

ZZZ8
DAZ@
DAZ04300100
PCB



ZZZ1
DA2@
MAIN BOARD
DA600007E10
PCB

ZZZ2
DA2@
E board
DA40000A910
PCB

ZZZ3
DA2@
FP board
DA600007D10
PCB

ZZZ4
DA2@
Function board
DA40000AA10
PCB

ZZZ5
DA2@
USB board
DA40000AB10
PCB

ZZZ6
DA2@
IO board
DA40000AC10
PCB

ZZZ7
DA2@
Power board
DA40000AD10
PCB

Compal Confidential

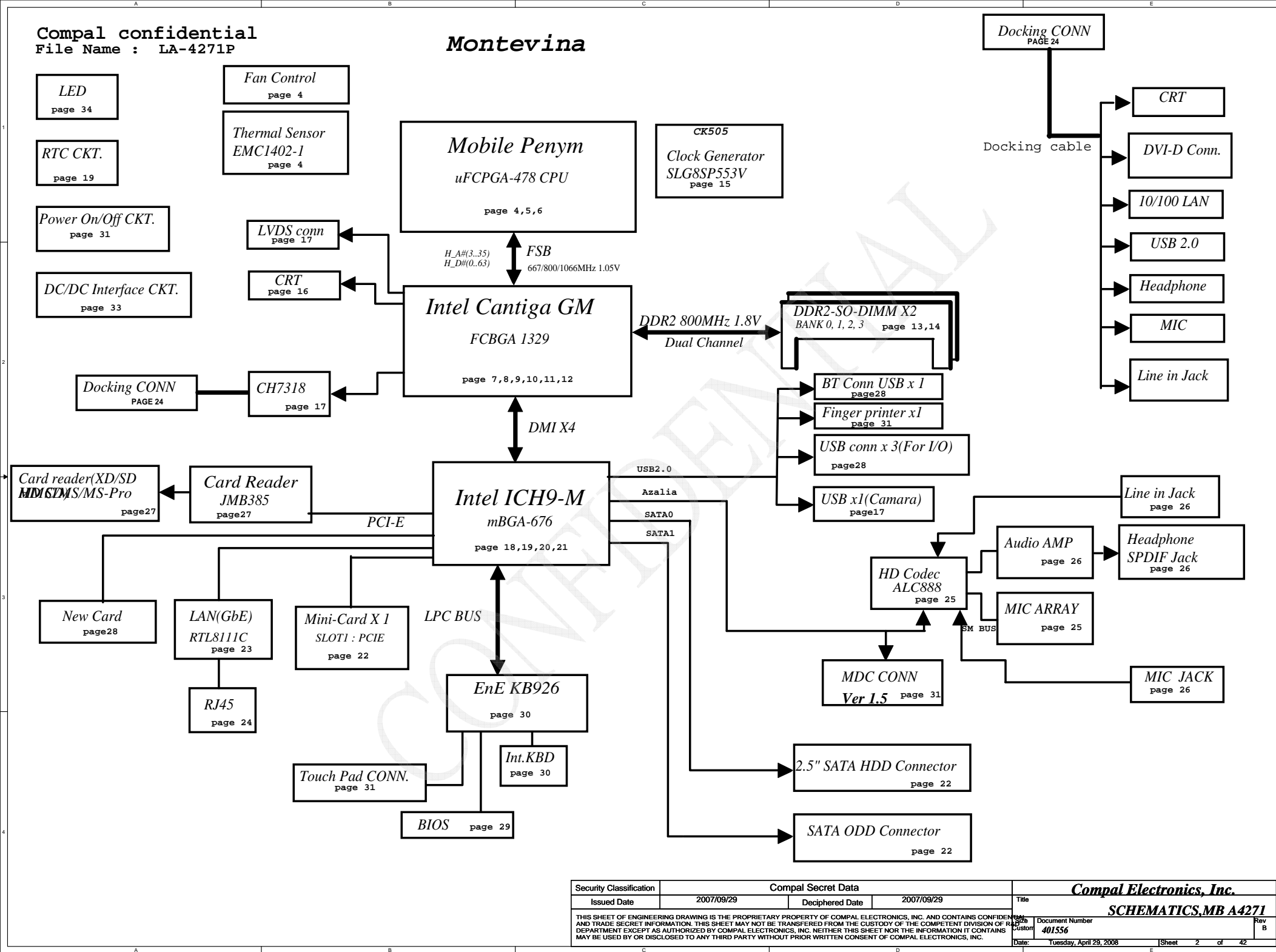
JAT10 M/B Schematics Document

Intel Penryn Processor with Cantiga + DDRII + ICH9M

2008-04-07

REV:1.0

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<div>power plane</div> <div>State</div>	+B	+5VALW +3VALW	+1.5V	+5VS +3VS +1.5VS +0.75V +VCCP +CPU_CORE +1.8VS
S0	O	O	O	O
S1	O	O	O	O
S3	O	O	O	X
S5 S4/AC	O	O	X	X
S5 S4/ Battery only	O	X	X	X
S5 S4/AC & Battery don't exist	X	X	X	X

Symbol Note :

 : means Digital Ground

 : means Analog Ground

@ : means just reserve , no build
DEBUG@ : means just reserve for debug.

