

Compal Confidential

DAT20 Schematics Document

Banias uFCPGA Package with 855PM(Odem) + ICH4-M

2003-10-23

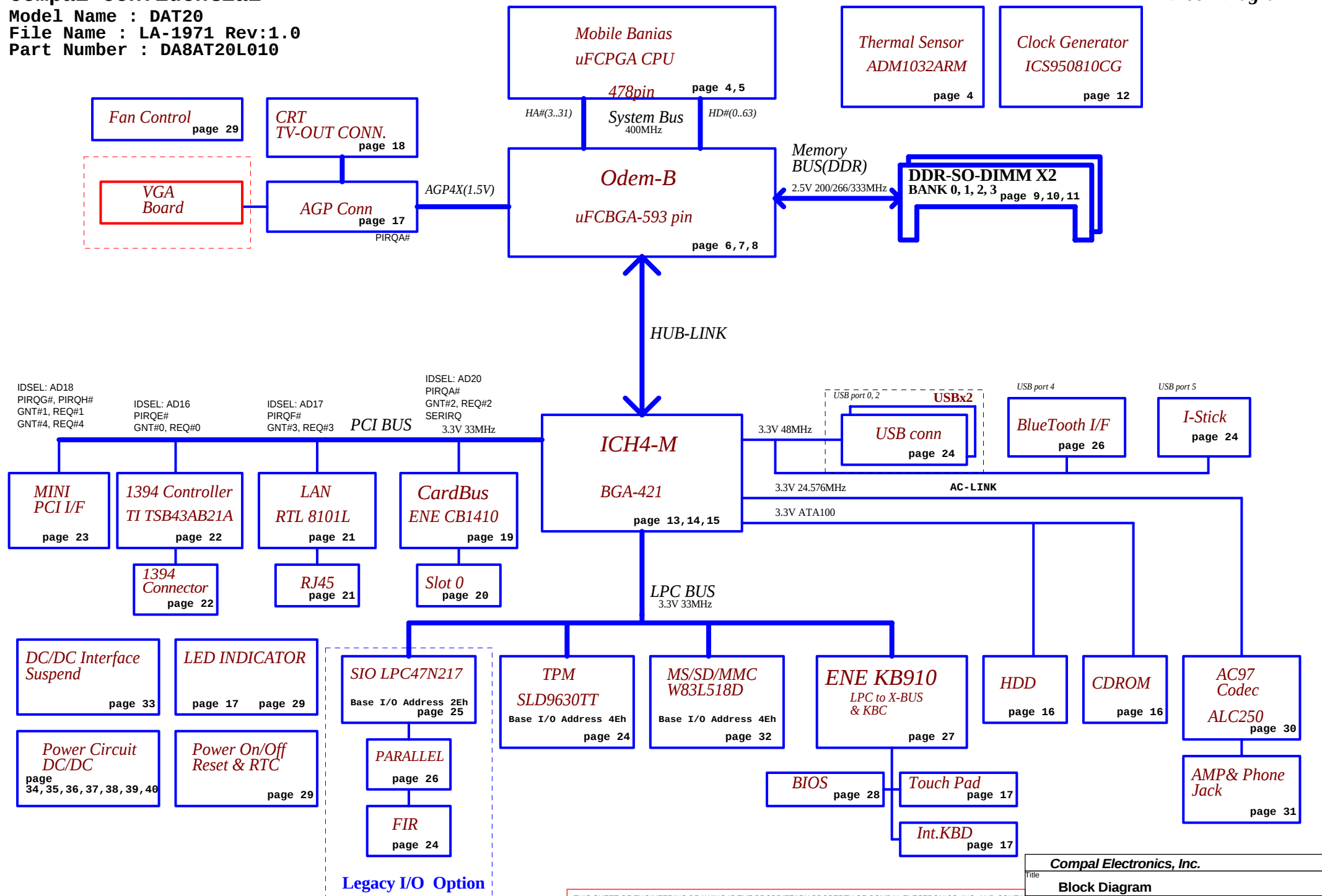
REV: 1.0

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Compal Electronics, Inc.	
Title	
Cover Sheet	
Document Number	
DAT20 LA-1971	
Rev	
1.0	
DATE: Tuesday, November 11, 2003	
Sheet 1 of 42	

Model Name : DAT20
File Name : LA-1971 Rev:1.0
Part Number : DA8AT20L010

Model Name : DAT20
File Name : LA-1971 Rev:1.0
Part Number : DA8AT20L010



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Drawing Number: **02A720 LA-1971** Rev **1.0**
 Date: **Tuesday, October 28, 2003** Sheet **2** of **42**

Voltage Rails

Power Plane	Description	S0-S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+VCCP	1.05V rail for Processor I/O	ON	OFF	OFF
+1.2VS	1.2VS switched power rail for MCH	ON	OFF	OFF
+1.25VS	1.25V switched power rail	ON	OFF	OFF
+1.5VALW	1.5V power rail	ON	ON	ON
+1.5VS	AGP 4X	ON	OFF	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+2.5V	2.5V power rail	ON	ON	OFF
+2.5VS	2.5V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V	3.3V power rail	ON	ON	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5V	5V power rail	ON	ON	OFF
+5VS	5V switched power rail	ON	OFF	OFF
+12VALW	12V always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON

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

External PCI Devices

Device	IDSEL#	REQ#/GNT#	Interrupts
VGA			PIRQA
CardBus	AD20	2	PIRQA
LAN	AD17	3	PIRQF
Mini-PCI	AD18,AD22	1/4	PIRQG/PIRQH
1394	AD16	0	PIRQE

EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b	ADM1032	1001 110X b
EEPROM(24C16/02)	1010 000X b		
(24C84)	1011 000Xb		

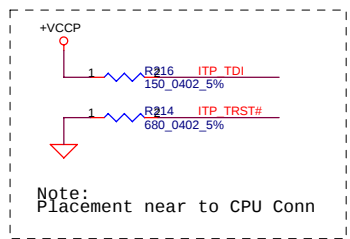
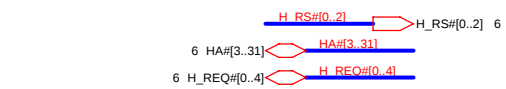
ICH4-M SM Bus address

Device	Address
Clock Generator (ICS950810C6)	1101 001Xb
DDR DIMM0	1010 000Xb
DDR DIMM1	1010 001Xb

Board ID Table for AD channel

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

Board ID	PCB Revision
0	0.1
* 1	0.2
2	0.3
3	0.4
4	
5	
6	
7	



Note:
Placement near to CPU Conn



Banias

ADDR GROUP

DATA GROUP

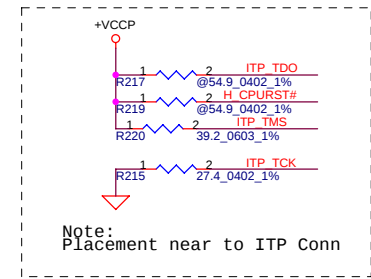
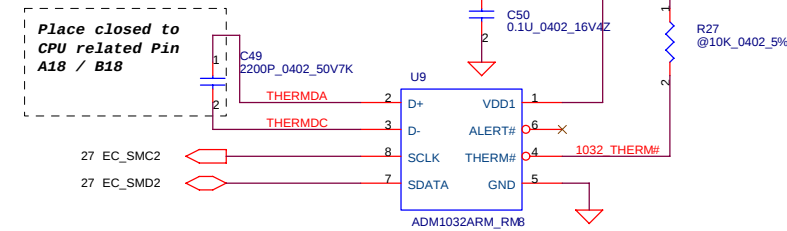
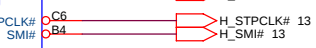
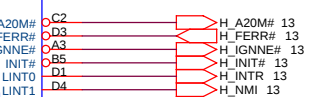
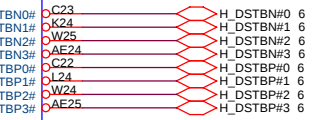
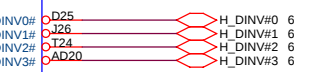
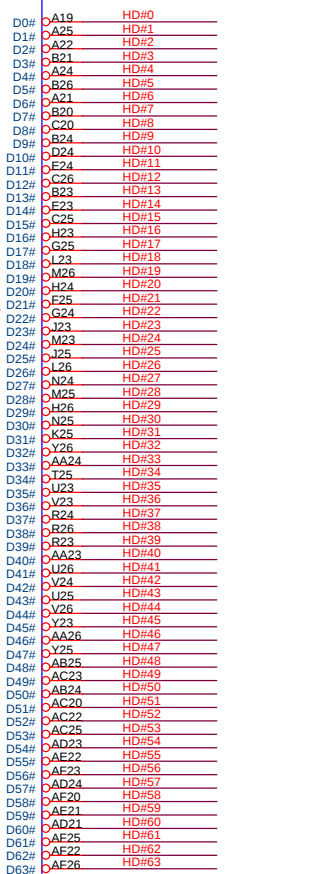
HOST CLK

CONTROL GROUP

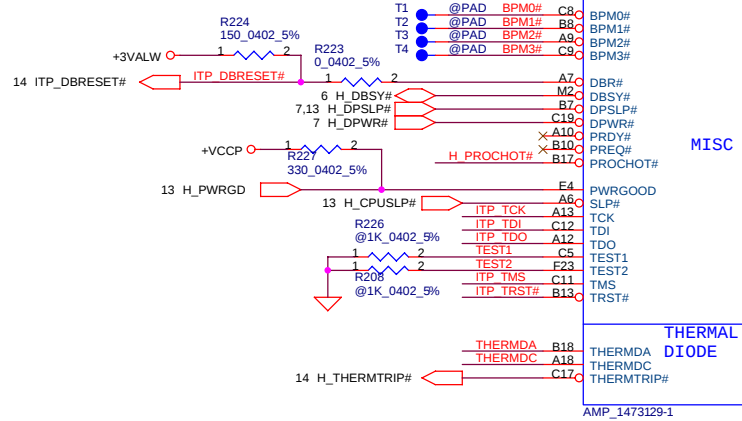
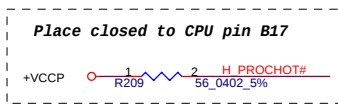
MISC

THERMAL DIODE

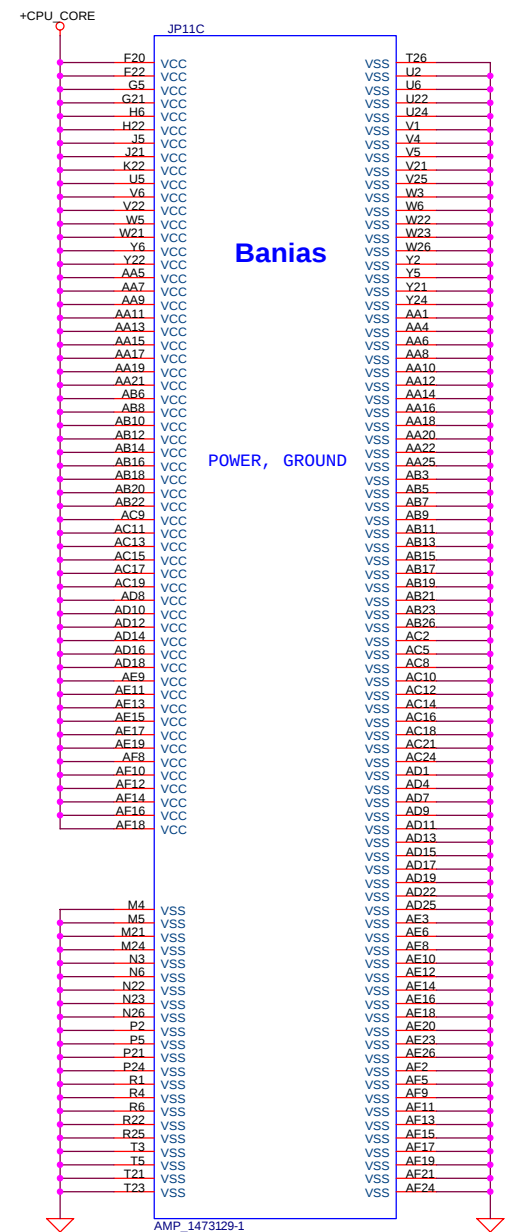
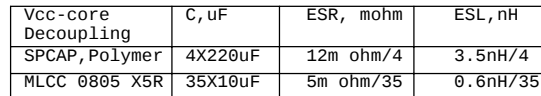
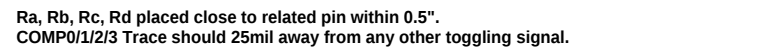
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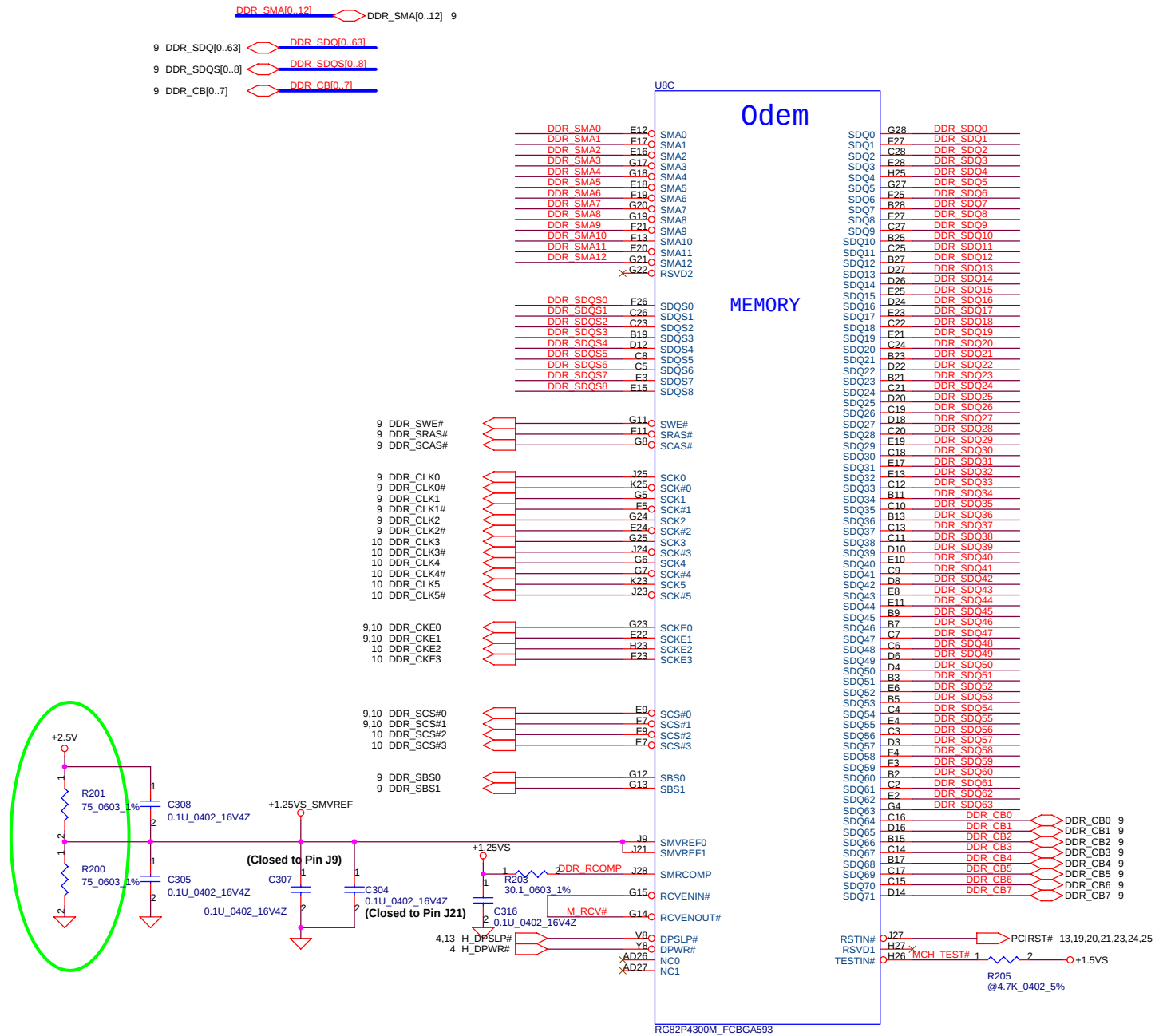


