

# HBL30 (Sakhir 20C)

## LA-2891 Schematics Document

Intel Dothan / AlvisoGM / DDR-II / ICH6-M / Fixed Bay

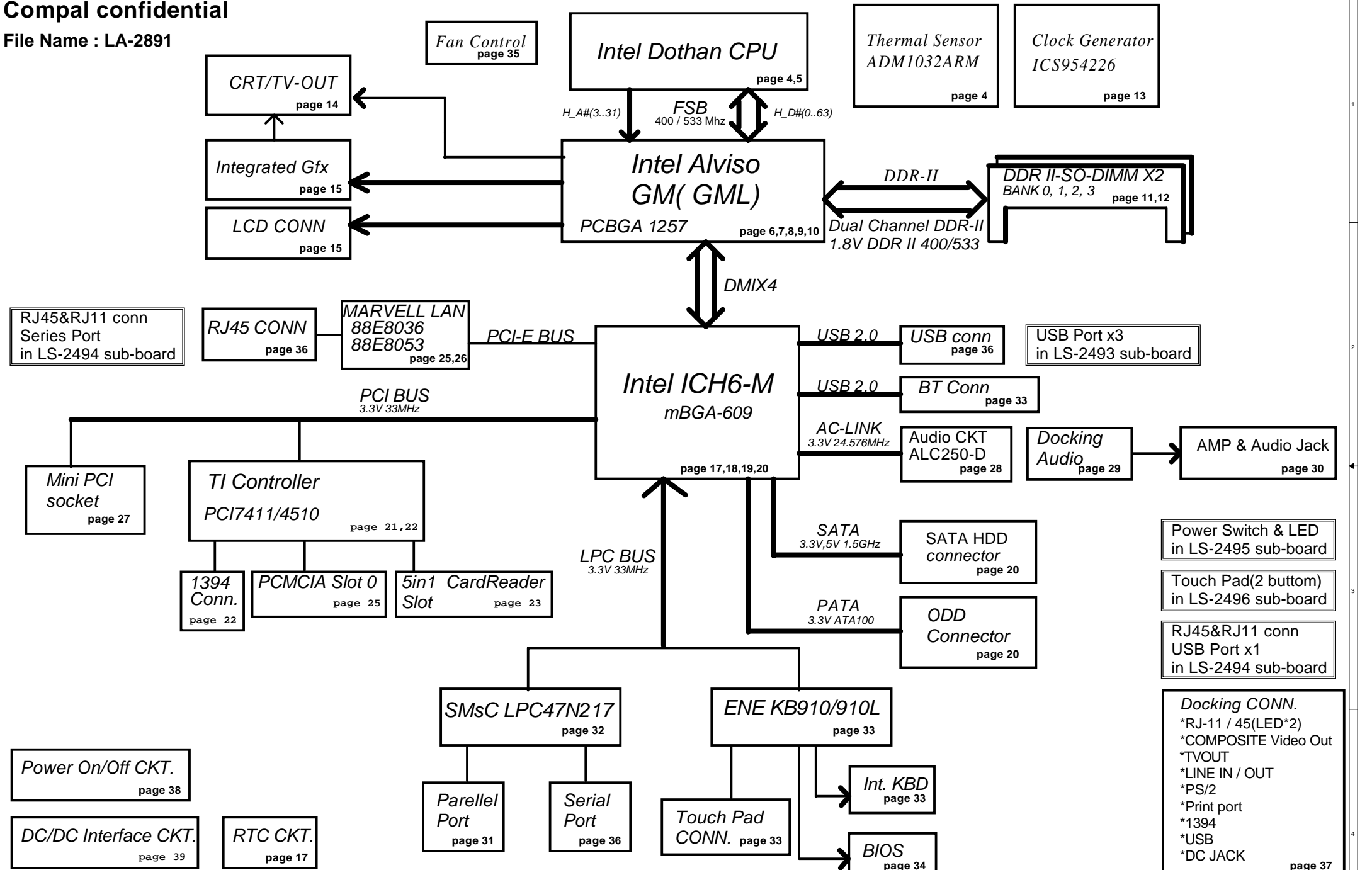
2005 / 05 / 03

Rev:0.1

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DC/DC Interface CKT. page 39

Power Circuit DC/DC page 41~47

RTC CKT. page 17

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Parellel Port page 31

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Touch Pad CONN. page 33

Int. KBD page 33

BIOS page 34

**Docking CONN.**  
 \*RJ-11 / 45(LED\*2)  
 \*COMPOSITE Video Out  
 \*TVOUT  
 \*LINE IN / OUT  
 \*PS/2  
 \*Print port  
 \*1394  
 \*USB  
 \*DC JACK  
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## Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (15V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+1.05VS	1.05V switched power rail	ON	OFF	OFF
+DDRVTT	0.9V switched power rail for DDR II terminator	ON	OFF	OFF
+1.5VALW	1.5V always on power rail	ON	ON	ON*
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.8VS (No Use)	1.8V switched power rail	ON	OFF	OFF
+DDRVCC	1.8V power rail for DDR II	ON	ON	OFF
+2.5VS	2.5V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V	3.3V power rail	ON	ON	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5VS	5V switched power rail	ON	OFF	OFF
+5VCD	5V switched power rail for Direct CD	ON	OFF	OFF
+5VMOD	5V switched power rail for Module Bay	ON	OFF	OFF
+12VALW	12V always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON

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

## External PCI Devices

Device	IDSEL#	REQ#/GNT#	Interrupts
CardBus	AD20	2	PIRQA/PIRQB
1394	AD20	2	PIRQA/PIRQB
SD	AD20	2	PIRQA/PIRQB
Mini-PCI	AD18	1	PIRQG/PIRQH

## EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b	ADM1032	1001 110X b
EEPROM(24C16/02)	1010 000X b	Codec	1001 011X b
(24C04)	1011 000Xb	Docking	1010 000X b

## EC SM Bus2 address

## ICH6M SM Bus address

Device	Address
Clock Generator ( ICS 954226)	1101 001Xb
DDR DIMM0	1001 000Xb
DDR DIMM2	1001 010Xb

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

## Board ID / SKU ID Table for AD channel

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

## BOARD ID Table

Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	1.0
4	1.A
5	
6	
7	

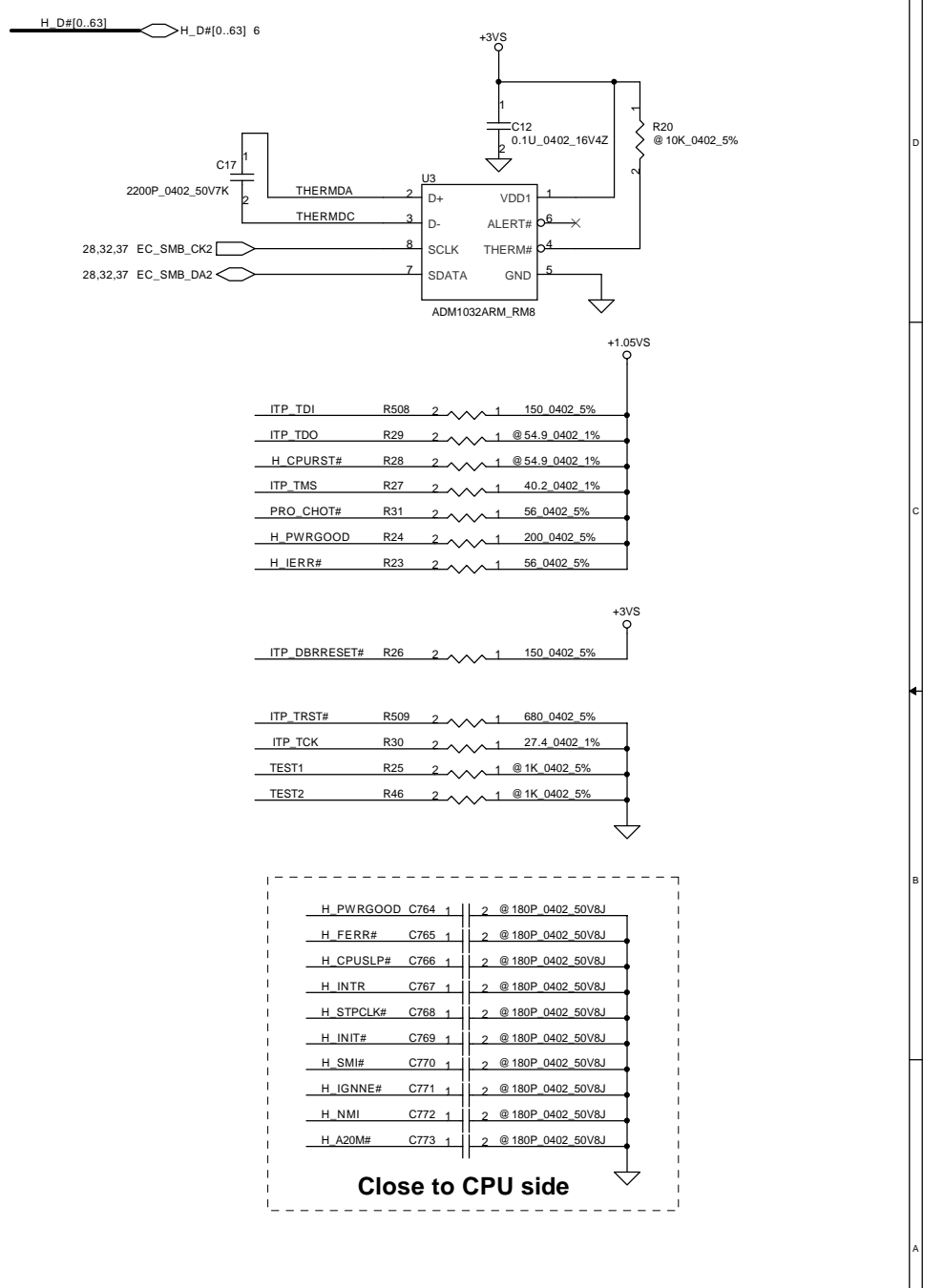
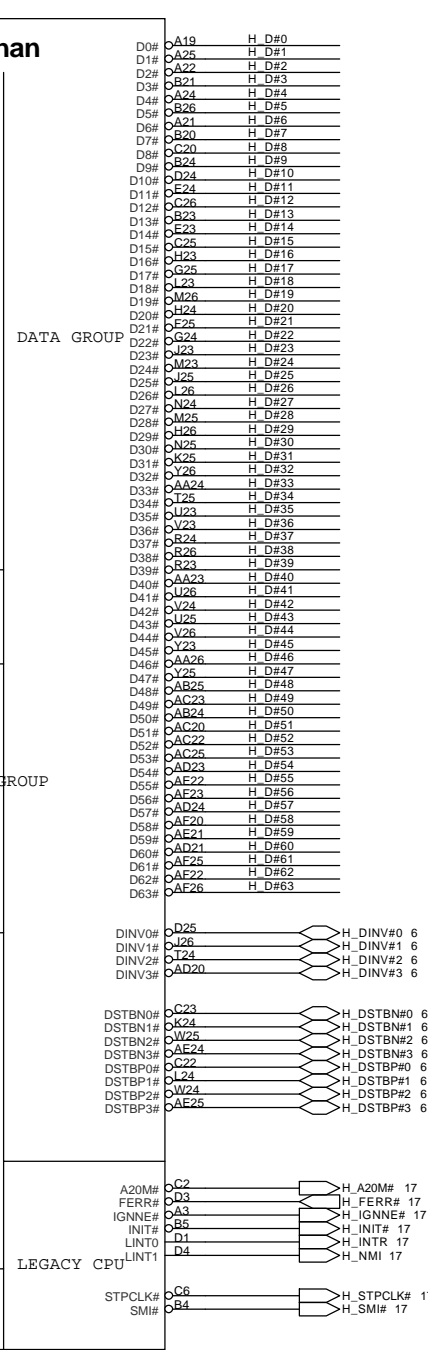
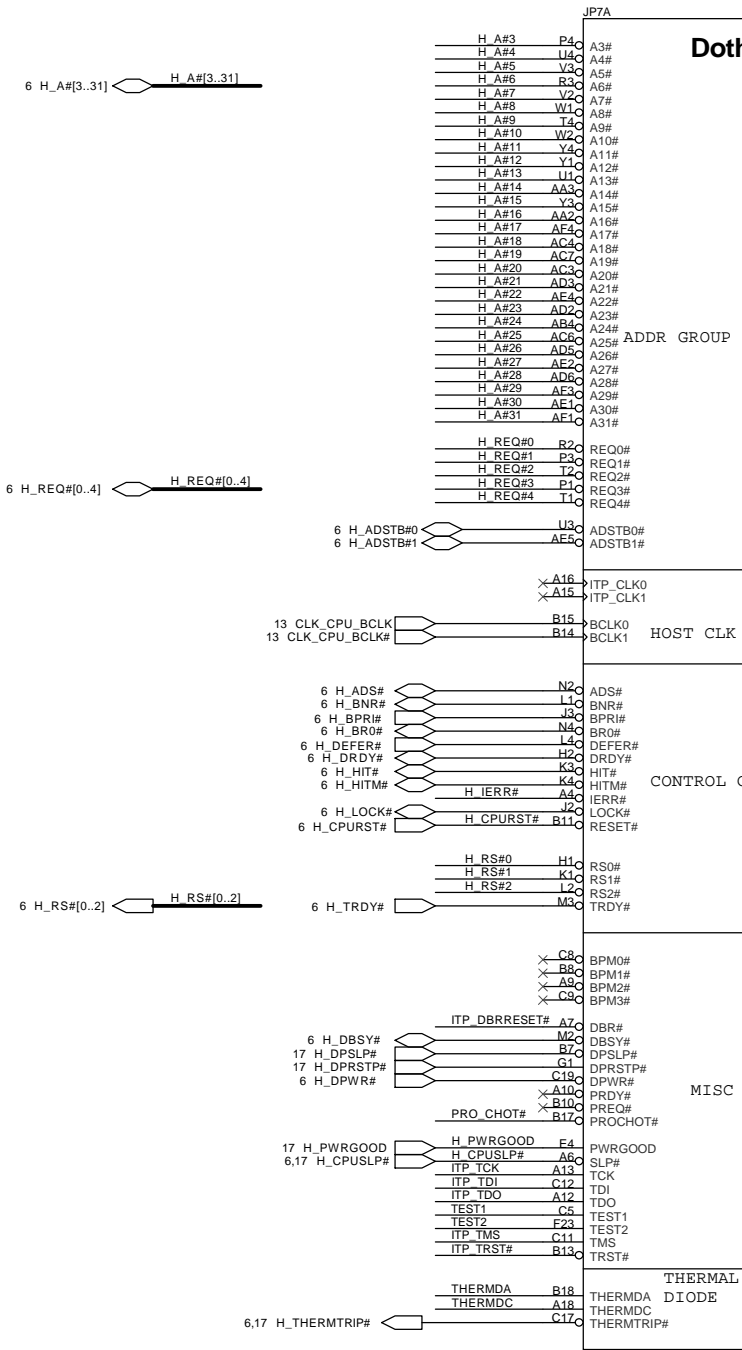
## BOM Structure Table

BOM Structure	Function
PM@	915PM(NO USE)
GM@/GML@	915GM / 910GML
WD@ & WOD@	W or WO Docking
SWDJ@	SWDJ(NO USE)
4510@	Cardbus Only
5IN1@	5 in 1 & Cardbus
1000@ & 10@	Giga or 10/100 LAN
WLAN@	Wireless LAN
IMIC@	Internal Microphone
LPT@ & LPT1@	Parallel Port on docking or on MB
PS@ & WOPS@	W or WO Power Sticker
BT@	Bluetooth
FIR@	FIR
45@	45 Level

## SKU ID Table

SKU_ID_CHECK_0	SKU_ID_CHECK_1	7	6	5
		1-Button	3-Buttons	7-Buttons
0				
1	20C	3	12	2(No USE)
2				
3				
4				
5				
6				

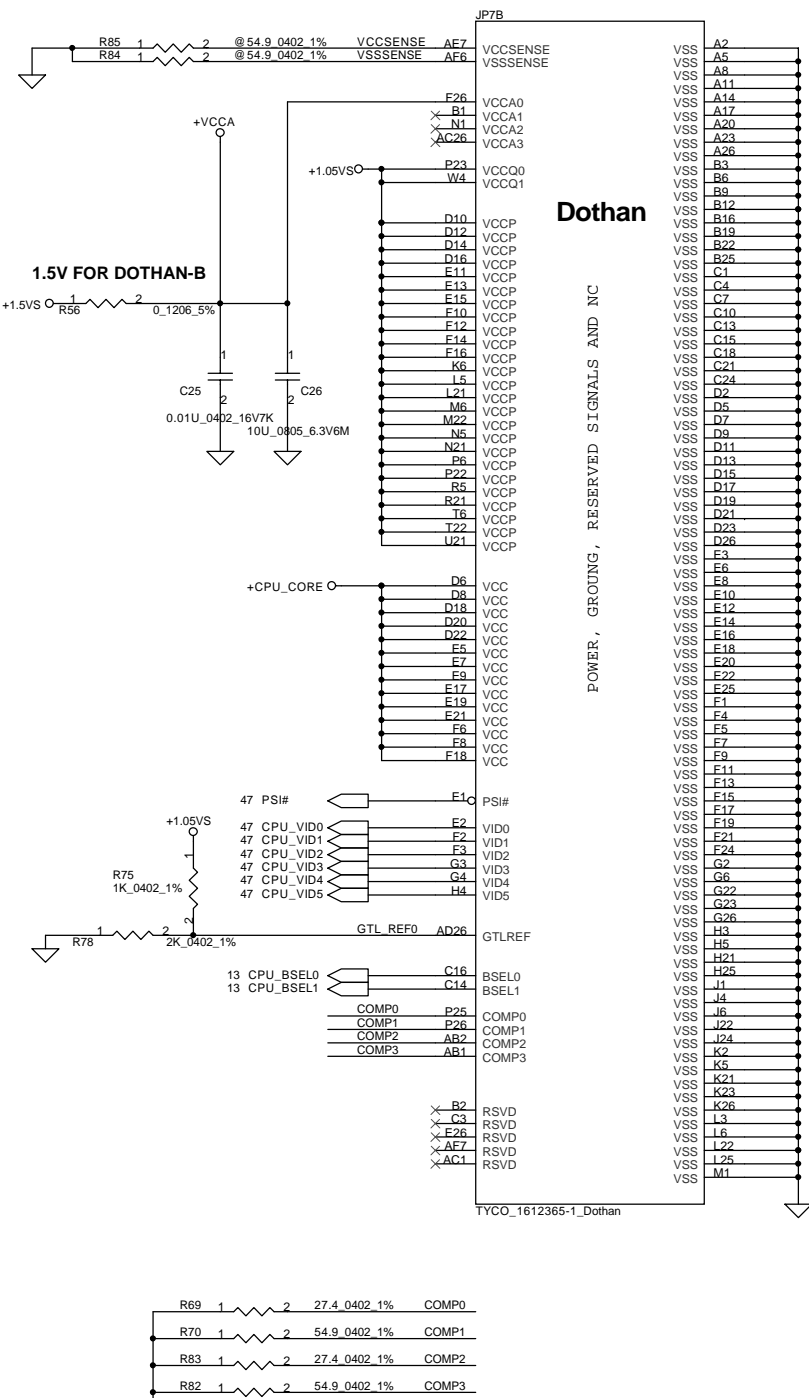
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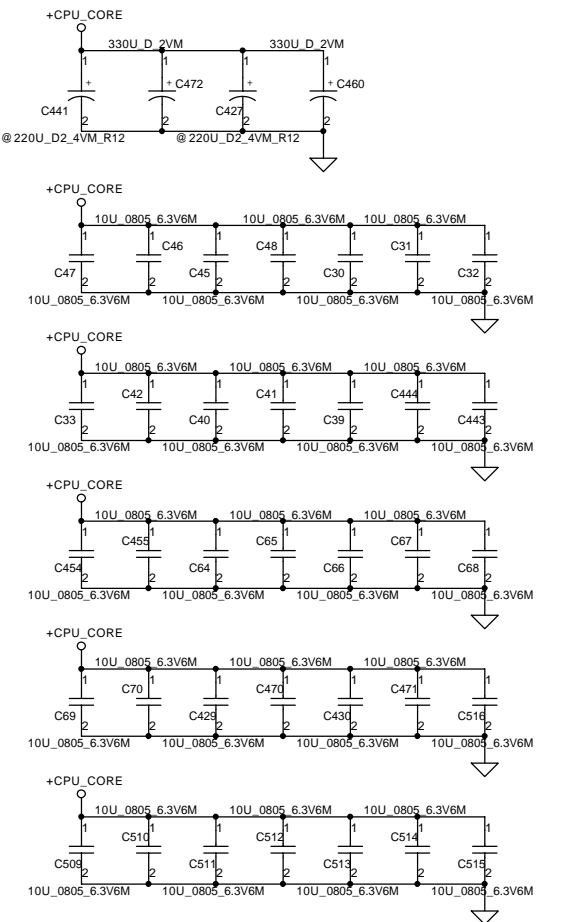
Thermal & Space = 10 / 10 mil

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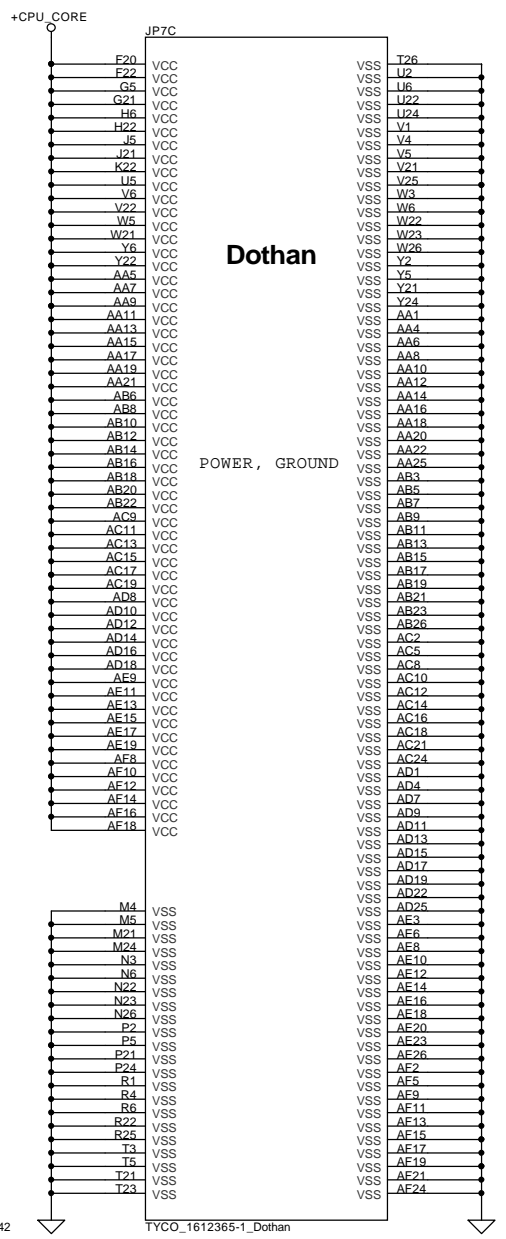
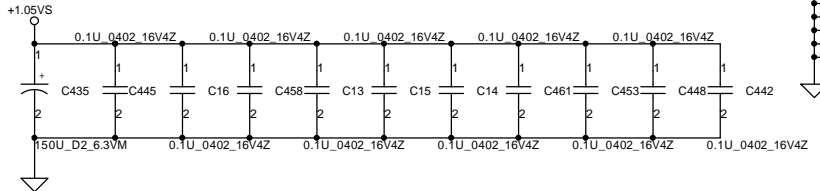


**Dothan**

POWER, GROUND, RESERVED SIGNALS AND NC



Vcc-core Decoupling	C, uF	ESR, mohm	ESL, nH
SPCAP, Polymer	2X3330uF	7m ohm/2	3.5nH/2
MLCC 0805 X5R	35X10uF	5m ohm/35	0.6nH/35



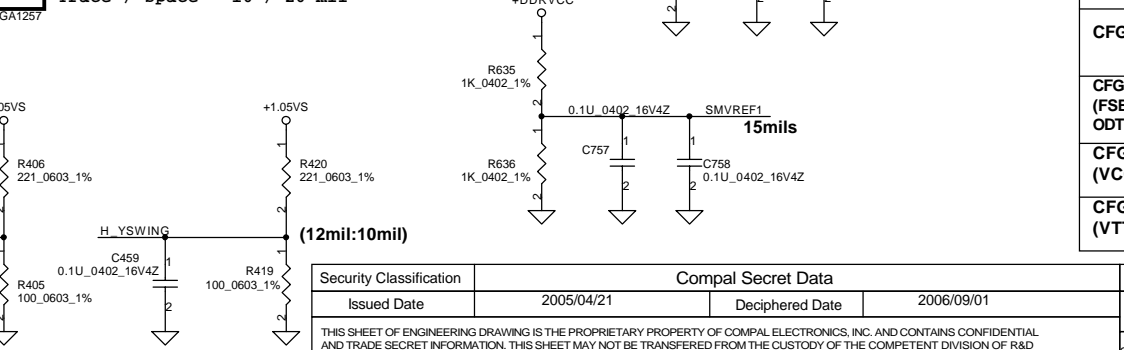
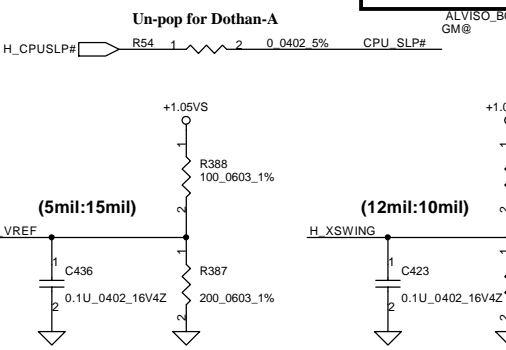
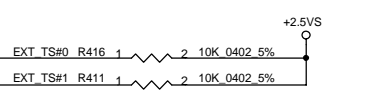
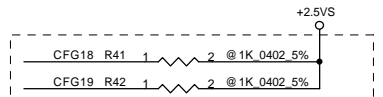
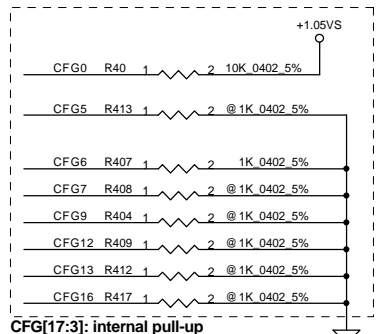
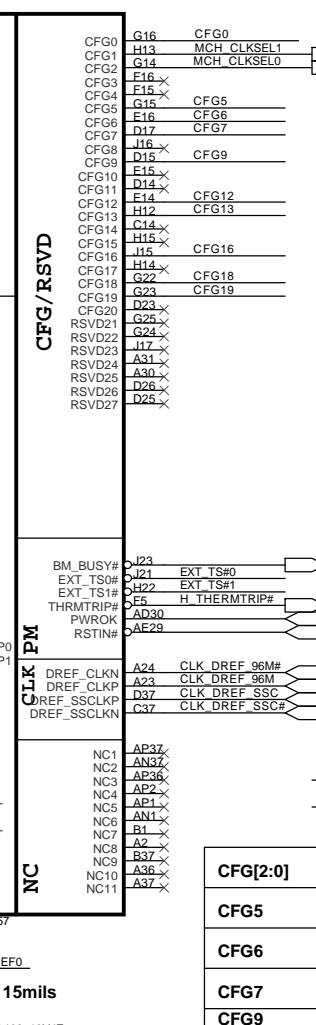
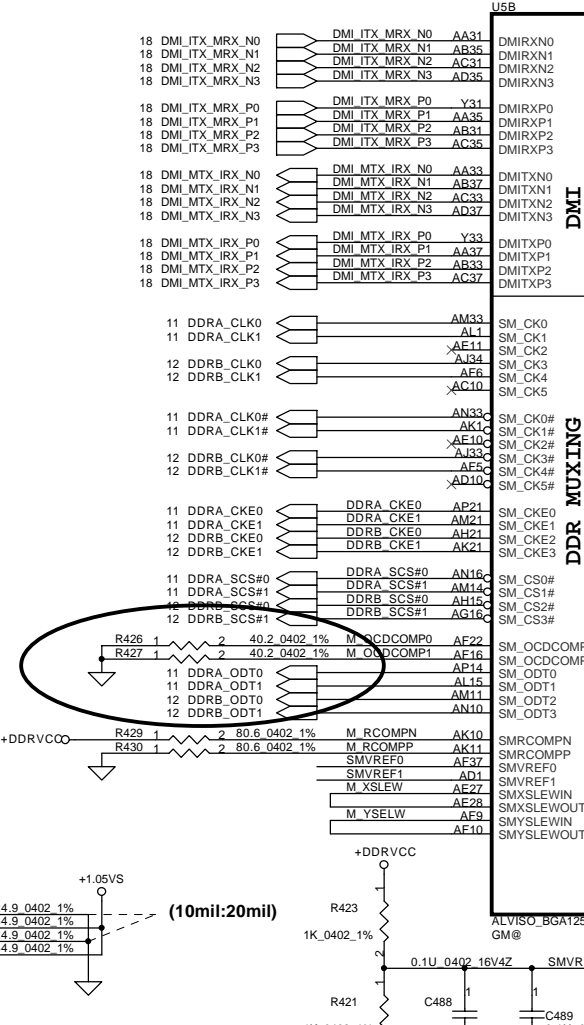
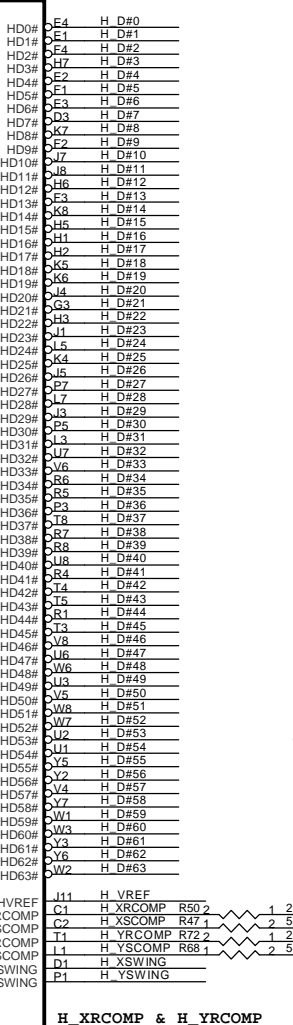
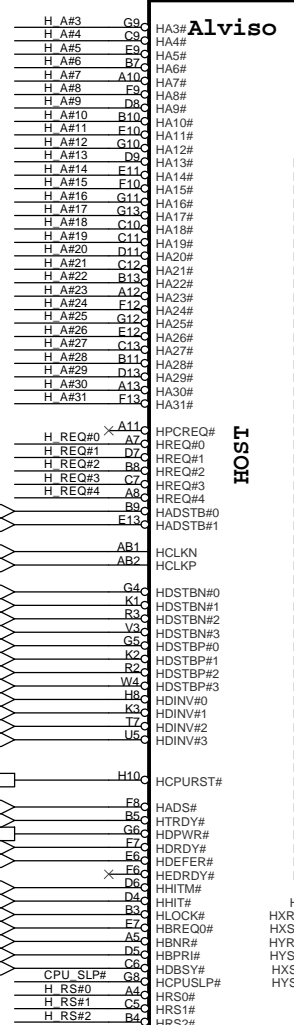
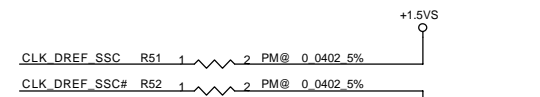
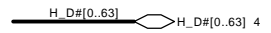
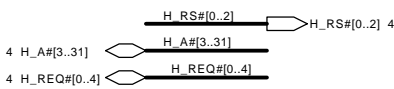
**Dothan**