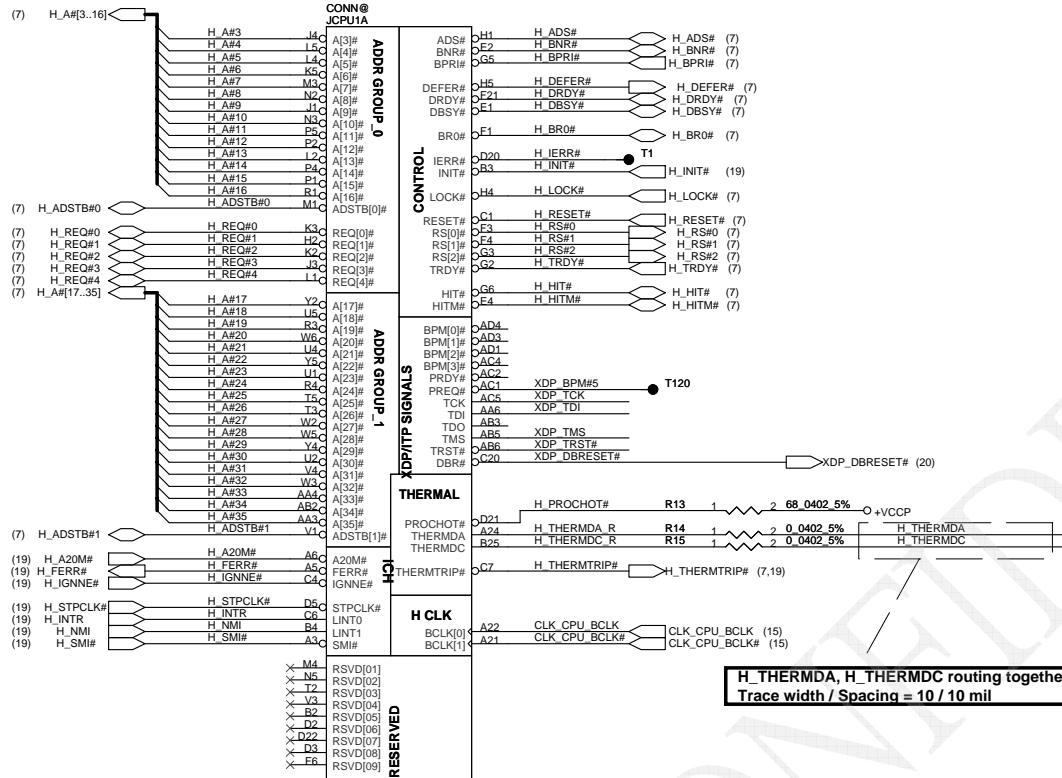
SMBUS Control Table

	SOURCE	INVERTER	BATT	SERIAL EEPROM	THERMAL SENSOR (CPU)	SODIMM	CLK CHIP	MINI CARD	LCD
SMB_EC_CK1 SMB_EC_DA1	KB926	X	V	V	X	X	X	X	X
SMB_EC_CK2 SMB_EC_DA2	KB926	X	X	X	V	X	X	X	X