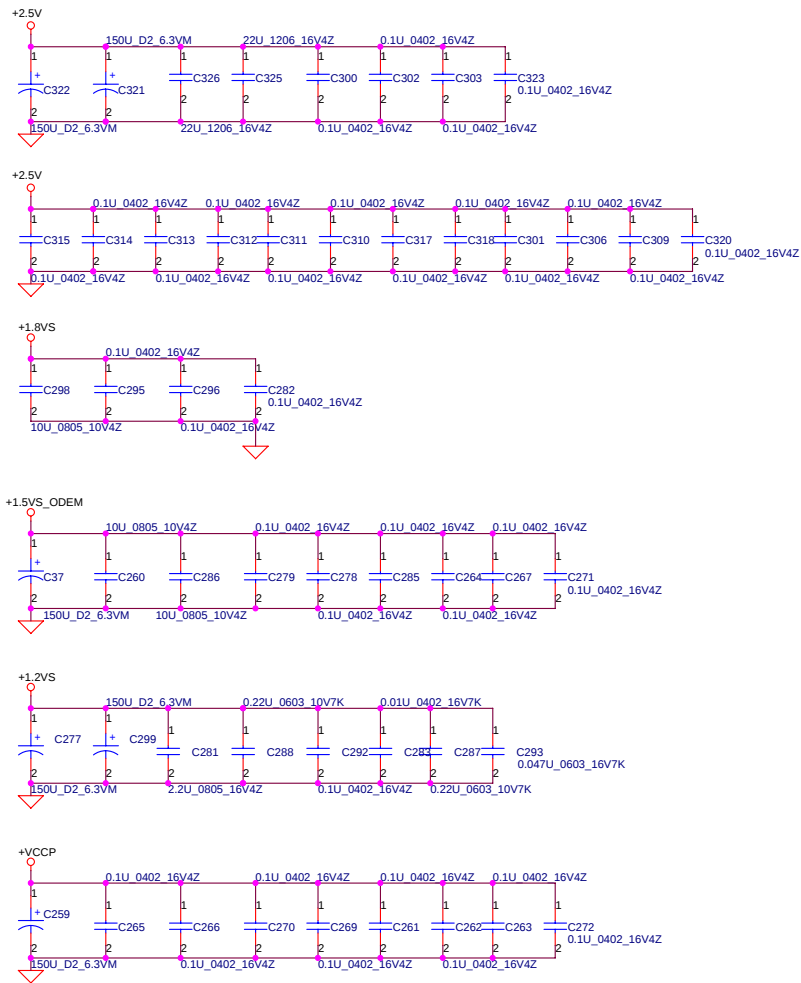
Note:
Placement near to ITP Conn

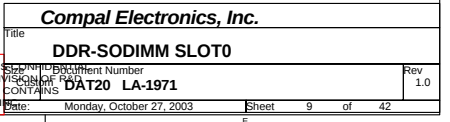


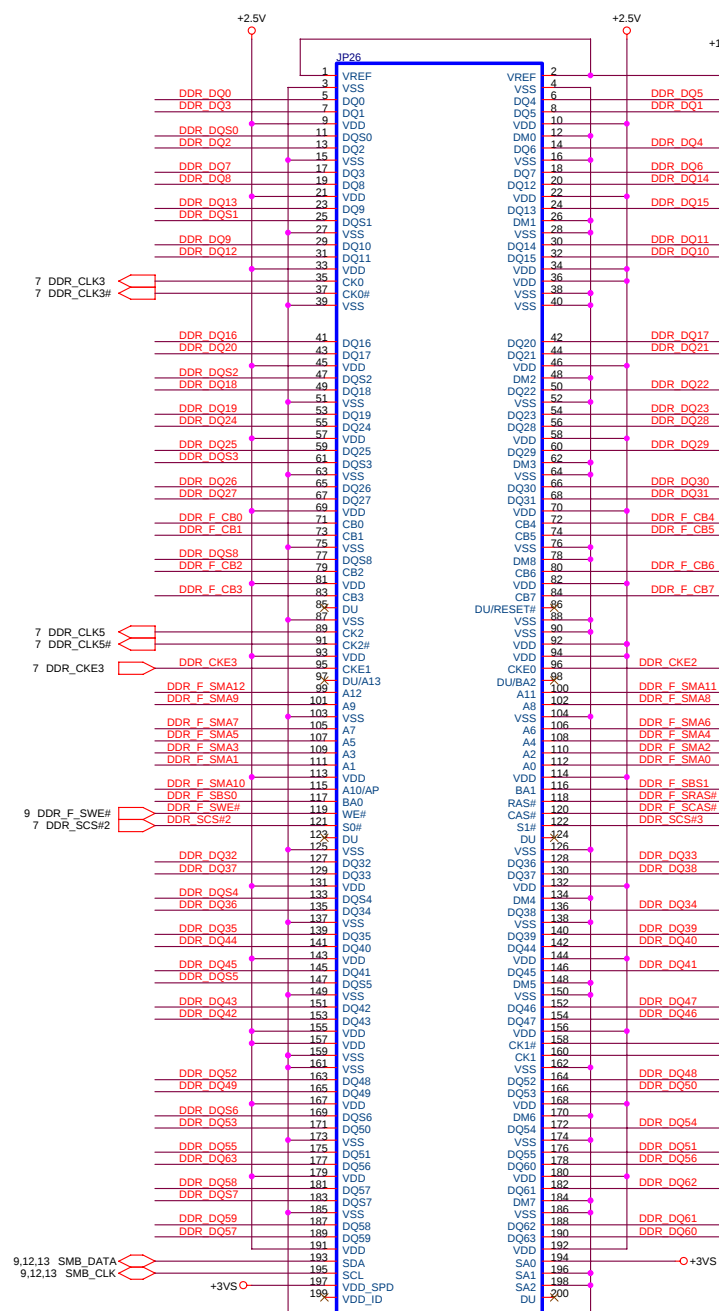
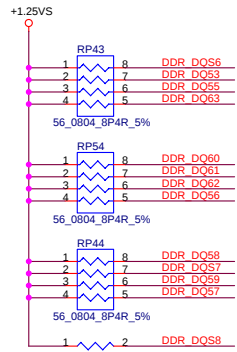
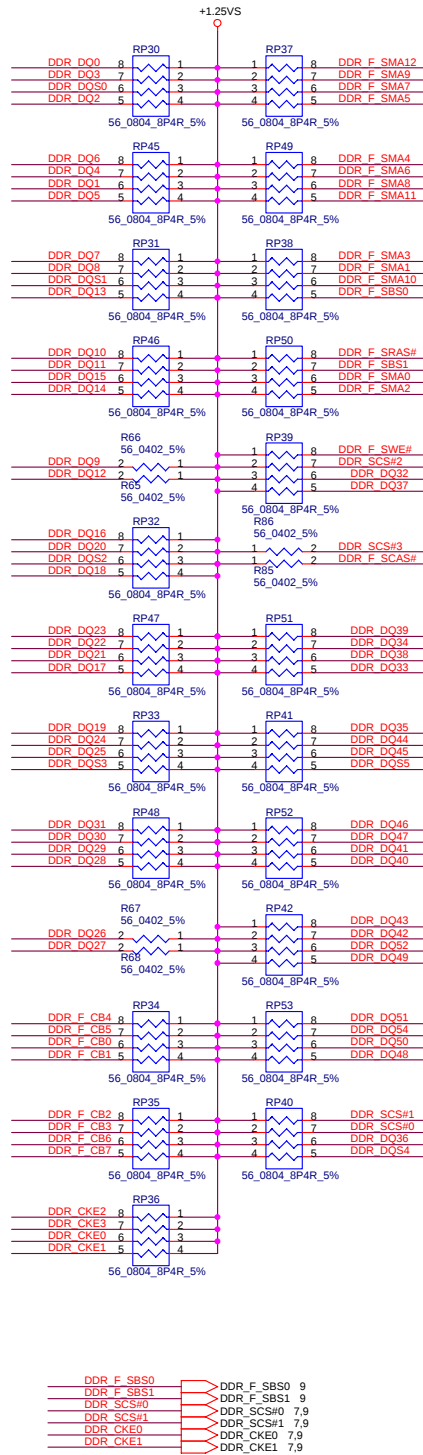
AMP_1473129-1











DDR F_SMA[0..12] 9
DDR_DQ[0..63] 9
DDR_DQS[0..8] 9
DDR_F_CB[0..7] 9

DDR_CKE2 7
DDR_F_SMA11 9
DDR_F_SMA8 9
DDR_F_SMA6 9
DDR_F_SMA4 9
DDR_F_SMA2 9
DDR_F_SMA0 9
DDR_F_SBS1 9
DDR_F_SRAS# 9
DDR_F_SCAS# 9
DDR_SCS#3 9

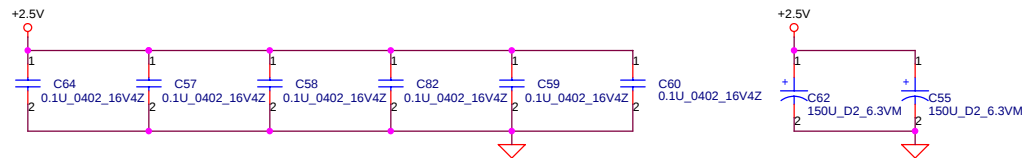
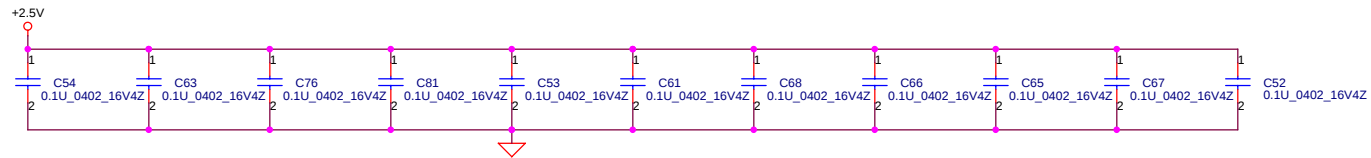
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DDR_CLK4 7

DIMM1

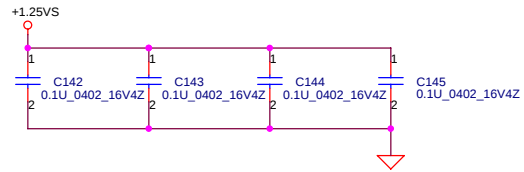
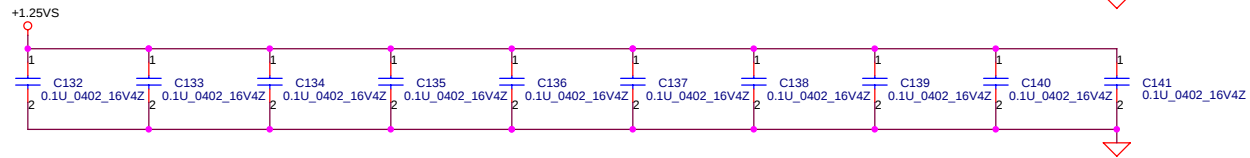
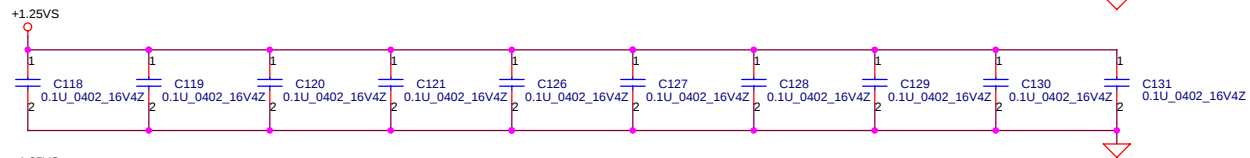
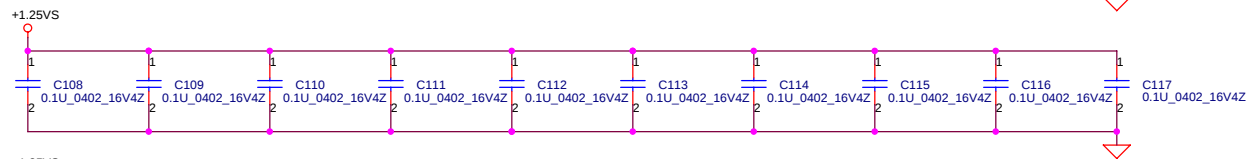
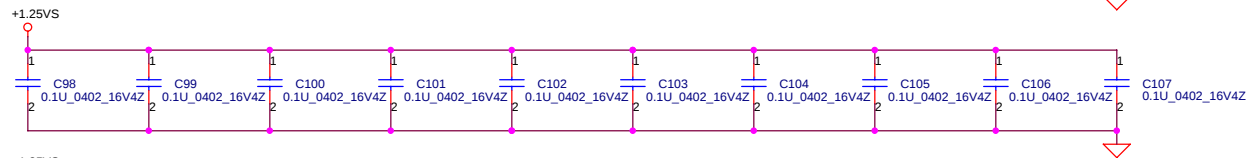
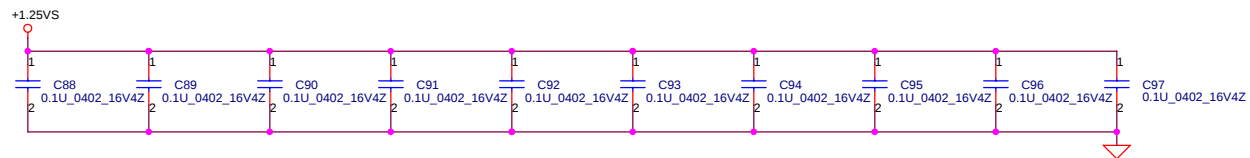
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Title	
DDR-SODIMM SLOT1	
Document Number	Rev
LA-1971	1.0
Date	Monday, October 27, 2003
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Layout note :
Distribute as close as possible
to DDR-SODIMM.



Layout note :
Place one cap close to every 2 pull up resistors termination to
+1.25V

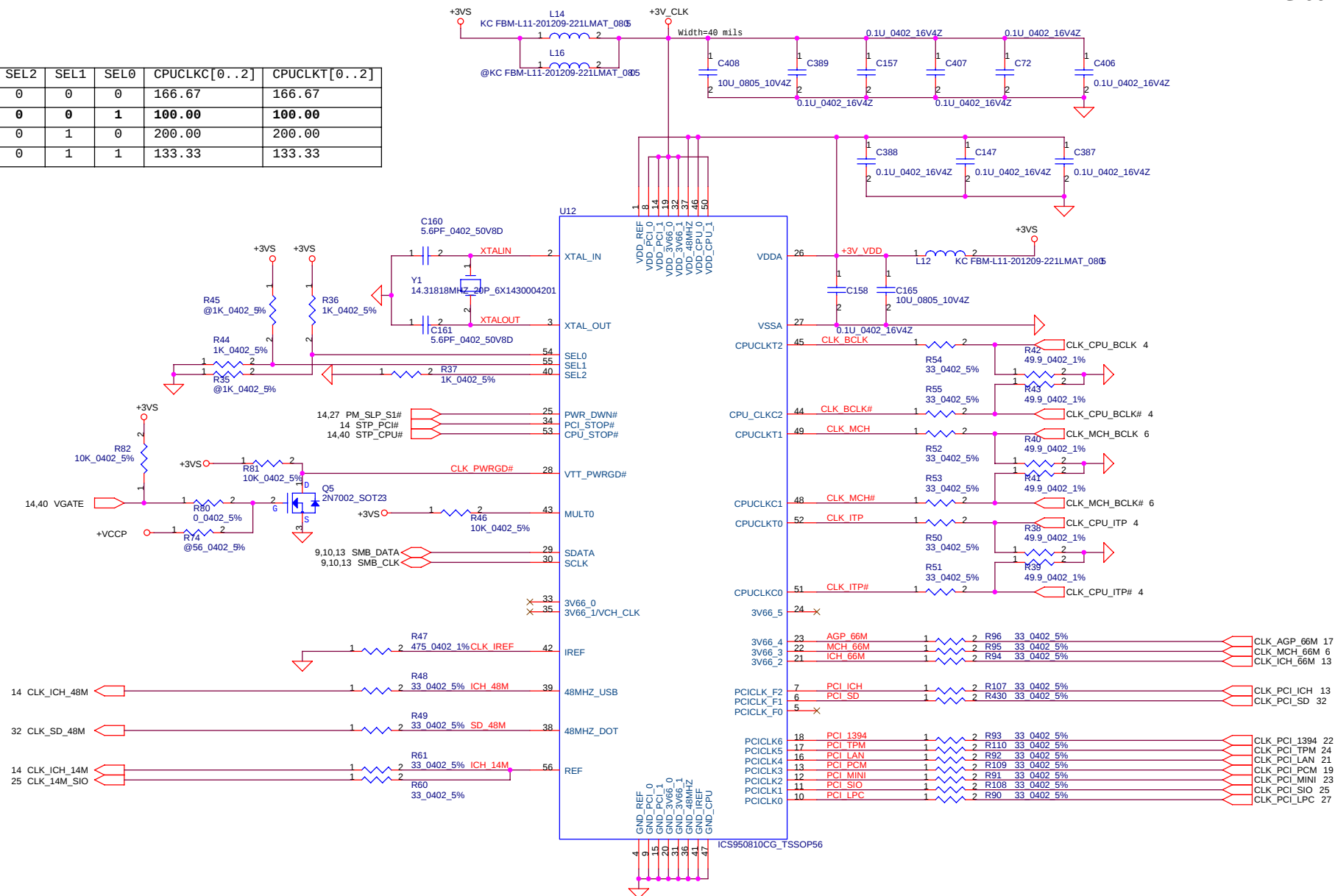


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Compal Electronics, Inc.			
Title			
DDR SODIMM Decoupling			
Revision			
1.0			
Document Number			
LA-1971			
Date			
Monday, October 27, 2003			
Sheet			
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Clock Generator

SEL2	SEL1	SEL0	CPUCLKC[0..2]	CPUCLKT[0..2]
0	0	0	166.67	166.67
0	0	1	100.00	100.00
0	1	0	200.00	200.00
0	1	1	133.33	133.33



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tion

Clock Generator

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ON IT CONTAINING
Size Document Number
Custom **DAT20 LA-1971**

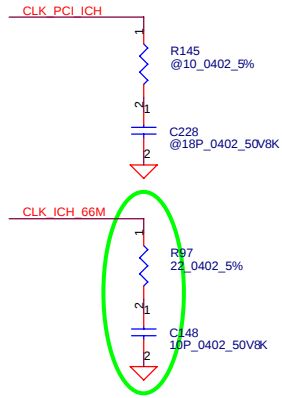
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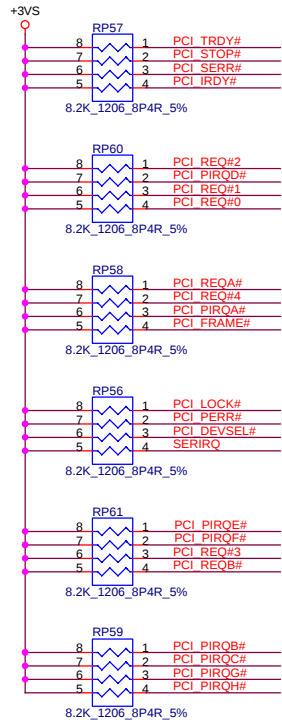
Sheet 12 of 42

Rev	1.0
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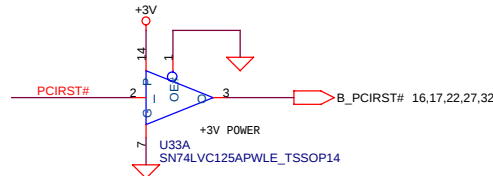
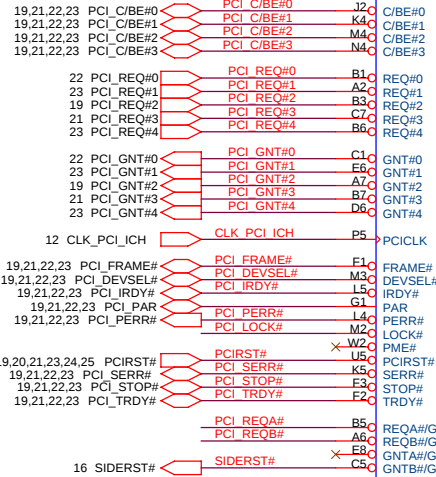
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PCI Pullups



19,21,22,23 PCI_AD[0..31] $\rightarrow$ PCI_AD[0..31]



FW82801DBM_BGA421

ICH4

SM I/F

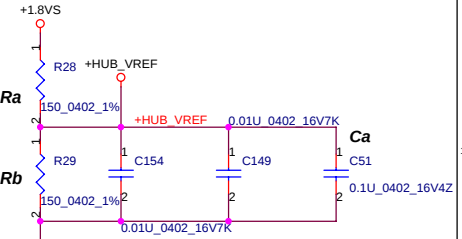
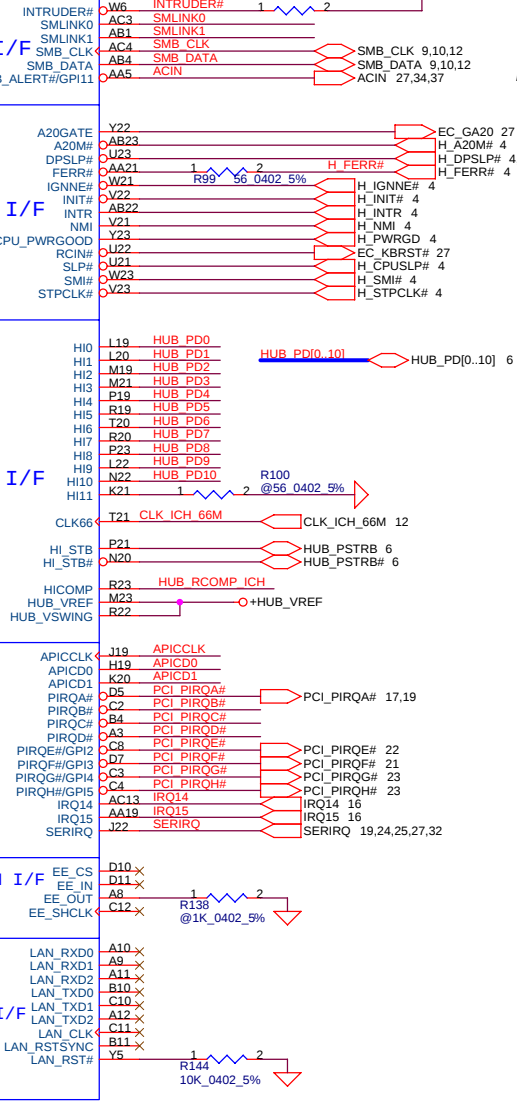
CPU I/F