POWER, GROUND

**TRACE CLOSELY CPU < 0.5'**

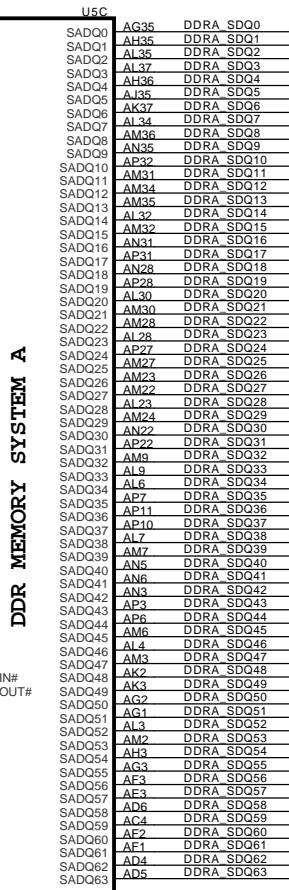
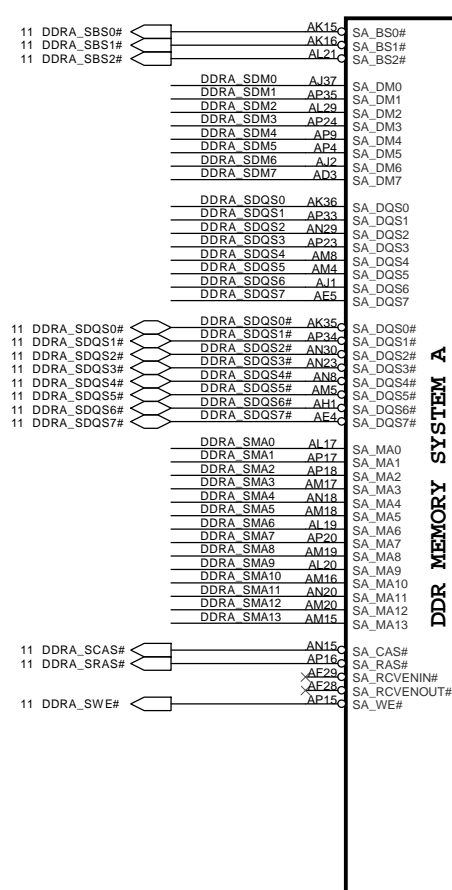
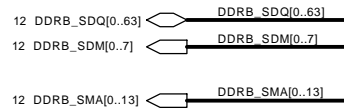
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 COMP1, COMP3 layout : Space 25mils

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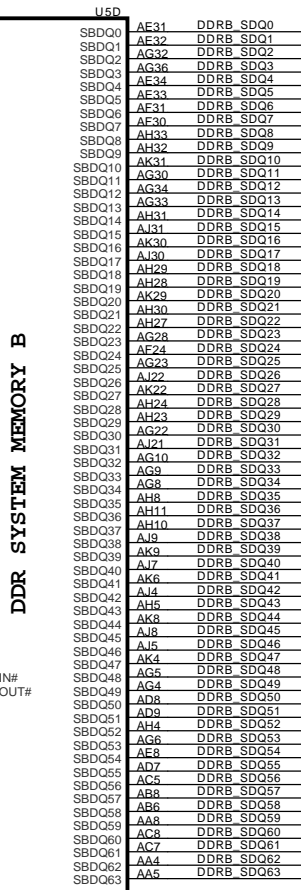
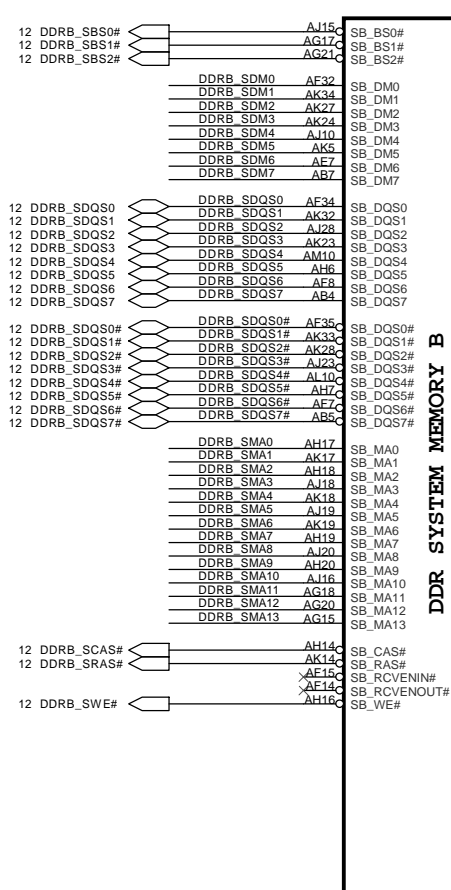


CFG	Refer to sheet 6 for FSF frequency select
CFG[2:0]	Low = DMI x 2 High = DMI x 4 *
CFG5	Low = DDR-II High = DDR-I *
CFG6	Low = Reverse Lane High = Normal Operation *
CFG7	Low = DT/Transportable CPU High = Mobile CPU *
CFG9	Low = Normal Operation High = Normal Operation *
CFG[13:12]	00 = Reserved 01 = XOR Mode Enabled 10 = All Z Mode Enabled 11 = Normal Operation (Default) *
CFG16 (FSB Dynamic ODT)	Low = Disabled High = Enabled *
CFG18 (VCC Select)	Low = 1.05V (Default) * High = 1.5V
CFG19 (VTT Select)	Low = 1.05V (Default) * High = 1.2V

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GM@

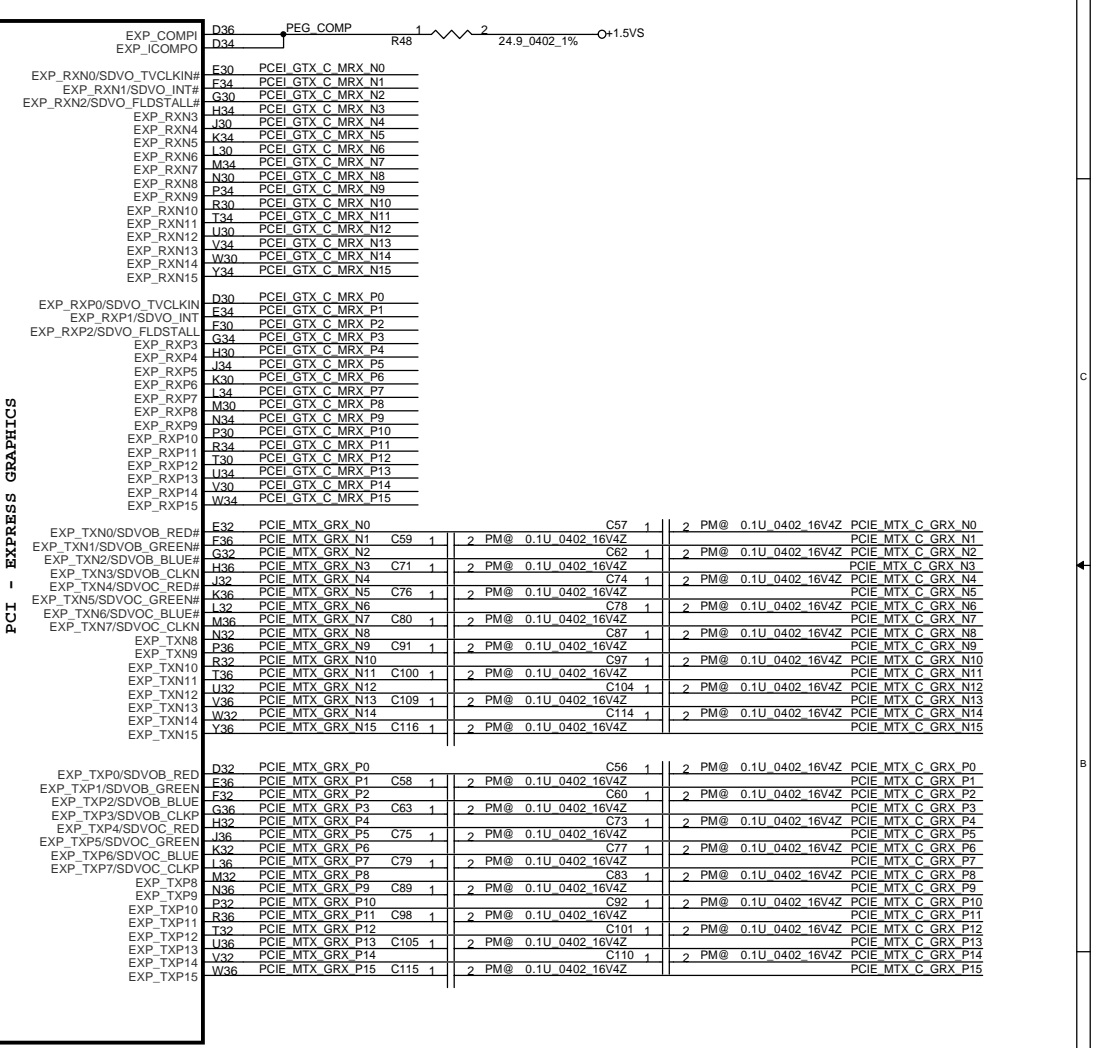
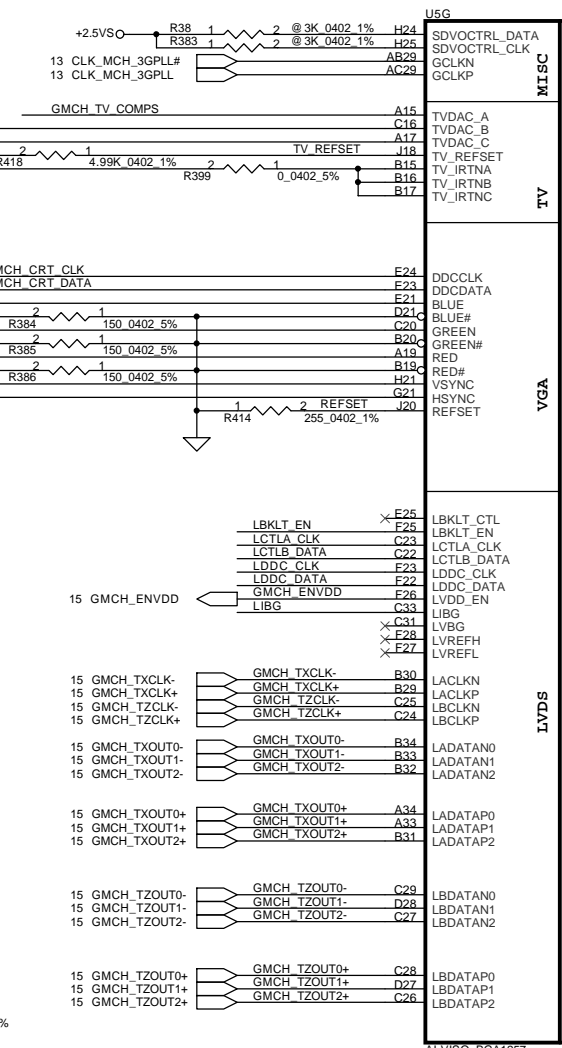
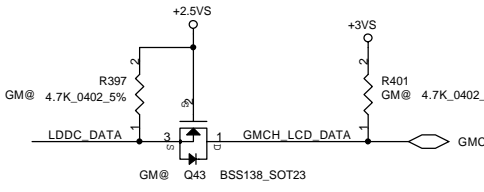
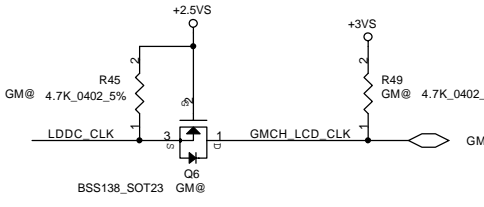
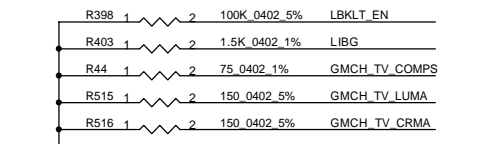
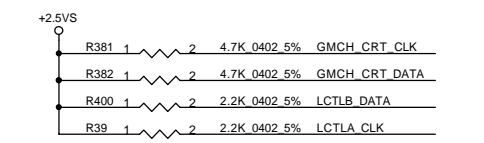
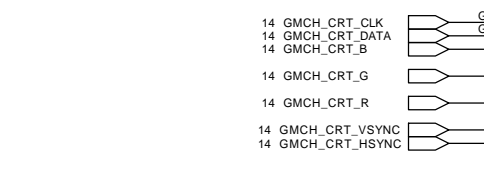
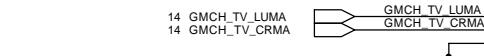
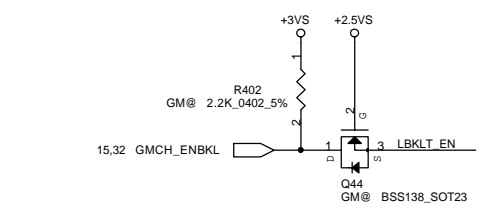


ALVISO\_BGA1257  
GM@

DDR MEMORY SYSTEM A

DDR SYSTEM MEMORY B

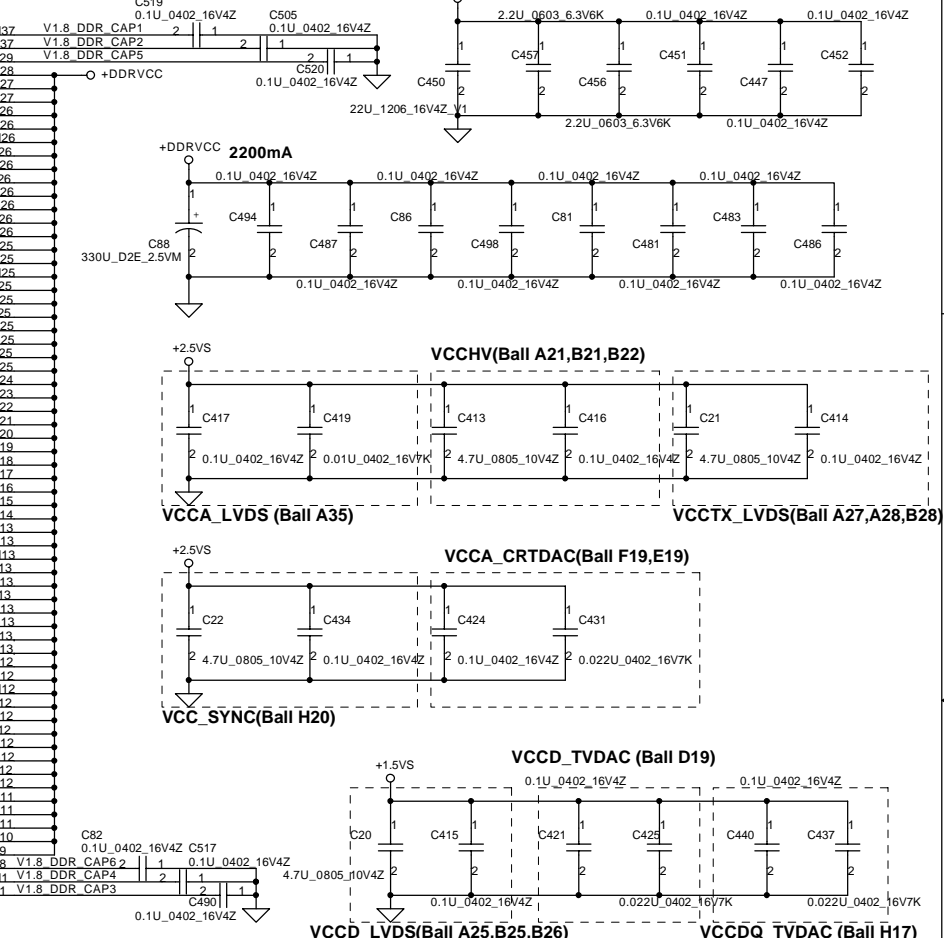
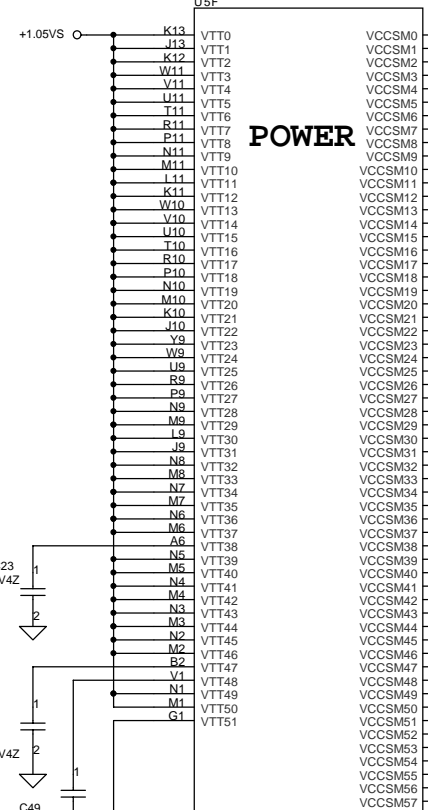
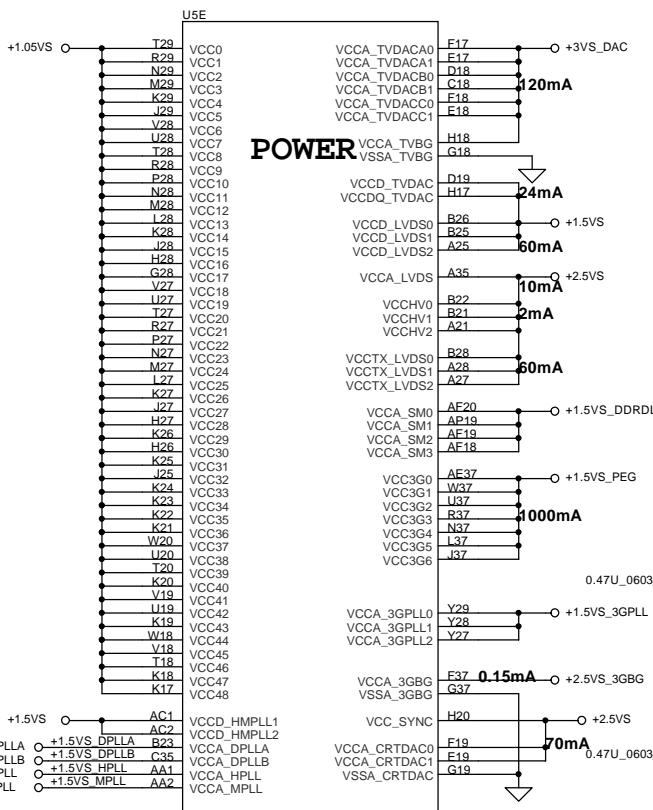
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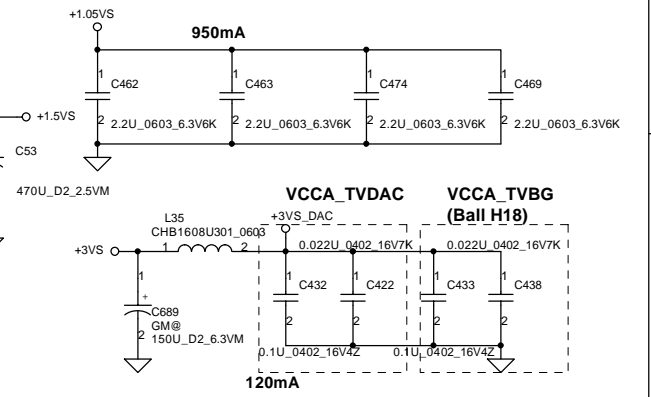
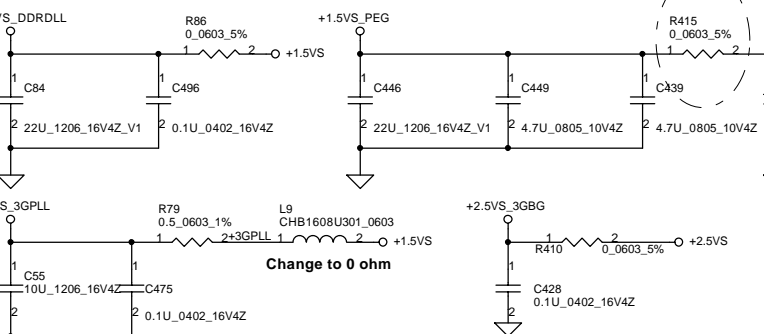
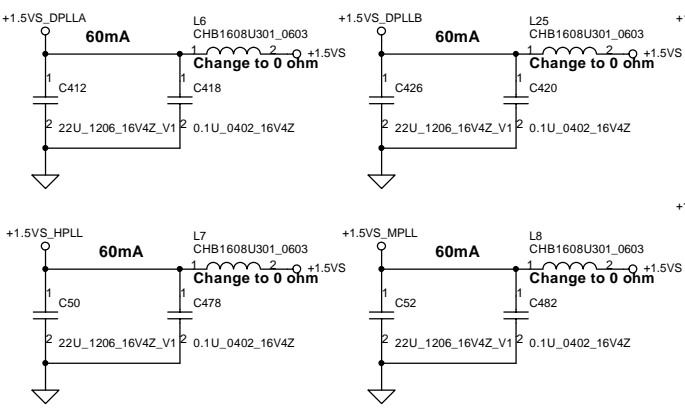
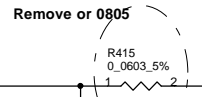
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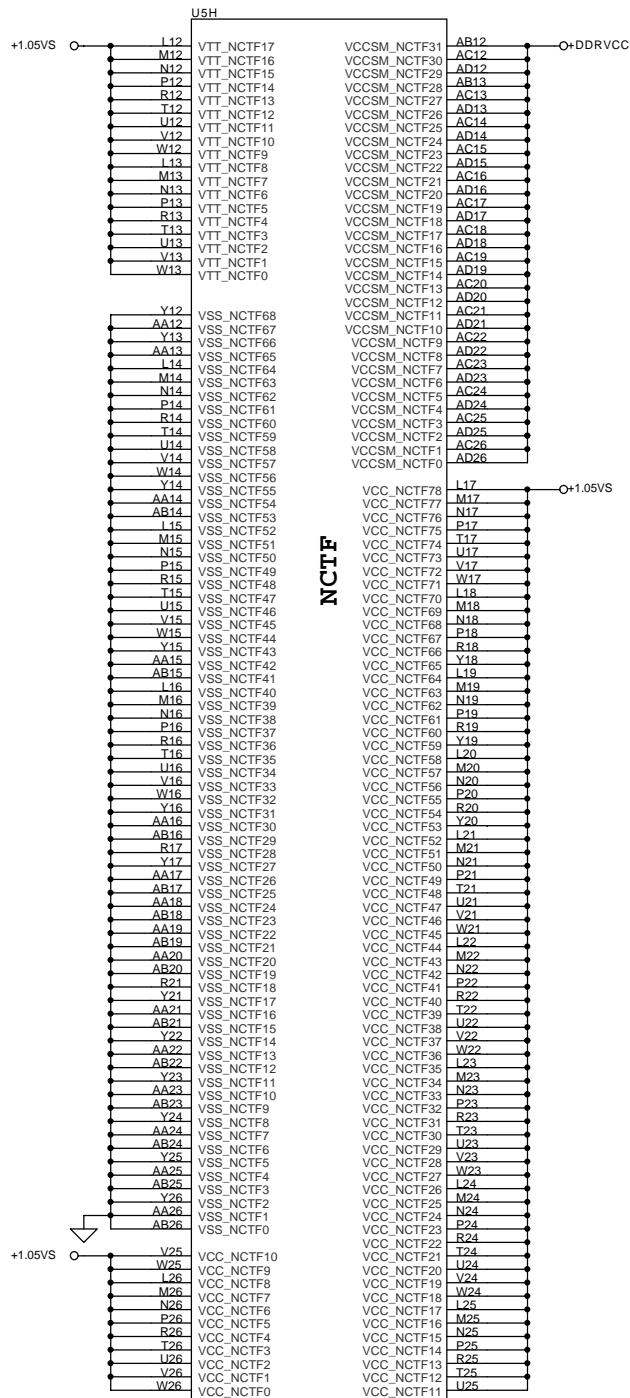