SMB_CK_CLK1 SMB_CK_DAT1	ICH9	X	X	X	X	V	V	V	X
LCD_CLK LCD_DAT	Cantiga	X	X	X	X	X	X	X	V

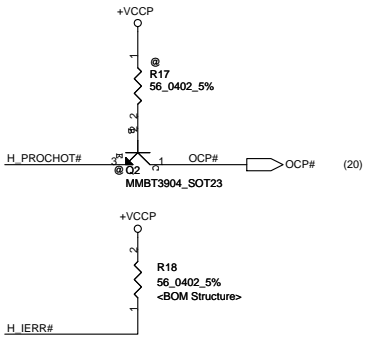
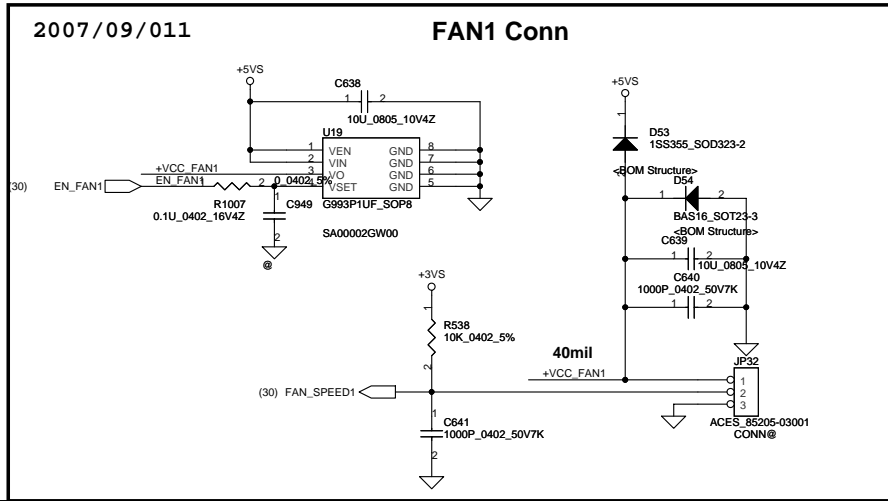
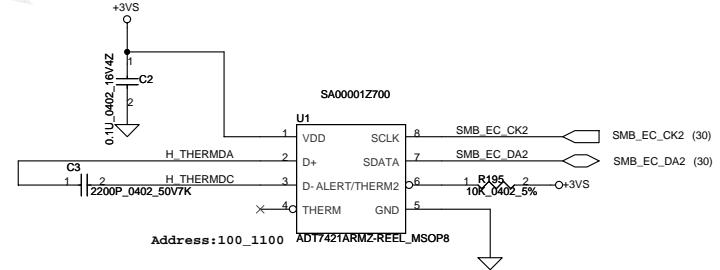
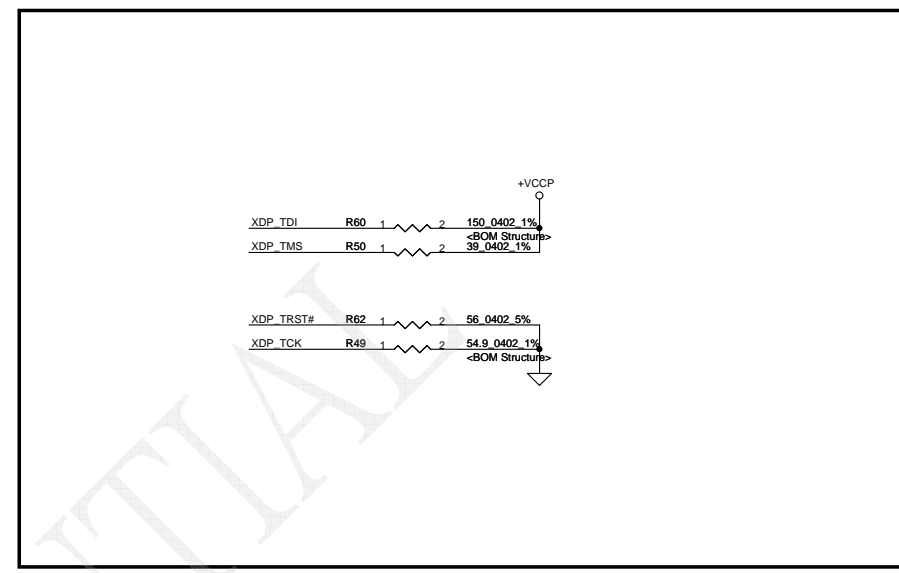
I2C / SMBUS ADDRESSING