HUB I/F

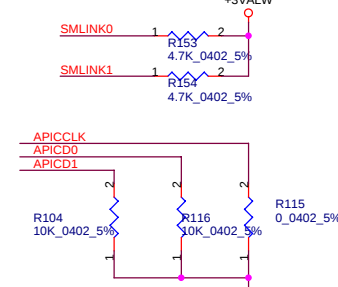
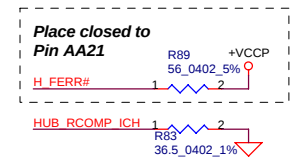
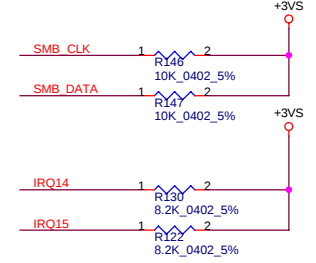
Interrupt I/F

EEPROM I/F

LAN I/F



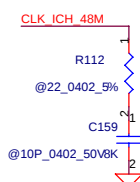
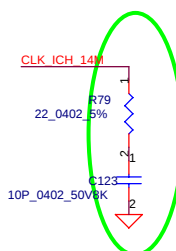
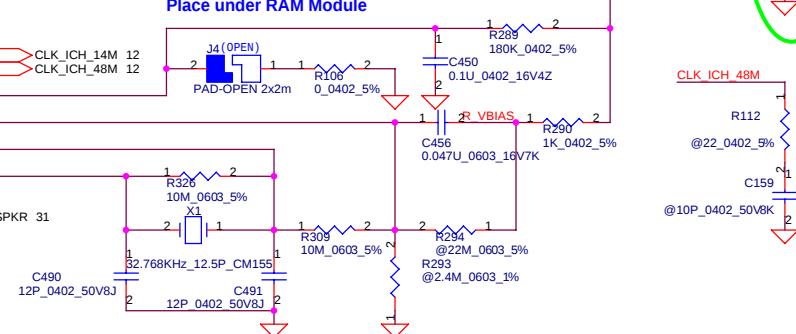
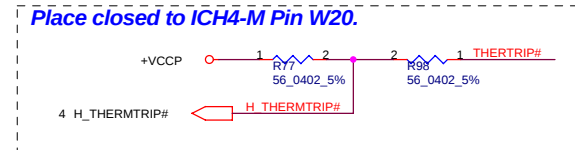
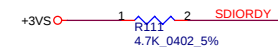
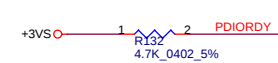
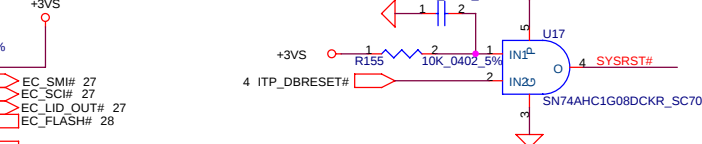
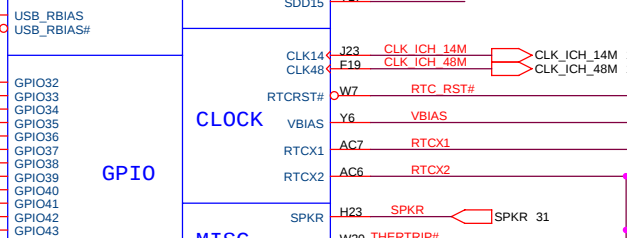
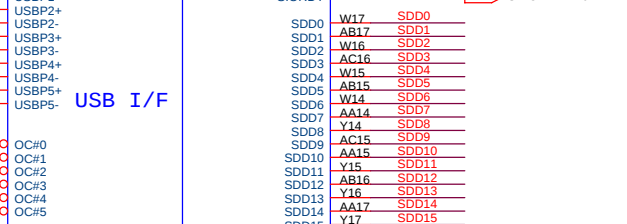
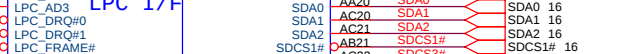
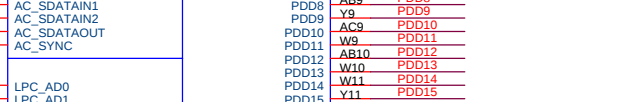
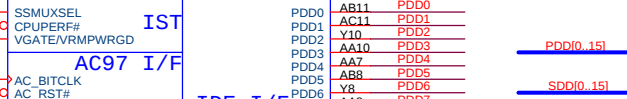
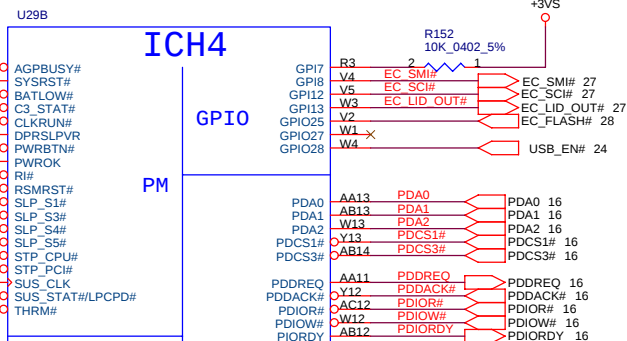
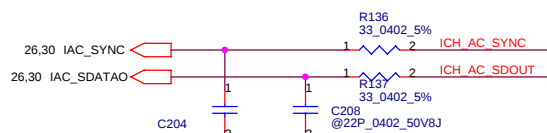
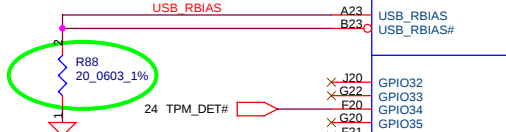
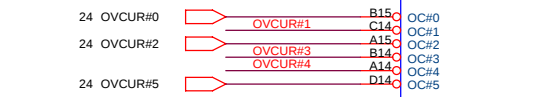
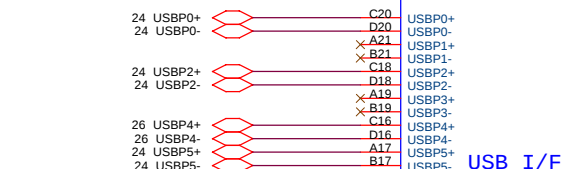
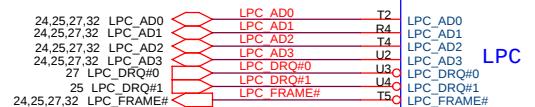
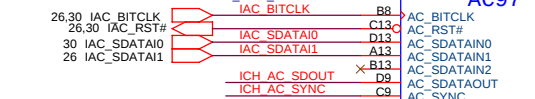
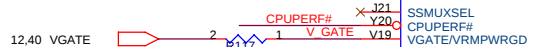
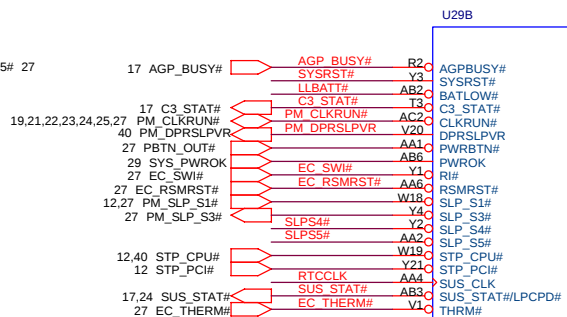
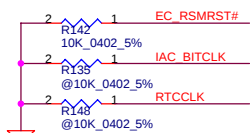
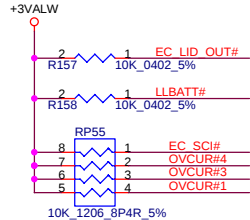
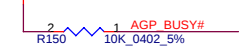
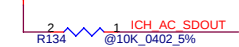
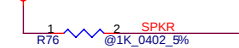
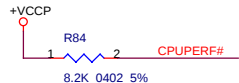
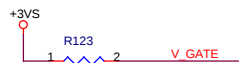
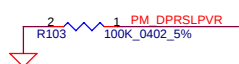
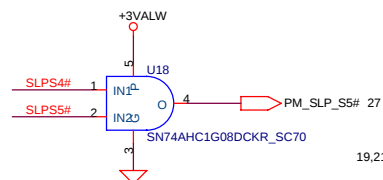
Note: Ra, Rb, Ca placement center of MCH and ICH4M



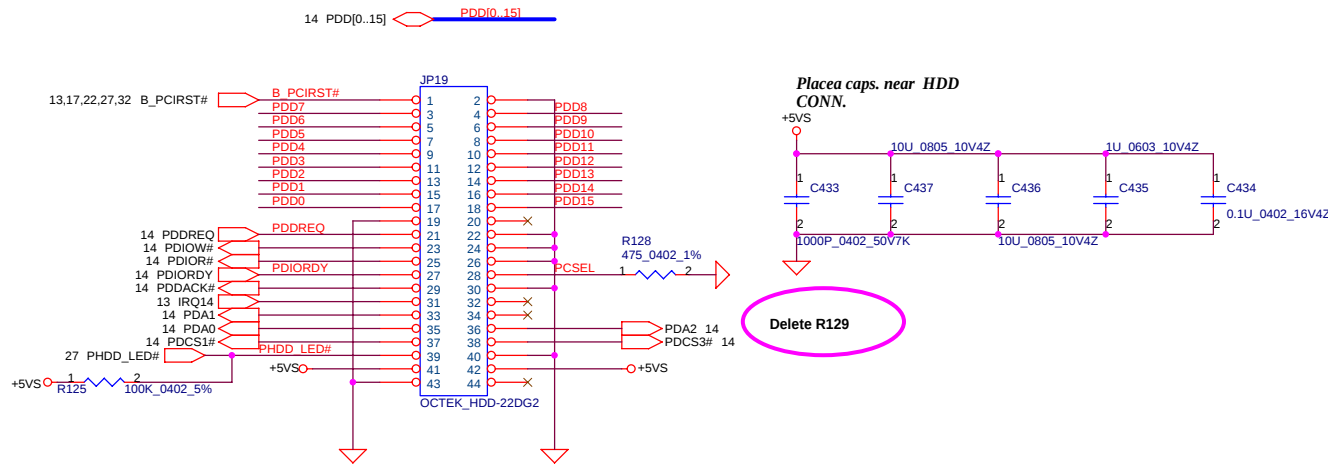
Compal Electronics, Inc.

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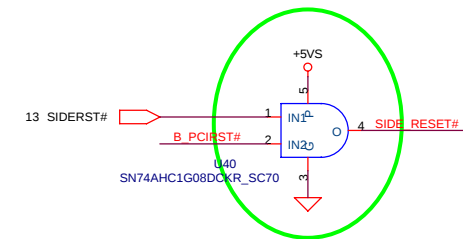
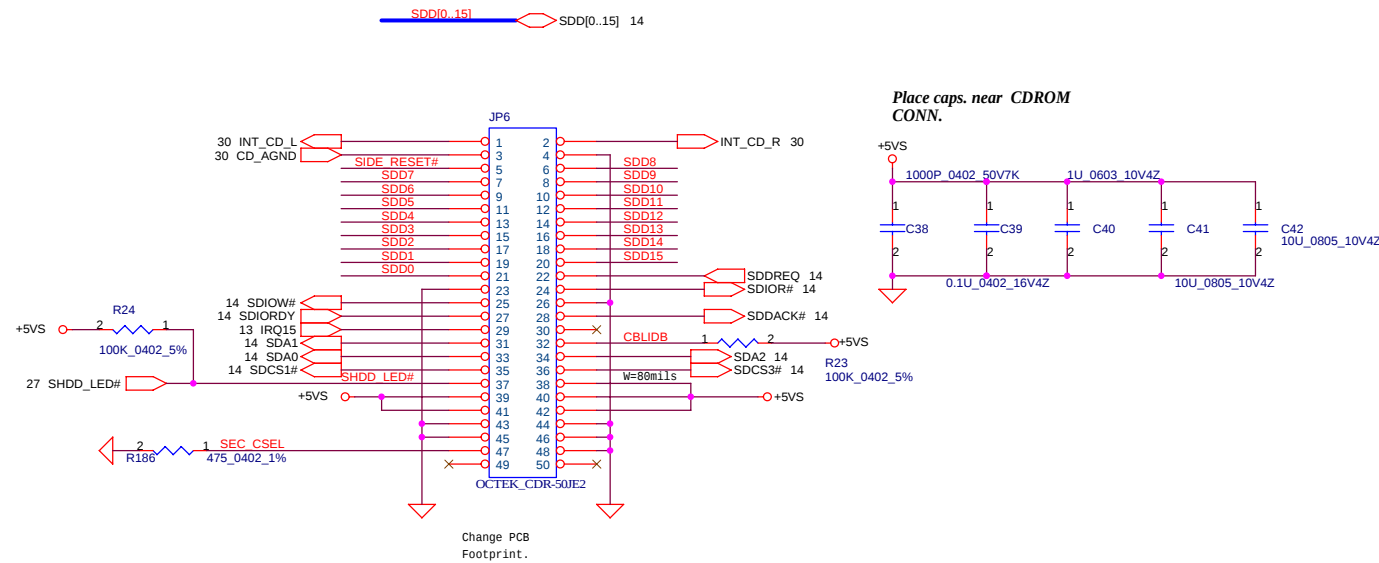
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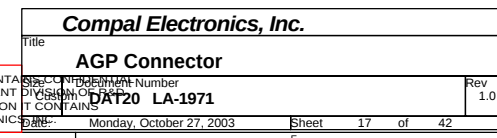
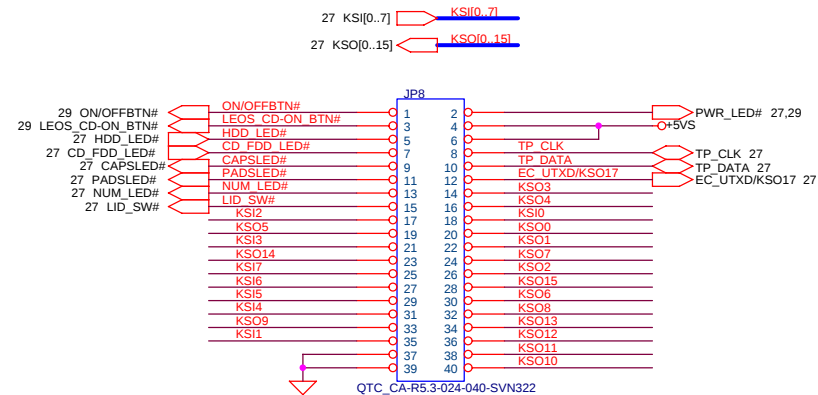


HDD Connector



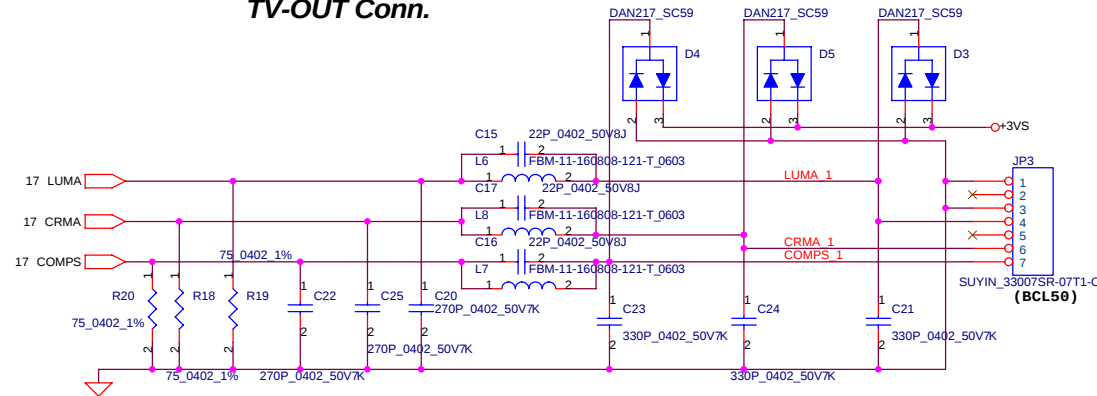
CD-ROM Connector



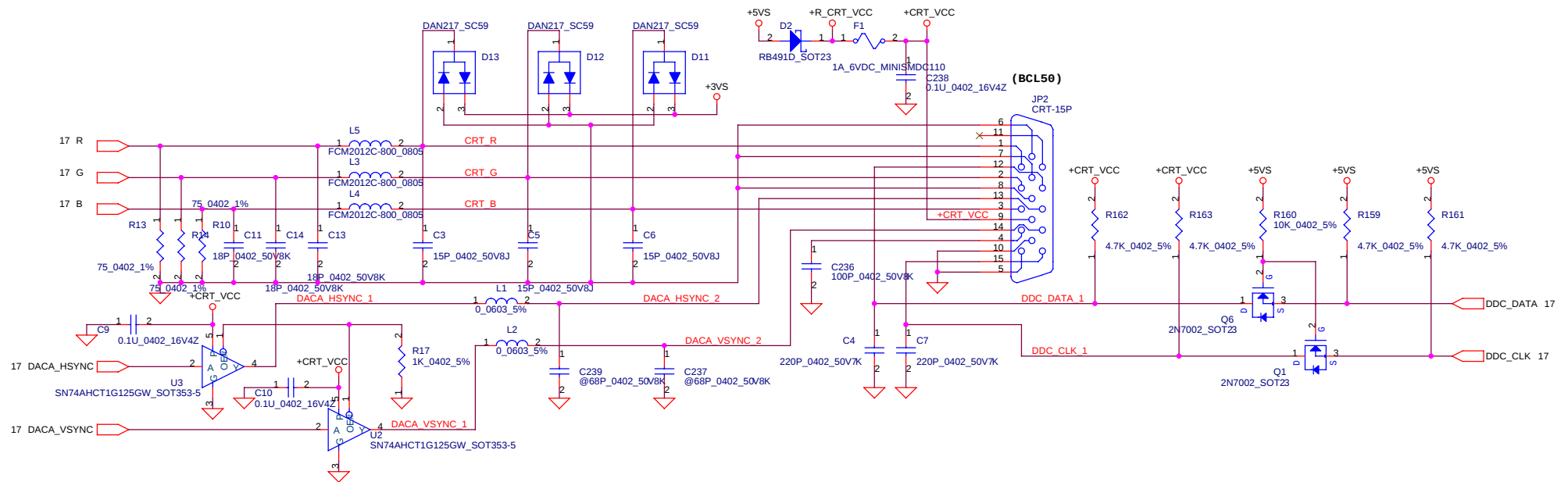


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TV-OUT Conn.



CRT Conn.



Compal Electronics, Inc.