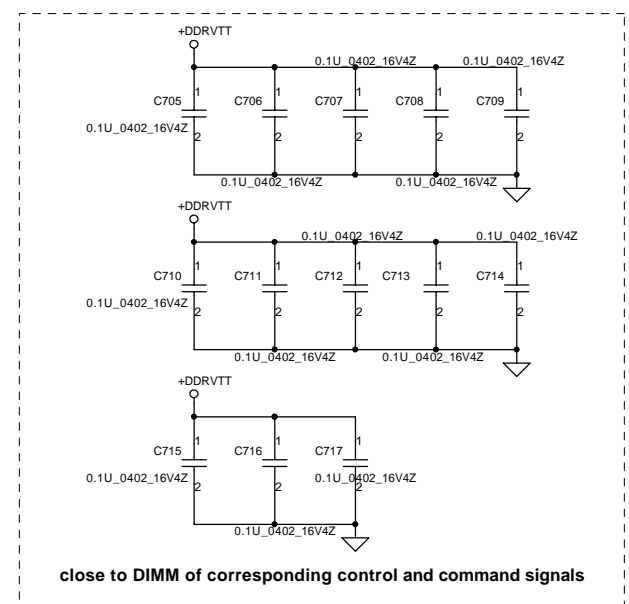
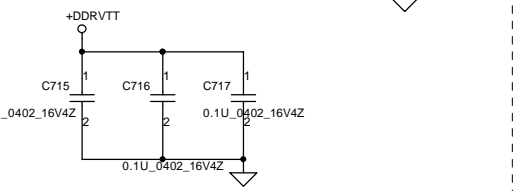
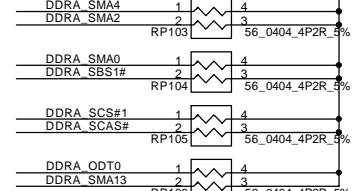
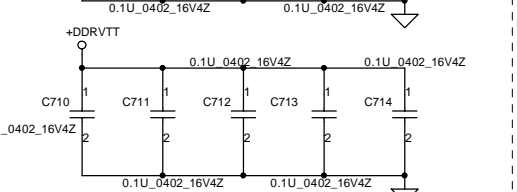
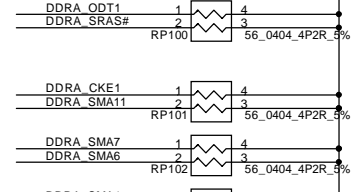
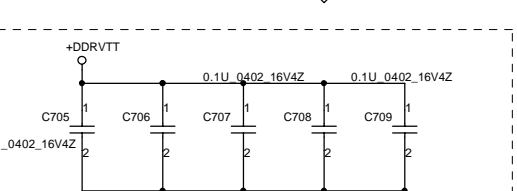
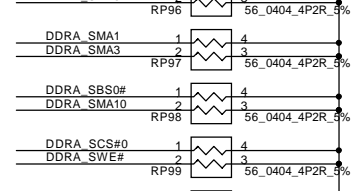
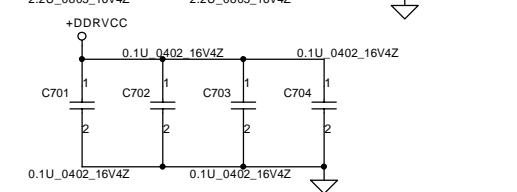
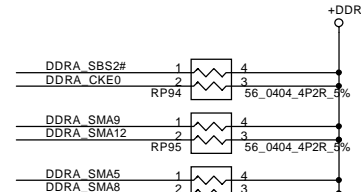
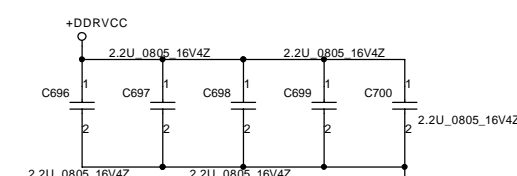
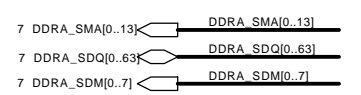
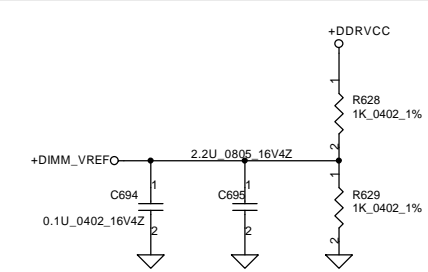
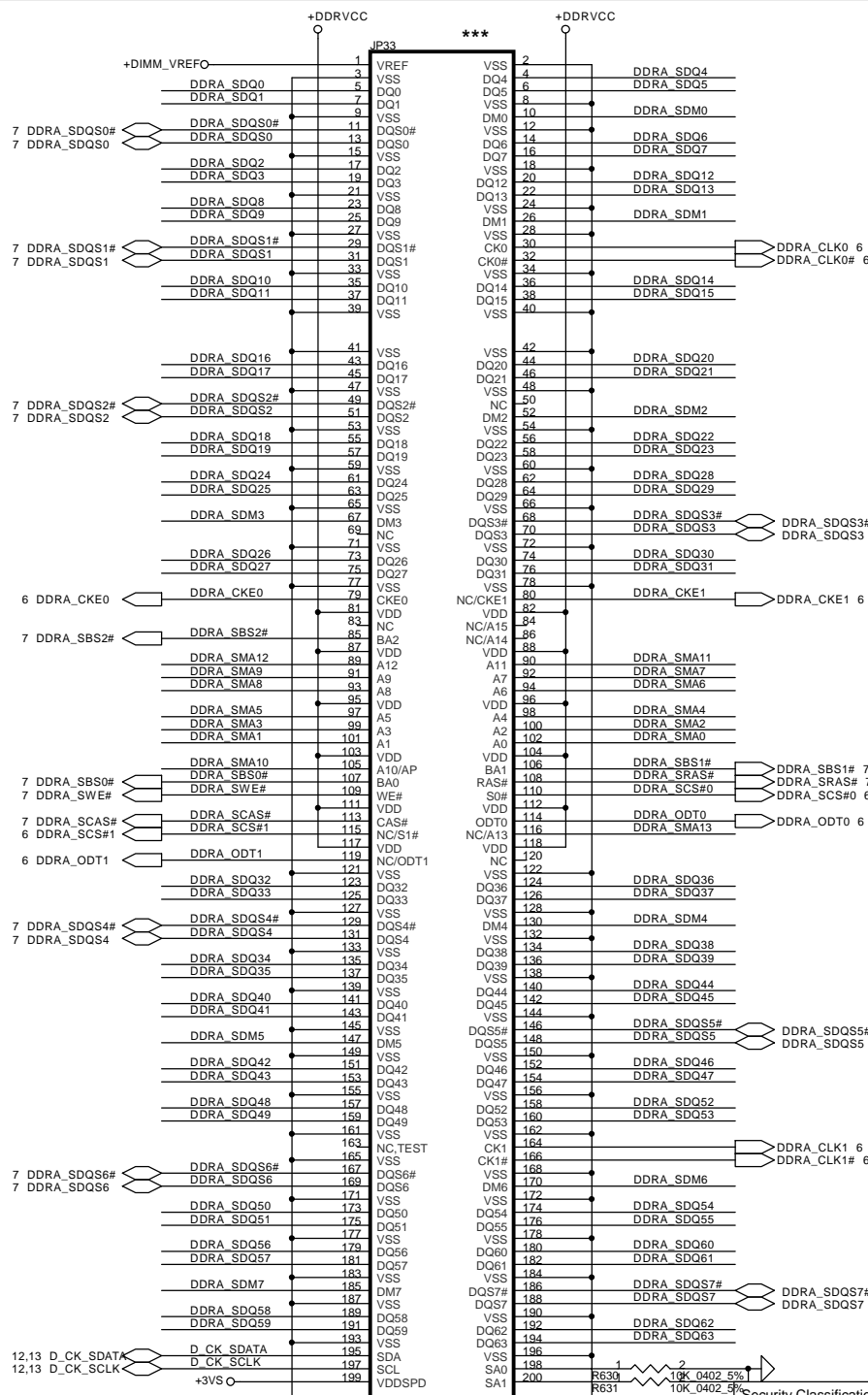
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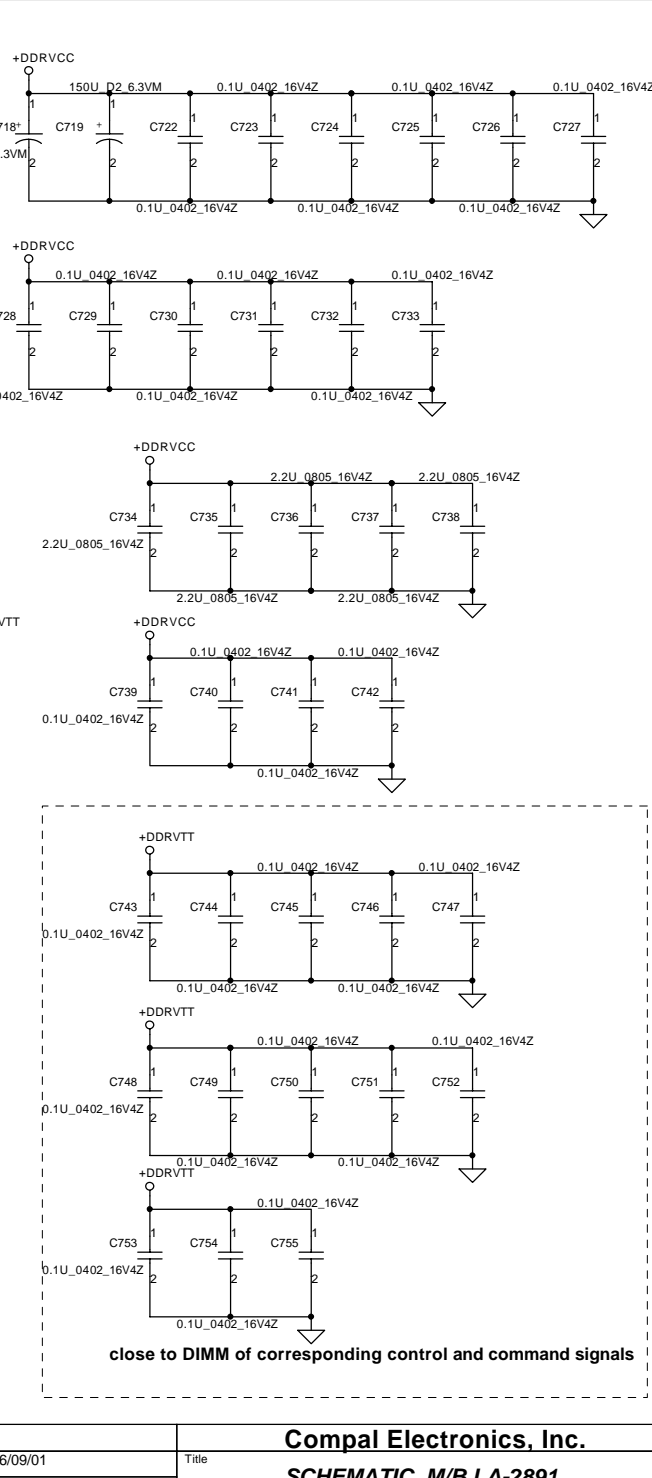
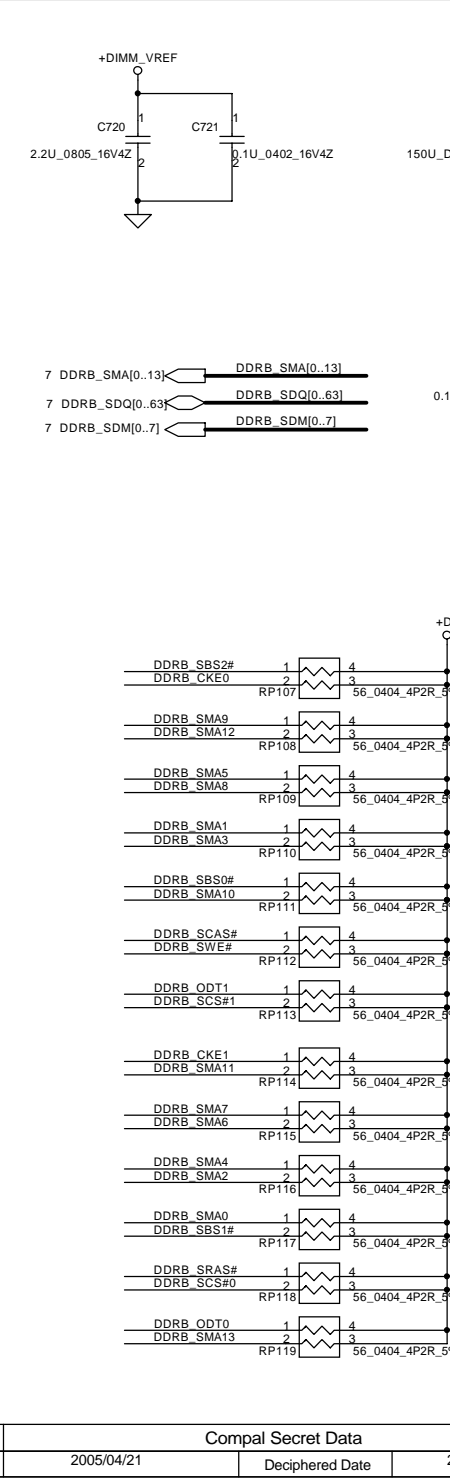
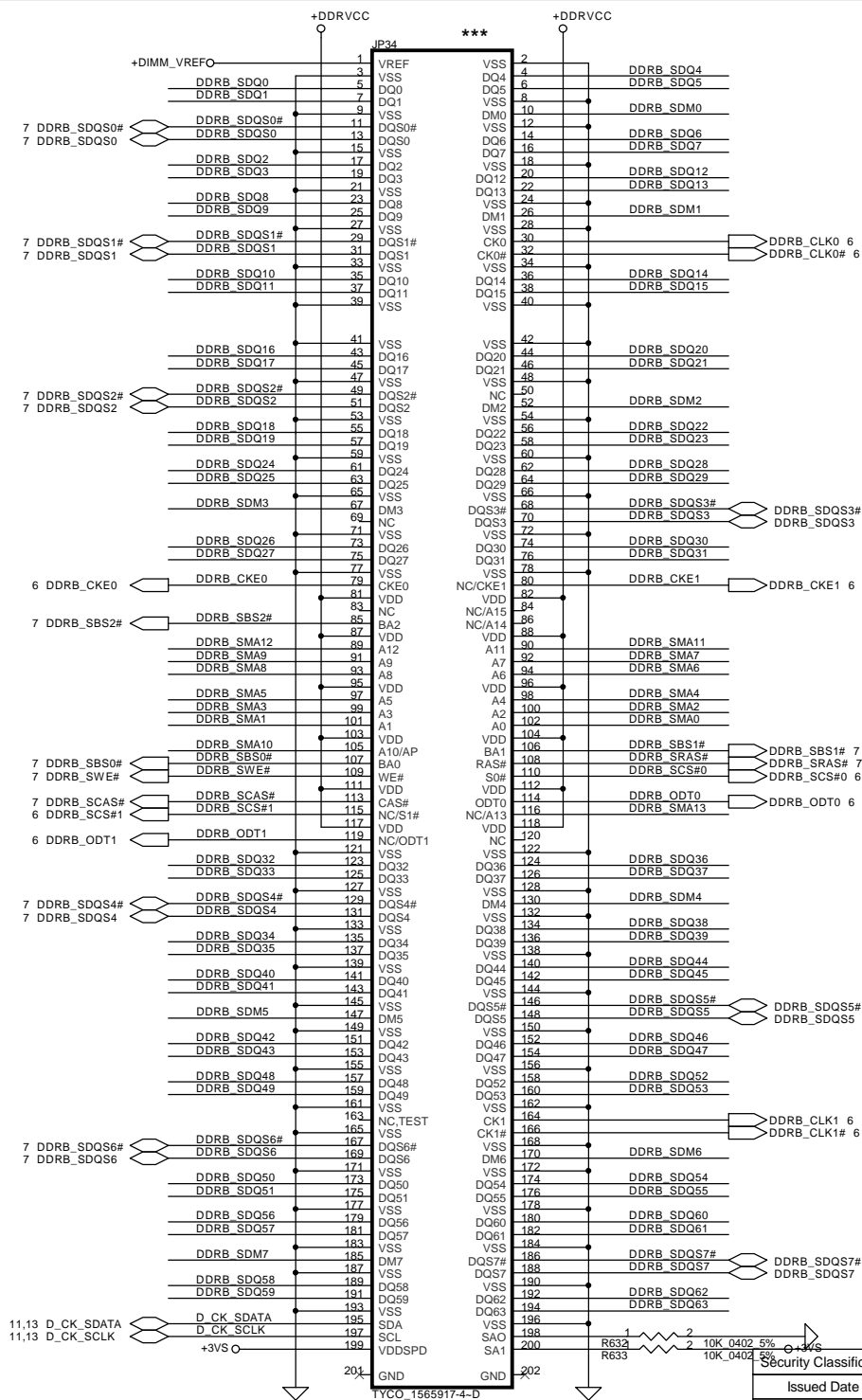


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DIMM0 STD H:52mm (BOT)

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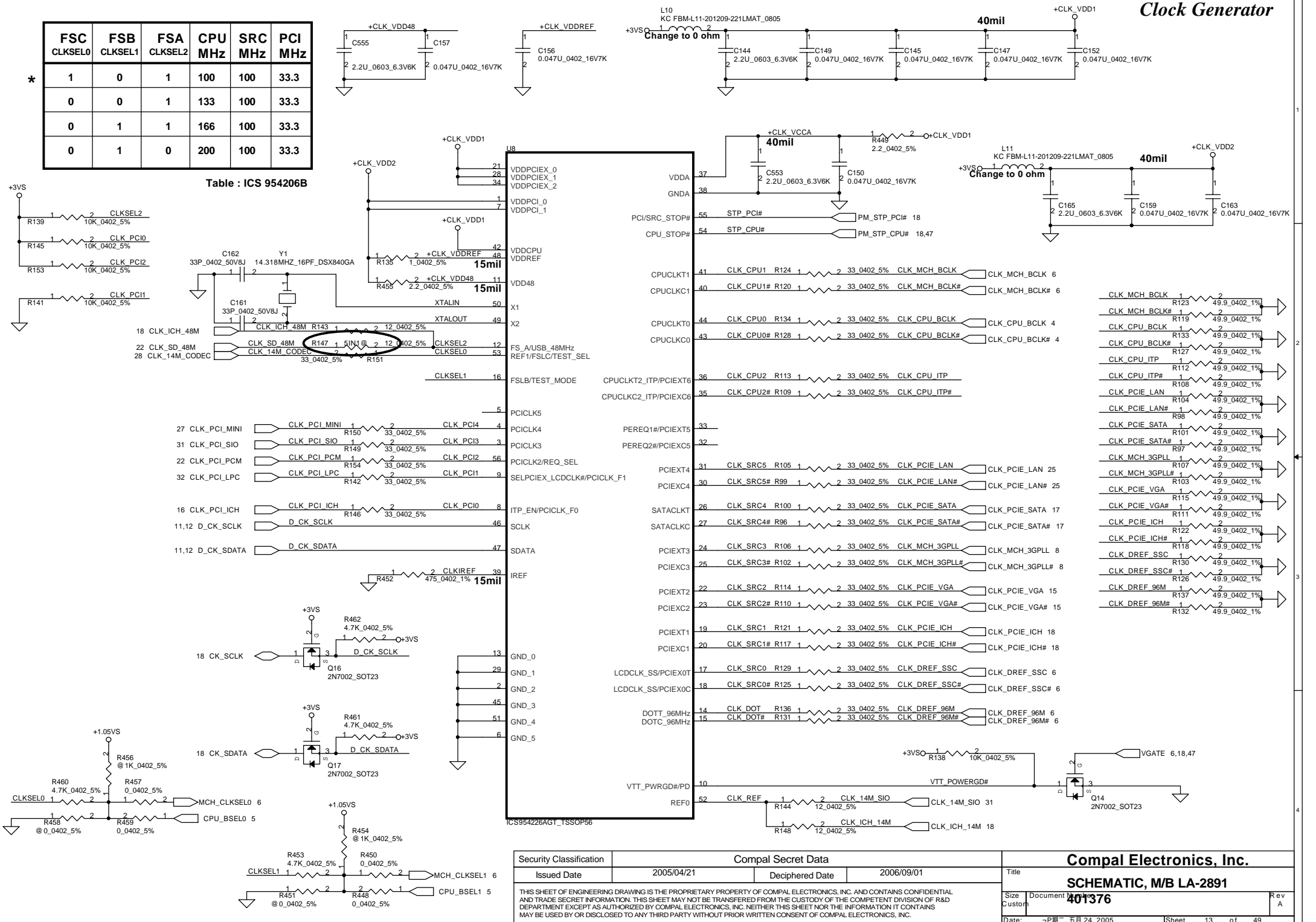


**DIMM1 REV H:52mm (BOT)**

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FSC	FSB	FSA	CPU	SRC	PCI
CLKSEL0	CLKSEL1	CLKSEL2	MHz	MHz	MHz
1	0	1	100	100	33.3
0	0	1	133	100	33.3
0	1	1	166	100	33.3
0	1	0	200	100	33.3

Table : ICS 954206B

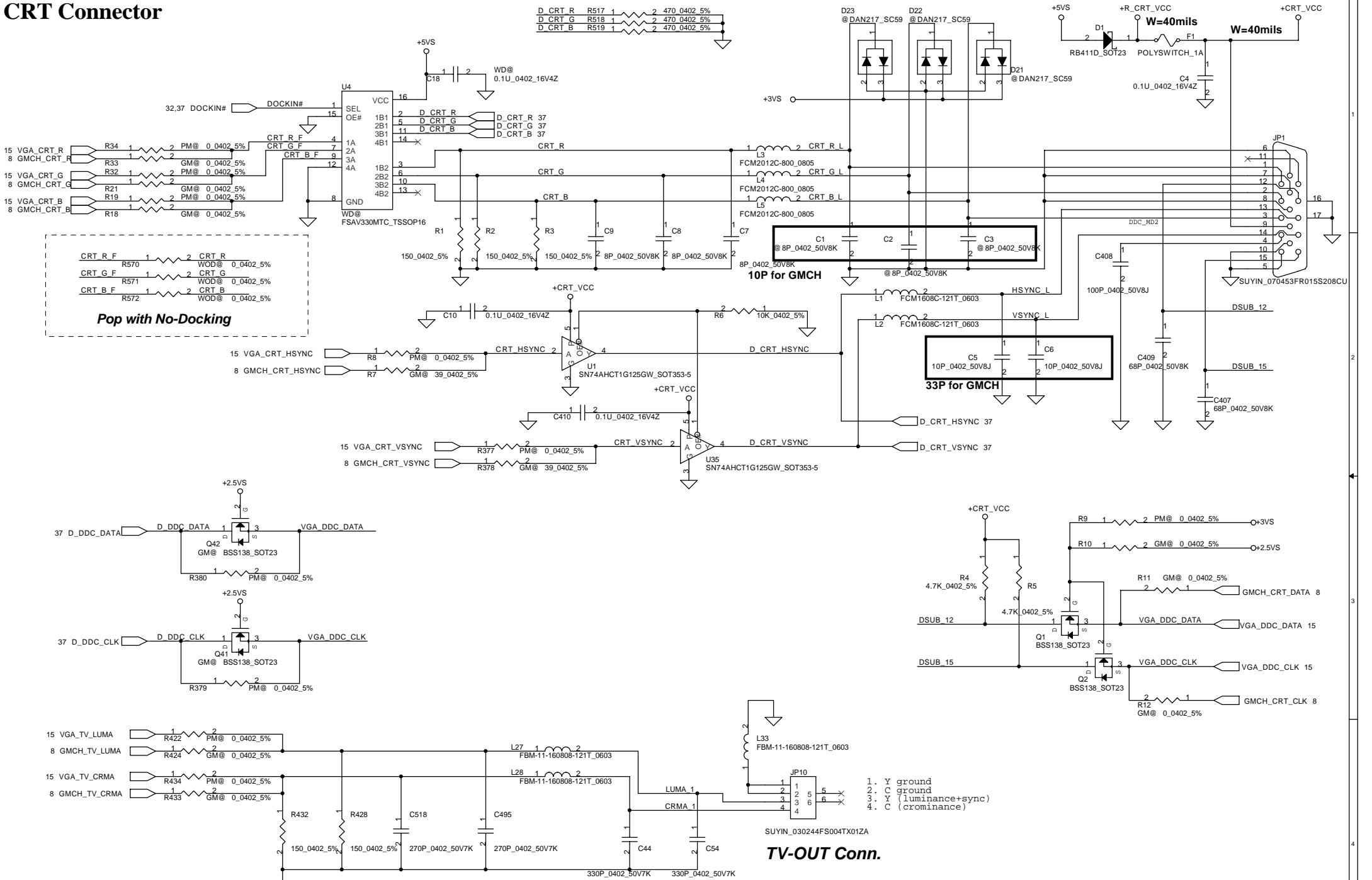


# Clock Generator

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# CRT Connector



**Pop with No-Docking**

CRT R F 1 2 CRT R  
R570 WOD@ 0.0402\_5%

CRT G F 1 2 CRT G  
R571 WOD@ 0.0402\_5%

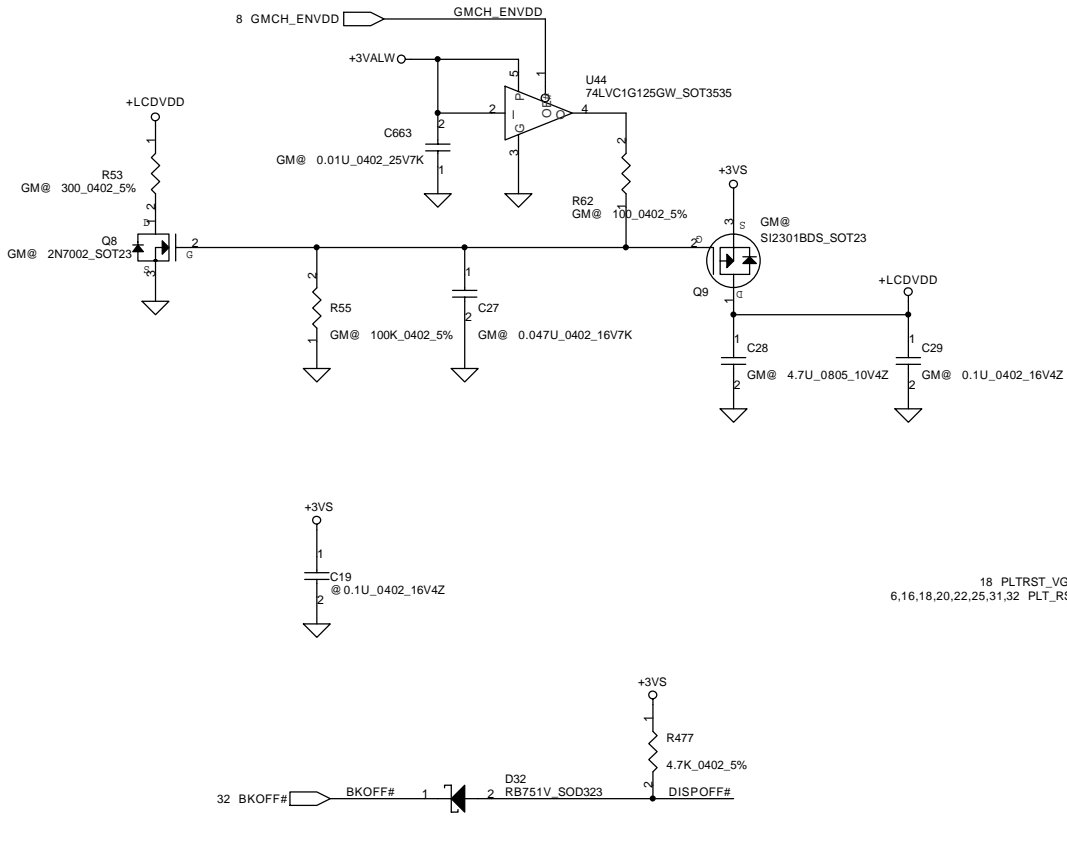
CRT B F 1 2 CRT B  
R572 WOD@ 0.0402\_5%

- 1. Y ground
- 2. C ground
- 3. Y (luminance+sync)
- 4. C (chrominance)

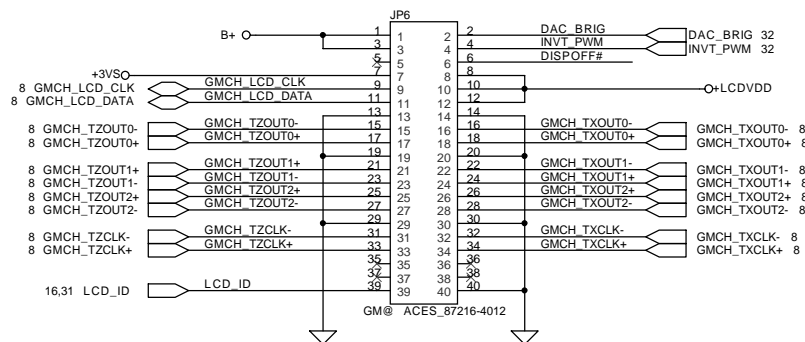
## TV-OUT Conn.

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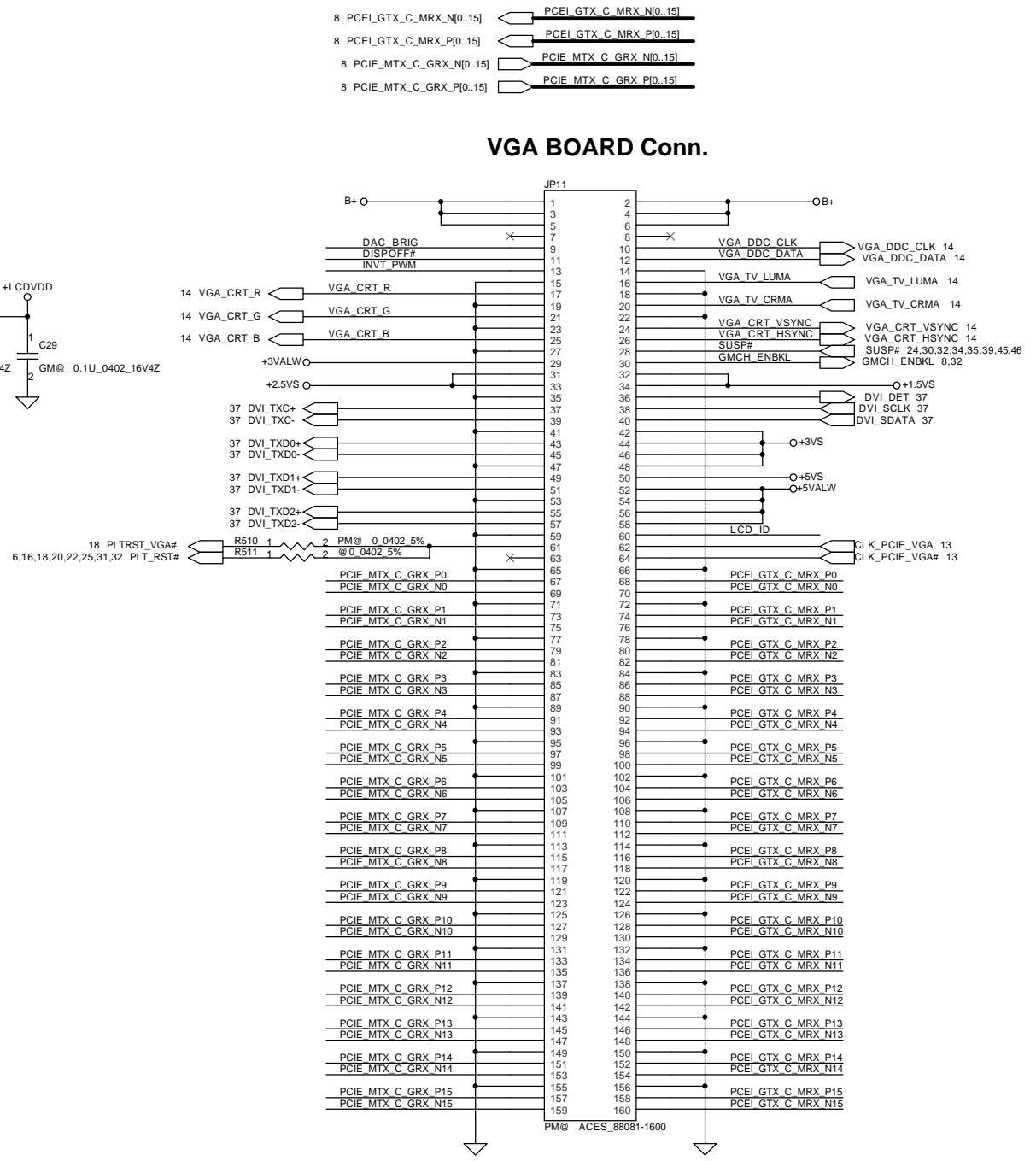
# LCD POWER CIRCUIT



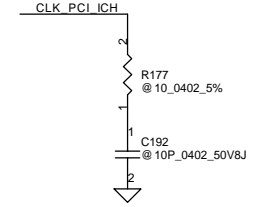
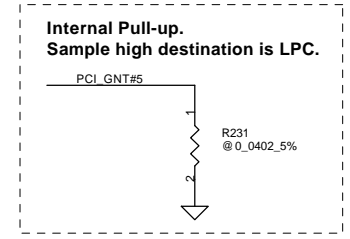
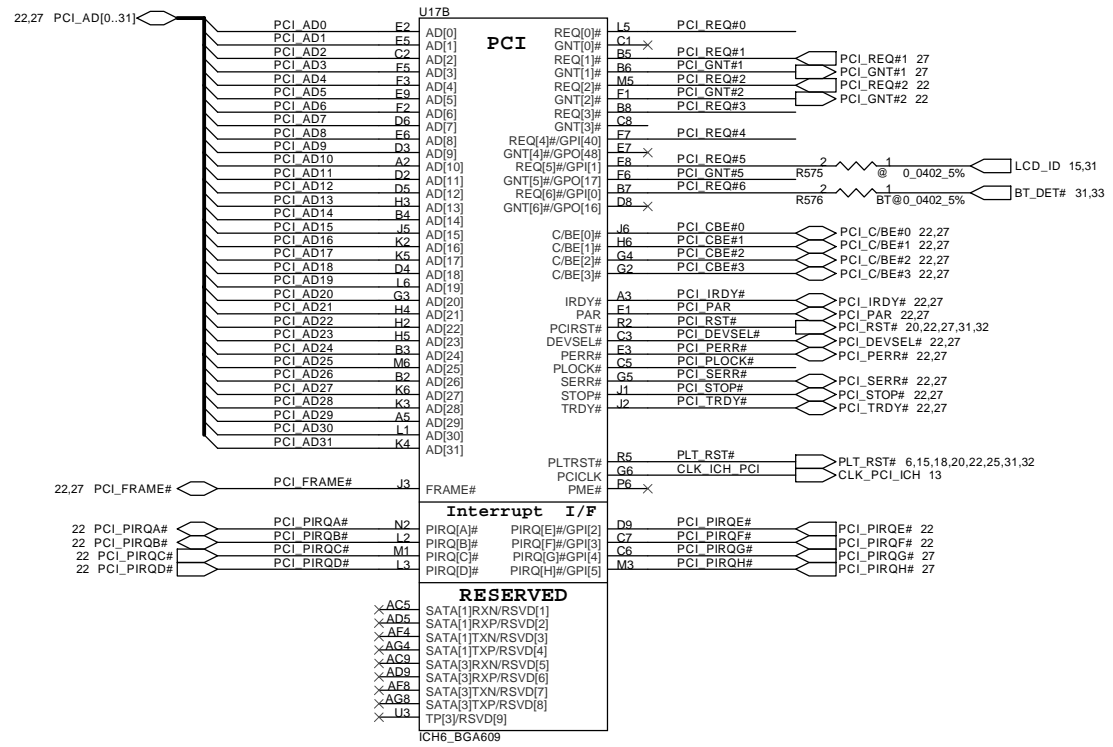
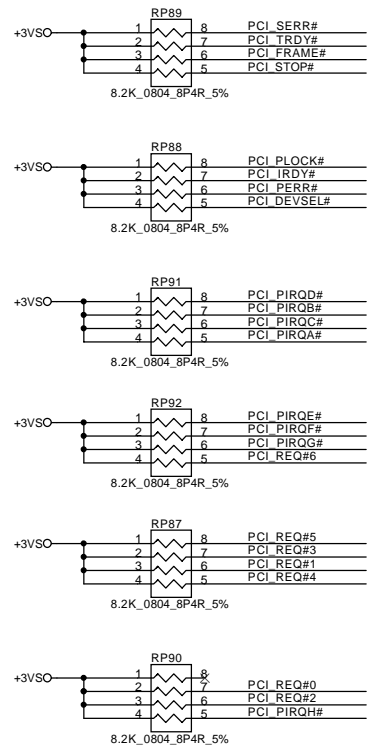
# LCD/PANEL BD. Conn.



