton pin to VCC	0.3	DVT
12		Change VTTP OCP protection point	43	1.Change PR108 from 15K to 30K	0.3	DVT
13		To avoid mechanical interferenc	42	Add PC106		
14		Change geyserville function from MAX1718 to external	43	1.Delete PR73~76,PC56~60 2.Delete PR80,82,83,84.86 3.Connect PU8.19PIN to GND	0.3	DVT
15		To improve EMI issue	43	1.Add PR87 to PU8.28 PIN in series 2.Add PR138 to PU10.1 PIN in series	0.3	DVT
16		Delete redundant parts.	42 & 43	1. Delete PC39 on page 42. 2. Delete PD21 on page 43.	0.5	DVT

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N32N101 Rev1.0 HISTORY LIST (PIR)

For C-Test 09/03/2001 Rev:1.0

Date	Page	Description
07/09	P11	SWAP DVOA_I2CCLK & DVOA_I2CDATA R105 REPLACEMENT
		DVOC_FLD CHANGE TO U30.M25
	P15	BOM ADD C560 22PF,C578 12PF BOM DEL R534 75_1%
	P16	R4,R256,R250 150_1% --> 75_1% ADD R135,R142 33
	P21	R243 PULL HIGH TO +3V_SW
	P35	BOM DEL Q39 2N7002
	P27	BOM DEL R570 10K
07/16	P30	Remove CDLED#,HDDLED#
	P37	Add D12 DAN202U
	P26	Add R530,R531 10K
	P31	ADD RP22 8P4R_10K R548 10K
	P16/21	HDDLED# LEVEL SHIFT
07/19	P38	BOM del R478, add R477 0 CONNECT JP31 Pin111 TO Pin116
	P27	C507,C508 1UF_0603
	P28	BOM DEL U61,ADD U62 SI9183DT-33
	P30	BOM DEL R458 10K
	P19	ADD R549 0,U63 7SH08
	P31	U51.2 EC_GRST#
07/23	P16	ADD D47 RB491 ADD Q61,Q61 2N7002
	P31	ADD R532 10K
07/25	P5	R37,R273 10K -> 100K
	P8	R365,R231,R229 10K -> 100K
	P11	R363,R369 4.7K -> 100K RP36 8P4R_4.7K -> 8P4R_100K
	P14	R194 10K -> 100K
	P15	RP15 8P4R_4.7K -> 8P4R_100K R337 10K -> 100K
	P17	RP18 8P4R_10K -> 8P4R_100K
	P18	RP19 8P4R_10K -> 8P4R_100K
	P19	R461,R466,R550 10K -> 100K R558,R559 4.7K -> 100K
	P21	R242 10K -> 100K
	P22	R130,R116,R136,R197,R198 4.7K -> 100K
	P24	R561,R562 10K -> 100K
	P25	R347 10K -> 100K
	P26	R462,R463,R480,R530,R531 10K -> 100K
		RP29 8P4R_10K -> 8P4R_100K RP27 10P8R_10K -> 10P8R_100K
	P27	R115 10K -> 100K
	P28	U35 74LVCI25 -> 74AHCTG125GW R439 4.7K -> 100K
		R440 20K -> 100K Add U66 NC7ST32
	P30	R467,R541 10K -> 100K R449,R506,R505 1K -> 10K
	P31	RP22,RP34 8P4R_10K -> 8P4R_100K R548,R532 10K -> 100K
	P32	RP24 8P4R_10K -> 8P4R_100K R469,R479 10K -> 100K
	P35	R111 10K -> 100K
	P36	R276,R510 10K -> 100K
	P37	Add PAD4,5,6,7
	P39	R402,R398 10K -> 100K
07/27	P27/30	Add MIC_GAINLOW# IN U15.49 & U46.119
07/31	P27	R139,R143 33K->6.8K R129,R141 20K->6.8K
	P26	ADD R575,R576 10K C771,C772 10UF
08/01	P26	ADD C773, C774 1uF/25V

Date	Page	Description
08/03	P28	Remove U66, connect "EC_MUTE" to R439.1
	P37	Add D48, connect D48.3 to JP9.31, D48.1 to "LID_SW#", D48.2 to "INTMICOFF#"
08/16	P28	Add C775 parallel with pin R208.1 and GND, add a 2.2K ohm bias resistor R590 by +3V_MIC on pin JP26.3 and change R217 value from 2.2K ohm to 1K ohm.
09/03	P27	Change SI9181(U12 & U59) from fixed to adjustable version. Add 30Kohm resistor R592(R594) and 10Kohm resistor R593(R595) to make output voltage at 4.8V.
	P28	Add a 39Kohm serial resistor R596, change R94 value from 100Kohm to 470Kohm and add a 10uF/16V parallel with Q40.2 and GND to solve pop sound when Int-MIC mute.
	P34	Change D48 from one DAN202U to two RB751Vs.
	P7	Change R68 from 1Kohm_1% to 499ohm_1% and R65 from 2Kohm_1% to 1Kohm_1% by Intel recommended.
09/05	P27	Change C167, C299 value from .01uF to .1uF.
		LA-1012 Rev 2.0
12/06	P16	Extract JP2.14 (DAC_V) & JP2.13 (DAC_H) to JP27.68 & JP27.70
	P18	Add R601 100K to solve for AC LED flash abnormal
	P27	Change SI9181 (U12 & U59) to LP3964-ADJ or LP2975-ADJ(reserved)
	P28	Add Q62 & Q63 (2N7002) to solve for pop sound from headphone when system off
	P37	Remove L54 and connect DAC_V to JP27.68 Remove L55 and connect DAC_H to JP27.70

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SCHEMATIC, M/B LA-1012		
Size	Document Number	Rev
	401200	2A
Date:	星期四, 一月 10, 2002	Sheet 89 of 89