CRT,TV-OUT CONNECTOR

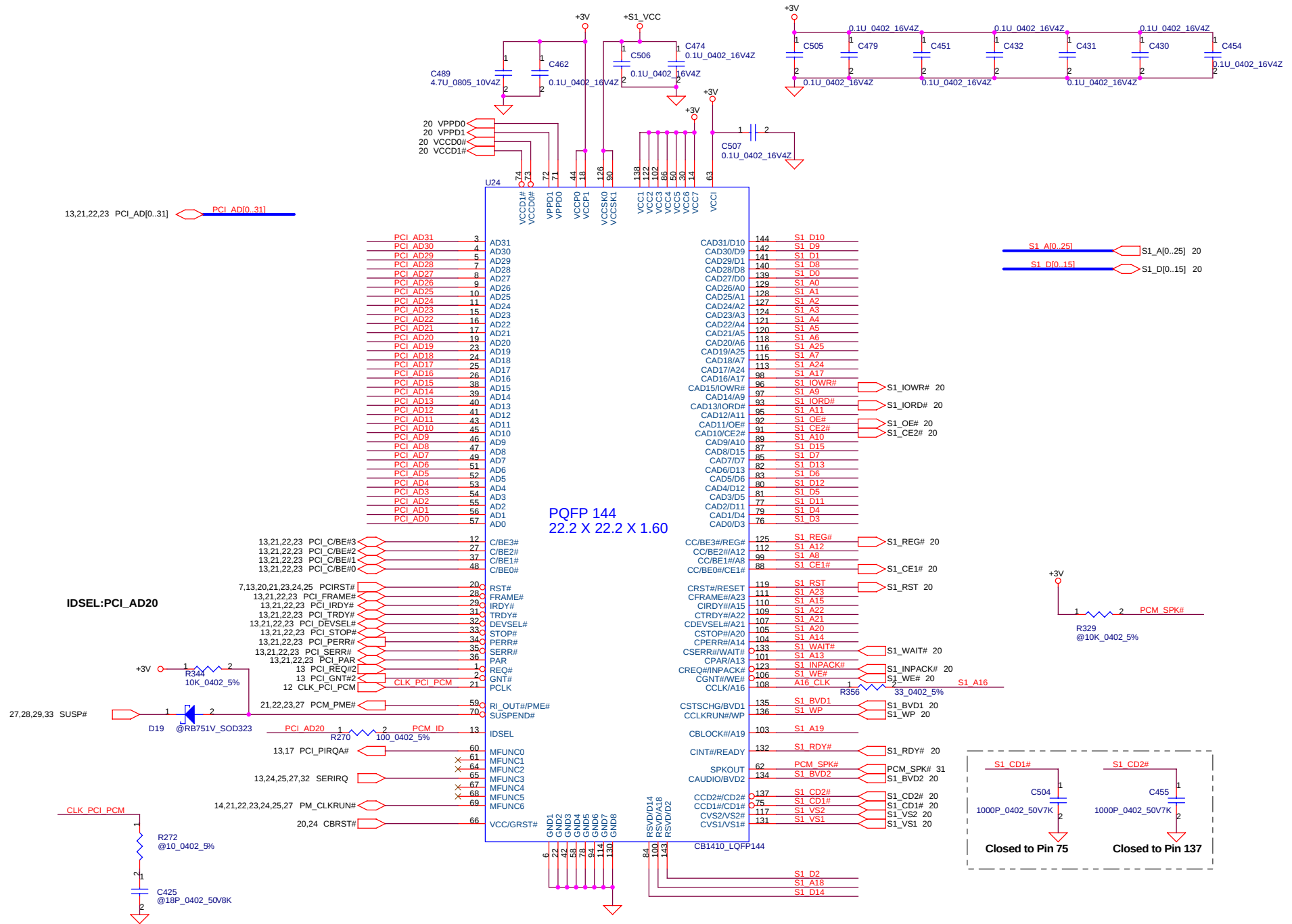
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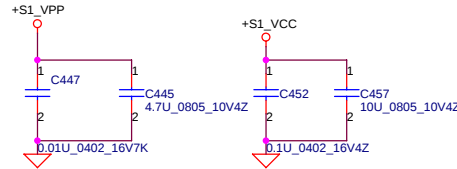
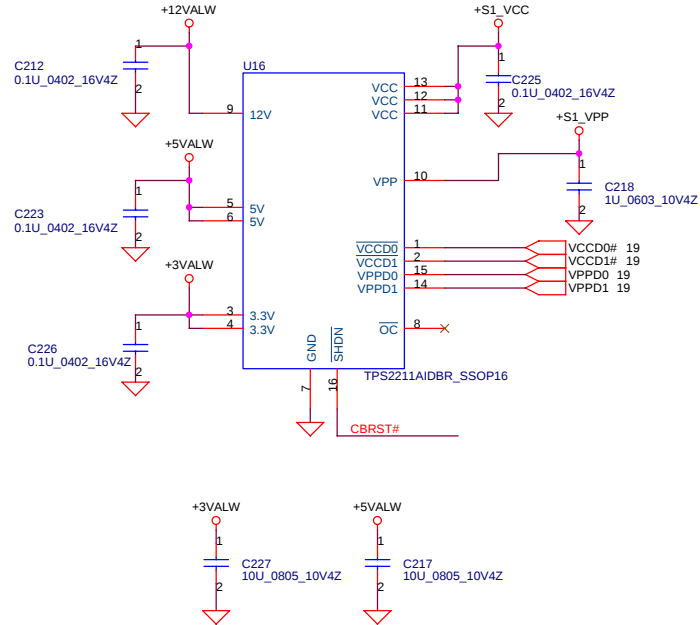
Rev
1.0

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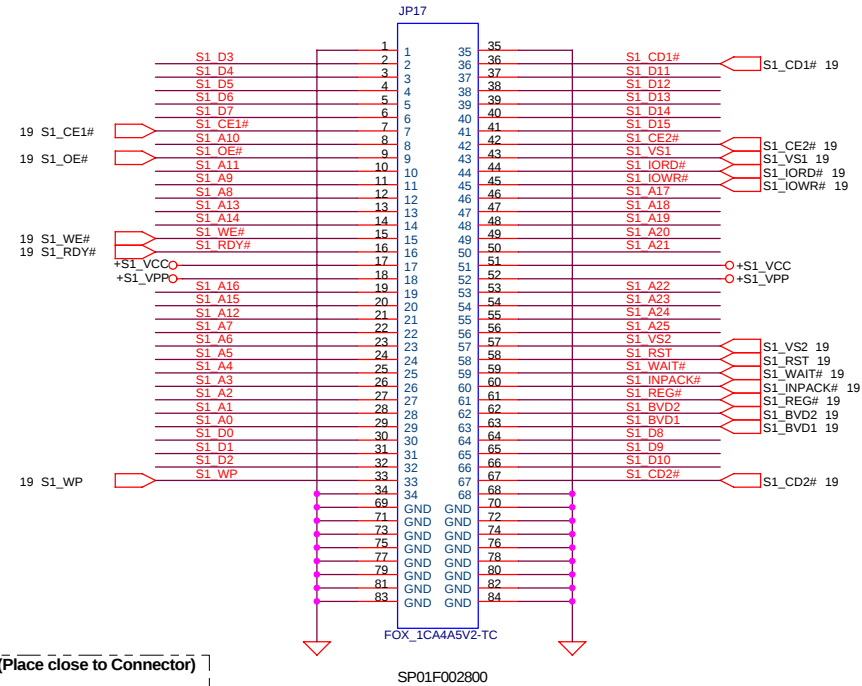
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PCMCIA Power Controller

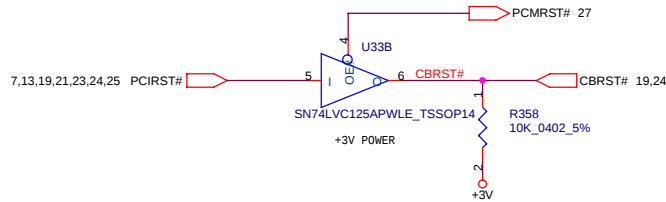
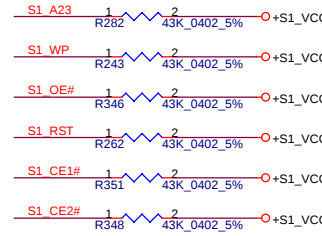


19 S1_A[0..25] S1_A[0..25]
19 S1_D[0..15] S1_D[0..15]

CardBus Socket

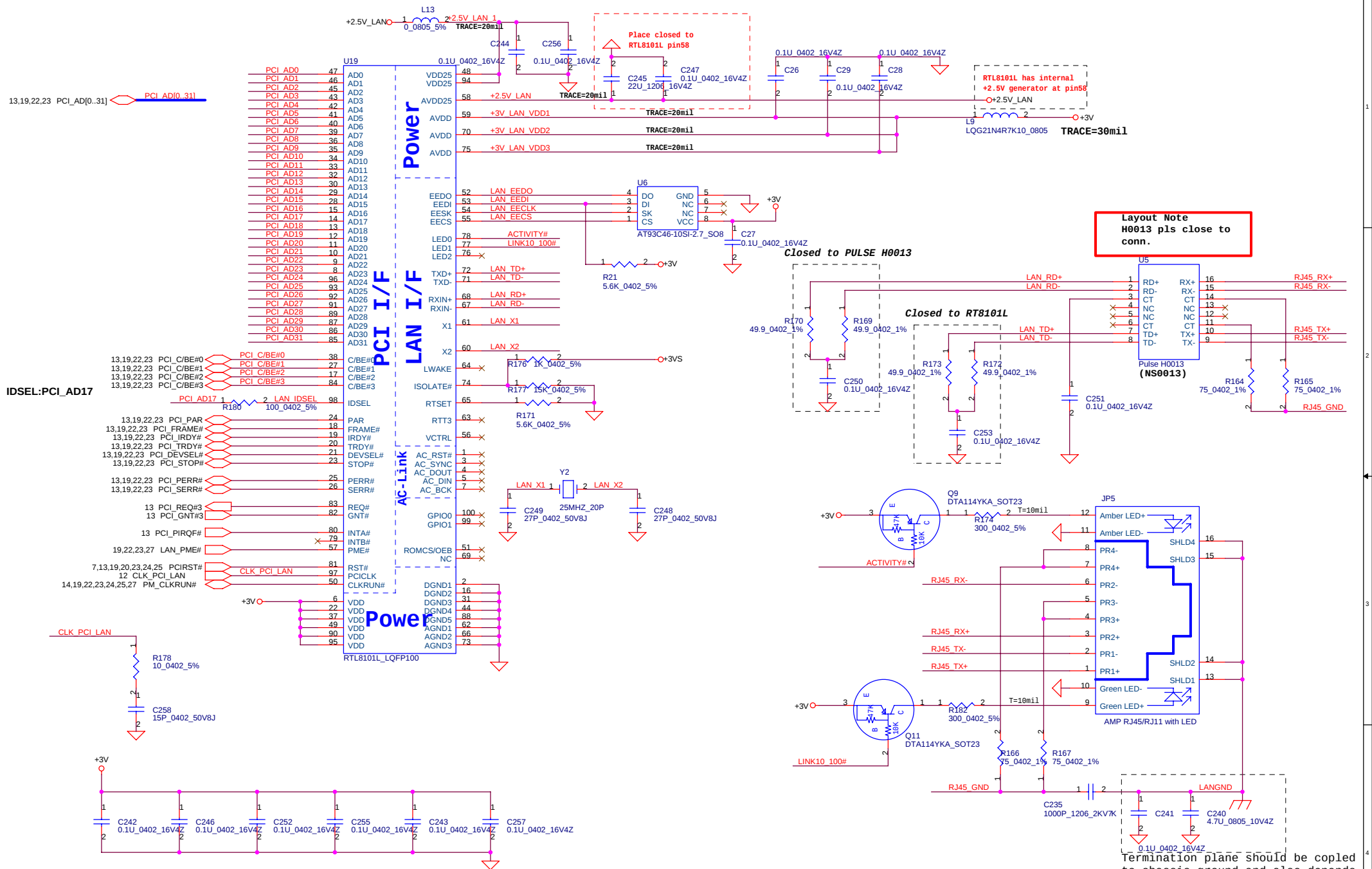


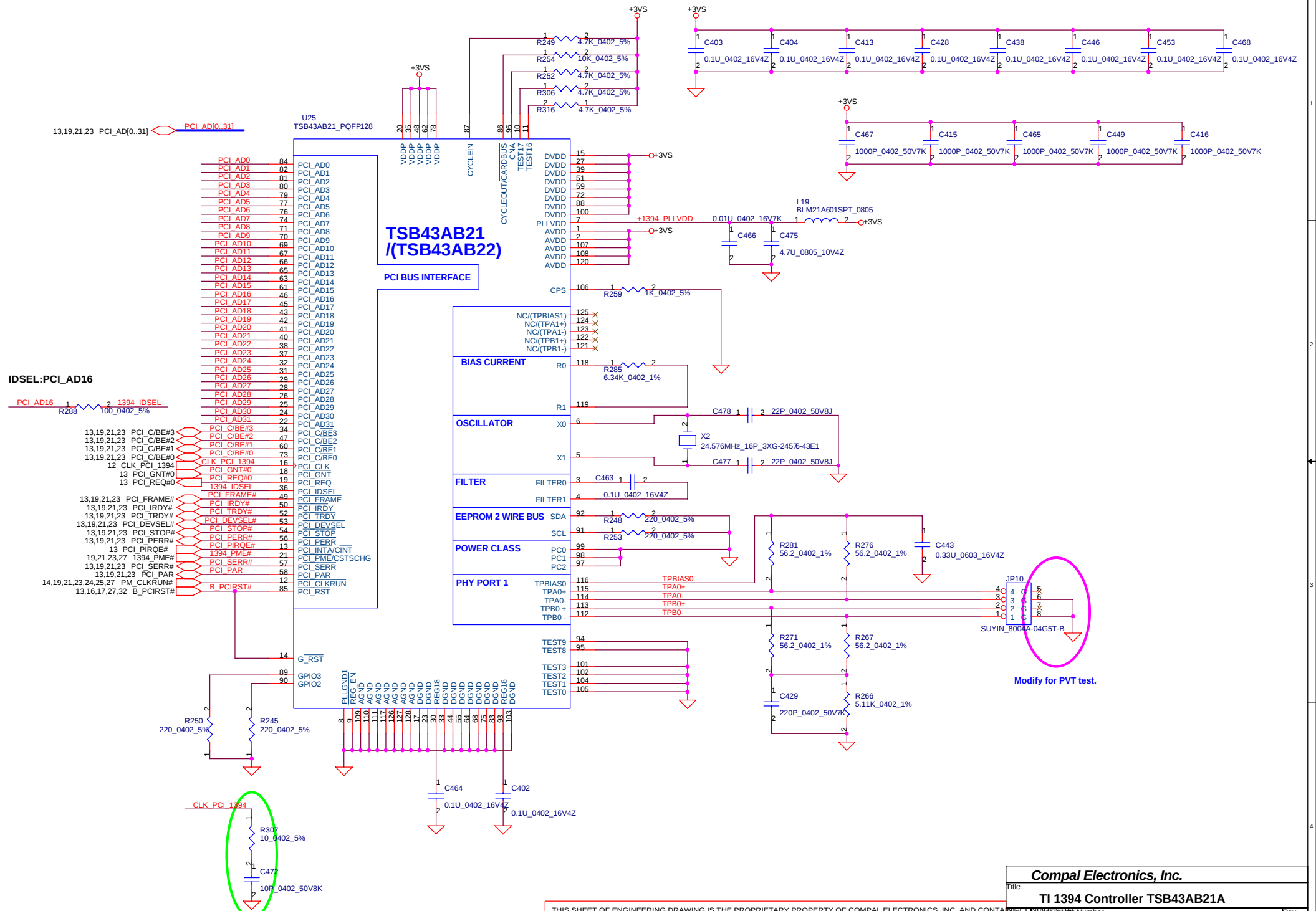
For CB1410 Rev.B0 (Place close to Connector)

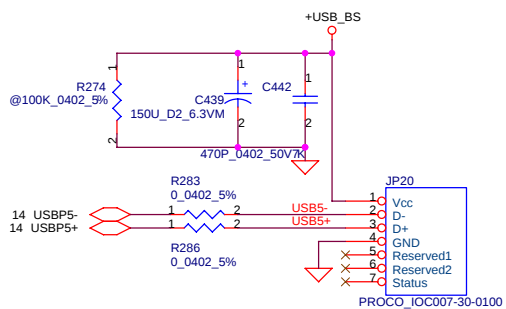
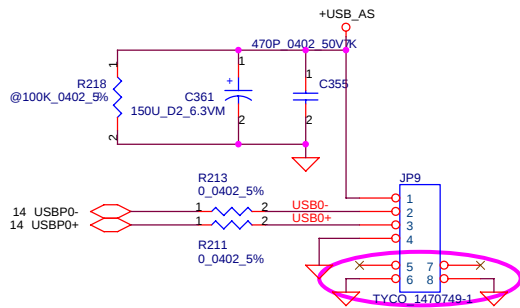
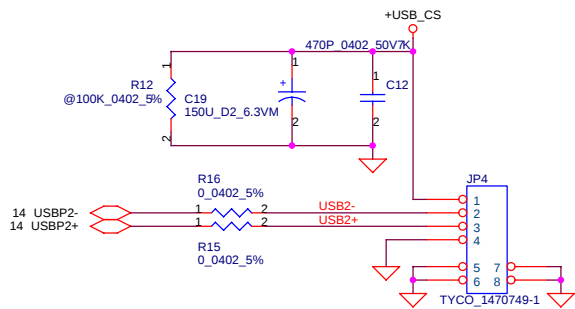


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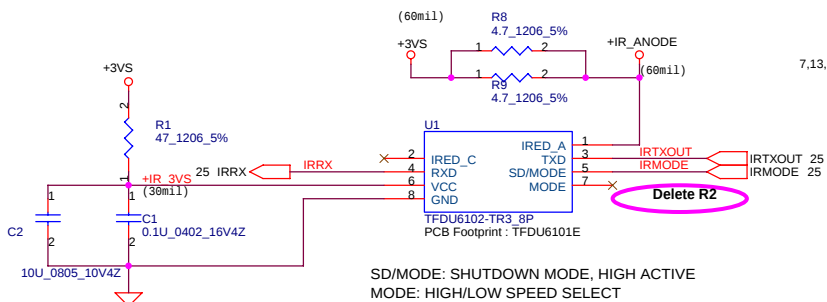
CardBus Socket



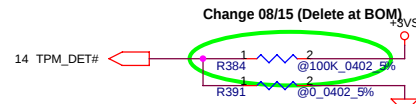
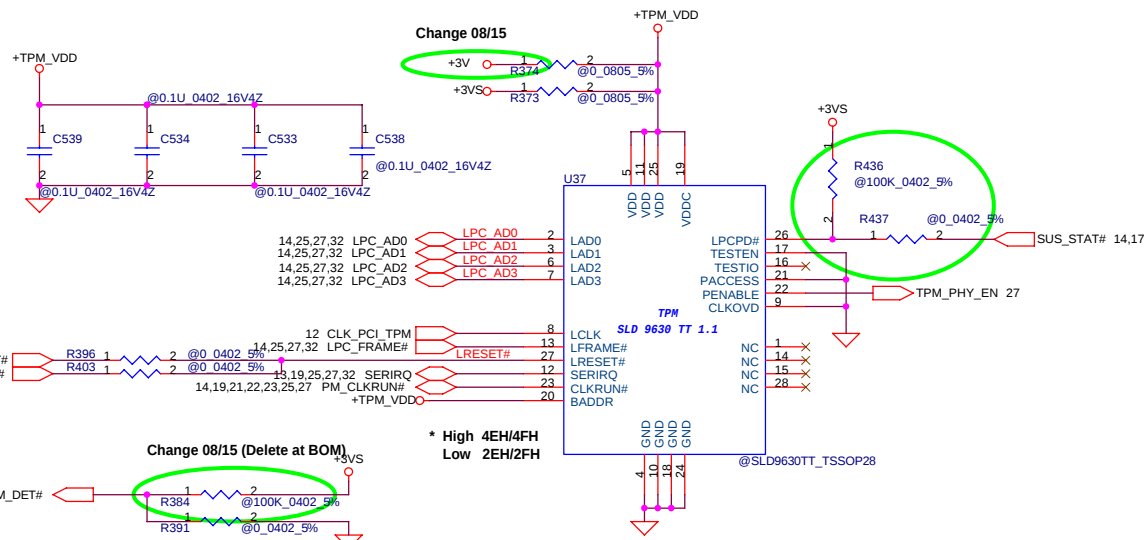
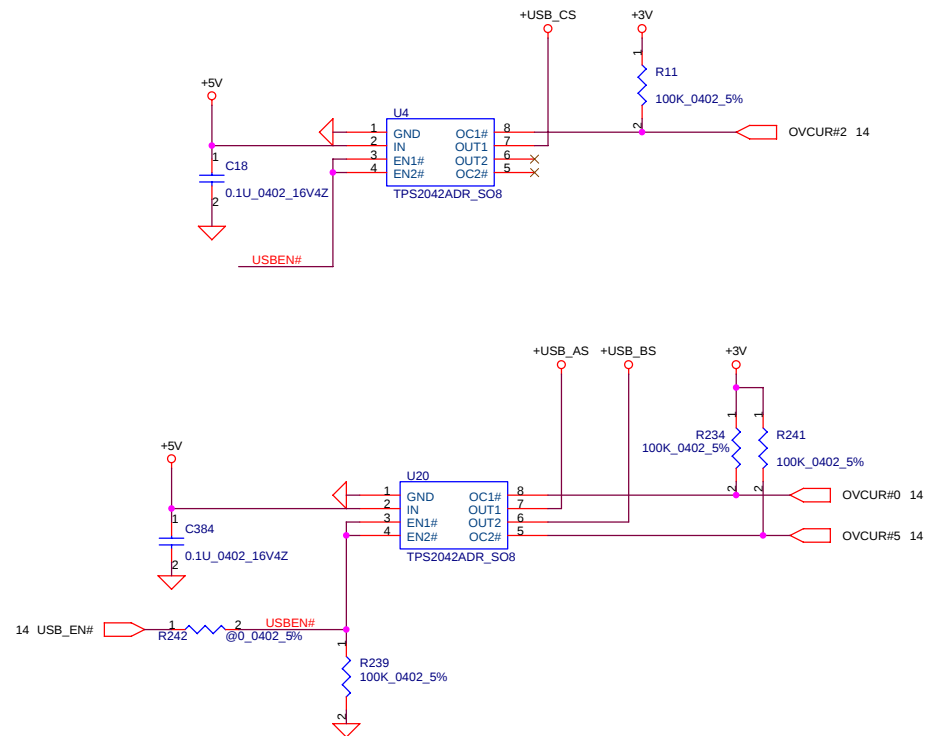