# VGA BOARD Conn.

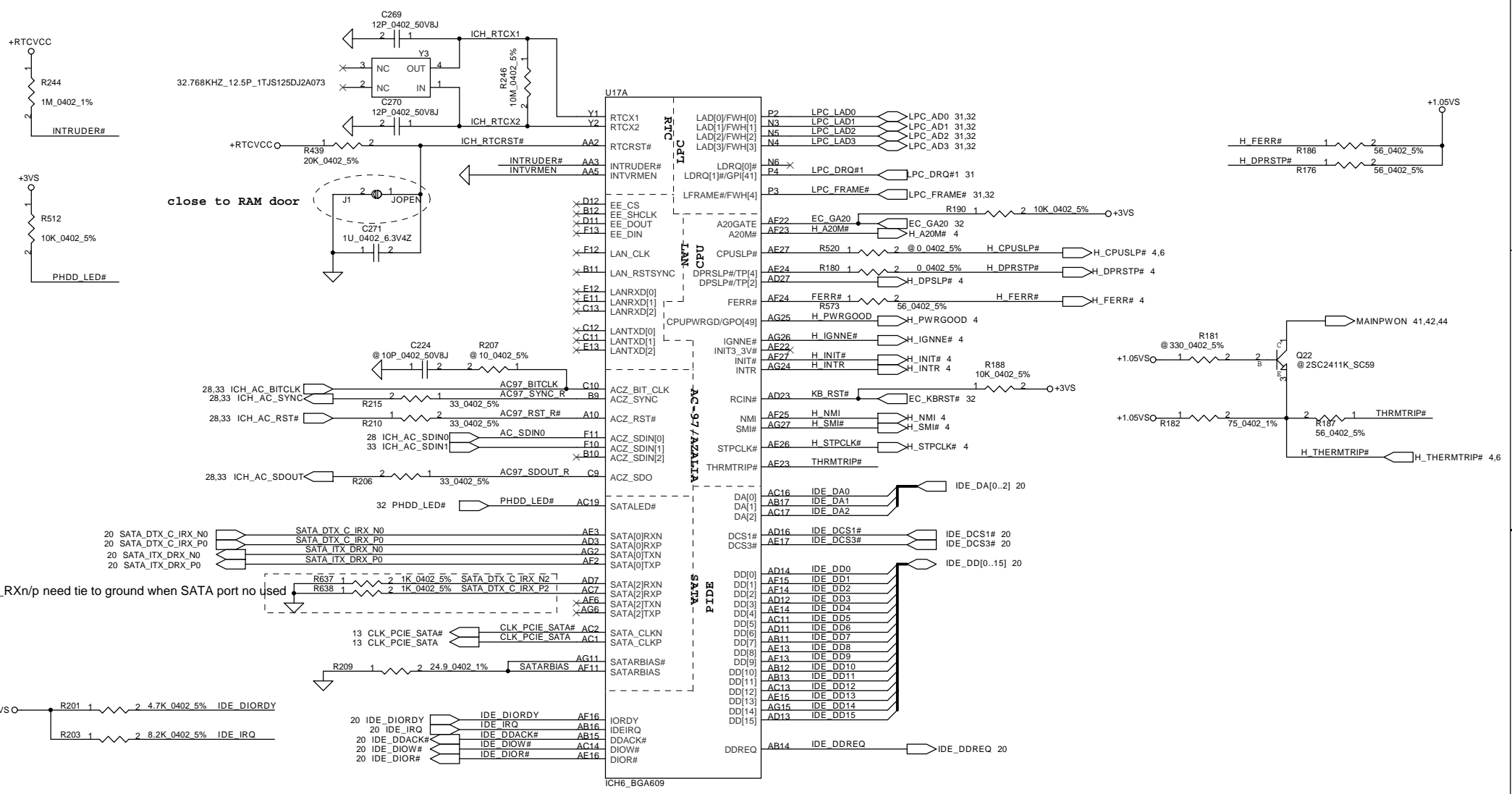


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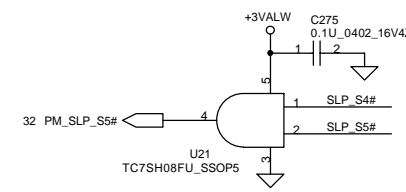
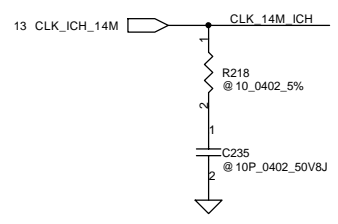
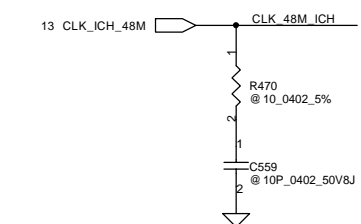
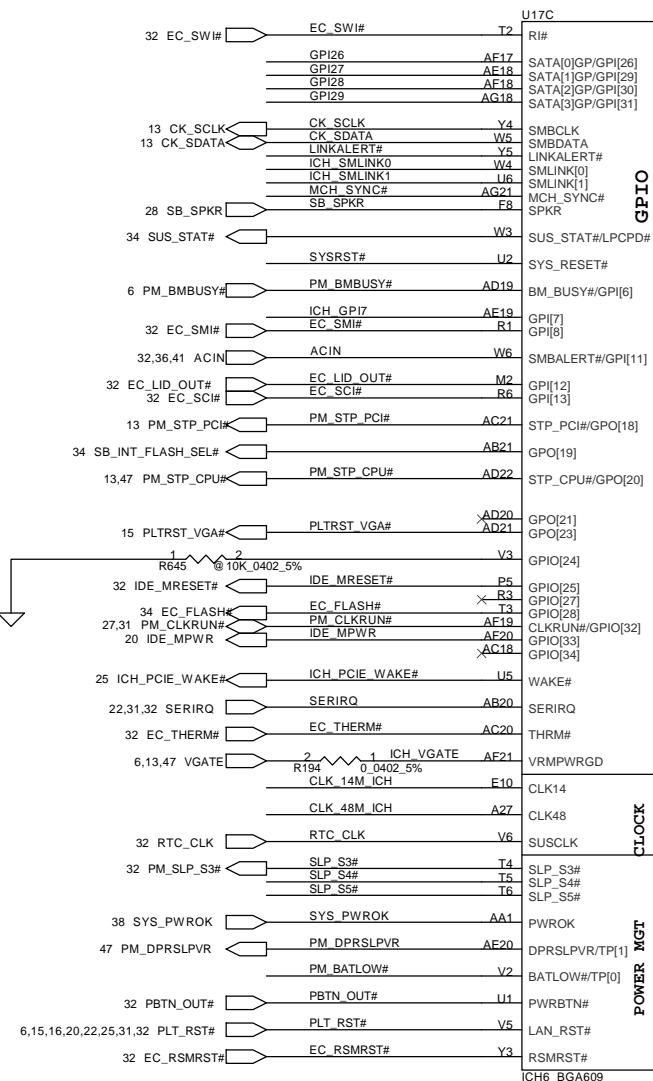
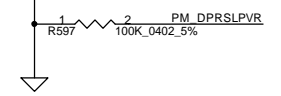
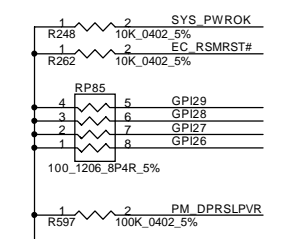
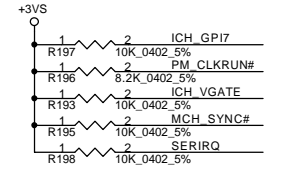
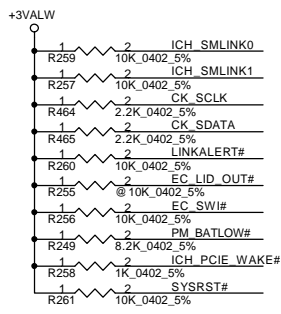


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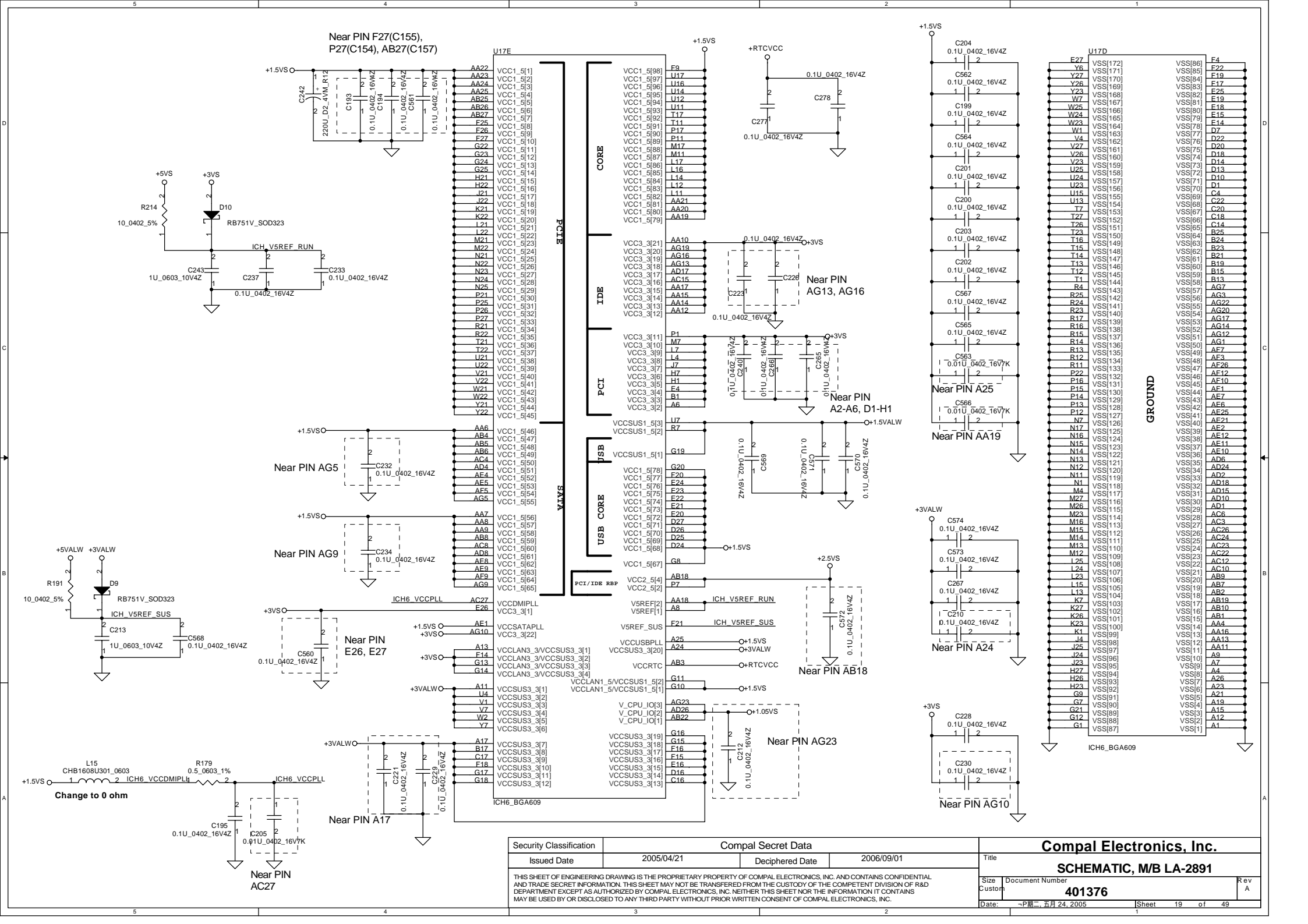




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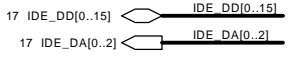
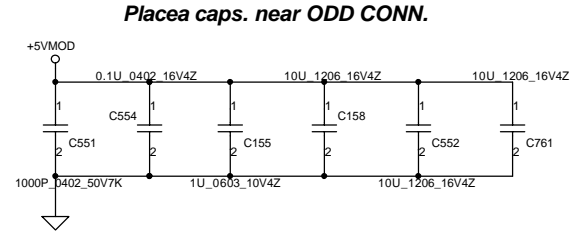
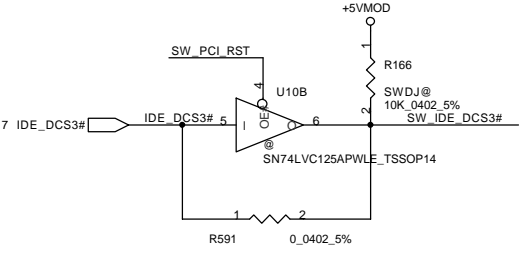
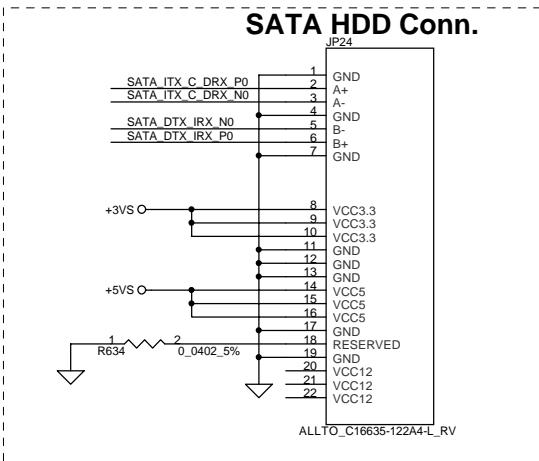
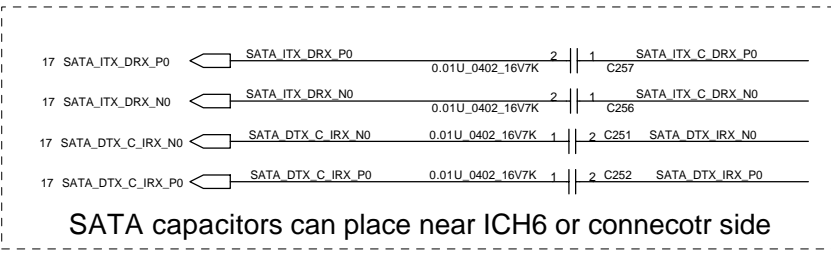
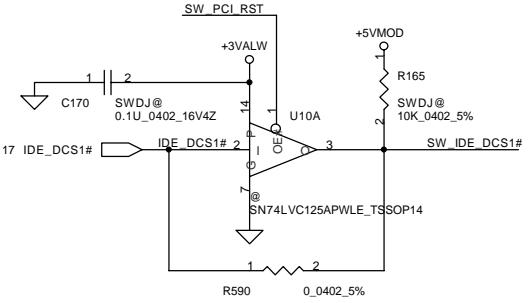
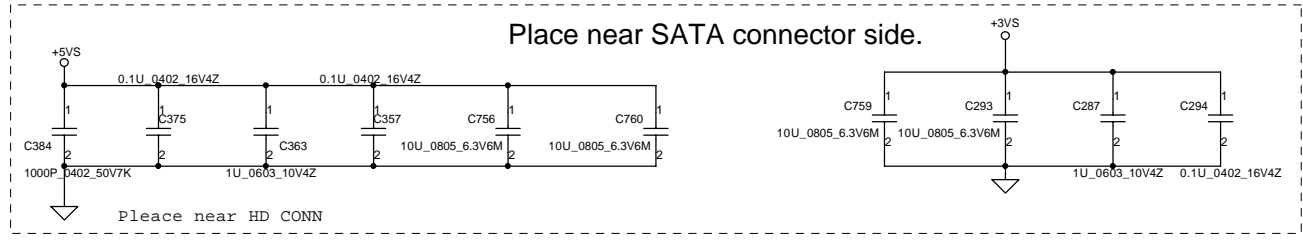


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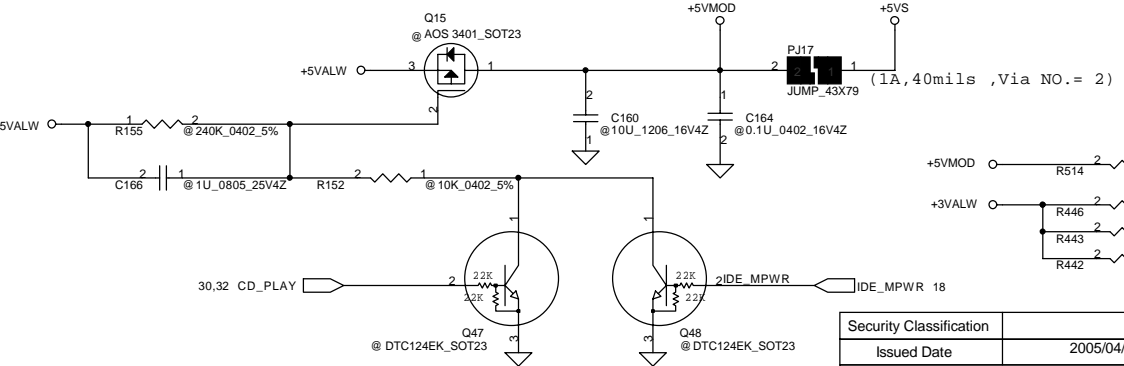
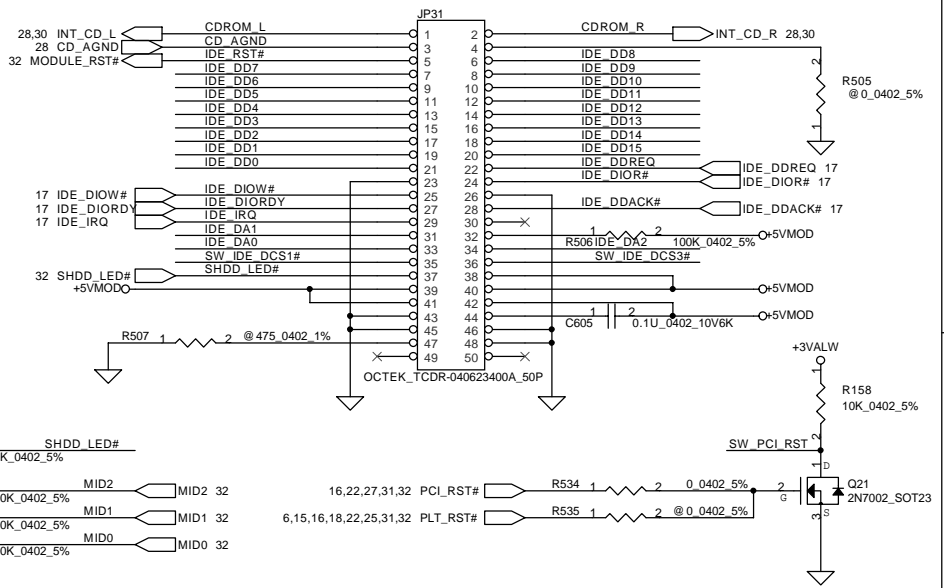


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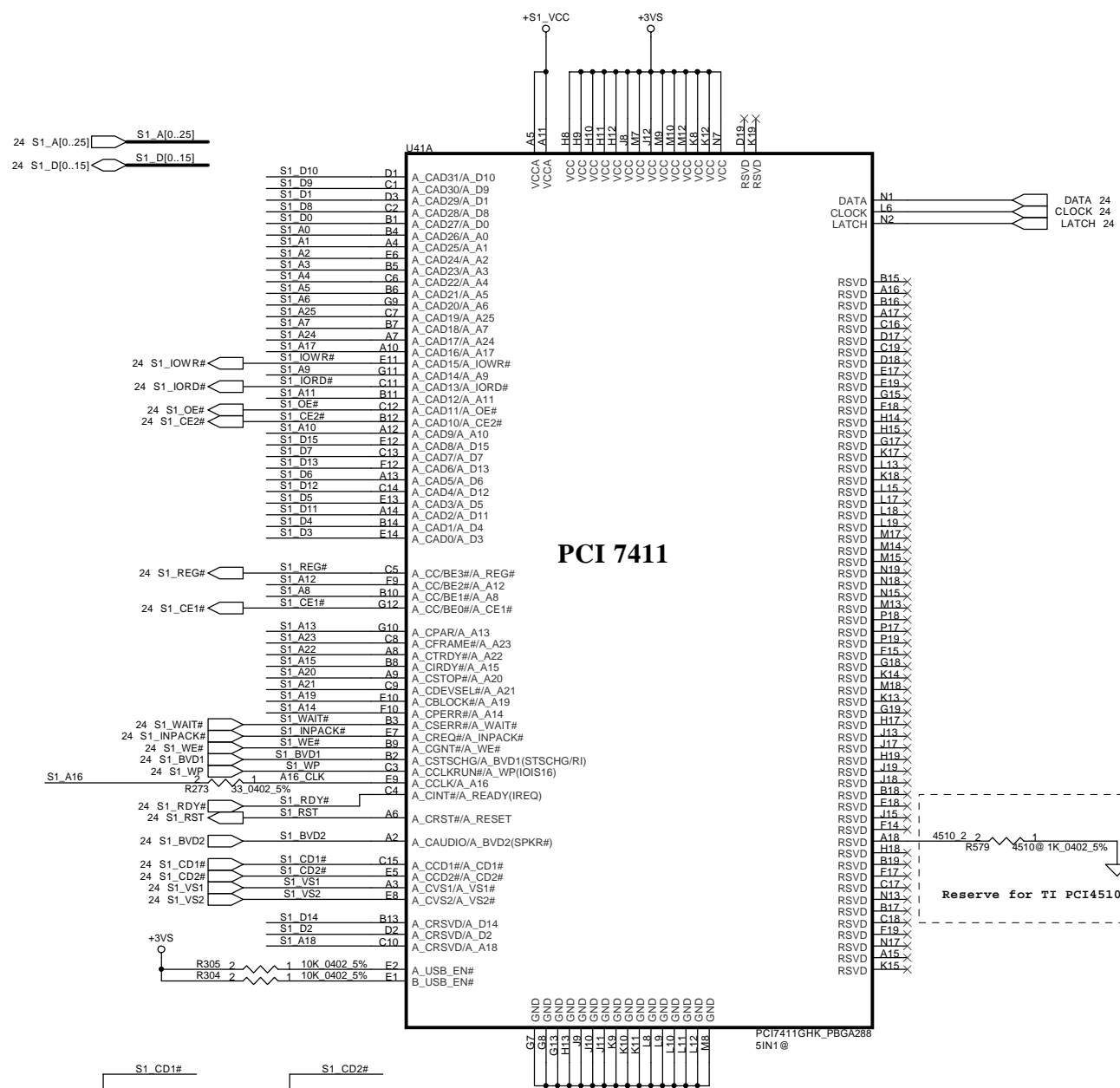


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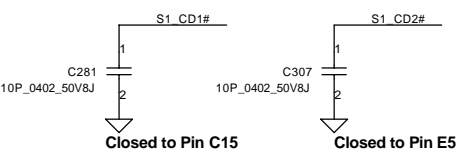
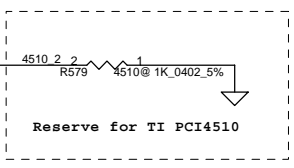
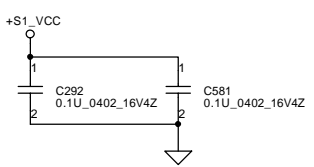
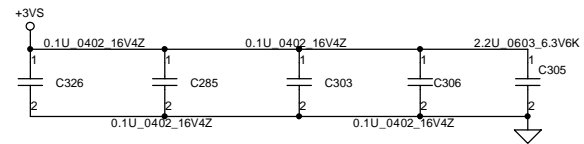
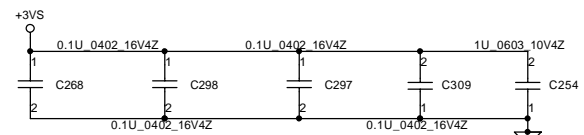


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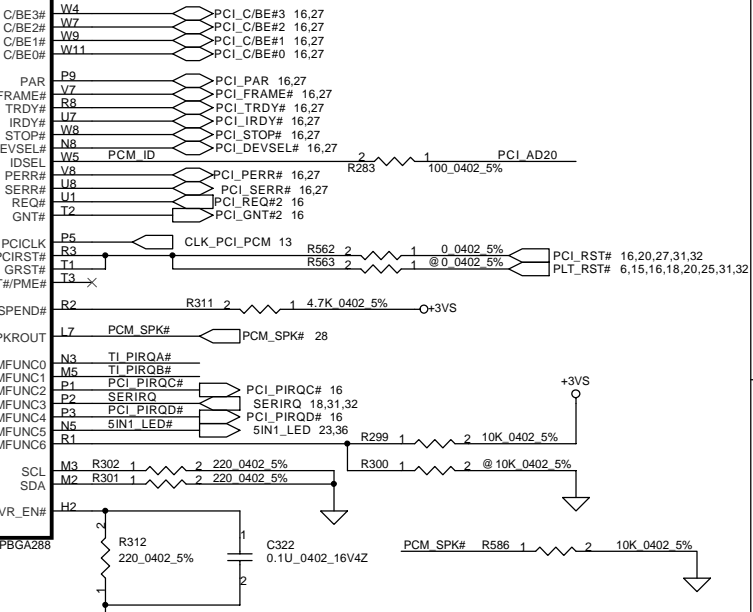
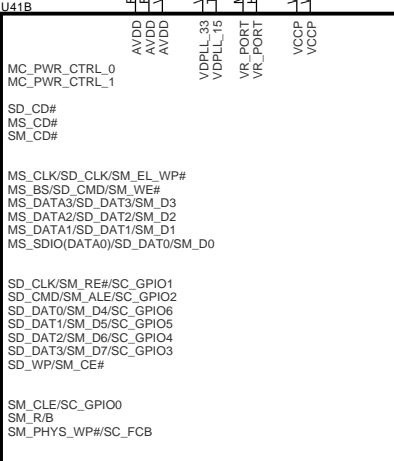
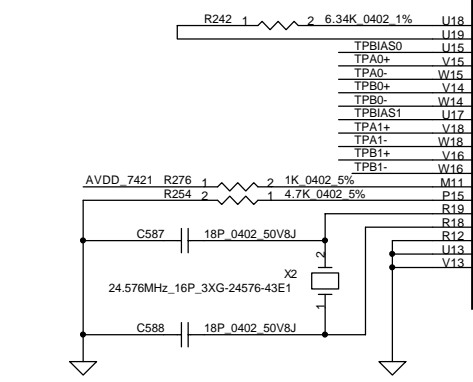
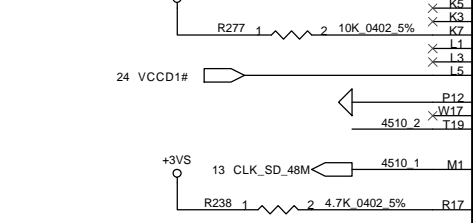
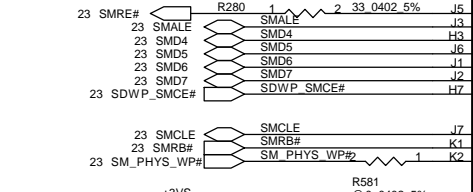
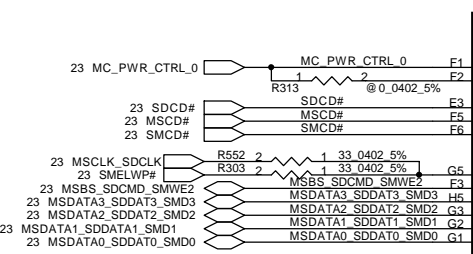
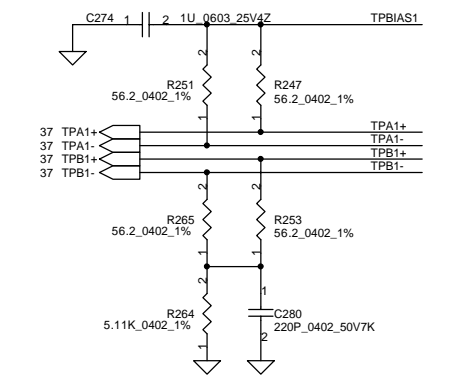
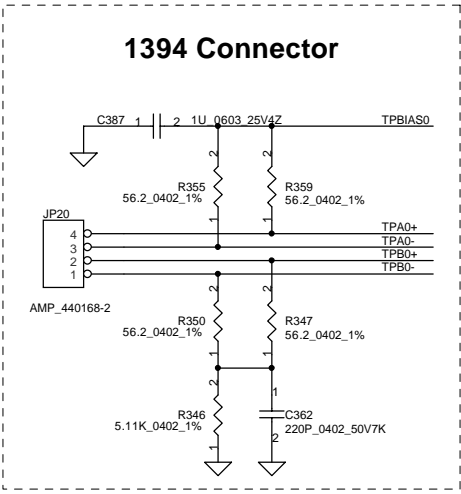
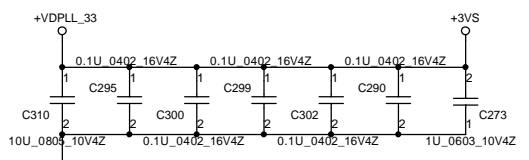
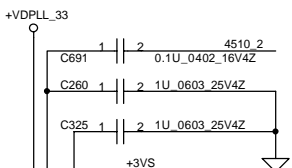
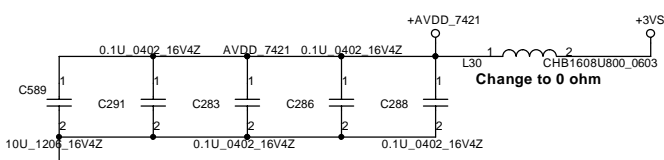
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**PCI 7411**



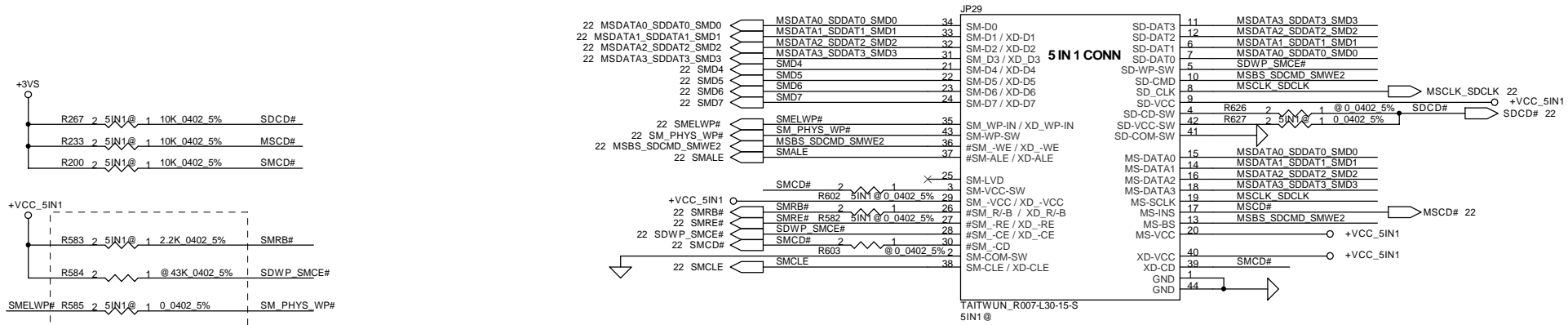
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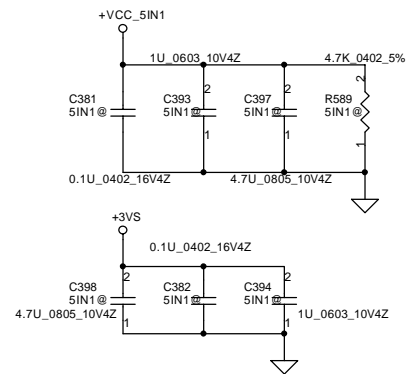
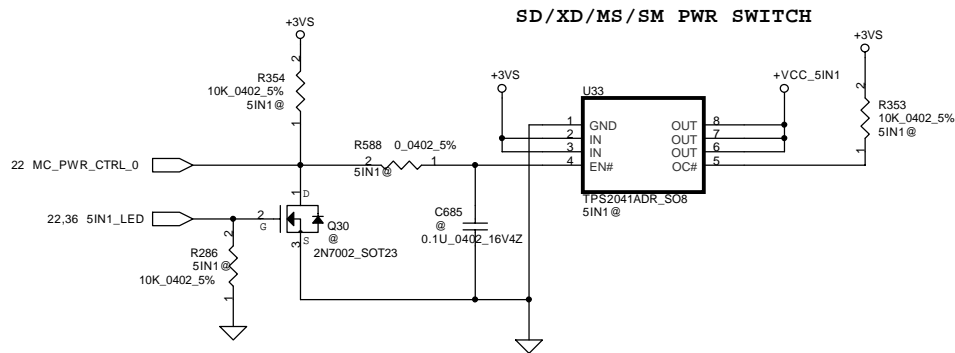
### PCI7411

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### 5 in 1 CardReader Conn.