DEVICE	HEX	ADDRESS
DDR SO-DIMM 0	A0	1 0 1 0 0 0 0 0
DDR SO-DIMM 1	A4	1 0 1 0 0 1 0 0
CLOCK GENERATOR (EXT.)	D2	1 1 0 1 0 0 1 0

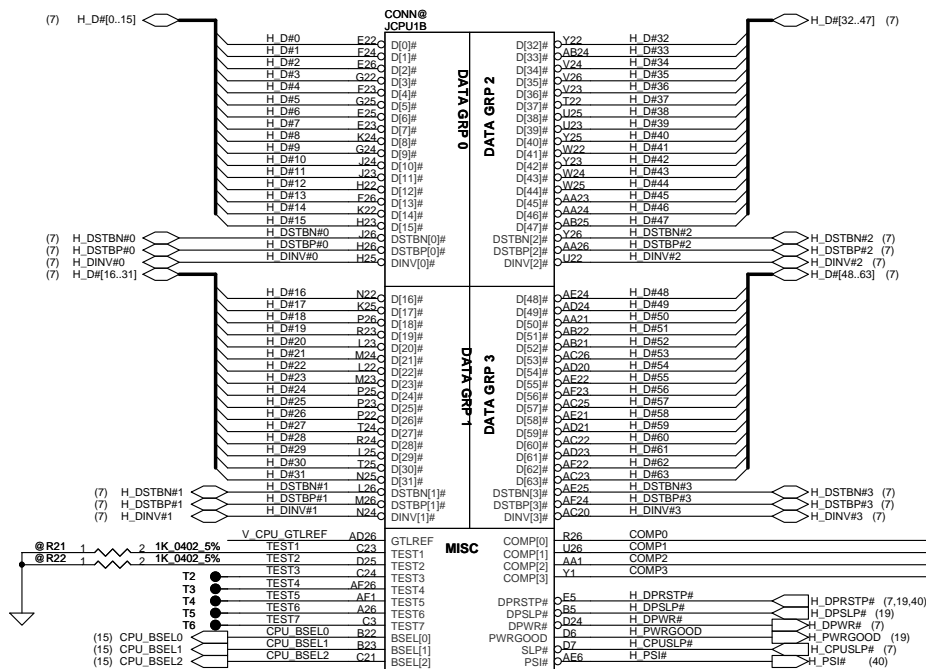
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H_THERMDA, H_THERMDC routing together,
Trace width / Spacing = 10 / 10 mil