FIR Module



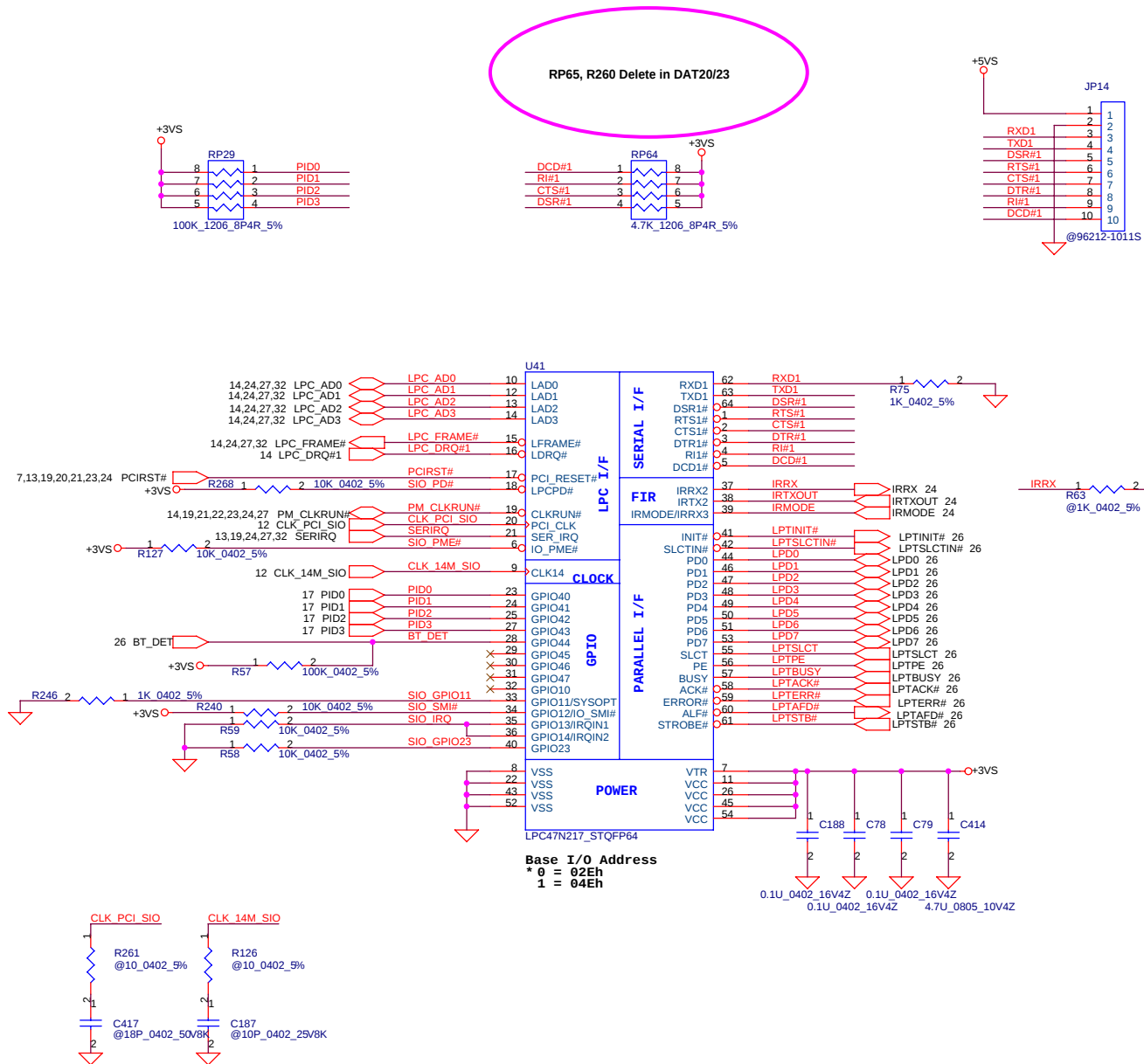
SD/MODE: SHUTDOWN MODE, HIGH ACTIVE
MODE: HIGH/LOW SPEED SELECT

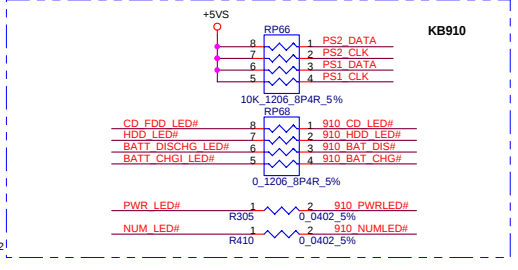
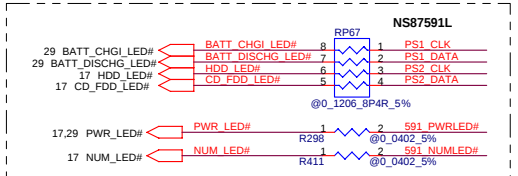
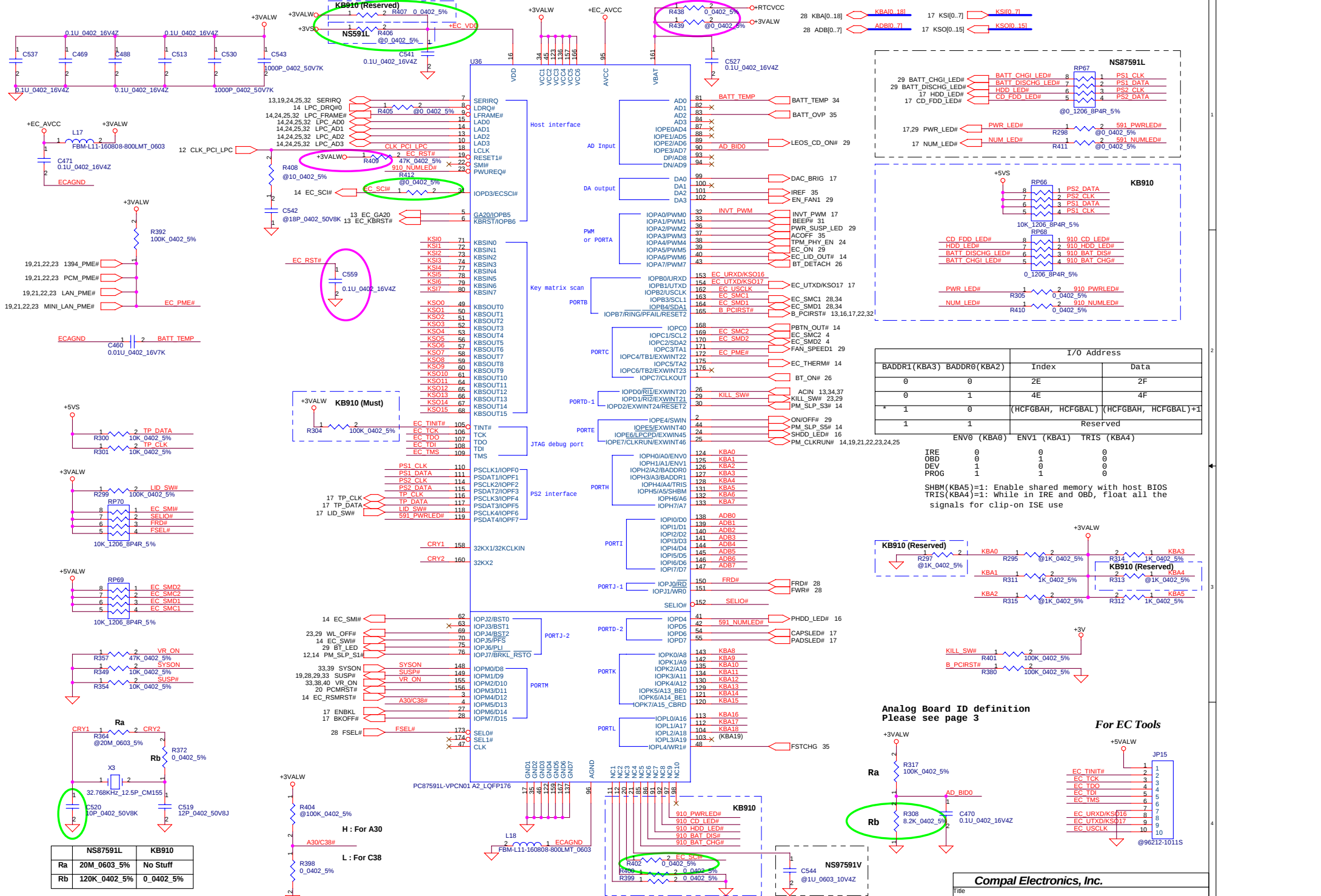


Compal Electronics, Inc.	
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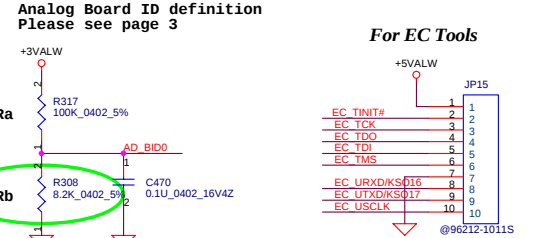
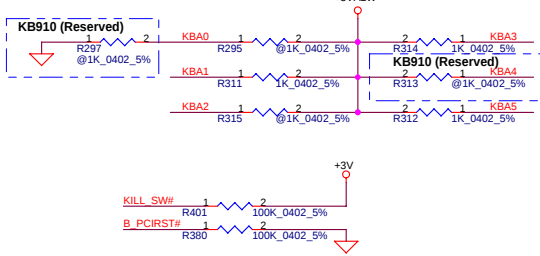
SUPER I/O SMsC LPC47N217





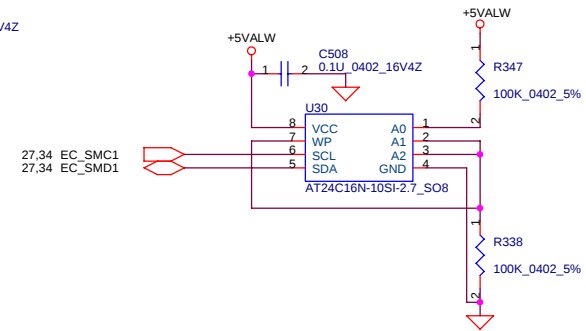
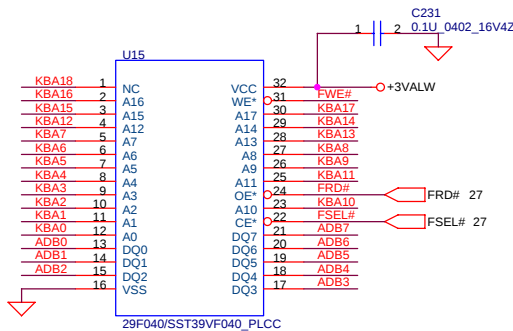
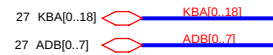
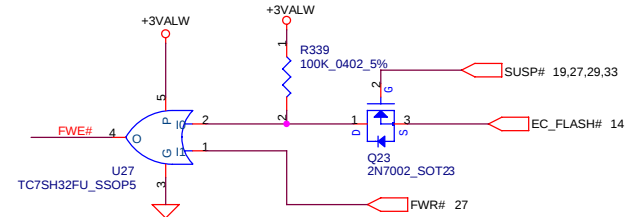
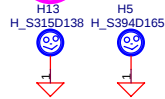
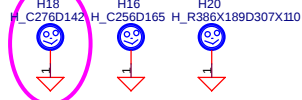
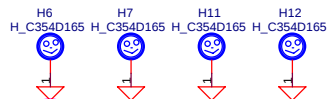
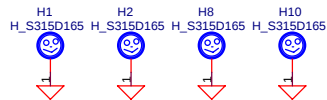
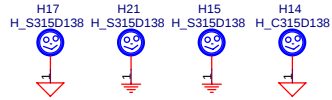
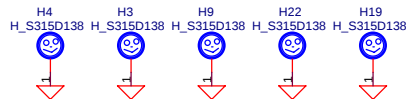
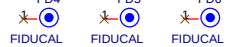
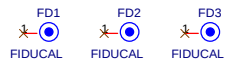
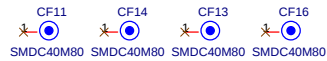
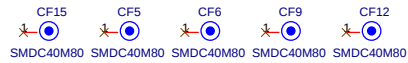
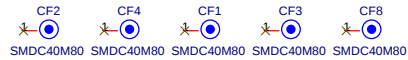
I/O Address			
BADDR1(KBA3)	BADDR0(KBA2)	Index	Data
0	0	2E	2F
0	1	4E	4F
* 1	0	(HCFGBAH, HCFGBAL)	(HCFGBAH, HCFGBAL)+1
1	1	Reserved	

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

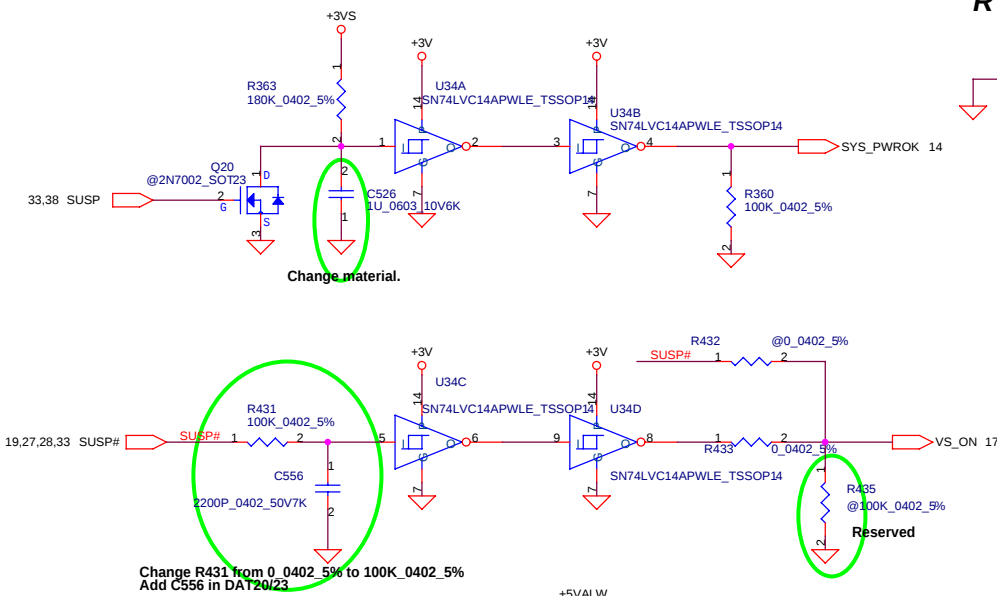


NS87591L	KB910
Ra	20M_0603_5%
Rb	120K_0402_5%

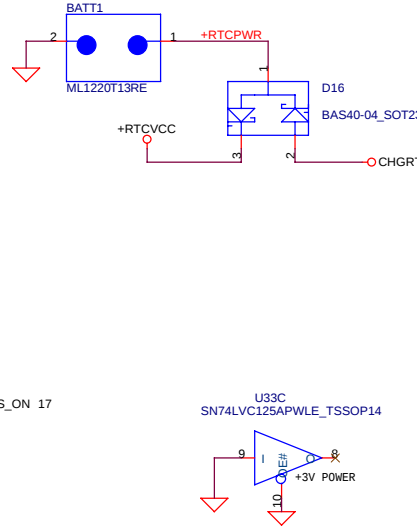
Compal Electronics, Inc.			
EC PC87591L			
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Custom	DAT20 LA-1971	1.0	
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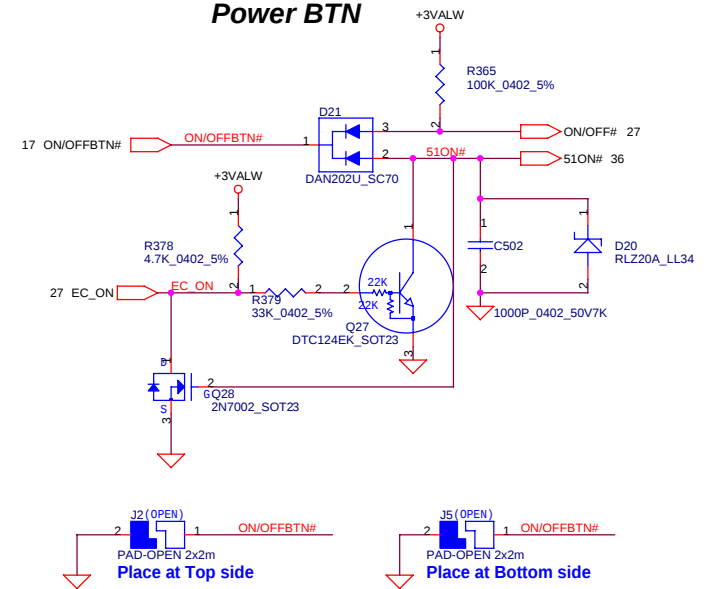
Power ON Circuit



RTC Battery

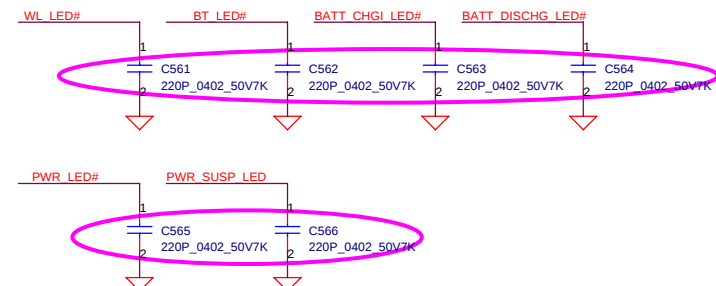
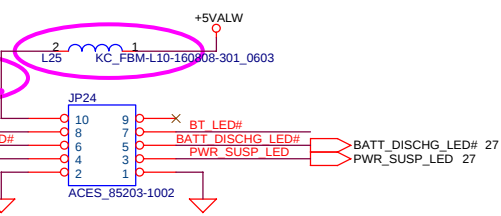