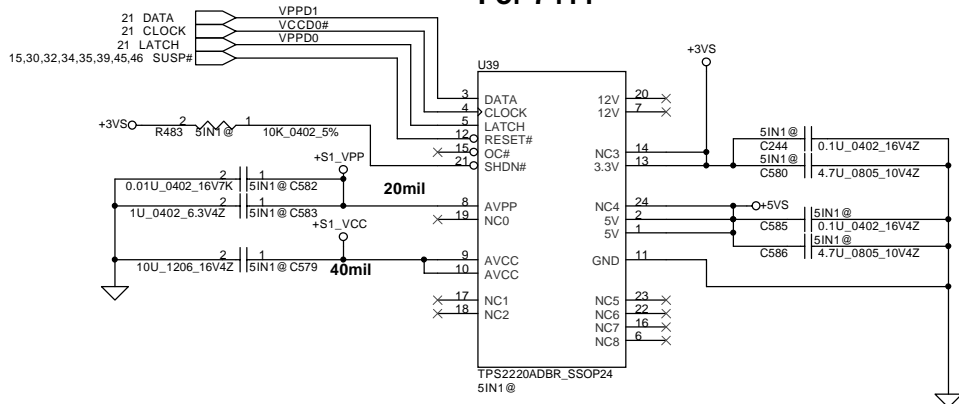
TI Workaround need check



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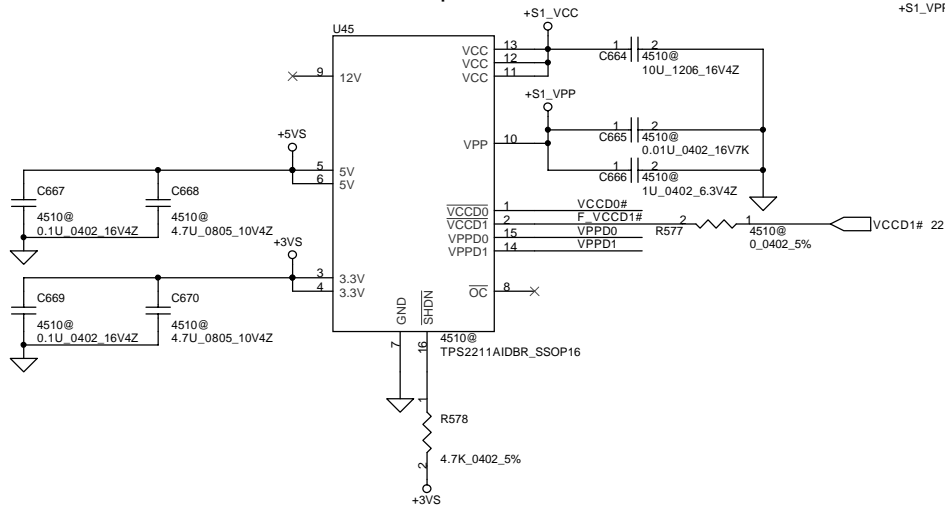
# Power Switch for PCMCIA

## For 7411

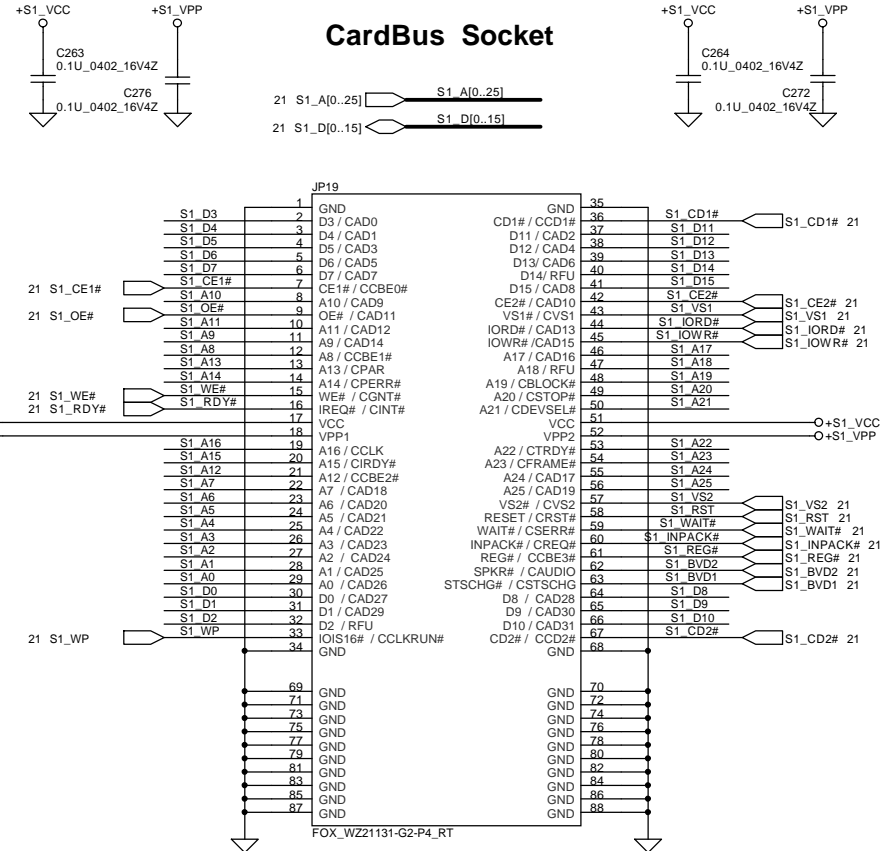


## For 4510

use U4 footprint

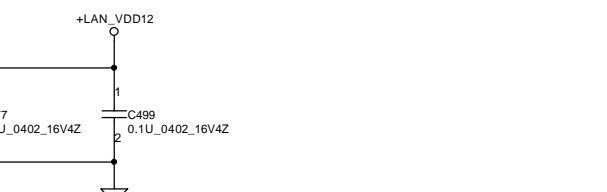
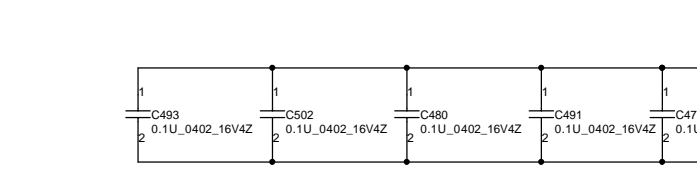
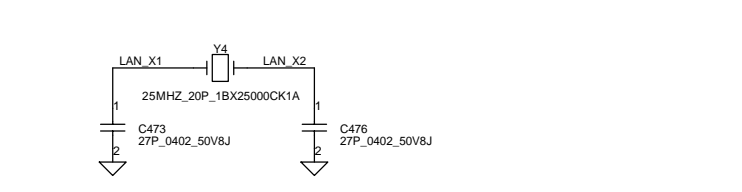
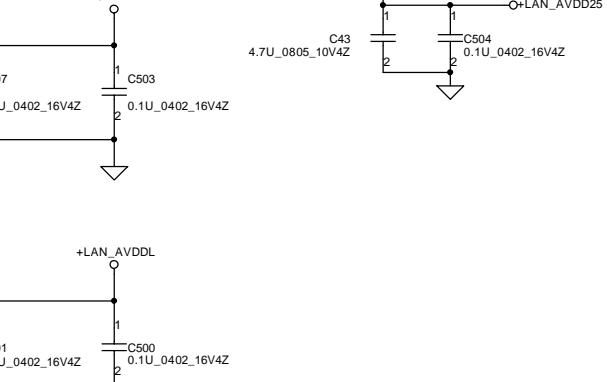
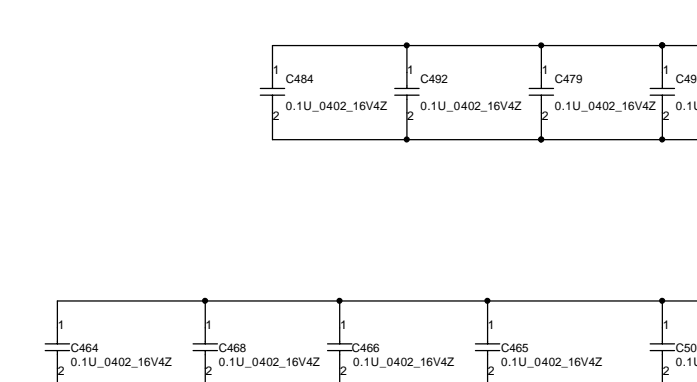
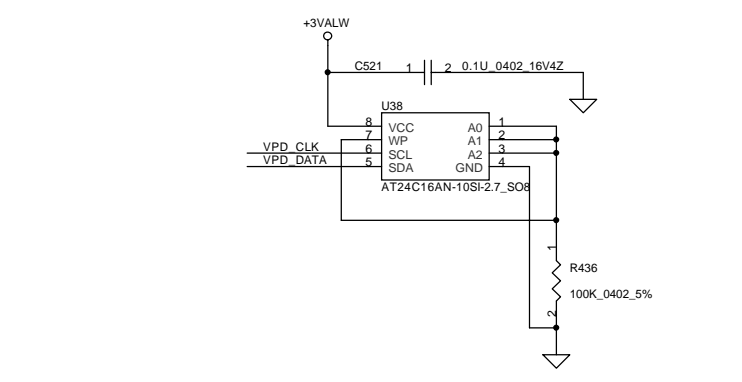
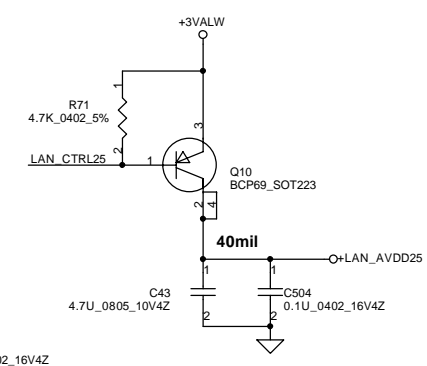
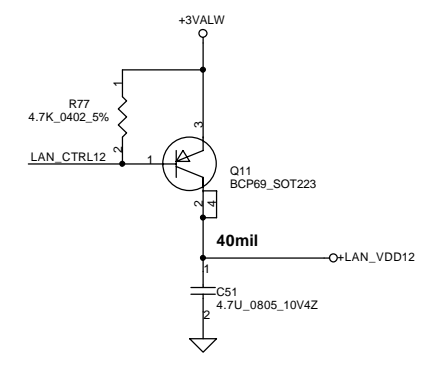
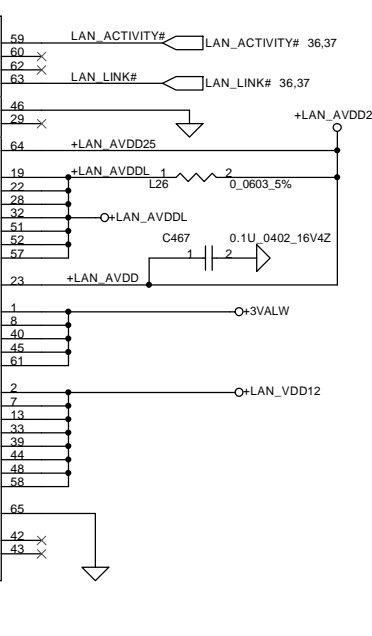
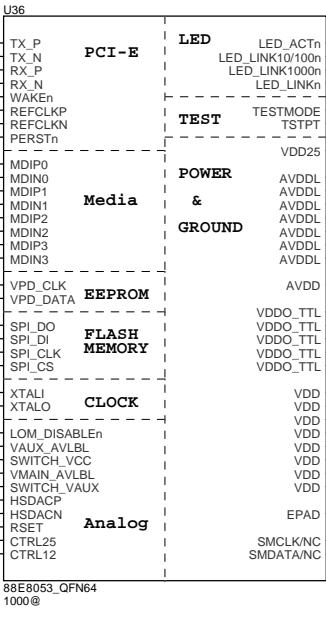
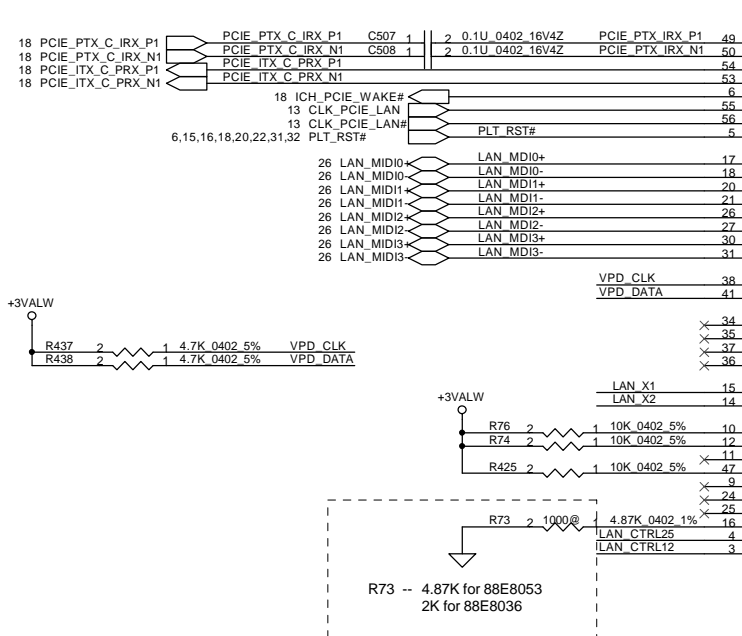


## CardBus Socket

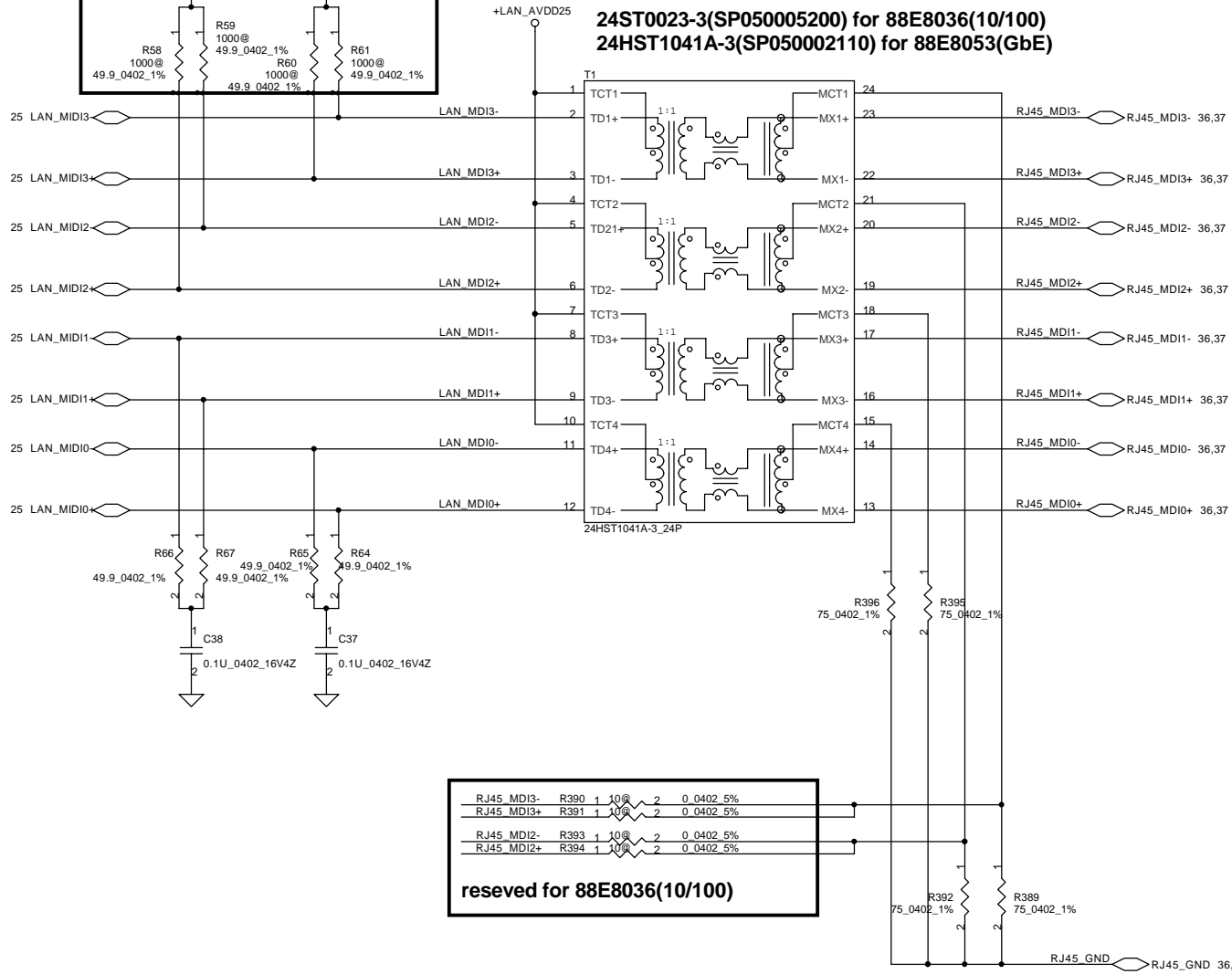
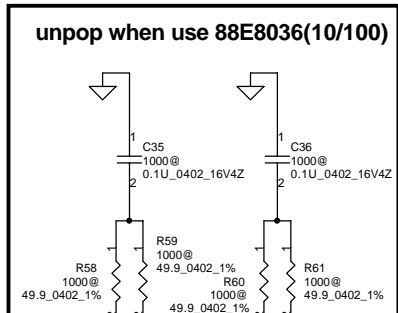


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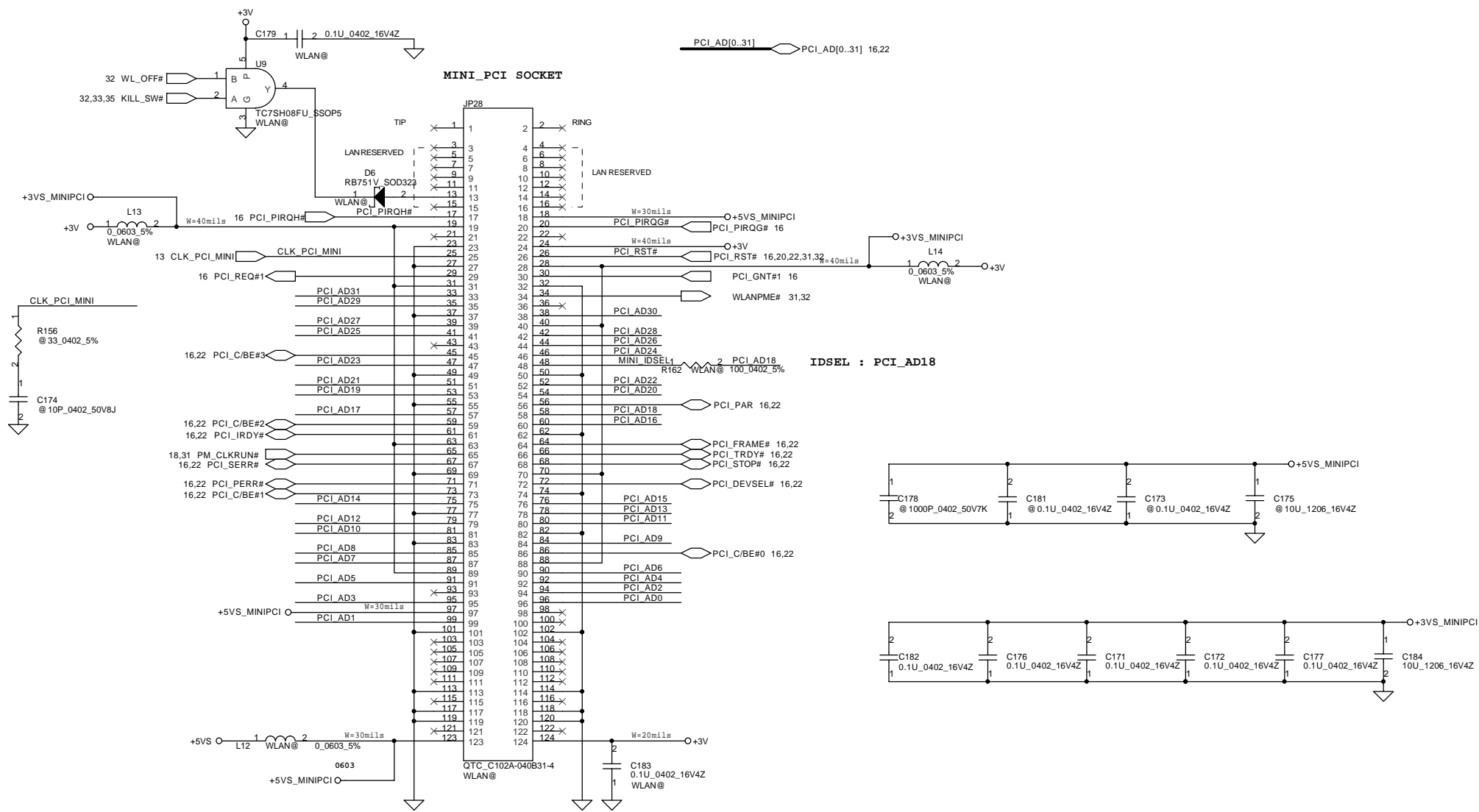




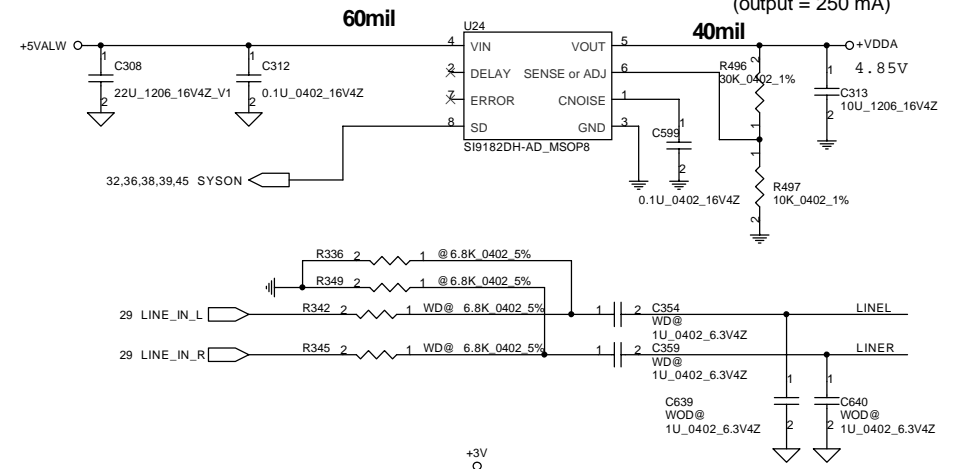
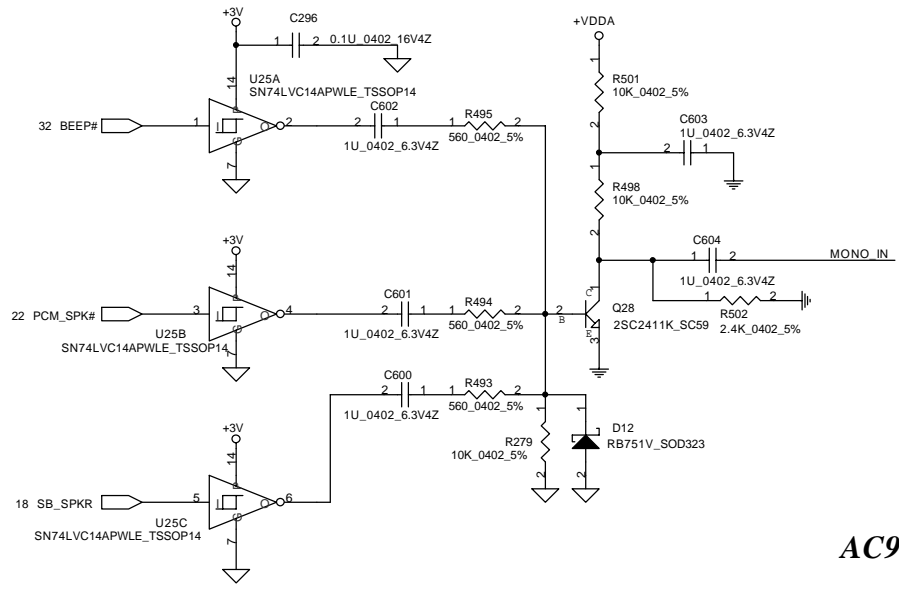
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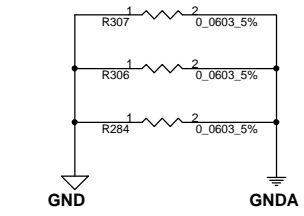
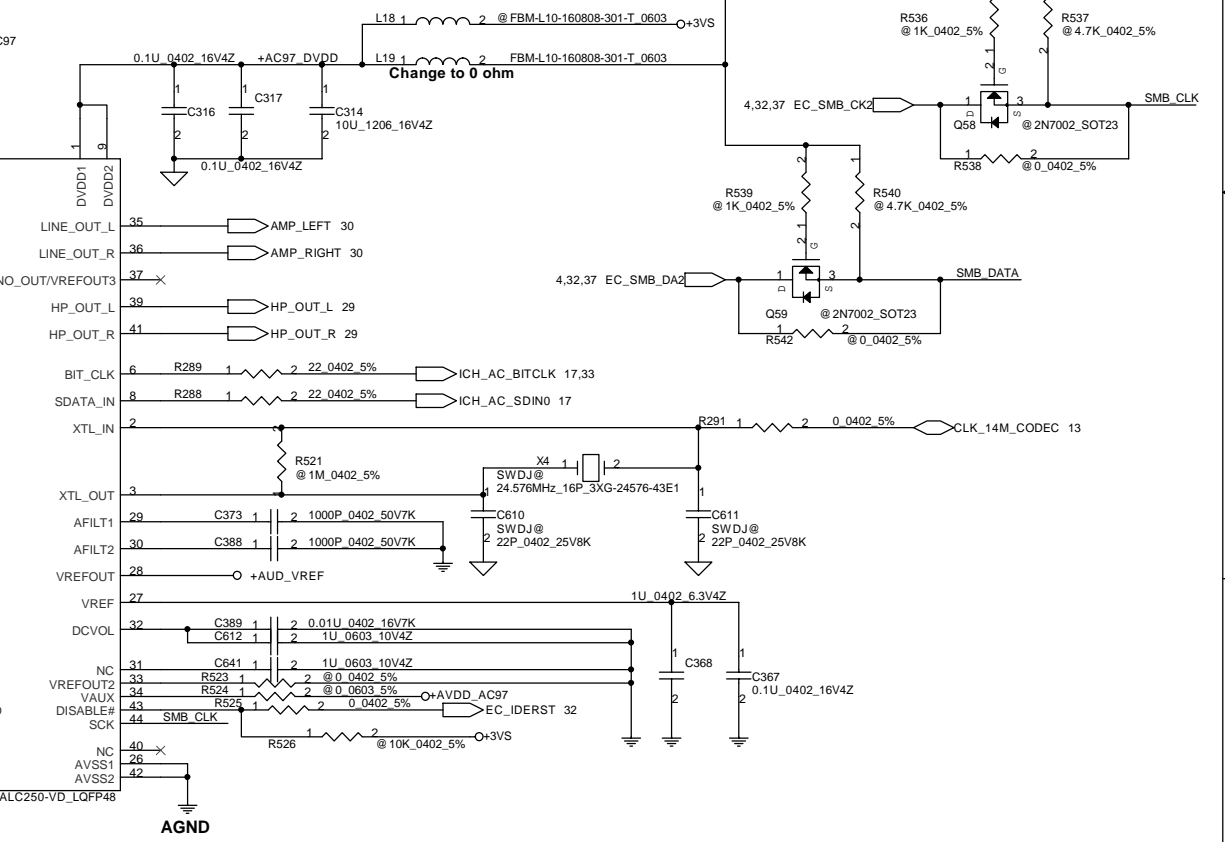
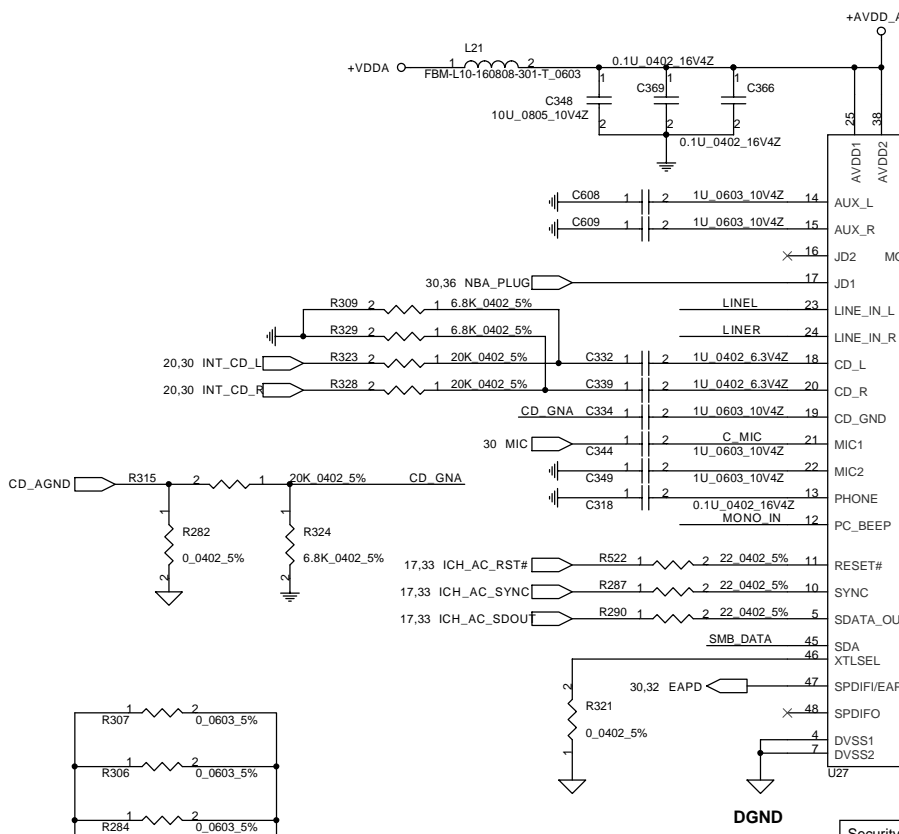
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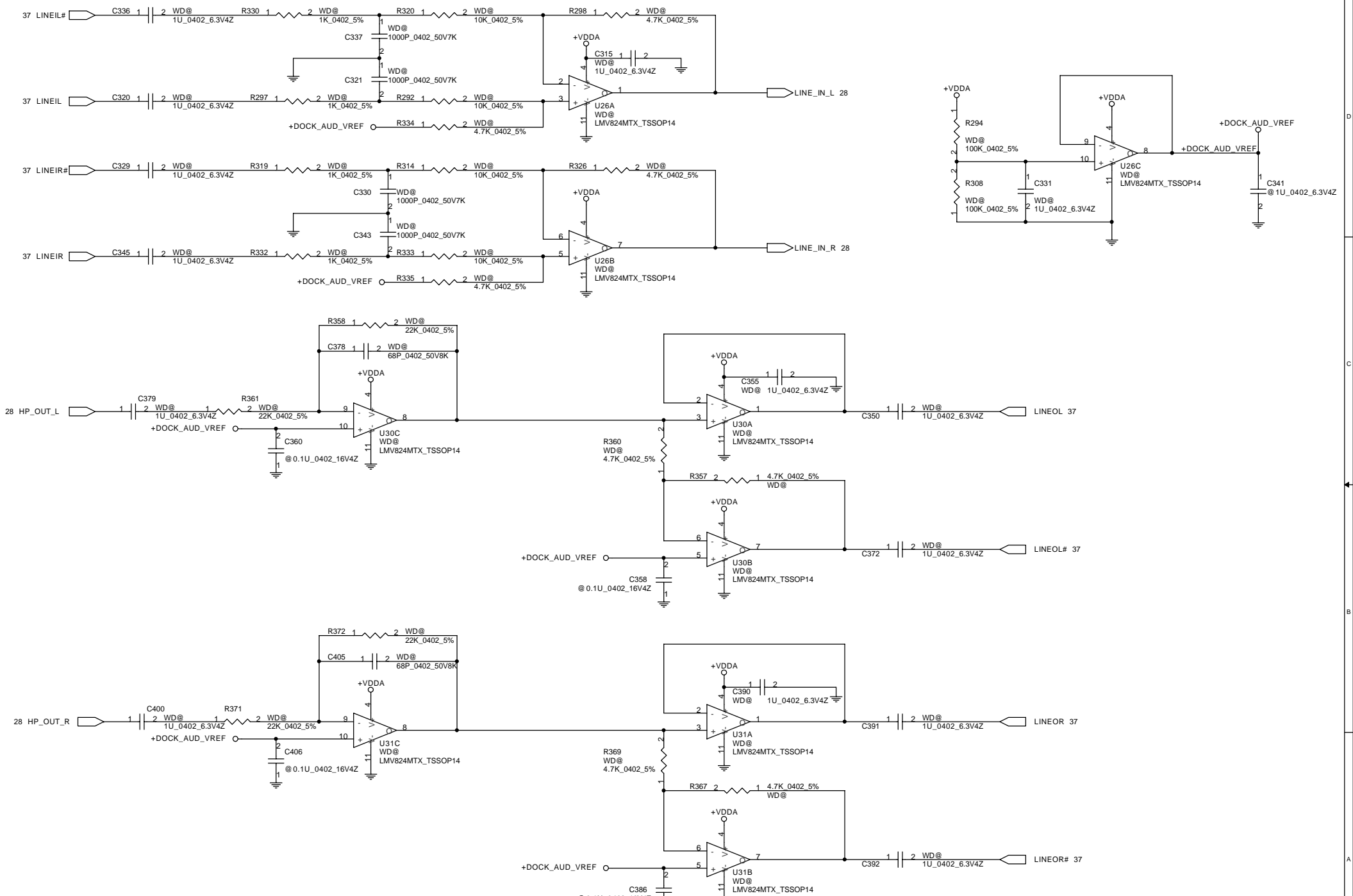