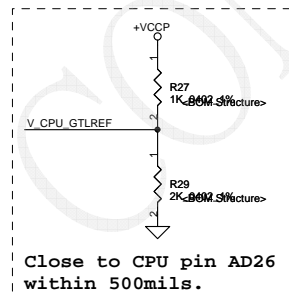


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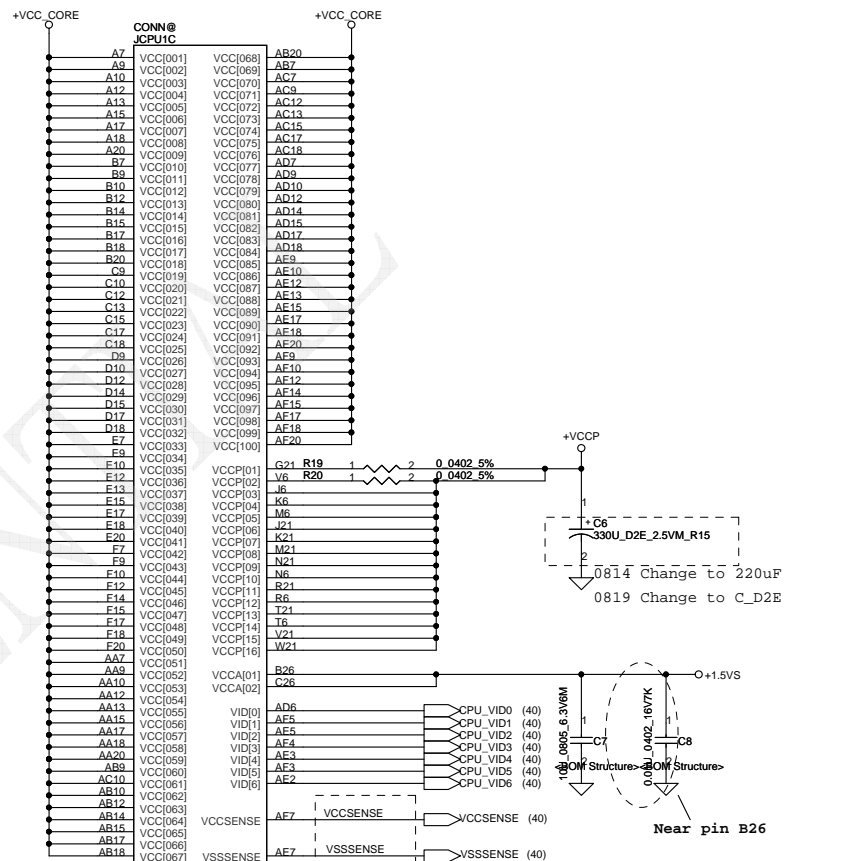