Power BTN

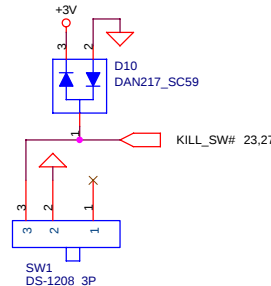


LED INDICATOR	C38	30
PWR	Blue	Green
PWR_SUSP	AMB	AMB
BATT_CHGI	Blue	Green
BATT_DISCHG	AMB	AMB
WL_LED	Blue	Green
BT_LED	AMB	AMB
SD_LED	None	Green

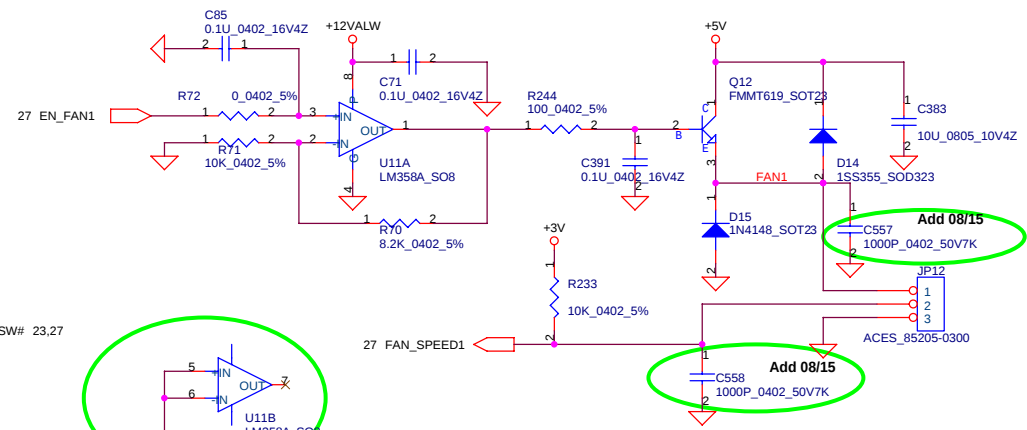
LED/B Connector



KILL Switch



Fan Control circuit



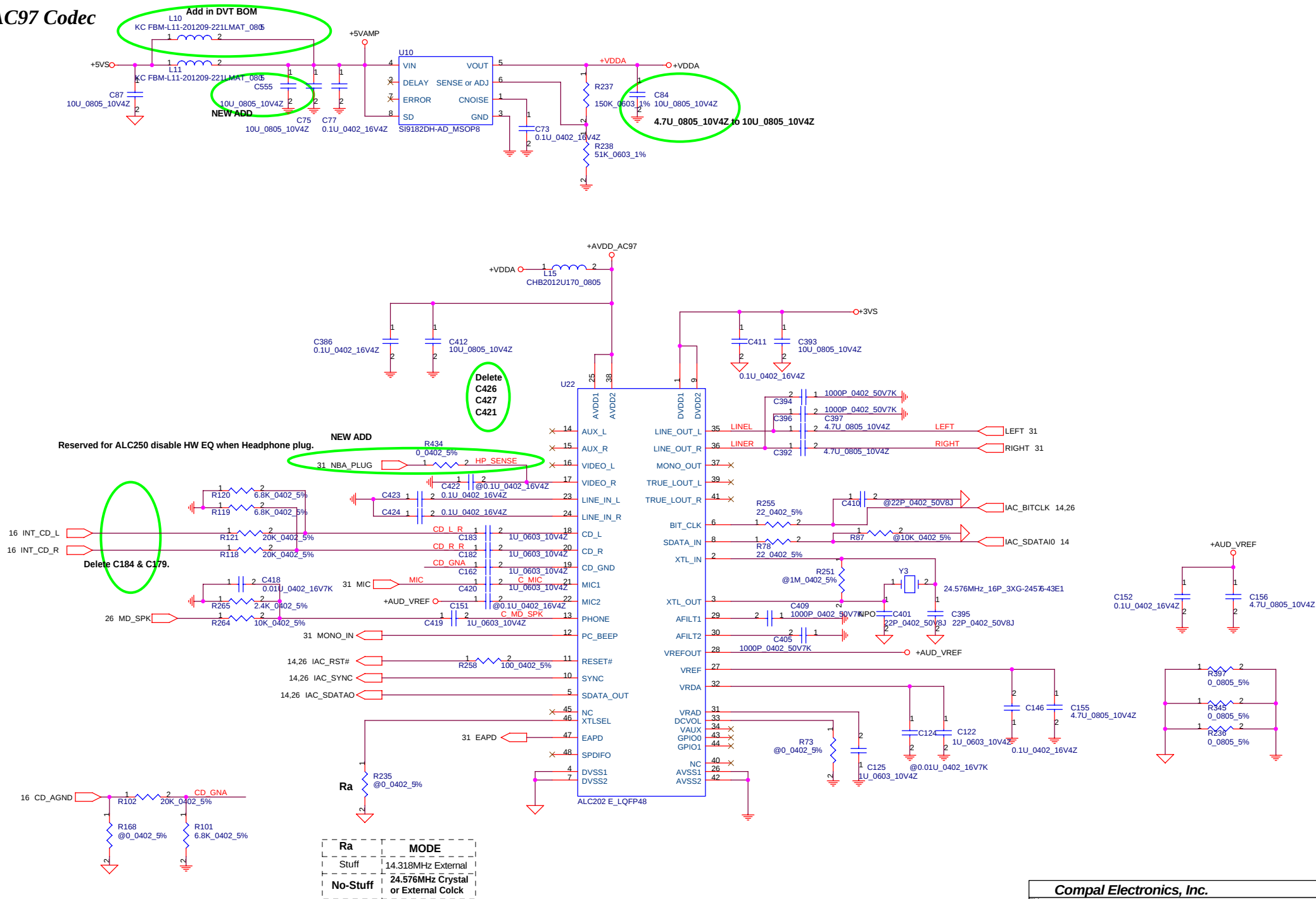
Compal Electronics, Inc.

Power OK/Reset/RTC battery

Rev 1.0

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AC97 Codec



Compal Electronics, Inc.

AC97 Codec Realtek ALC202

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Document Number
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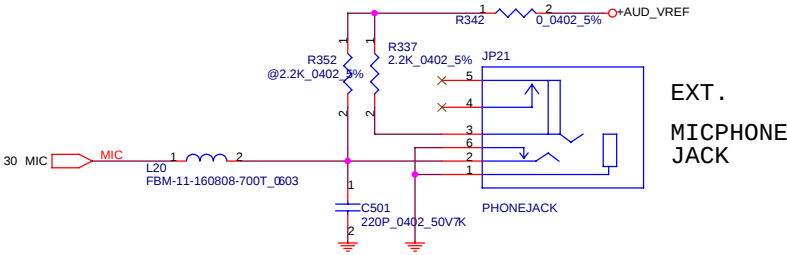
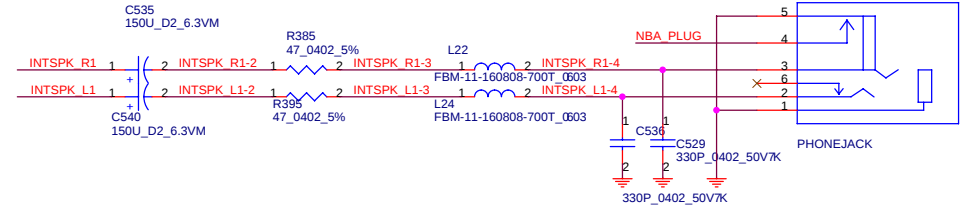
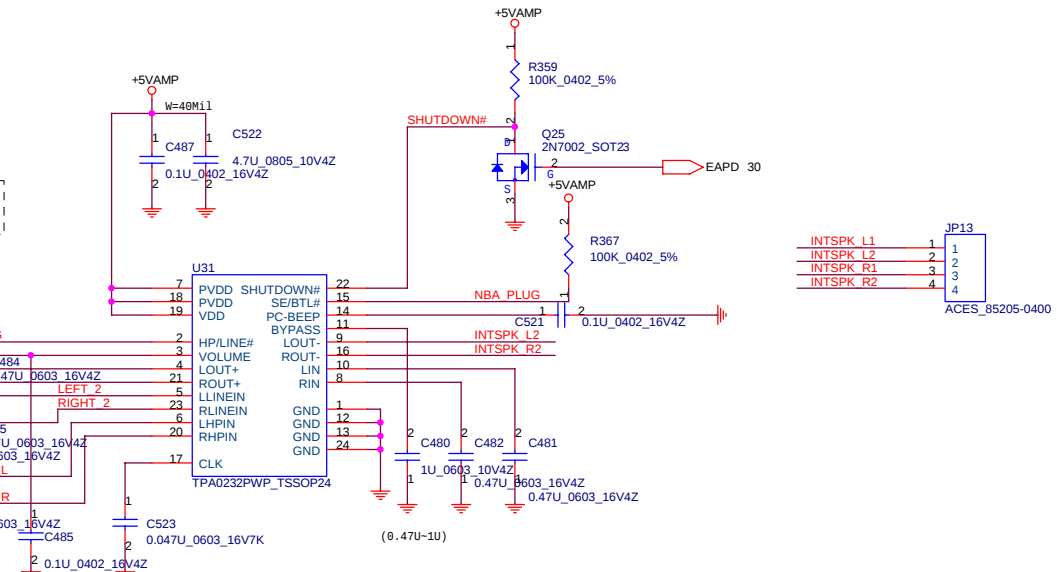
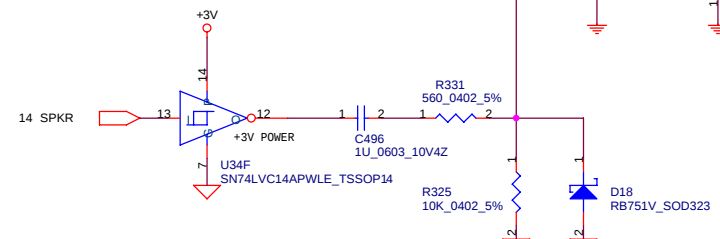
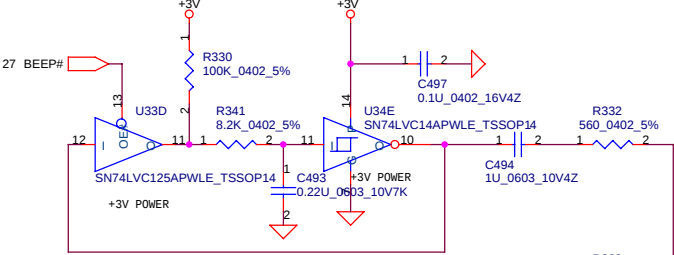
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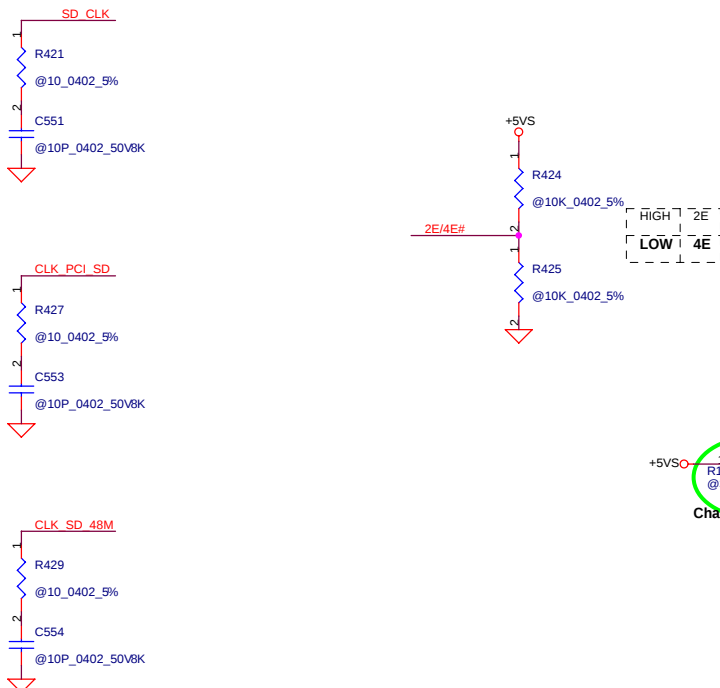
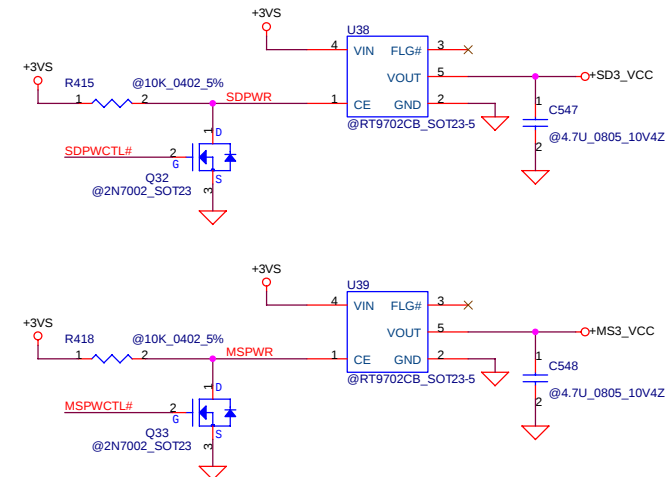
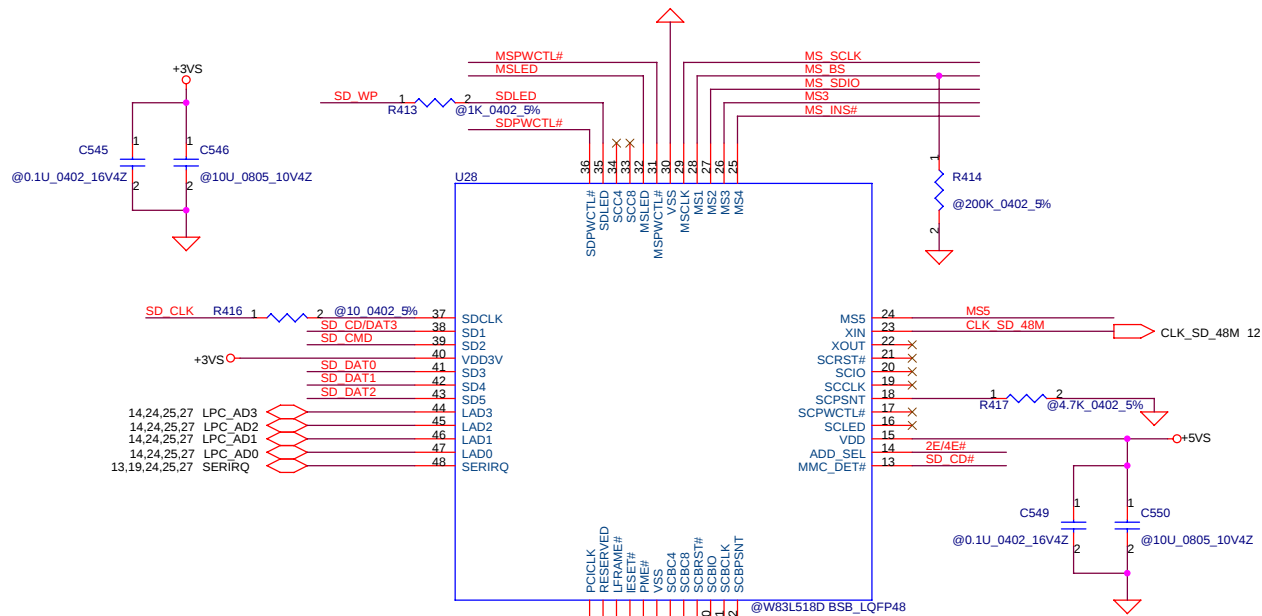
Pin 2 HIGH - PIN 6,26 ACTIVE
LOW - PIN 5,23 ACTIVE

Delete C476 & C531

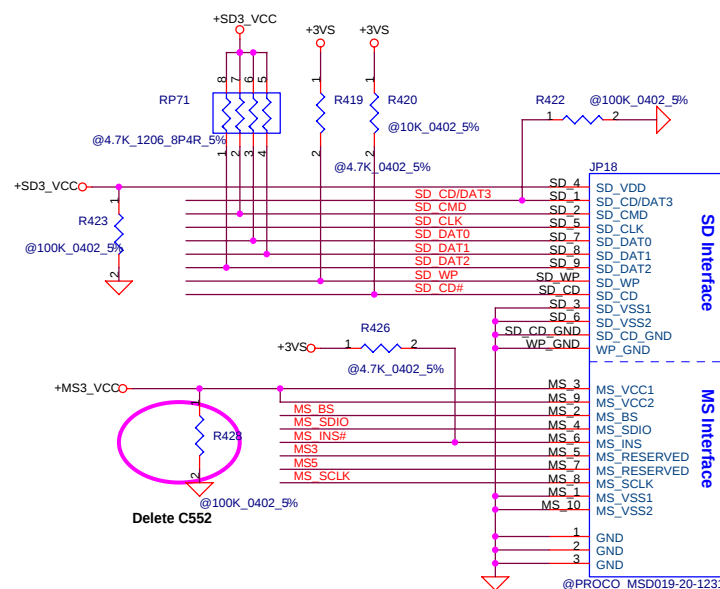
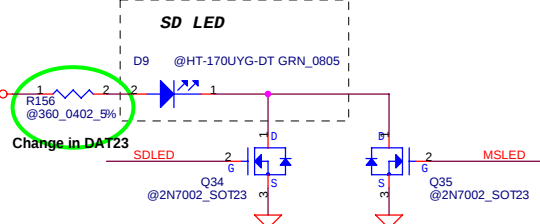
Delete R319 & R371

+5VAMP
R310
10K_0402_5%
VOL AMP
(0.65V -> 10dB)
R318
1.5K_0402_1%

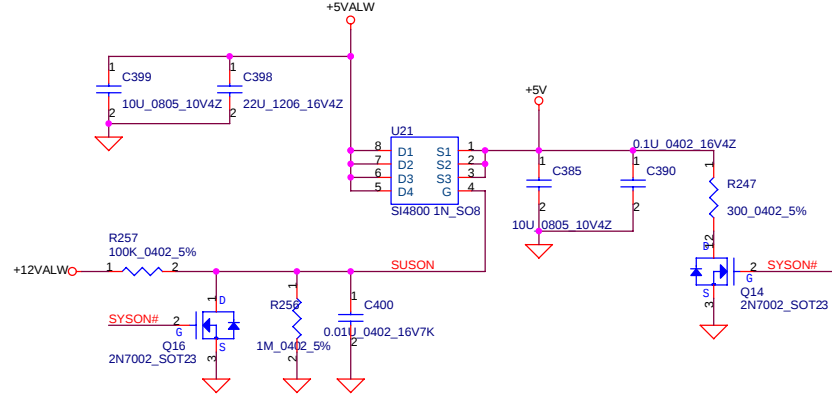




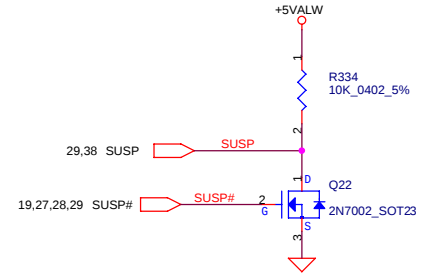
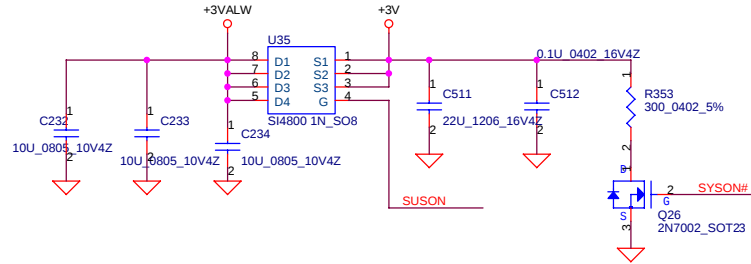
Frequency depend on data access.