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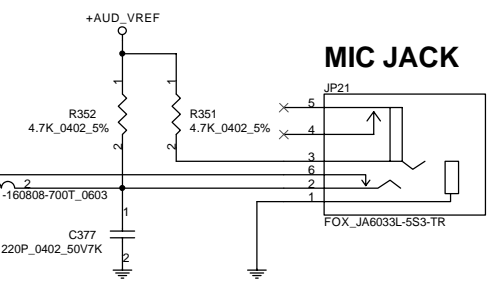
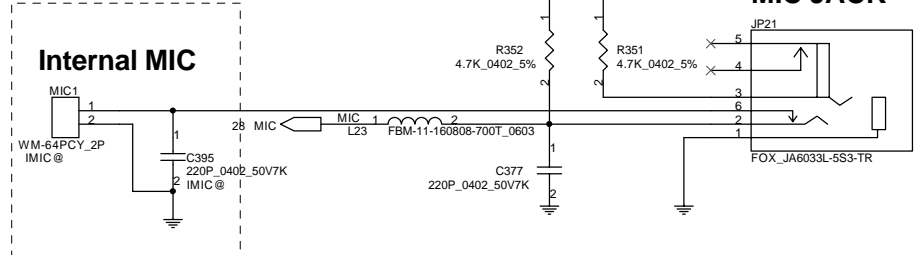
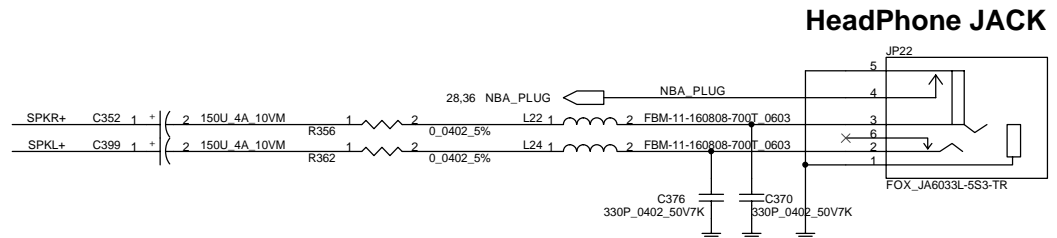
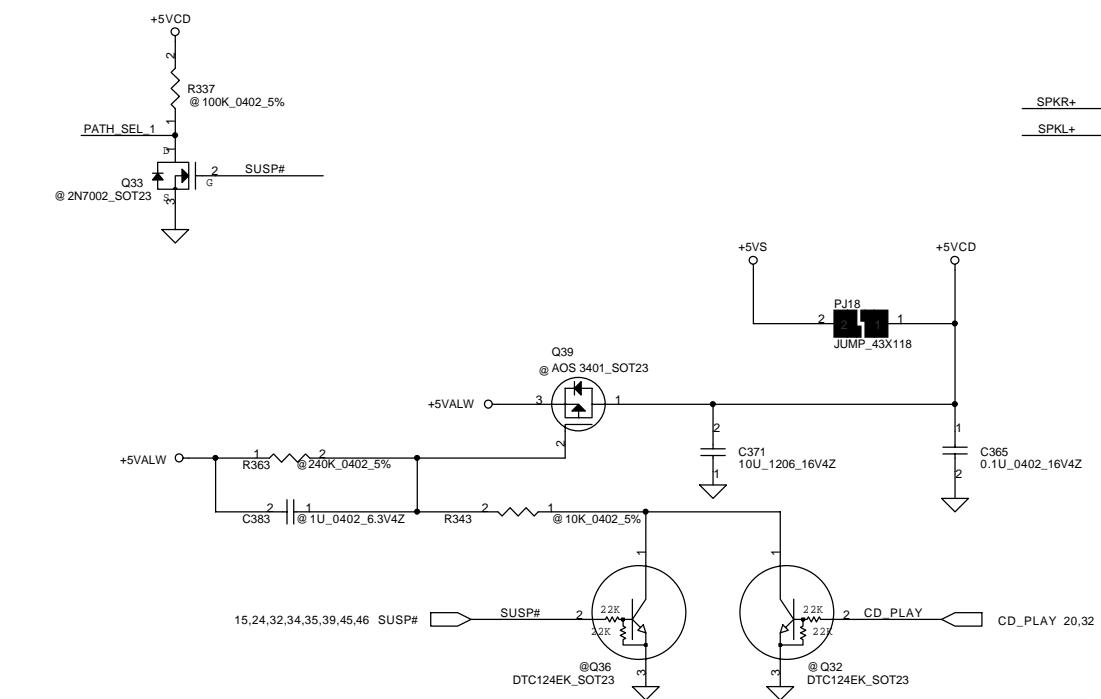
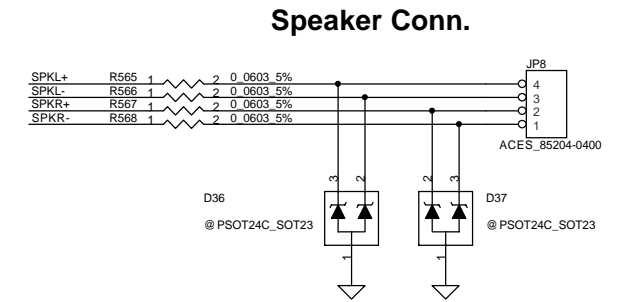
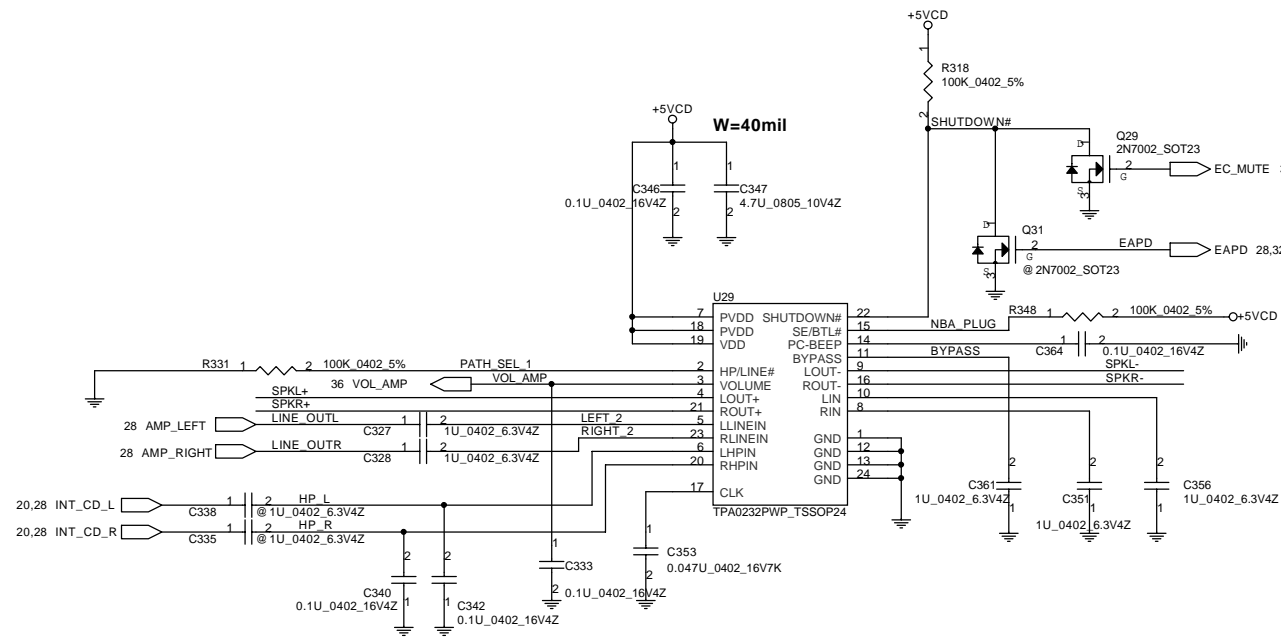


With 14.318Mhz : R321 POP  
 With 24.576Mhz : R321 DEPOP

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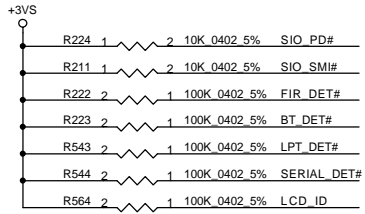


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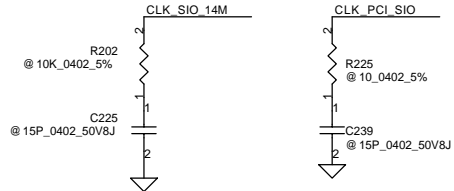
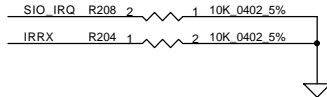


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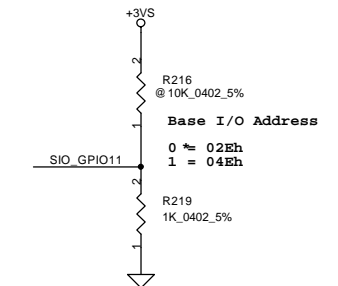
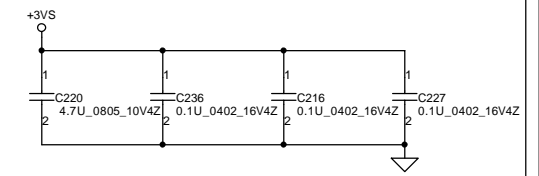
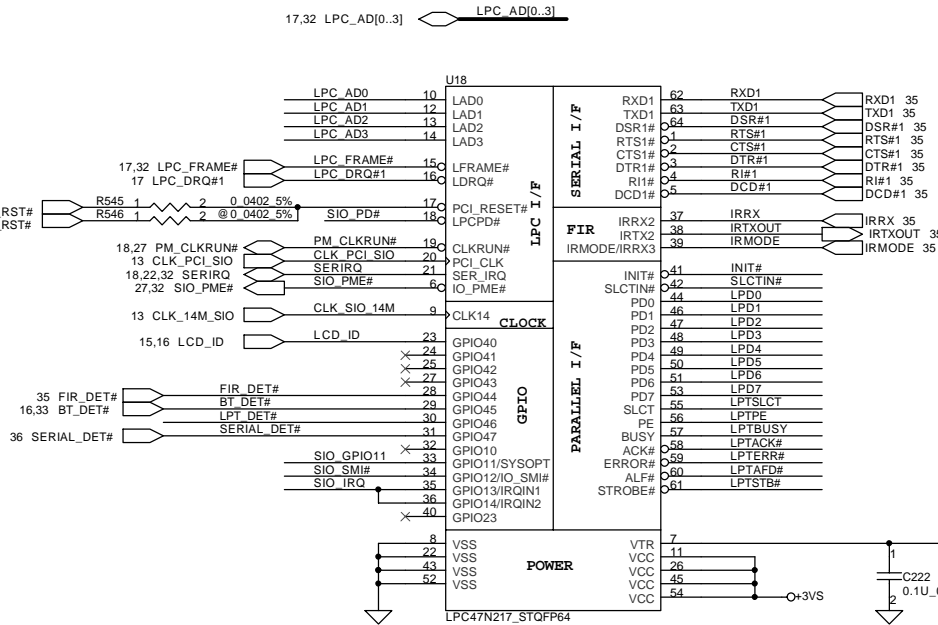
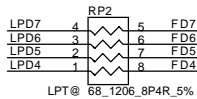
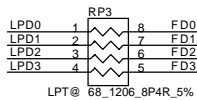
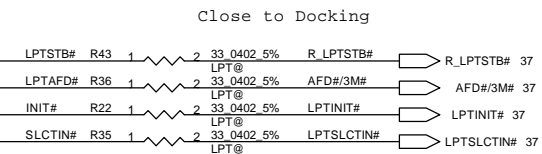
# SUPER I/O SMsC LPC47N217



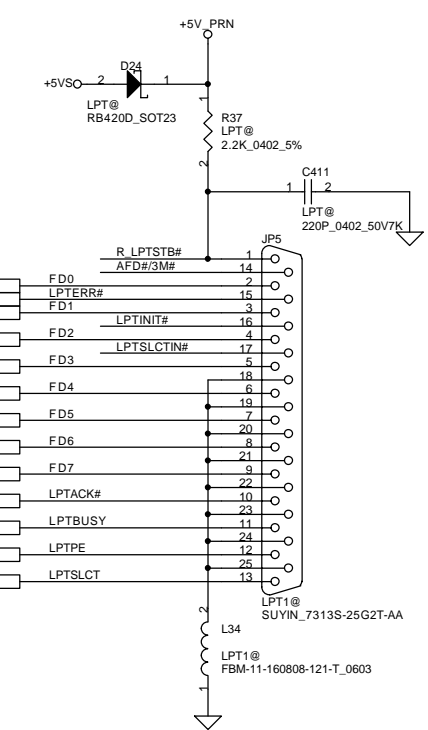
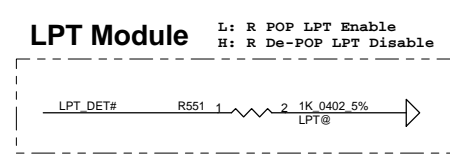
LCD ID : High -- EDID  
Low -- Panel ID



## No Docking and Parallel Port ----->Del



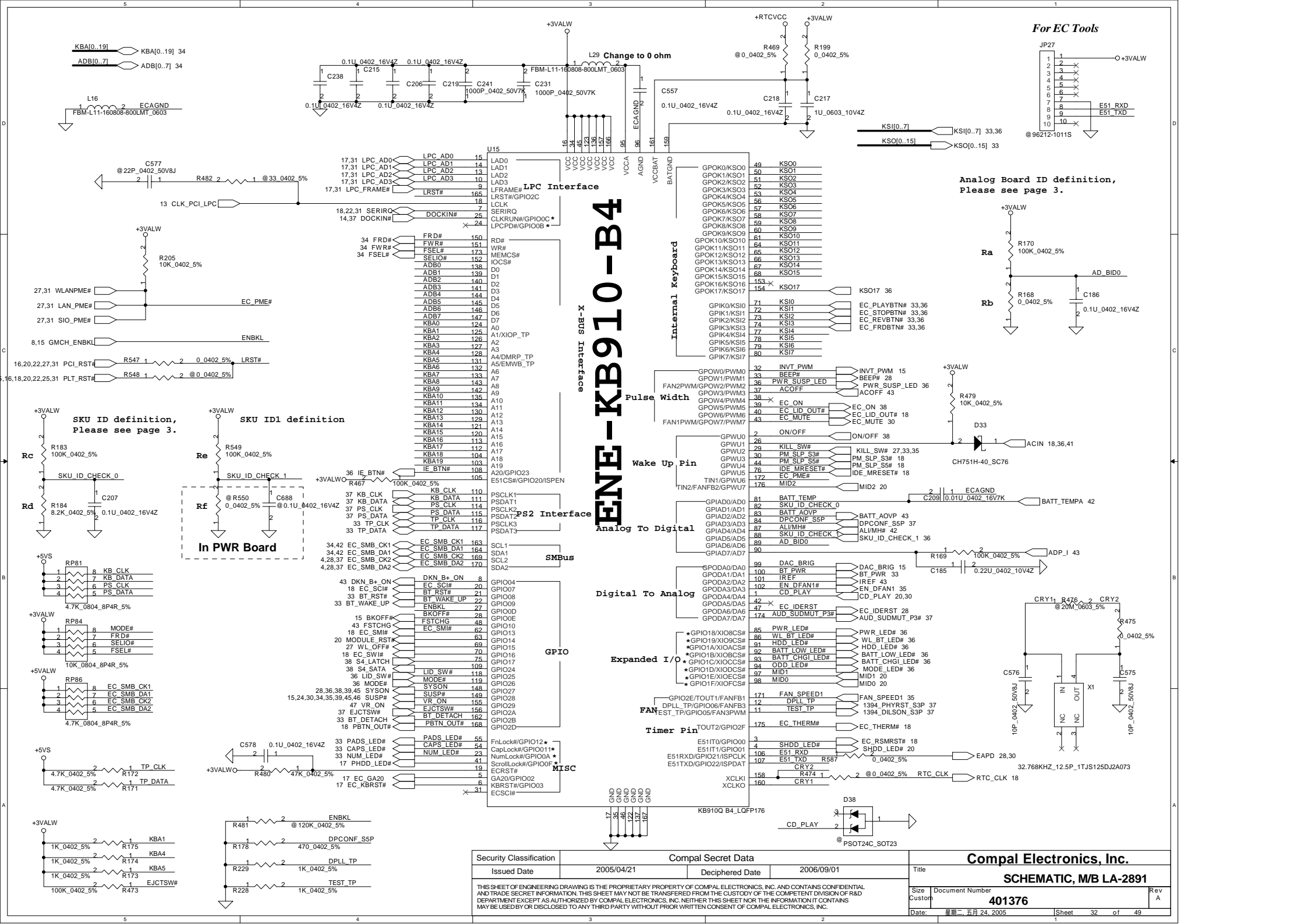
## Parallel Port



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LPTPE	R611	1	2	33 0402 5%	LPT@	LPTPE EMI
LPTBUSY	R612	1	2	33 0402 5%	LPT@	LPTBUSY EMI
LPTACK#	R613	1	2	33 0402 5%	LPT@	LPTACK# EMI
AFD#/3M#	R614	1	2	33 0402 5%	LPT@	AFD#/3M# EMI
LPTERR#	R615	1	2	33 0402 5%	LPT@	LPTERR# EMI
LPTINIT#	R616	1	2	33 0402 5%	LPT@	LPTINIT# EMI
LPTSCLTIN#	R617	1	2	33 0402 5%	LPT@	LPTSCLTIN# EMI
FD0	R618	1	2	33 0402 5%	LPT@	FD0 EMI
FD1	R619	1	2	33 0402 5%	LPT@	FD1 EMI
FD2	R620	1	2	33 0402 5%	LPT@	FD2 EMI
FD3	R621	1	2	33 0402 5%	LPT@	FD3 EMI
FD7	R622	1	2	33 0402 5%	LPT@	FD7 EMI
FD6	R623	1	2	33 0402 5%	LPT@	FD6 EMI
FD5	R624	1	2	33 0402 5%	LPT@	FD5 EMI
FD4	R625	1	2	33 0402 5%	LPT@	FD4 EMI

## EMI Request for LPT ISSUE

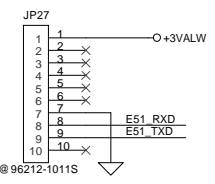
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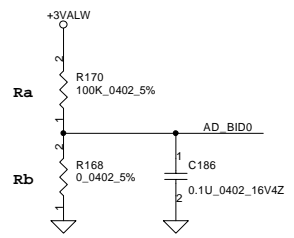
# ENE-KB910-B4

X-BUS Interface

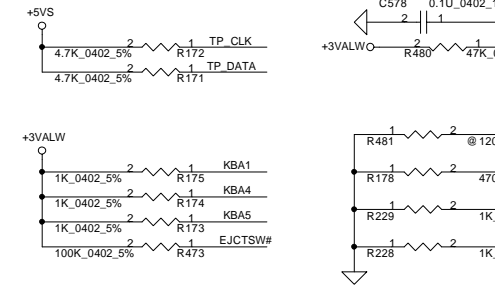
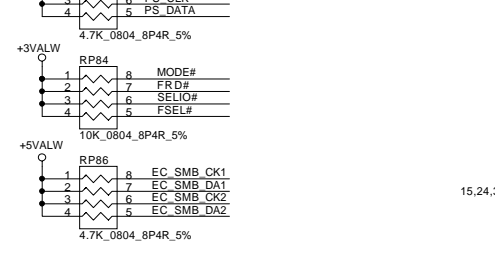
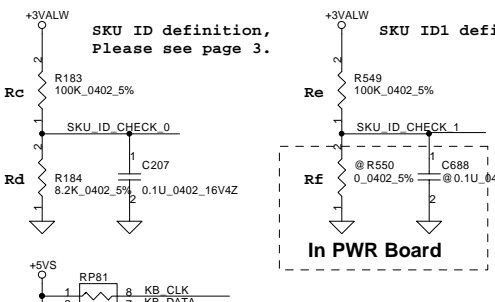
**For EC Tools**



**Analog Board ID definition, Please see page 3.**



**SKUID definition, Please see page 3.**



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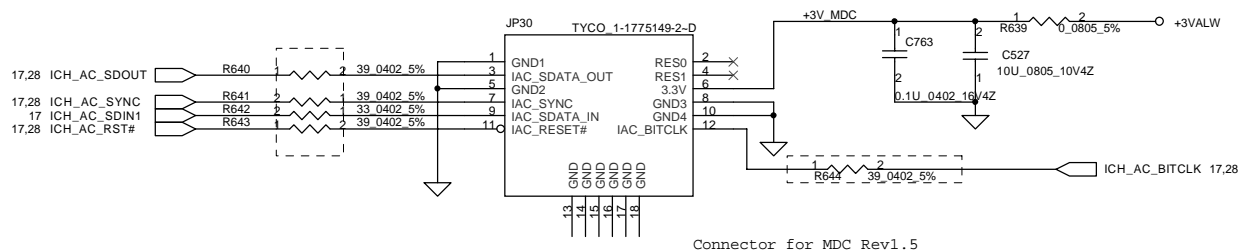
**Compal Electronics, Inc.**

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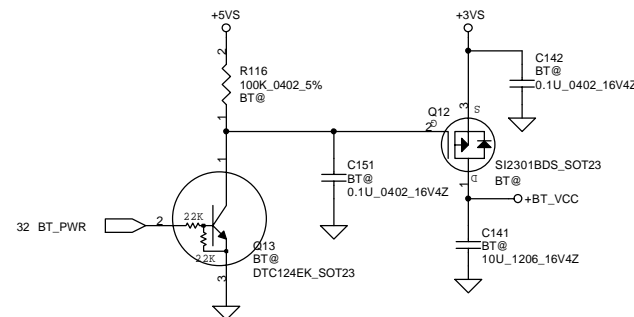


# MDC CONN.



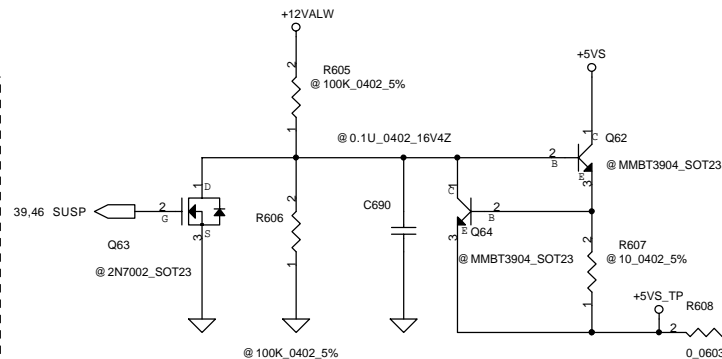
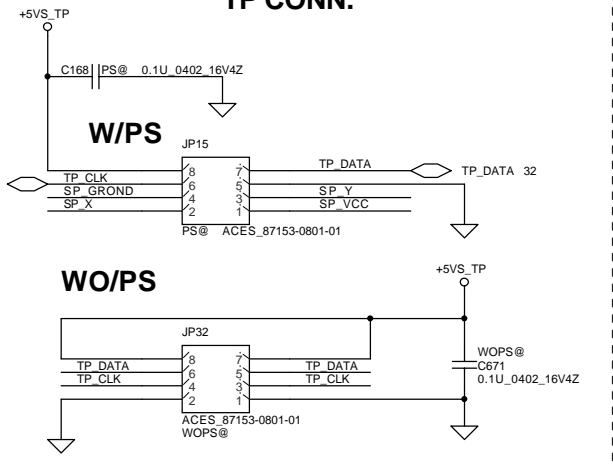
Connector for MDC Rev1.5

# BlueTooth Interface

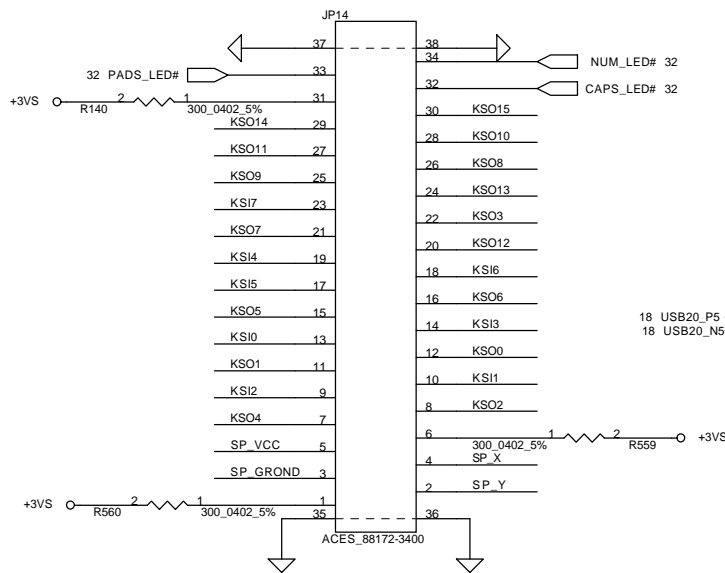


Module ID  
Indication for polarity of reset  
Reset input High Active -> Low,  
Reset input Low Active -> Open

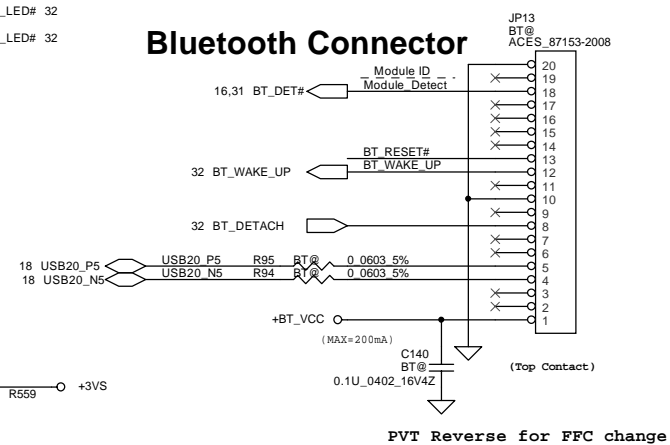
# TP CONN.



# INT\_KBD CONN.



# Bluetooth Connector

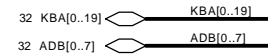
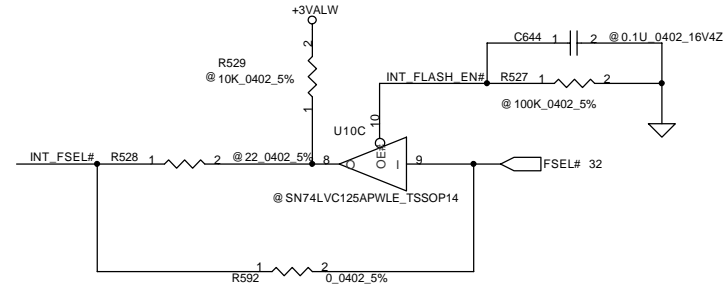
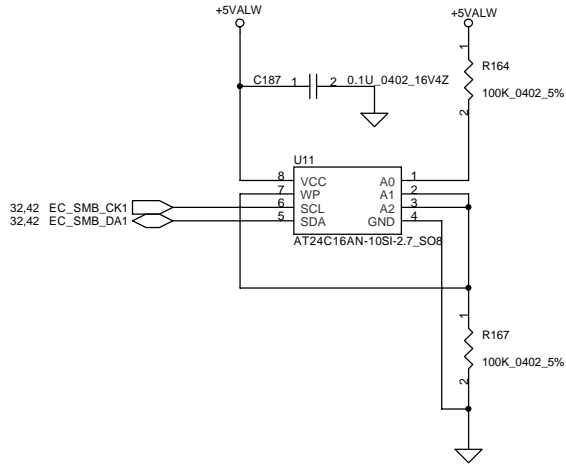
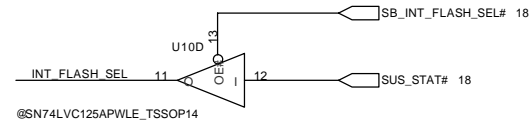
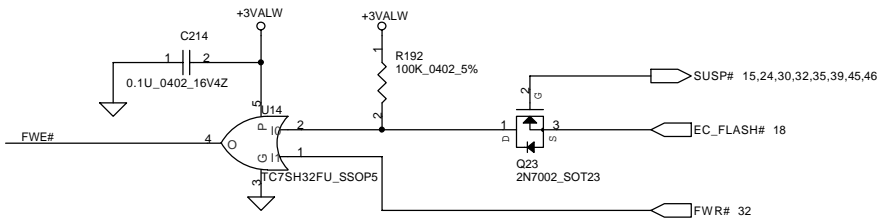


PVT Reverse for FFC change

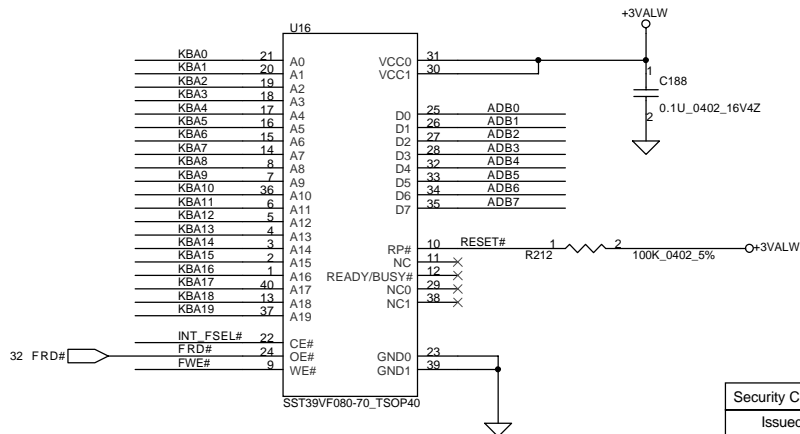
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KSO6	C626	100P_0402_25V8K
KSO5	C627	100P_0402_25V8K
KSO4	C628	100P_0402_25V8K
KSO3	C629	100P_0402_25V8K
KSI4	C630	100P_0402_25V8K
KSO2	C631	100P_0402_25V8K
KSO1	C632	100P_0402_25V8K
KSO0	C633	100P_0402_25V8K
KSI5	C634	100P_0402_25V8K
KSI6	C635	100P_0402_25V8K
KSI7	C636	100P_0402_25V8K
KSO8	C624	100P_0402_25V8K

KSO15	C613	100P_0402_25V8K
KSO14	C614	100P_0402_25V8K
KSO13	C615	100P_0402_25V8K
KSO12	C616	100P_0402_25V8K
KSI0	C617	100P_0402_25V8K
KSO11	C618	100P_0402_25V8K
KSO10	C619	100P_0402_25V8K
KSI1	C620	100P_0402_25V8K
KSI2	C621	100P_0402_25V8K
KSO9	C622	100P_0402_25V8K
KSI3	C623	100P_0402_25V8K
PADS_LED#	C682	100P_0402_25V8K
NUM_LED#	C683	100P_0402_25V8K
CAPS_LED#	C684	100P_0402_25V8K

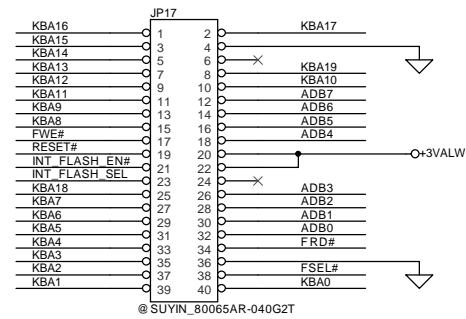
Security Classification	Compal Secret Data		Title	<b>Compal Electronics, Inc.</b>	
Issued Date	2005/04/21	Deciphered Date		2006/09/01	<b>SCHEMATIC, M/B LA-2891</b>
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### 1MB Flash ROM

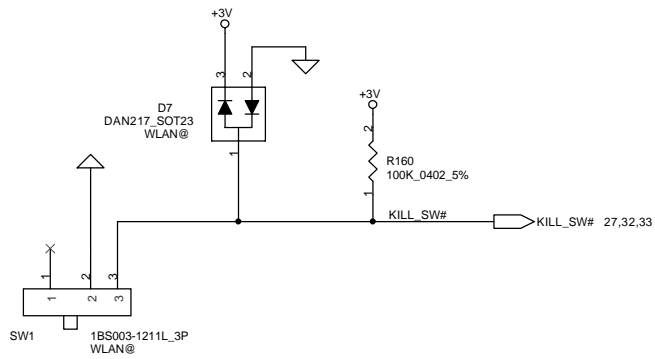


### 1MB ROM Socket

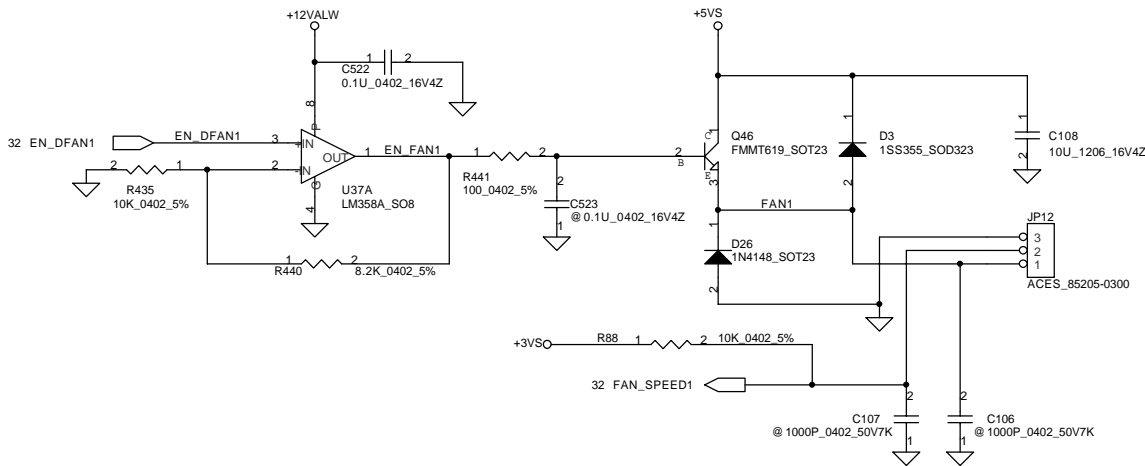


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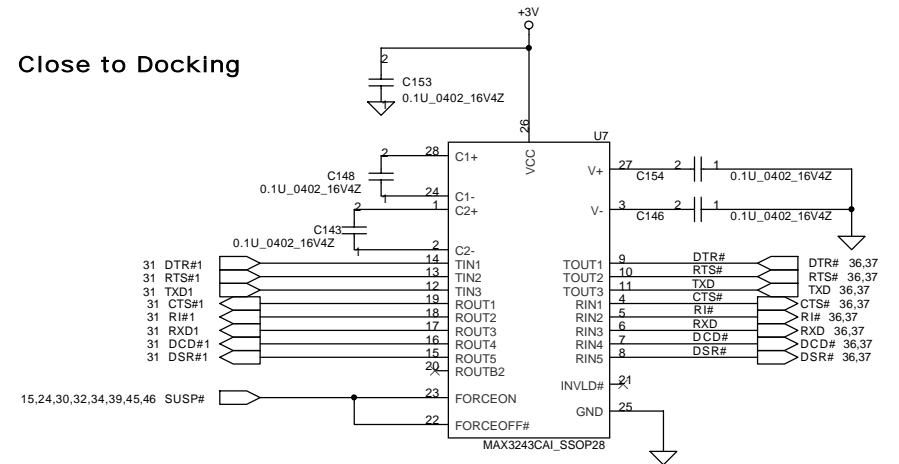
### Kill Switch



### FAN Conn



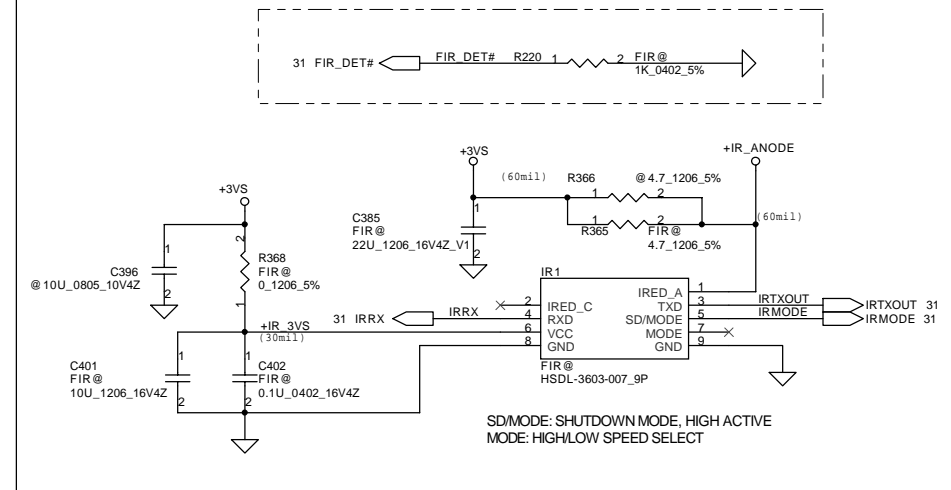
### Close to Docking



No Docking and Serial Port ----> Del  
But Sakhir 20C has Docking always ----> Keep

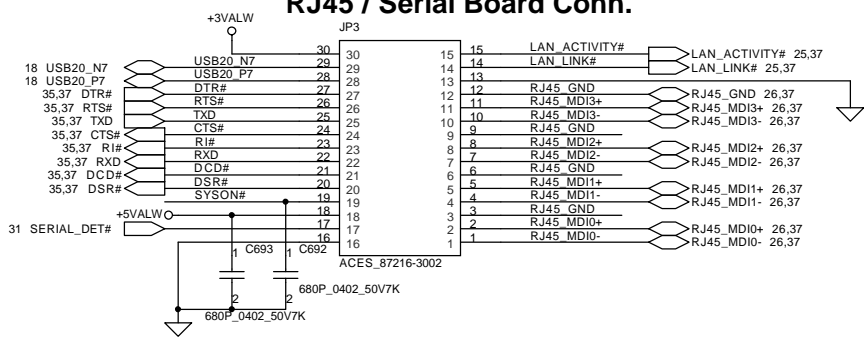
### FIR Module

L: R POP; FIR Enable  
H: R De-POP/FIR Disable

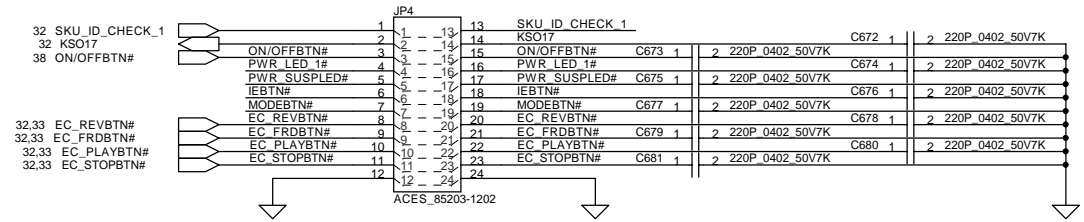


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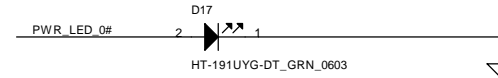
### RJ45 / Serial Board Conn.



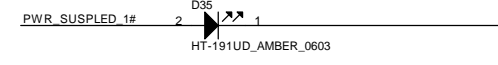
### Power / LED Board Conn.



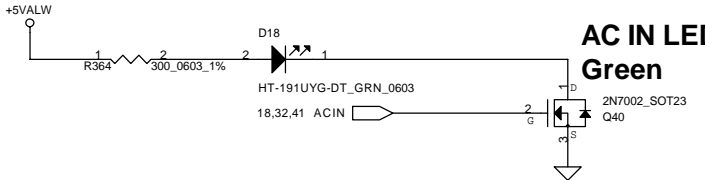
**POWER/ON LED Green**



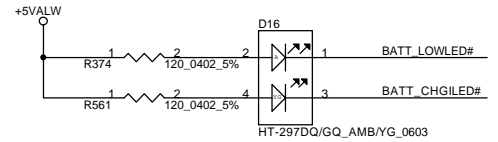
**POWER/SUSP LED Amber**



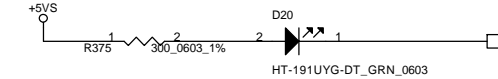
**AC IN LED Green**



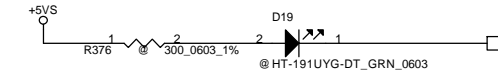
**BATTERY CHG Green Amber**



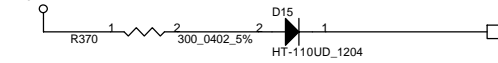
**HDD LED Green**



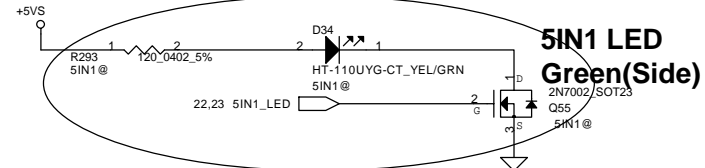
**MODE LED Green**



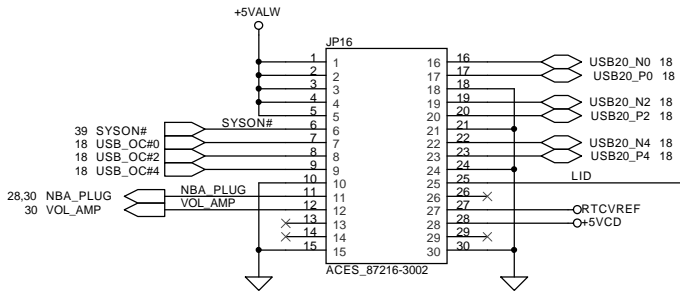
**WL LED Amber(Side)**



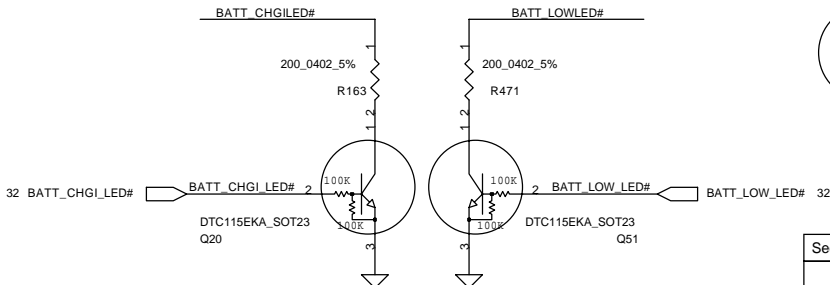
**5IN1 LED Green(Side)**



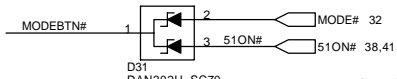
### USB Board Conn.



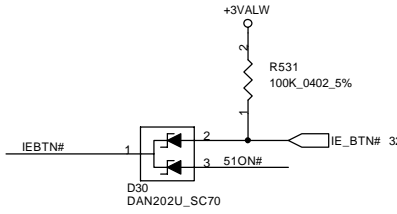
### BATTERY CHG/LOW LED



**PWR SUSP LED**

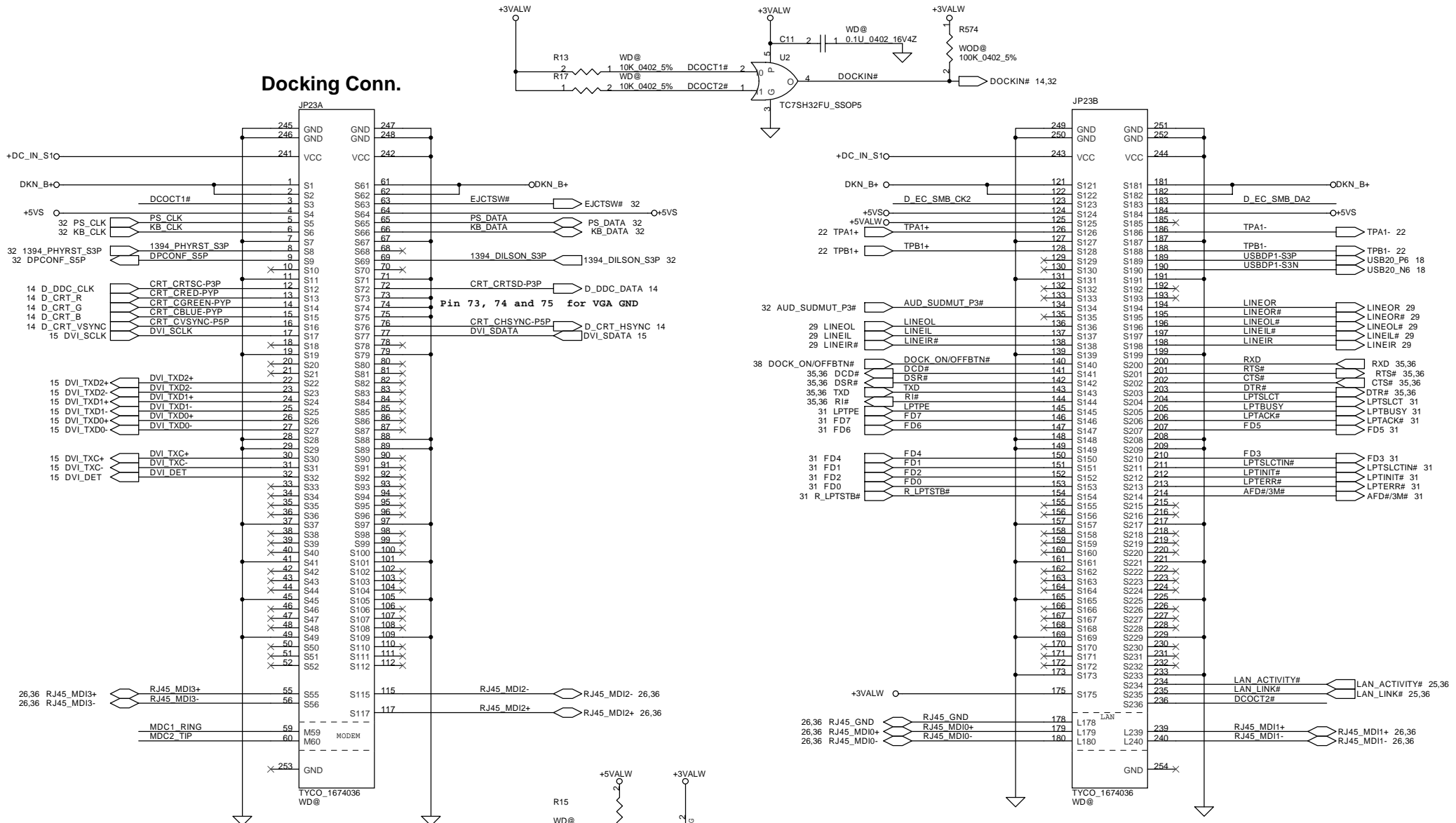


**IE\_BTN# LED**

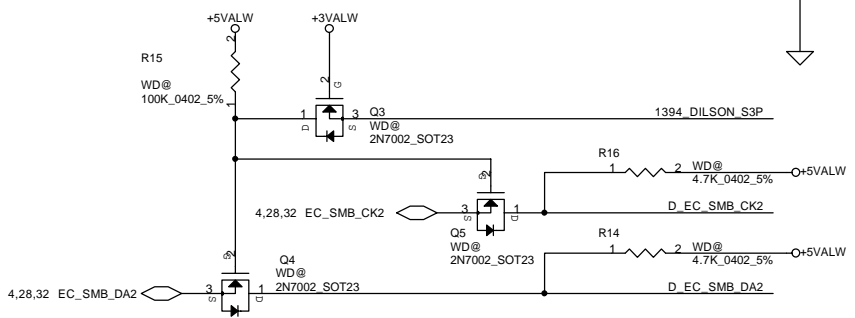
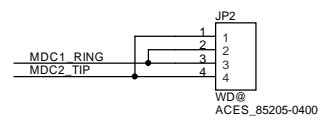


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# Docking Conn.

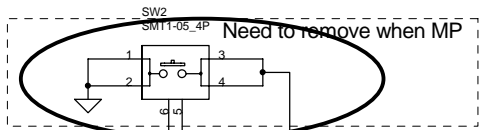


## MDC to Docking Conn.

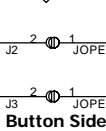


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### Power Button

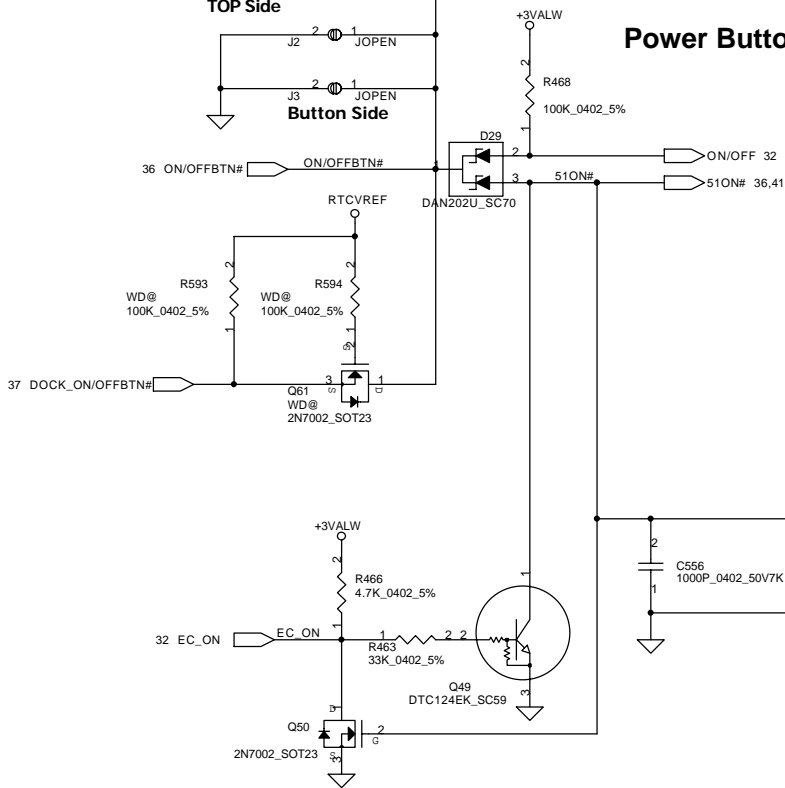


TOP Side

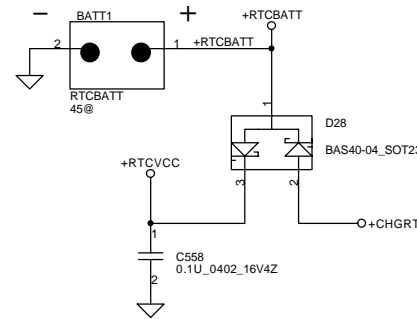


Button Side

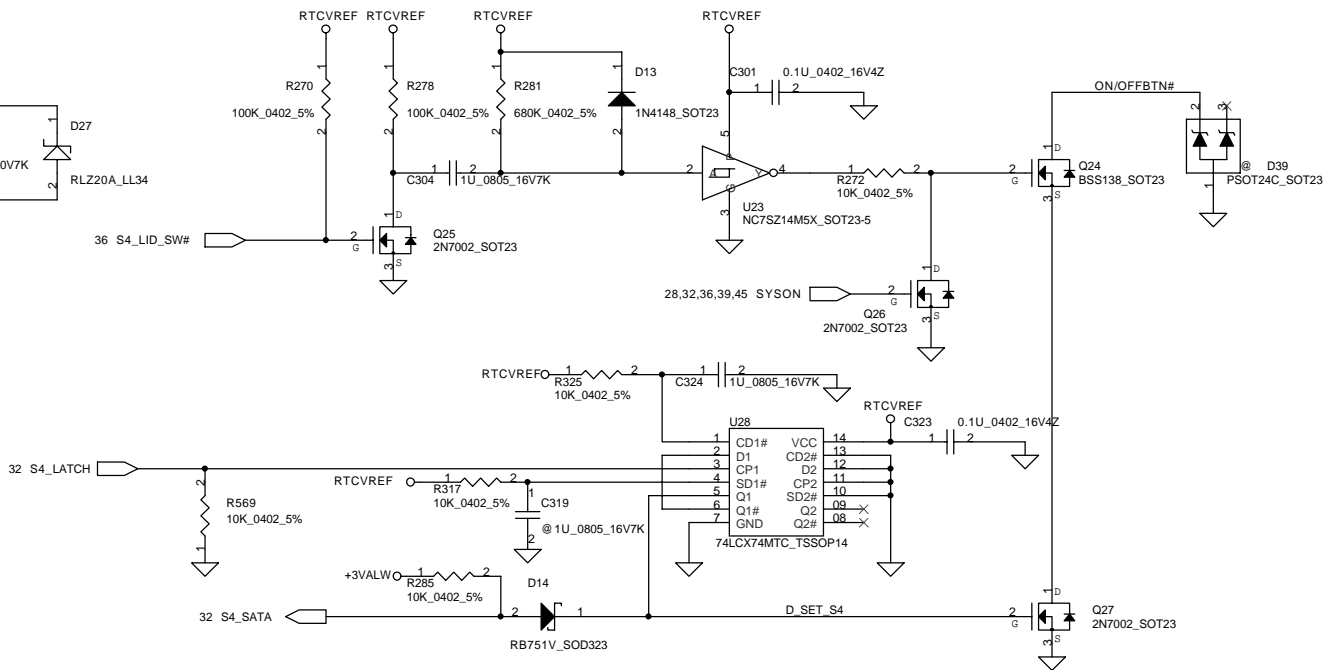
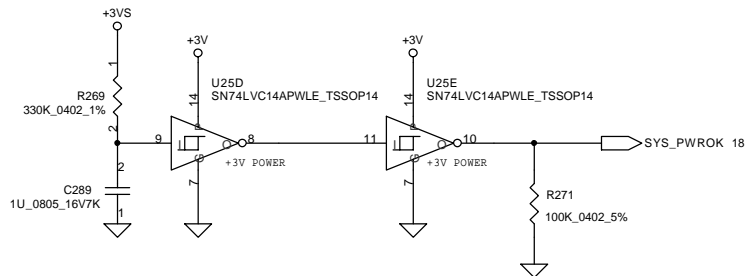
### Power Button



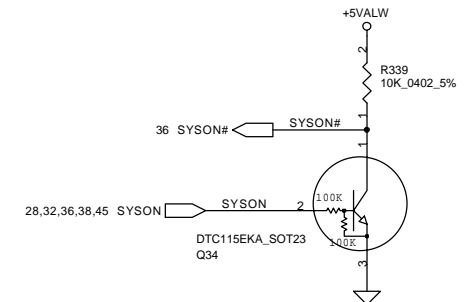
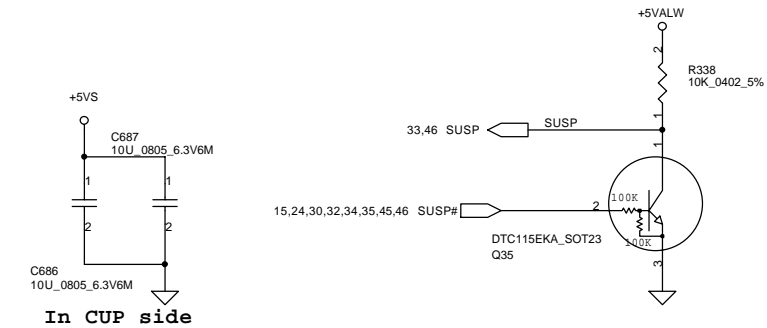
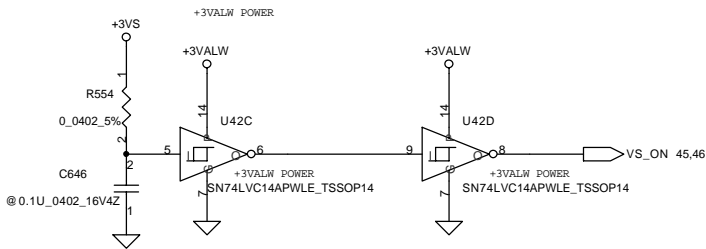
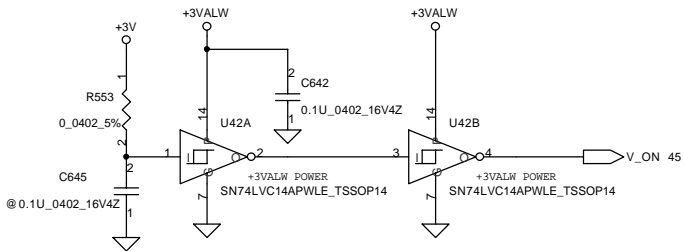
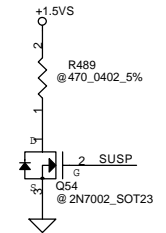
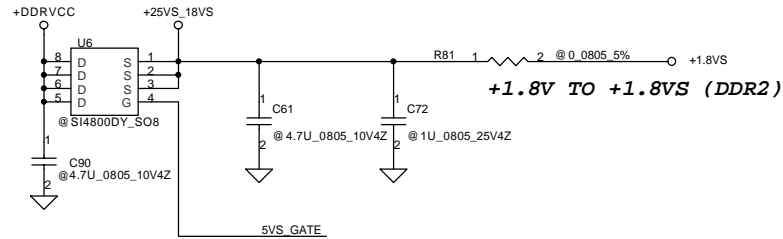
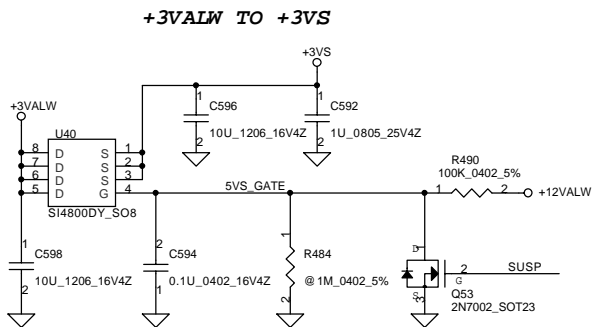
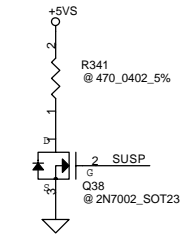
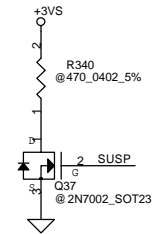
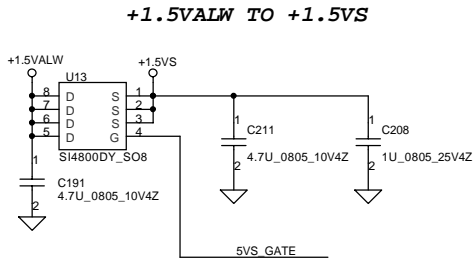
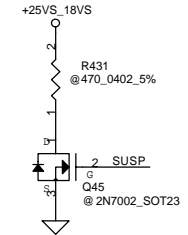
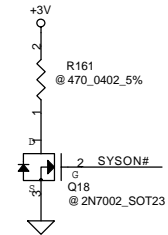
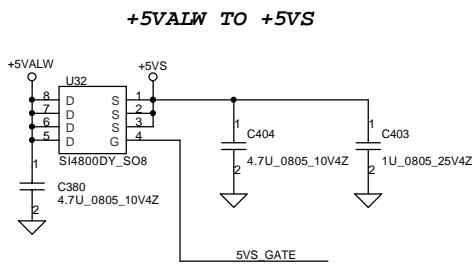
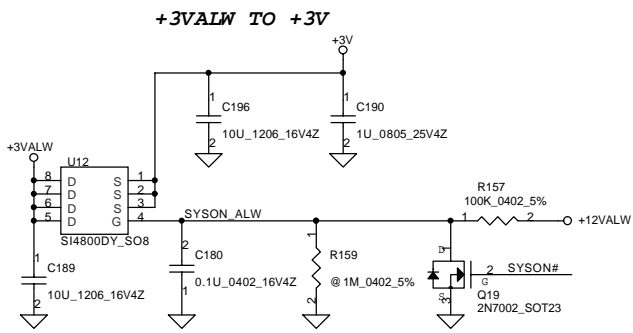
### RTC Battery



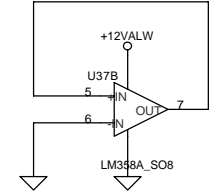
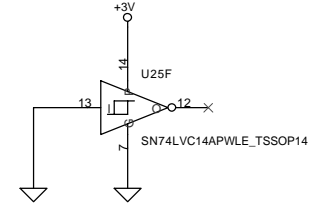
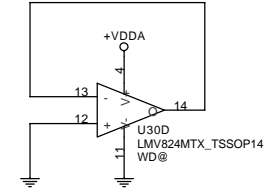
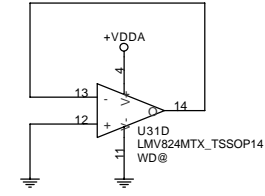
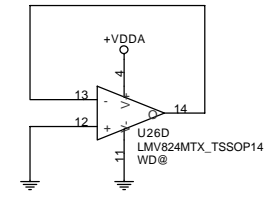
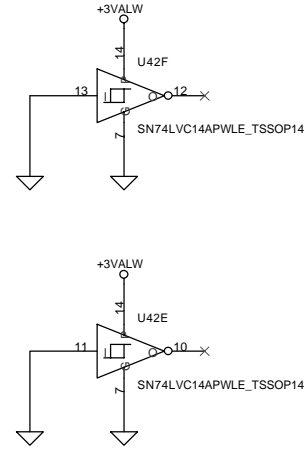
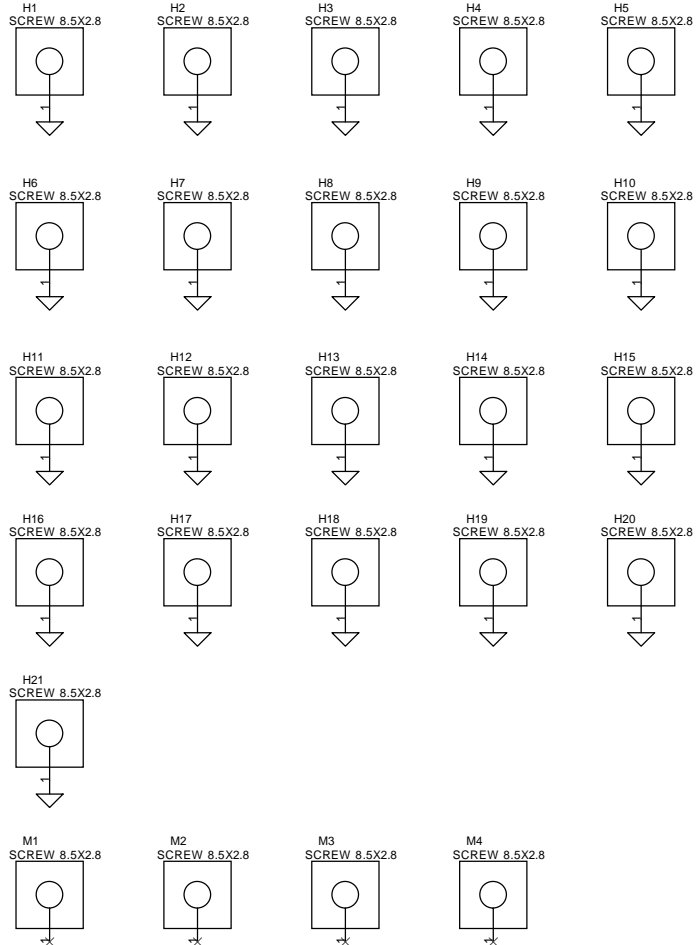
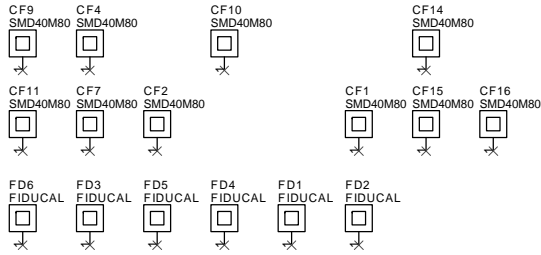
### Power ON Circuit