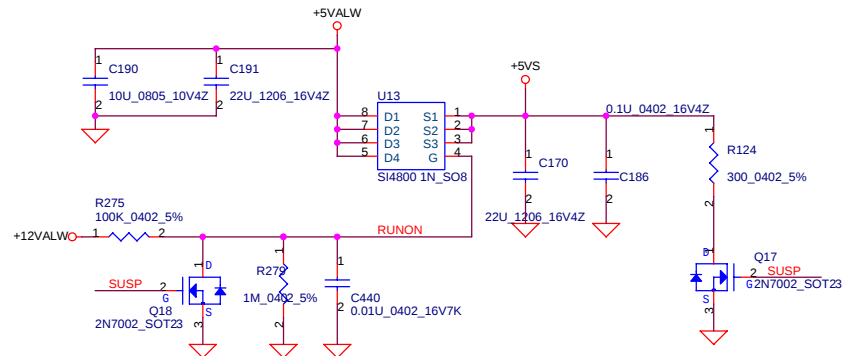
+5VALW to +5V Transfer



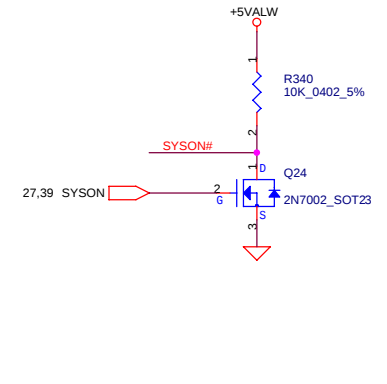
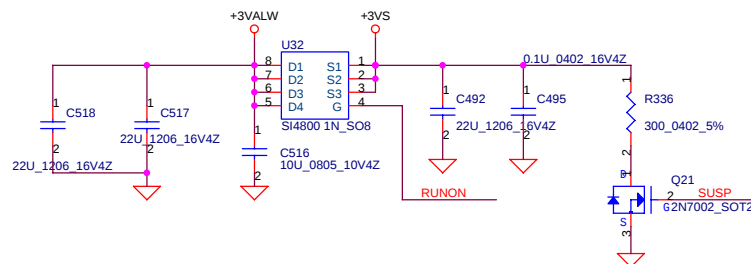
+3VALW to +3V Transfer



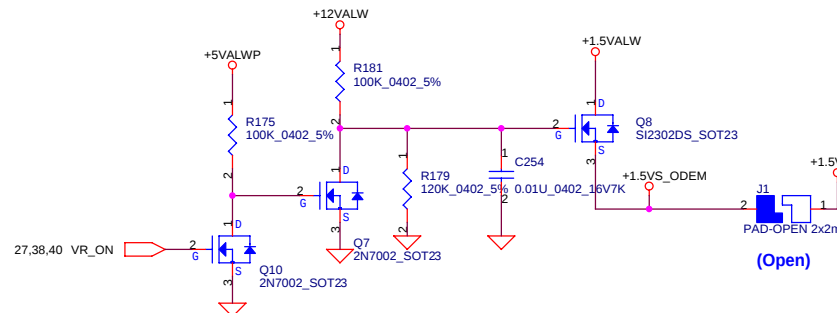
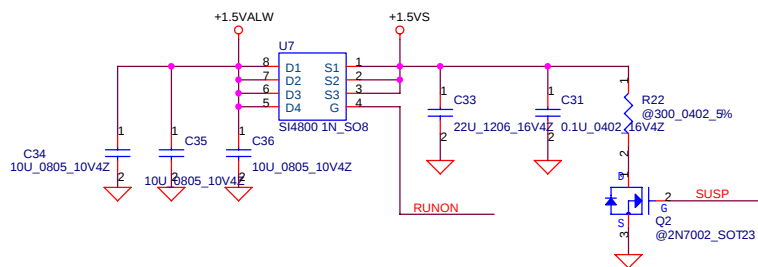
+5VALW to +5VS Transfer



+3VALW to +3VS Transfer

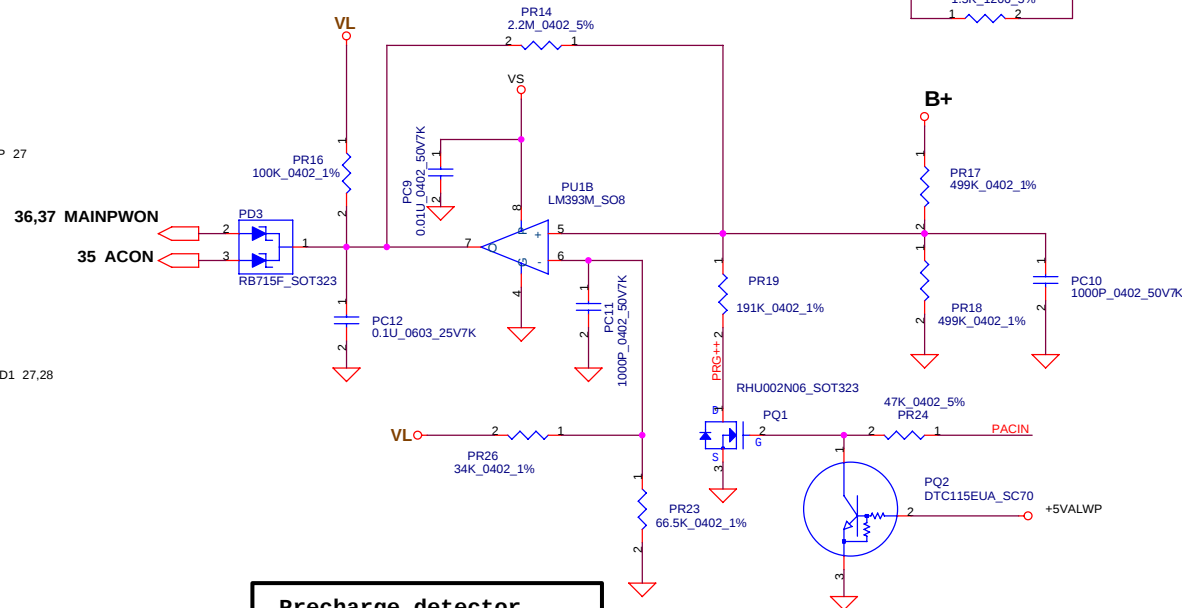


+1.5VALW to +1.5VS Transfer



Compal Electronics, Inc.	
Title	DC/DC Circuit Interface
Revision	1.0
Part Number	LA-1971
Date	Monday, October 27, 2003
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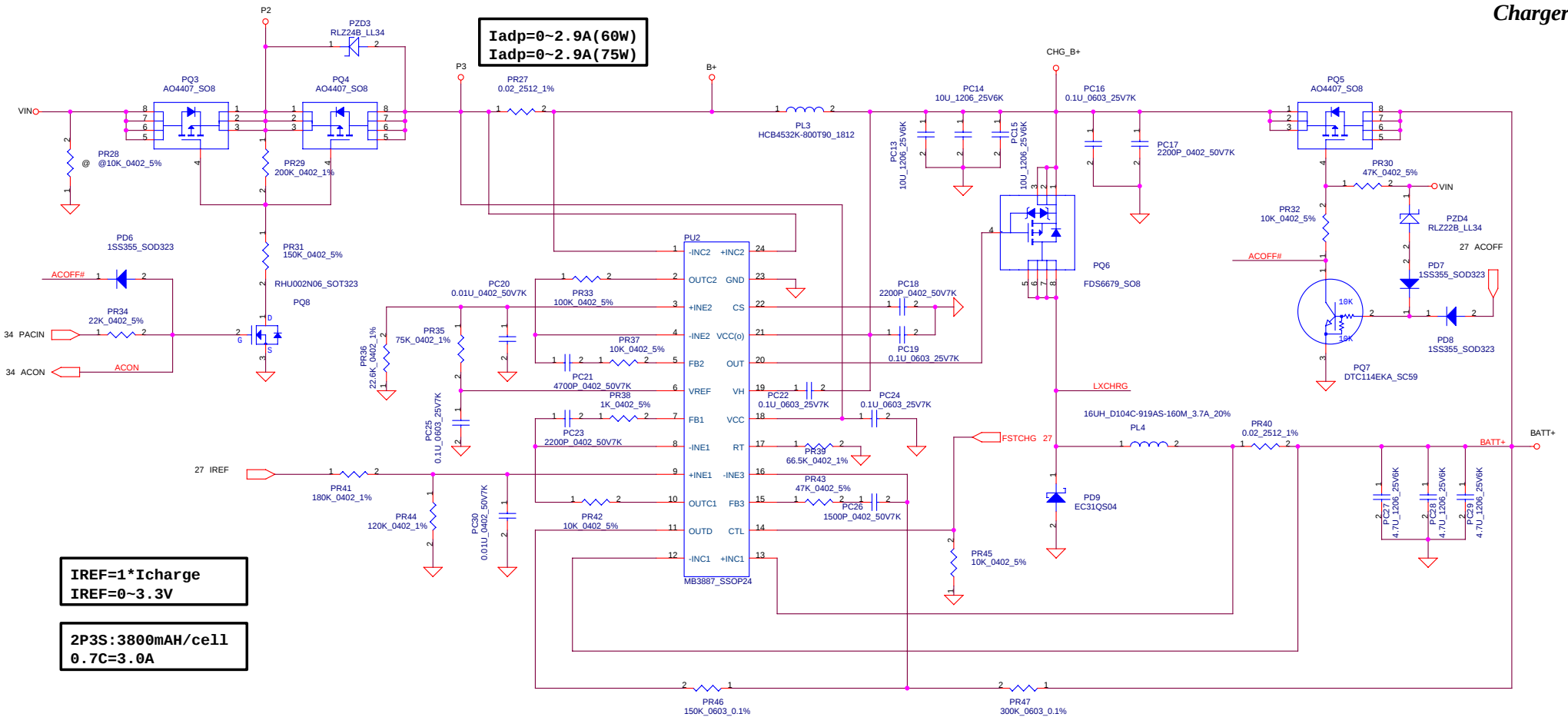


Precharge detector
15.97V14.84V For ADAPTOR

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Compal Electronics, Inc.

Title		DCIN & DETECTOR & Precharge	
Size	Document Number		Rev
Custom	DAT20 LA-1971		1.0
Date:	Monday, October 27, 2003	Sheet	34 of 42

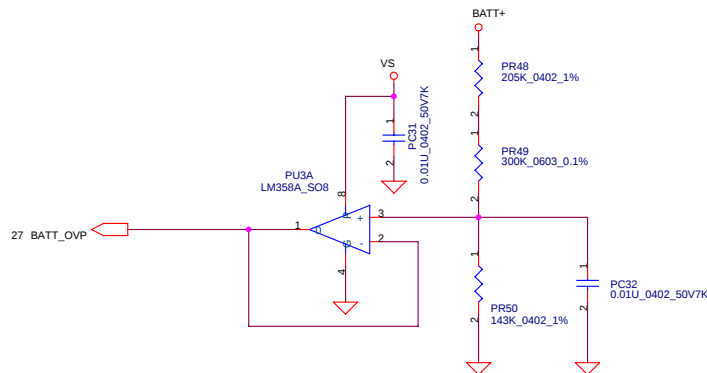


**Charge voltage
3S CC-CV MODE : 12.6V**

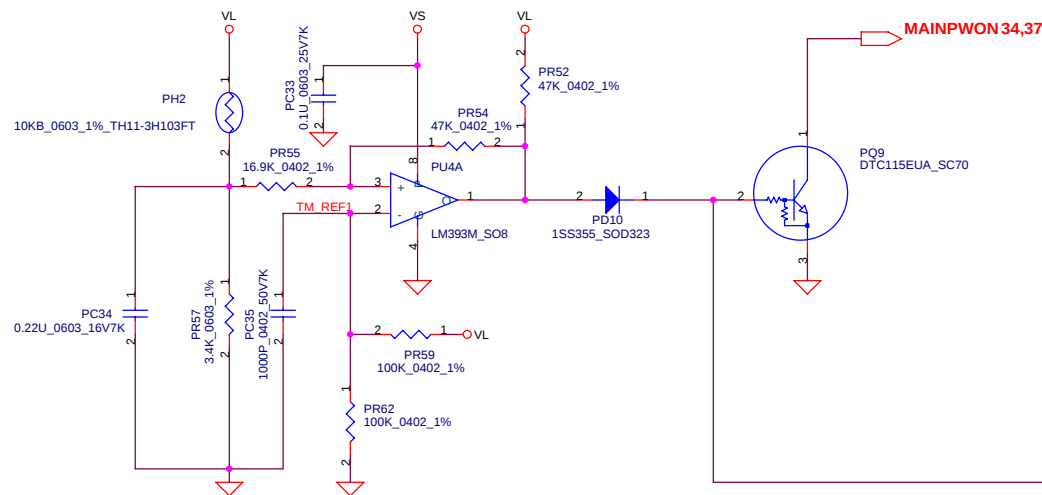
OVP voltage :

LI-3S :12.9V----BATT-OVP=2.84V

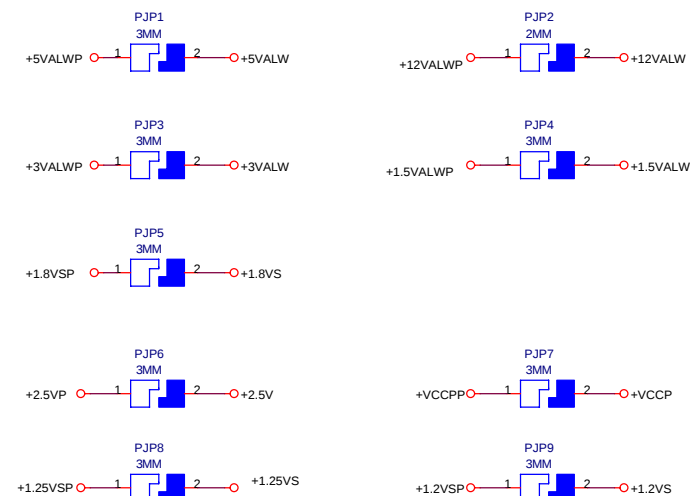
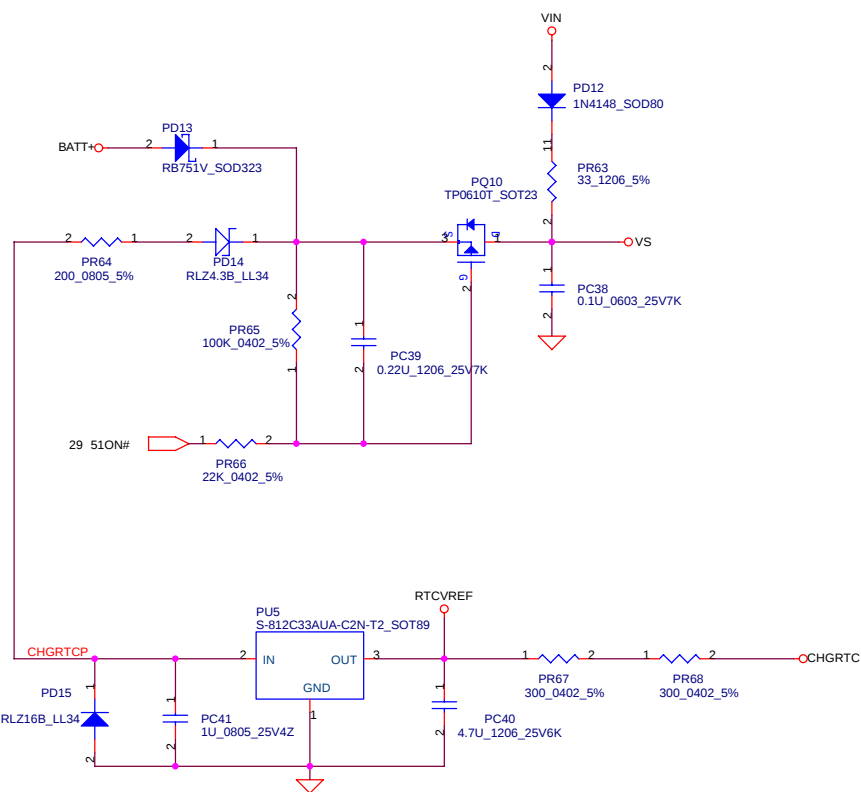
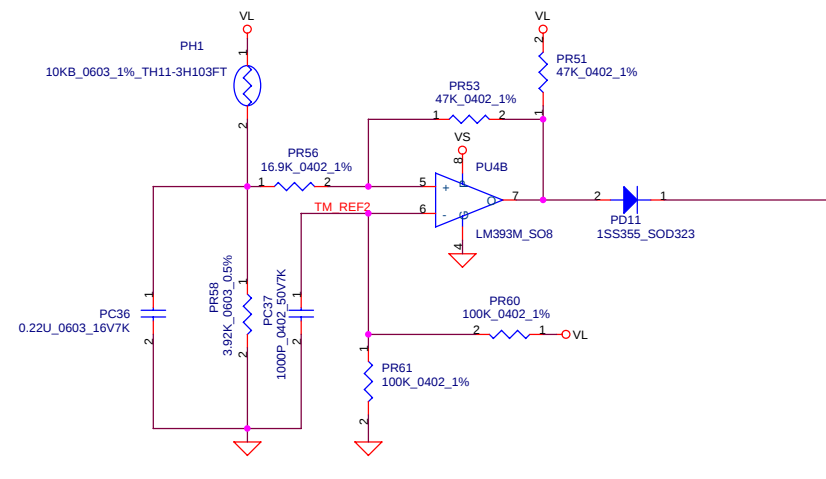
BATT-OVP=0.2206*BATT+



PH1 under CPU botten side :
 CPU thermal protection at 85 degree C
 Recovery at 44(45) degree C

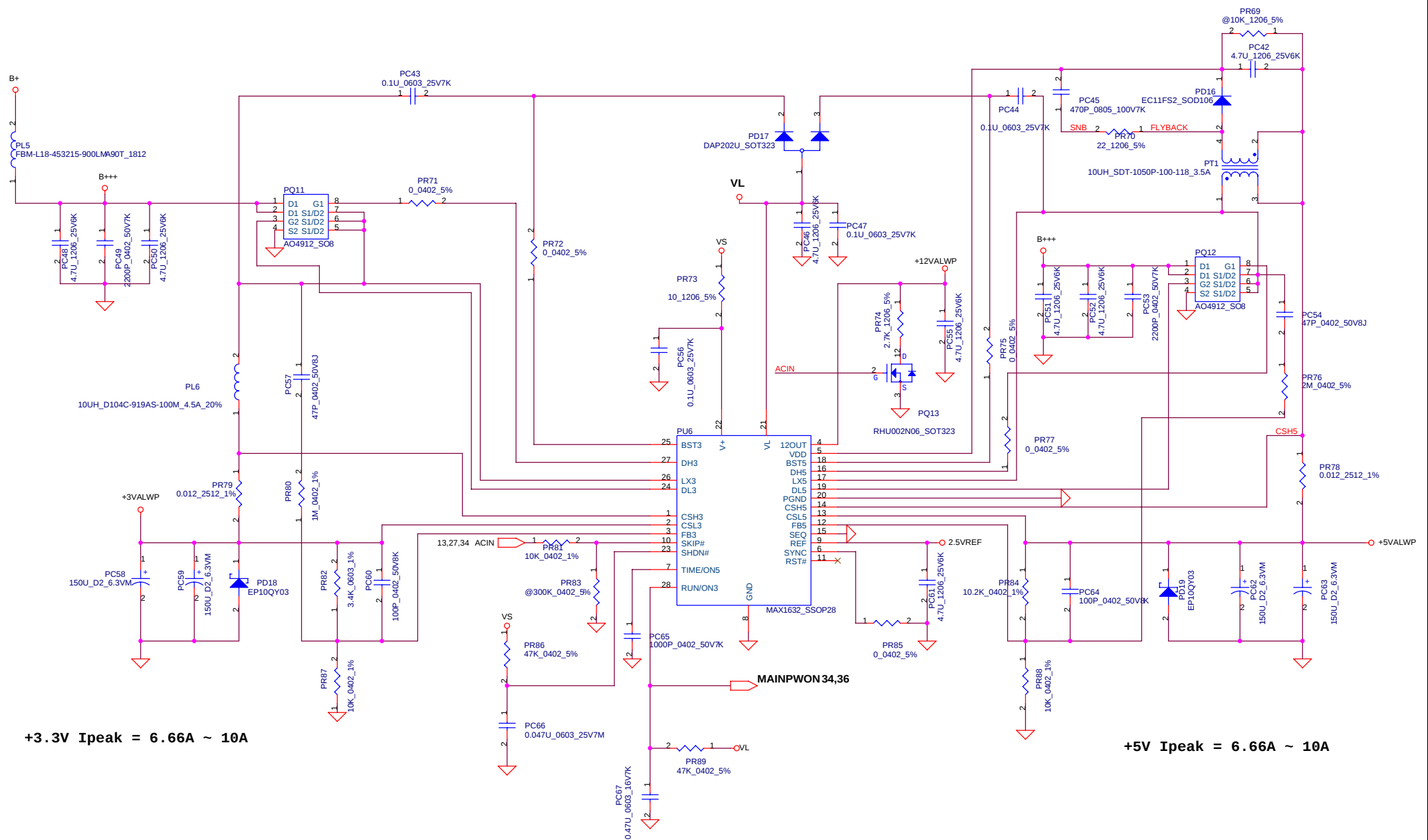


PH2 near main Battery CONN :
 BAT. thermal protection at 78 degree C
 Recovery at 39(40) degree C