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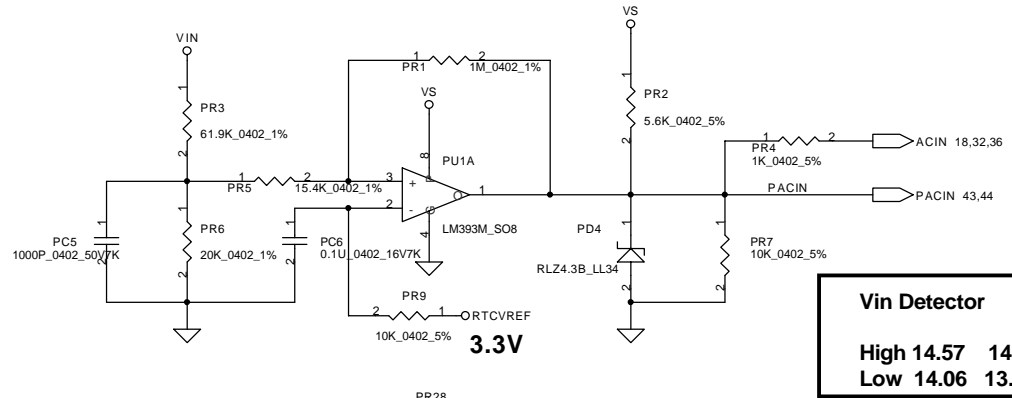
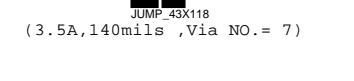
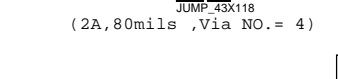
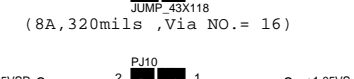
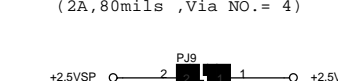
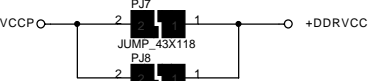
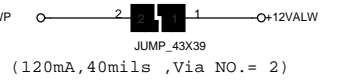
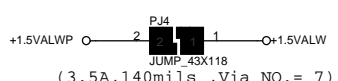
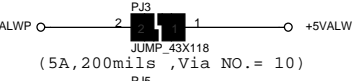
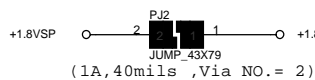
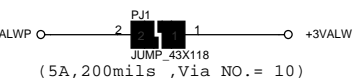
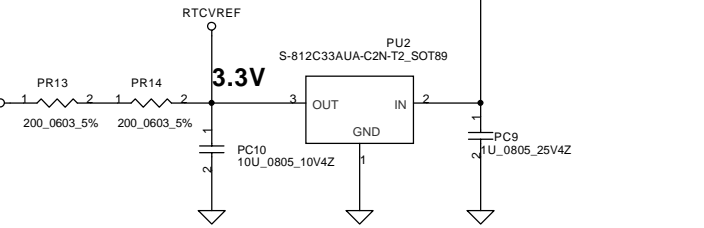
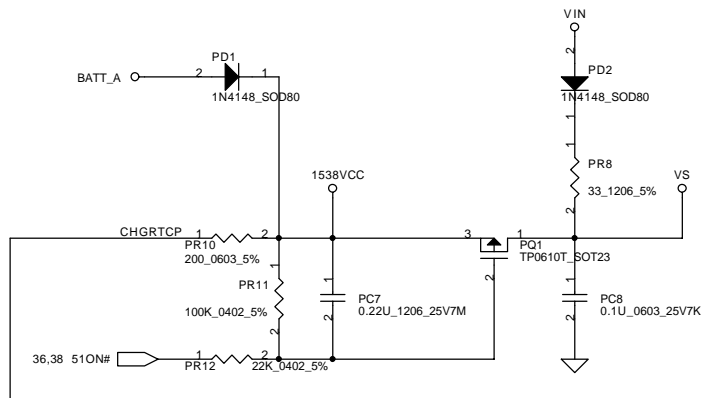
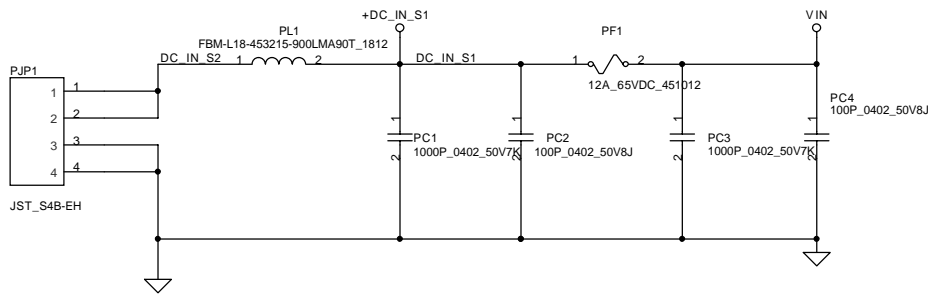


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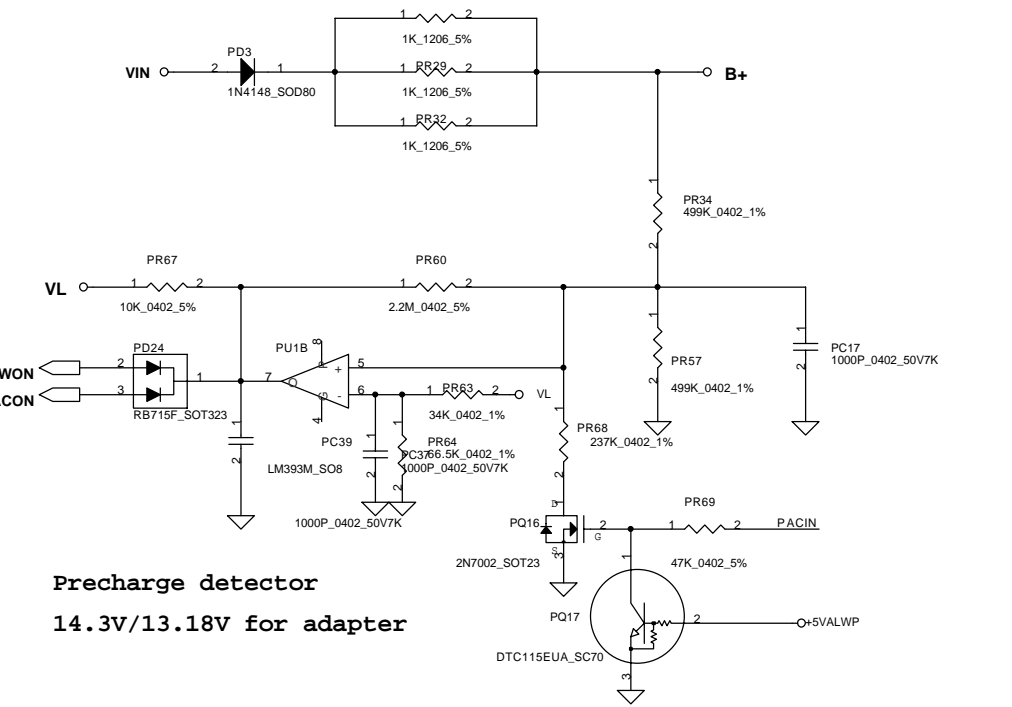


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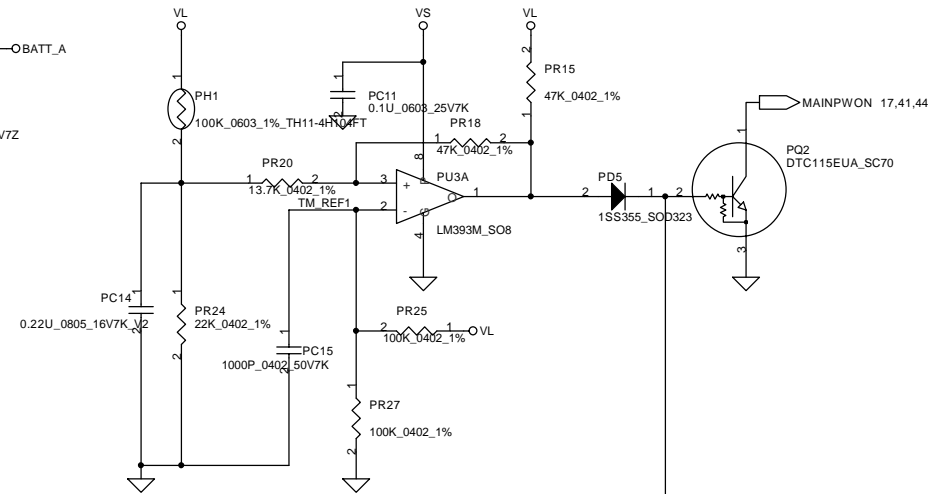
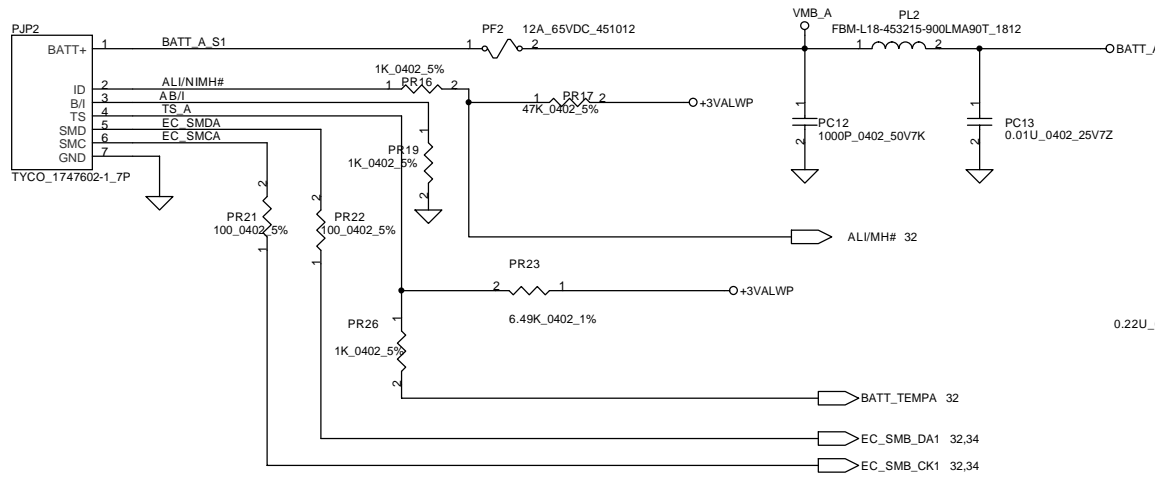
Vin Detector			
High	14.57	14.01	13.46
Low	14.06	13.51	12.98



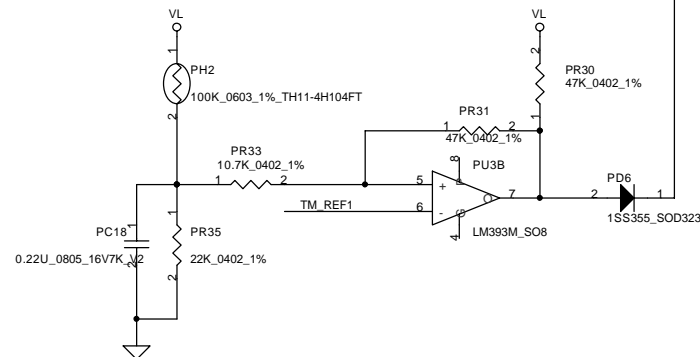
**Precharge detector**  
14.3V/13.18V for adapter

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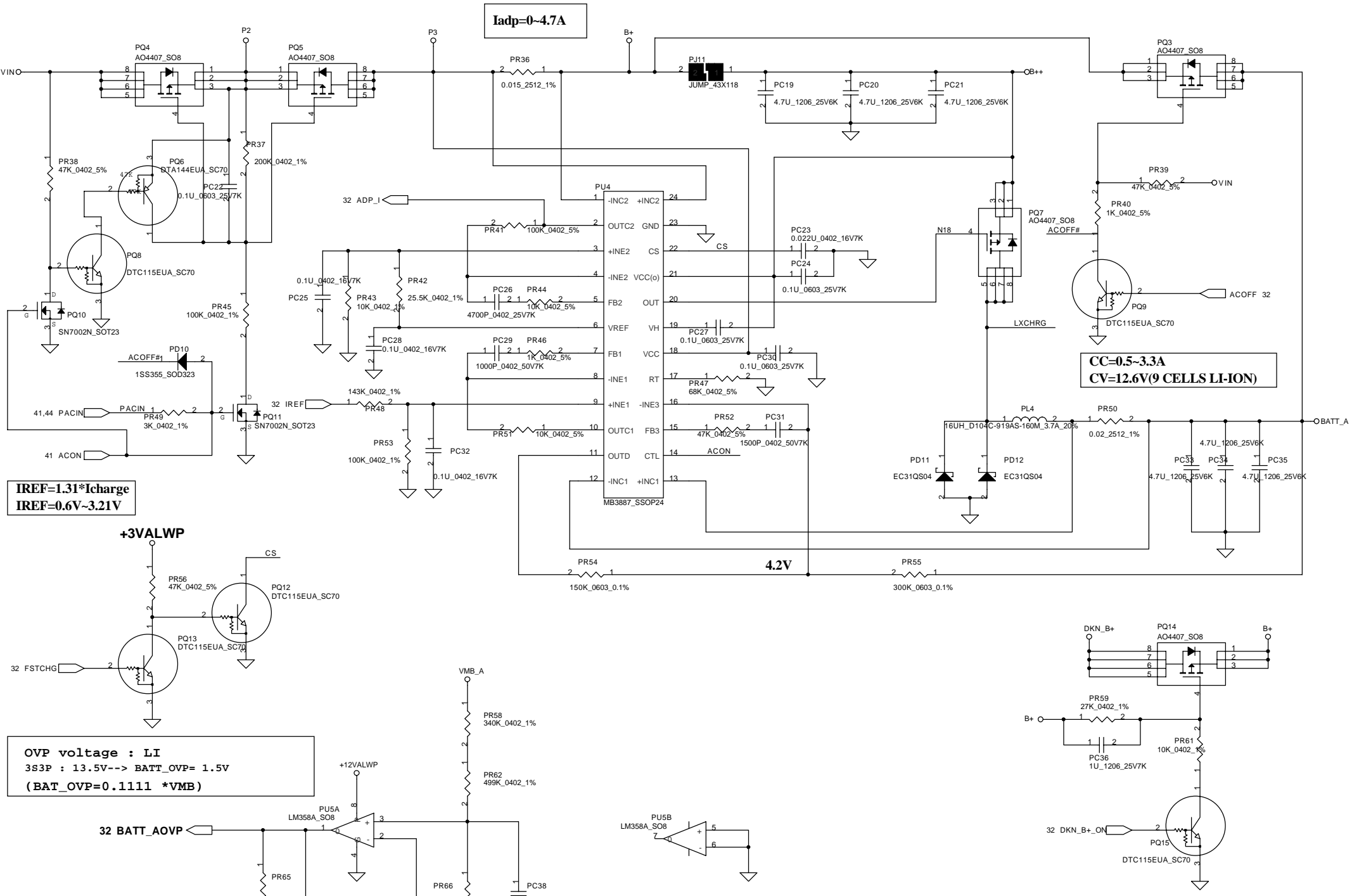
**PH1 under CPU botten side :**  
 CPU thermal protection at 84 degree C  
 Recovery at 45 degree C



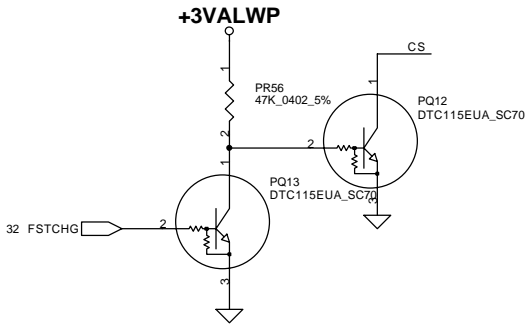
**PH2 near main Battery CONN :**  
 BAT. thermal protection at 79 degree C  
 Recovery at 45 degree C



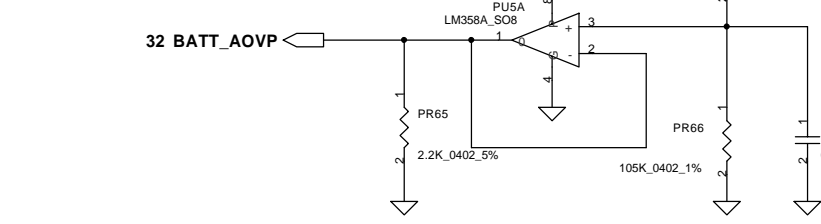
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**IREF=1.31\*Icharge**  
**IREF=0.6V~3.21V**

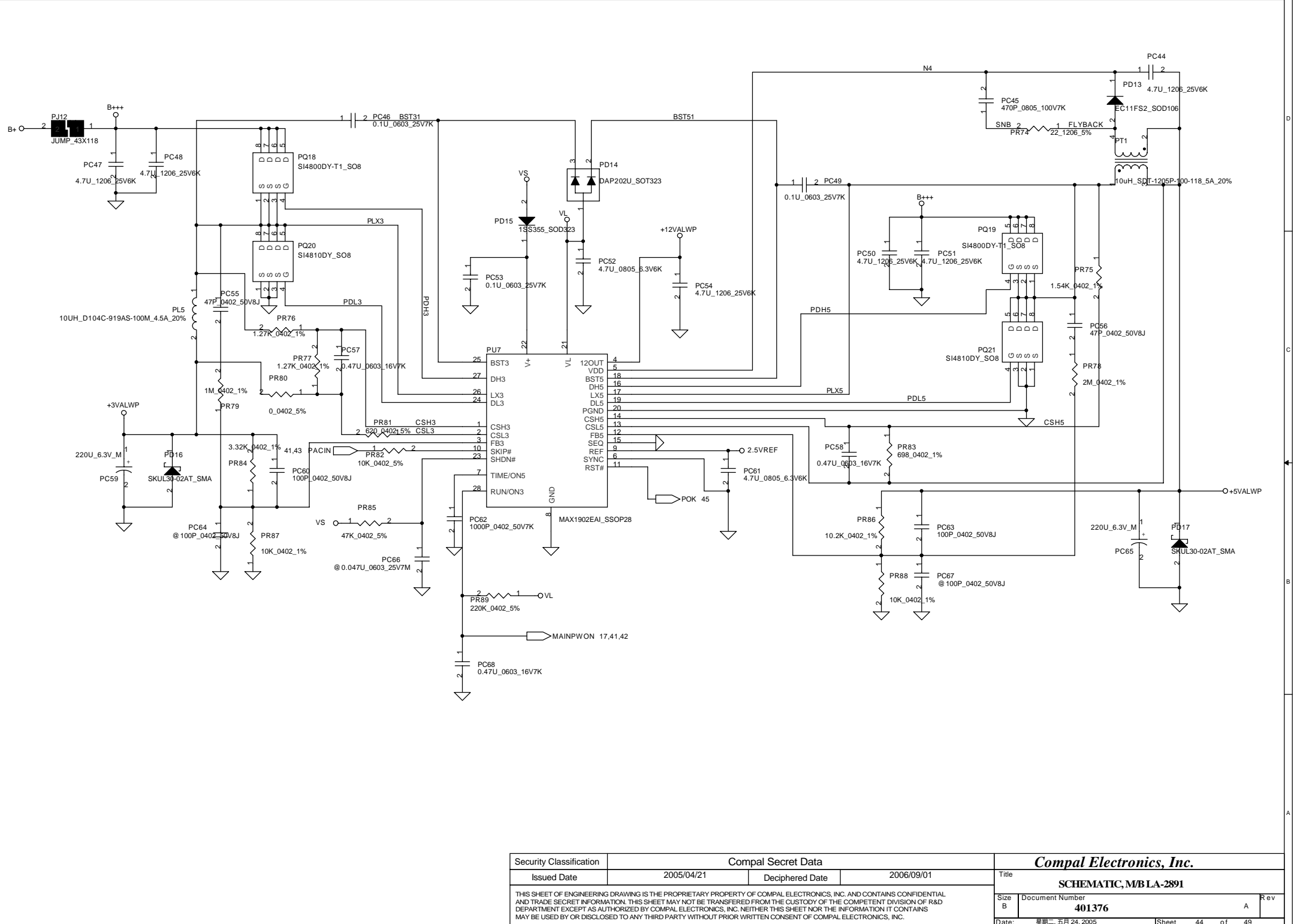


**OVP voltage : LI**  
**3S3P : 13.5V--> BATT\_OVP = 1.5V**  
**(BAT\_OVP=0.1111 \*VMB)**

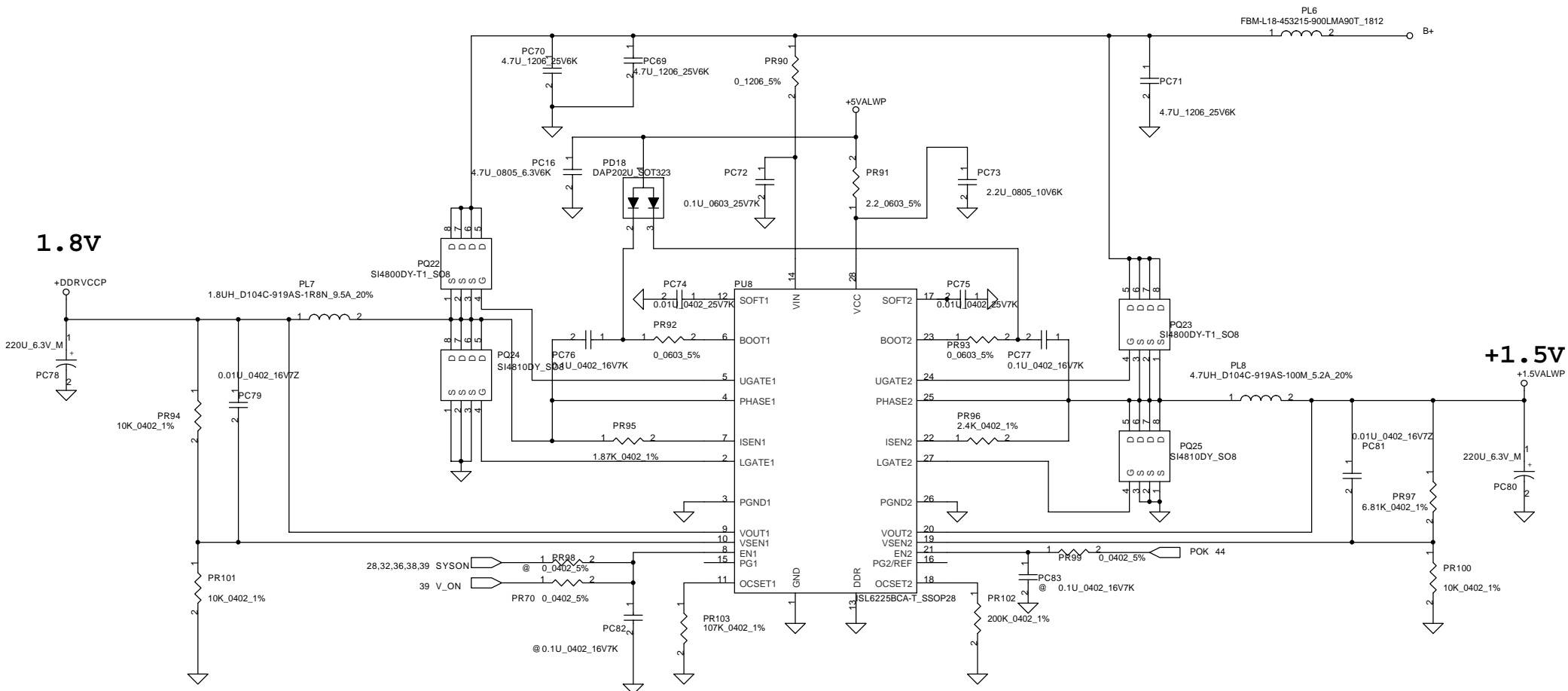


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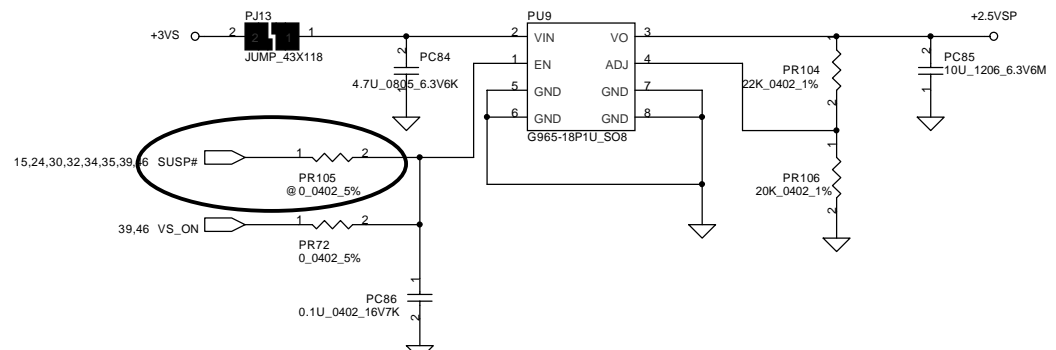
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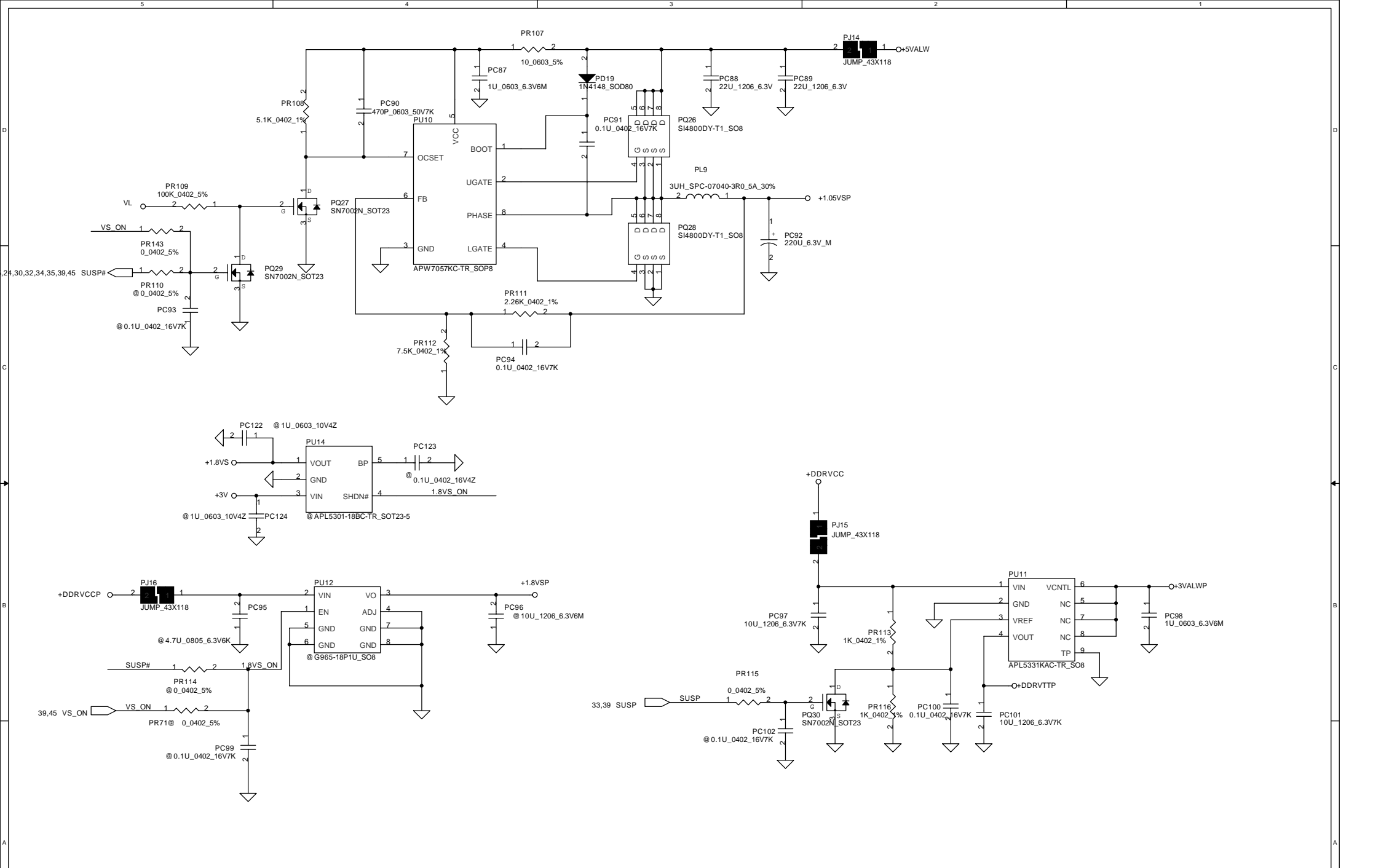


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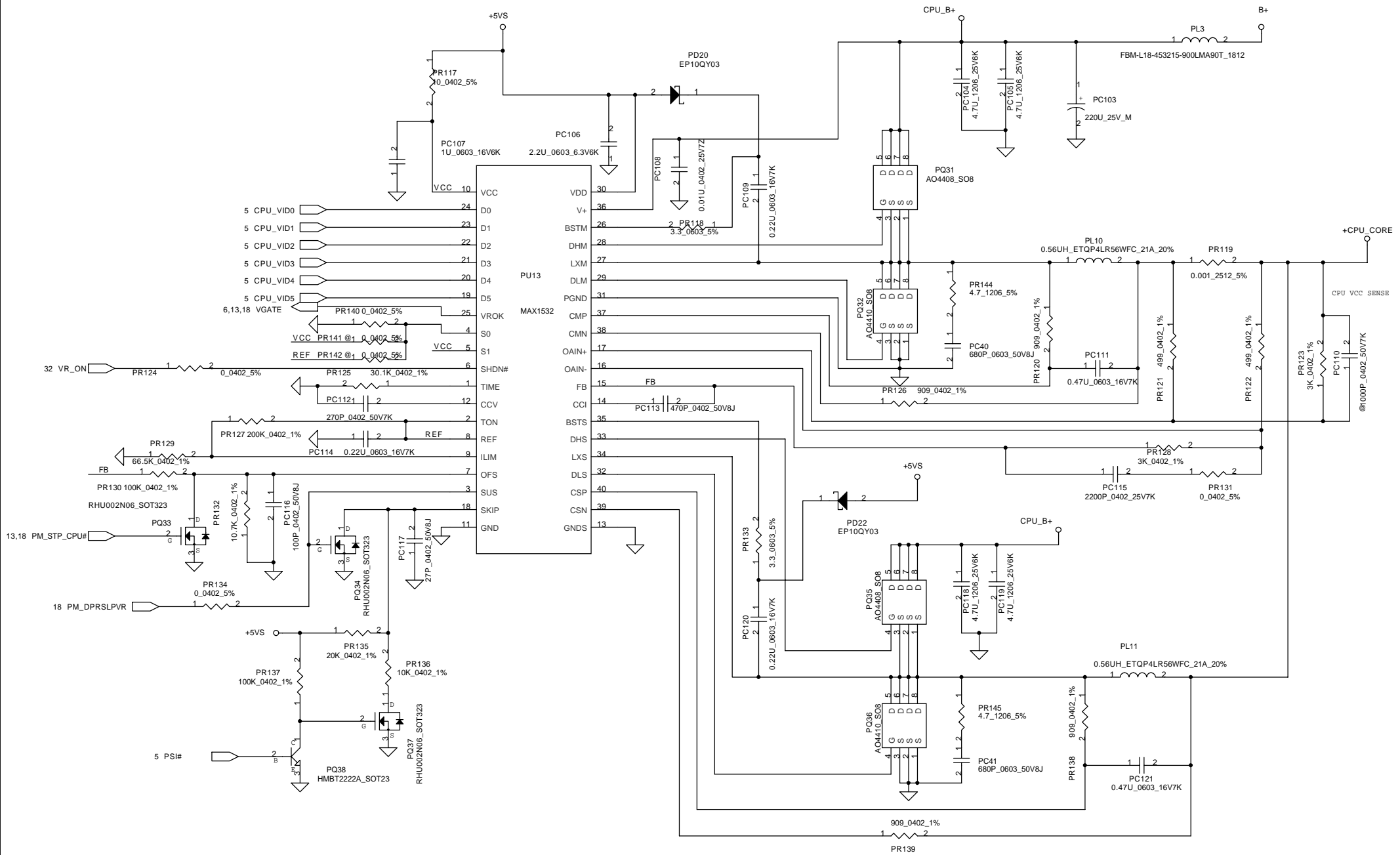


	PR94	UNPOP
DDRI	18.2K_0402_1% (2.5V)	PU9, PC84, PR105, PR104, PR106, PC85
DDRII	10K_0402_1% (1.8V)	PU12, PC95, PR114, PC96





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D

ZZZ

LA-2891

U5

ALVISO  
GML@

U36

10/100 88E8036  
10@

T1

10/100 Transformer  
10@

R73

10/100 88E8036 RSET  
10@

U41

T1 PCI4510  
4510@

C

B

A

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# HBL30 PIR List

\*\*\*\*\* Rev:0.1 PIR List 2005/05/05 Writer by Young Chou \*\*\*\*\*

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