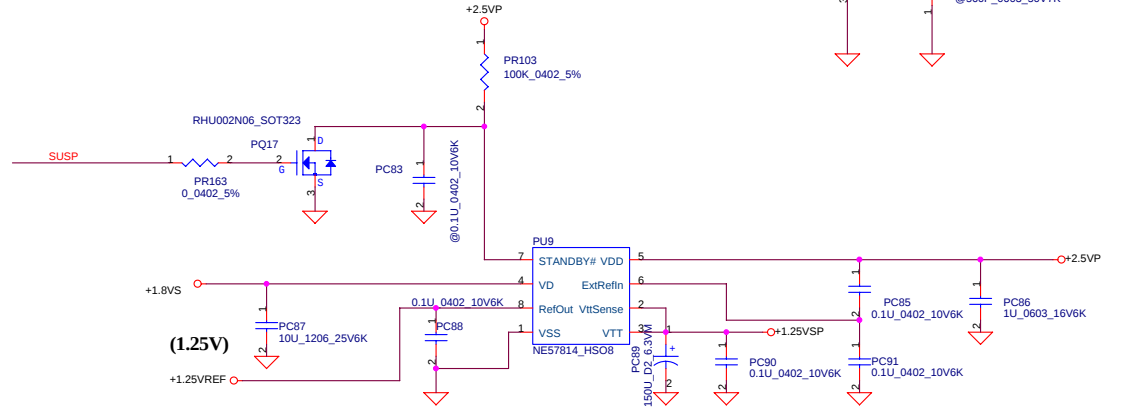
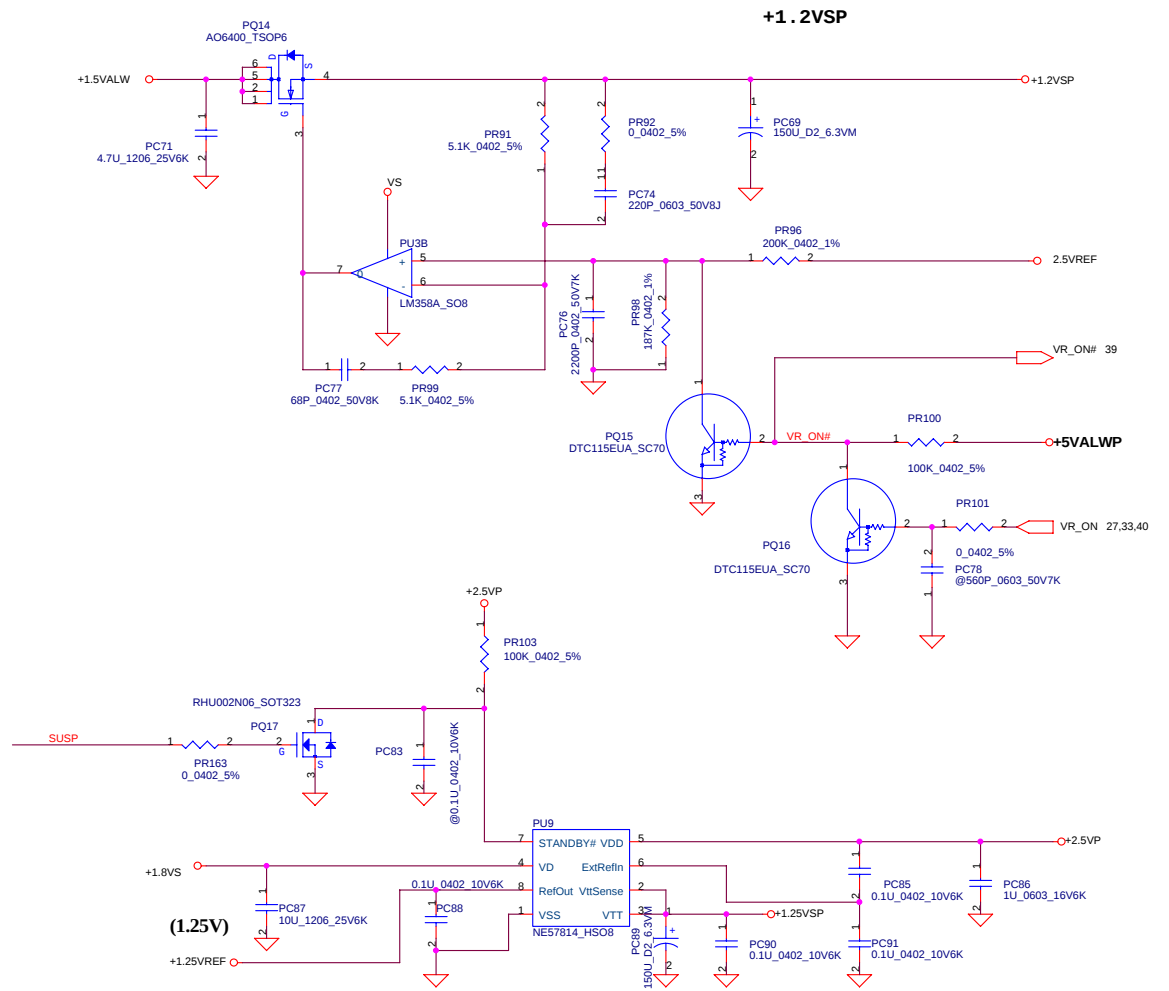
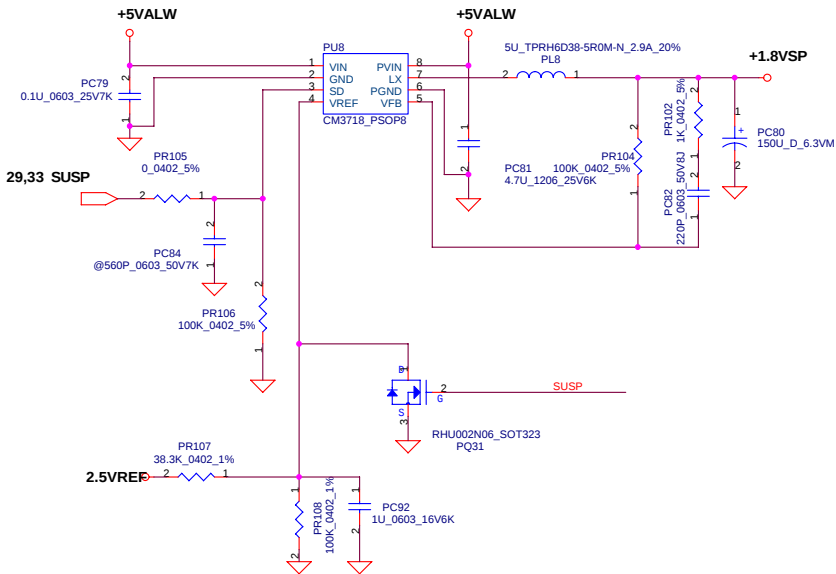
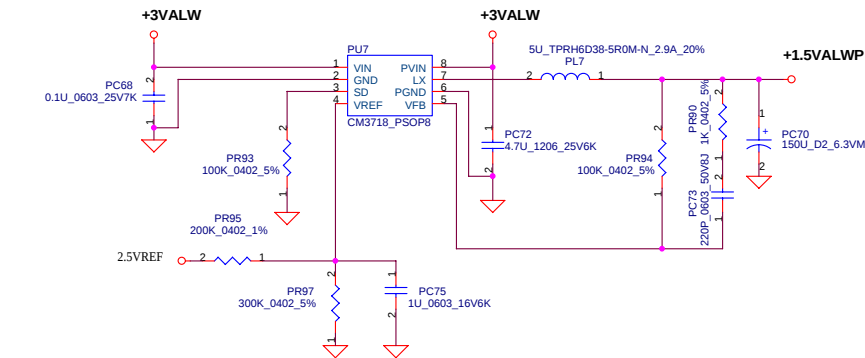
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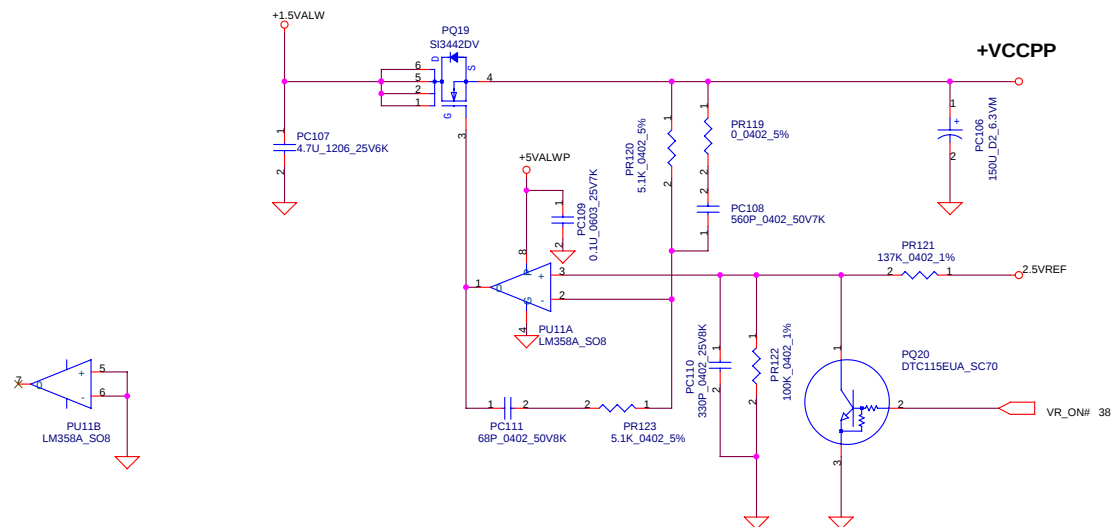
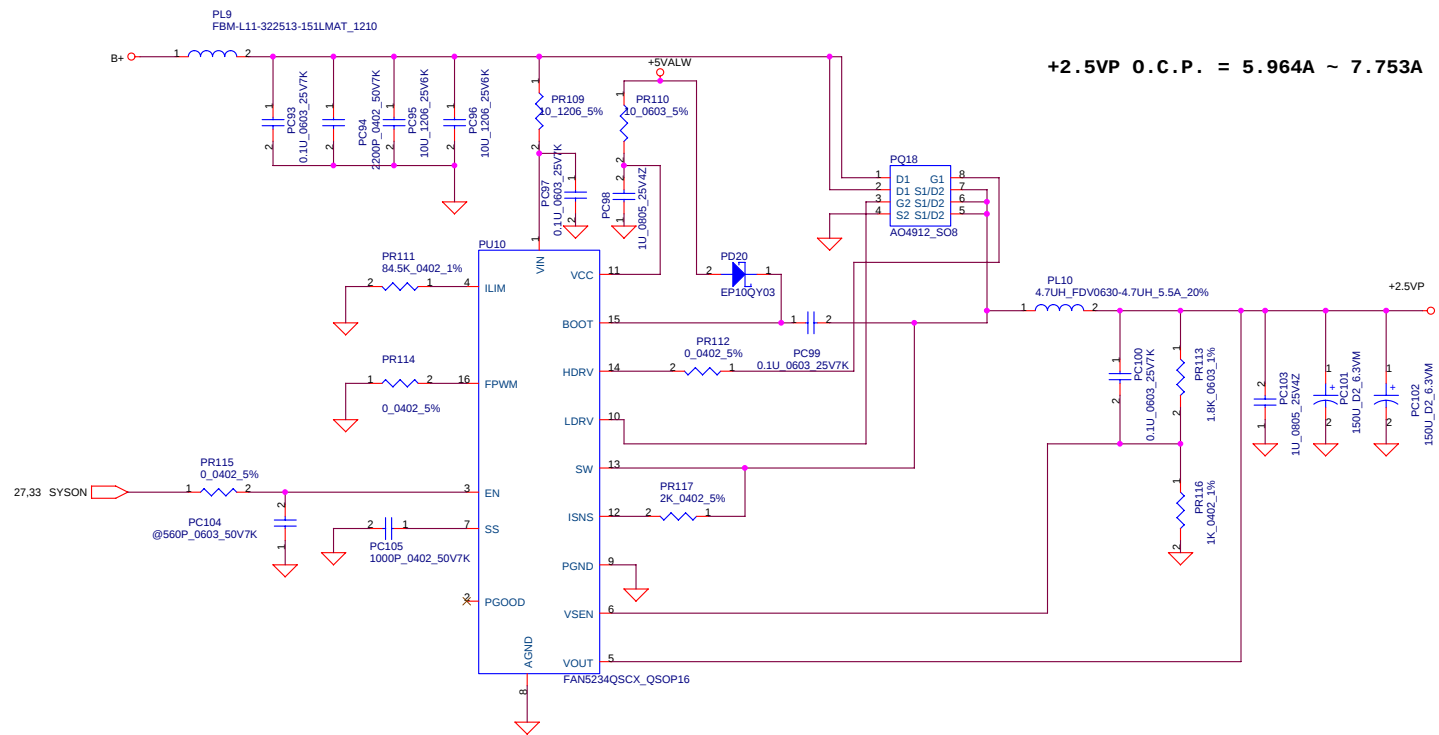
Compal Electronics, Inc.			
Title	RTC Battery & OTP		
Size	Document Number	Rev	
B	DAT20 LA-1971	1.0	
Date:	Monday, October 27, 2003	Sheet	36 of 42



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Compal Electronics, Inc.			
Title		+5VALWP / +3VALWP / +12VALWP	
Size	Custom	Document Number	Rev
		DAT20 LA-1971	1.0
Date:	Monday, October 27, 2003	Sheet	37 of 42





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Compal Electronics, Inc.			
Title		DDR +2.5VP & VCCPP	
Size	Document Number	Rev	
Custom	DAT20 LA-1971	1.0	
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DAT20 PIR LIST

HW PIR LIST

EVT -> DVT

- [Page 7 & 9] Change Material R33, R34, R200, R201 (75_0603_1%)
- [Page 14] Change Material R38 (20_0603_1%)
- [Page 16] Change Material U40
- [Page 24] Modify R374 connected from +3VALW to +3V & delete R384 (Remove TPM detect function)
- [Page 25] Delete RP65 & R260 which reserved for LPC47N227
- [Page 26] Change SLCTIN# connection.
- [Page 27] Change R308 from 0_0402_5% to 8.2K_0402_5% for DVT test AD_BID0
- [Page 29] Change material for C526 from 1U_0603_10V4Z to 1U_0603_10V6K
 - Add C556 2200P_0402_50V7K
 - Add C557, C558 1000P_0402_50V7K
- [Page 30] Add L10
 - Change C84 from 4.7U_0805_10V4Z to 10U_0805_10V4Z
 - Add C555 10U_0805_10V4Z
 - Delete C184, C179 1U_0603_10V4Z
- [Page 32] R156 from 390_0402_5% to 360_0402_5%
- [Page 27] R409 from 10K_0402_5% to 47K_0402_5% & add C559 0.1U_0402_16V4Z

DVT -> PVT

- [Page 12] Delete C70, C80, C166, C167, C168
- [Page 24] Delete R2 (Reserved for FIR)
- [Page 31] Delete C476, C531, R319, R371 AudioHigh pass filter.

PVT -> MP

- [Page 12] Add C160, C161 5.6PF_0402_50V8D
- [Page 19] Delete R329
- [Page 25] Delete R63
- [Page 27] Add R438

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Compal Electronics, Inc.			
Title			
DAT20 PIR LIST			
SAC - Competent Number			Rev
Division/Component			1.0
DATE			
Tuesday, October 28, 2003			
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Version change list (P.I.R. List)

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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	B.Ver#	Phase
1	M/B cannot power on.	RC delay time is not enough of Max1632 on3 pin.	0.2	34	1.Change PC67 from 0.047U_0805_10V6K to 0.47U _16V K X7R 0603.	0.2	DVT
2	Layout symbol error.	Layout symbol error.	0.2	37	1.Change PR26 PCB footprint from R_0603 to R_0402.	0.2	DVT
3	Layout symbol error.	Layout symbol error.	0.2	40	1.Change PD22 from EP10QY03 to EP31QS04.	0.2	DVT
4	System cannot re-start and Windows fail when into C4.	The CPU cannot into skip mode,happen the OVP when C4.	0.2	40	Swap the PR154 and PR155.	0.2	DVT
5	Rating not enough.	Rating not enough.	0.2	34	1.Change PC66 from 0.047U_00603_16V7K to 0.047U_00603_25V7M.	0.2	DVT
6.	Rating is not enough.	Surge power rating concerned.	0.2	39	1.Change PR109 from 10_0603 to 10_1206.	0.2	DVT
7.	Change size.	Change size.	0.2		1.Change PR149,PR44,PR48,PR82,PR36,PR107,PR39,PR121,PR140,PR145 and PR146 from 0603 to 0402.	0.2	DVT
8.	Change size.	Change size.	0.2		1.Change PC114,PC131,PC49,PC21,PC53,PC128,PC126,PC124,PC31,PC7 and PC9 from 0603 to 0402.	0.2	DVT
9.	Change size.	Change size.	0.2		1.Change PC56,PC24,0C38,PC100,PC16 and PC19 from 0805 to 0603.	0.2	DVT
10.	Choke rating is not enough.	Charge current power rating concerned.	0.2	35	1.Change PL4 from 22UH to 16UH.	0.2	DVT
11.	Appication of CM3718 has overshoot issue during system on.	Charge control signal SHDN# to reference.	0.2	38	1.Add PQ31.	0.2	DVT
12.	EMI issue of charger.	EMI issue of charger.	0.3	35	1.Change PQ6 from A04407 to FDS6679. Add the PR164 on GATE pin of PQ6.	0.3	PVT
13.	EMI issue of CPU_CORE.	EMI issue of CPU_CORE.	0.3	40	1.Change PQ21 and PQ25 from IRF7821 to IRF7811A. Add the 2200P on PC134 and PC135.	0.3	PVT
14.							

Compal Electronics, Inc.

Title

PWR-PIR

SAC-Component Number

DAT20 LA-1971

Rev

1.0

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