layout note: Route TEST3 & TEST5 traces on ground referenced layer to the TPs

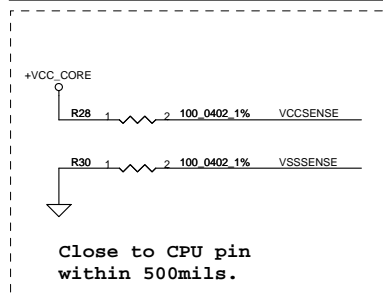
CPU_BSEL	CPU_BSEL2	CPU_BSEL1	CPU_BSEL0
166	0	1	1
200	0	1	0
266	0	0	0

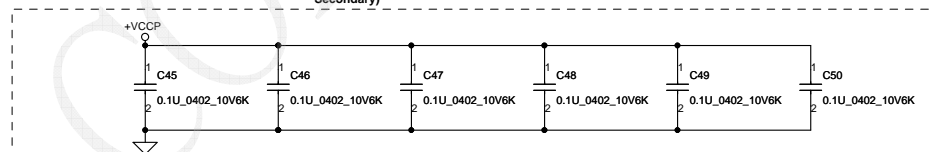
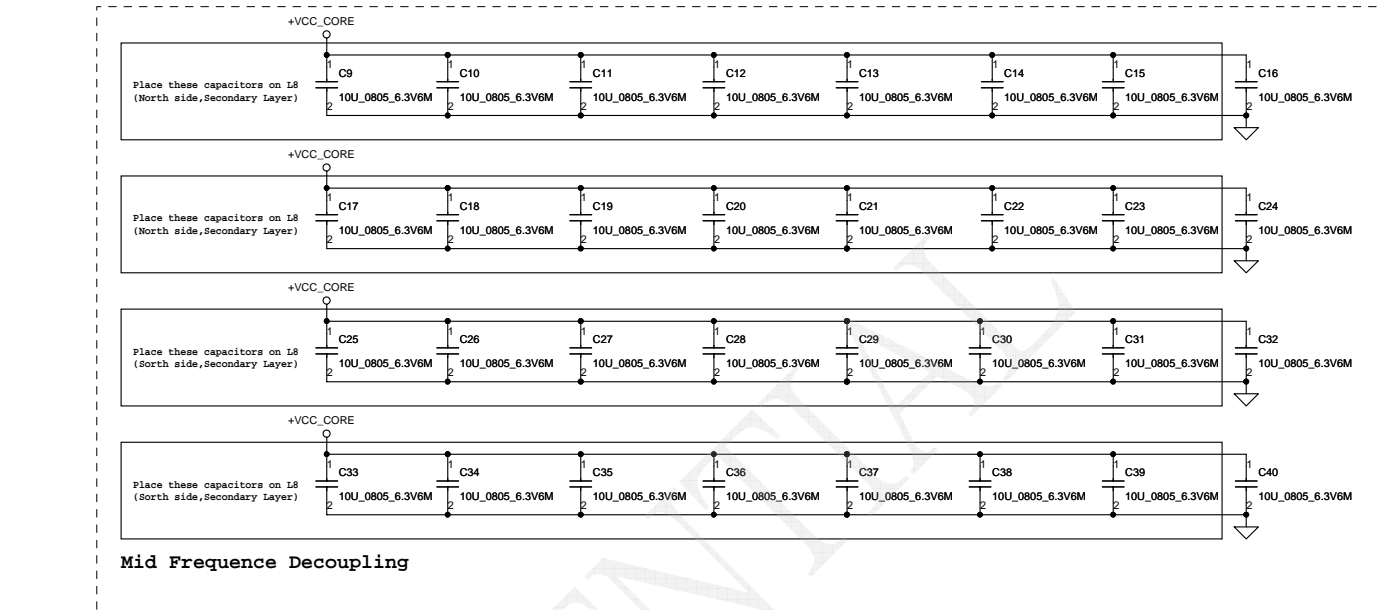


Resistor placed within 0.5" of CPU pin. Trace should be at least 25 mils away from any other toggling signal. COMP[0,2] trace width is 18 mils. COMP[1,3] trace width is 4 mils.

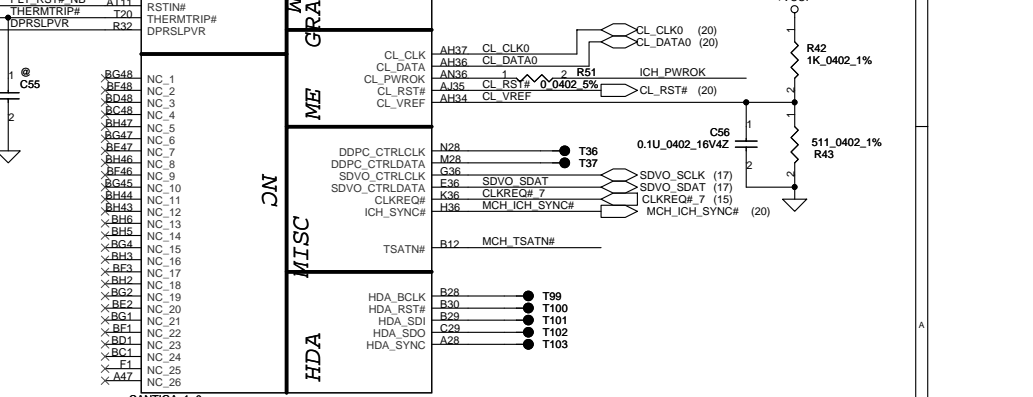
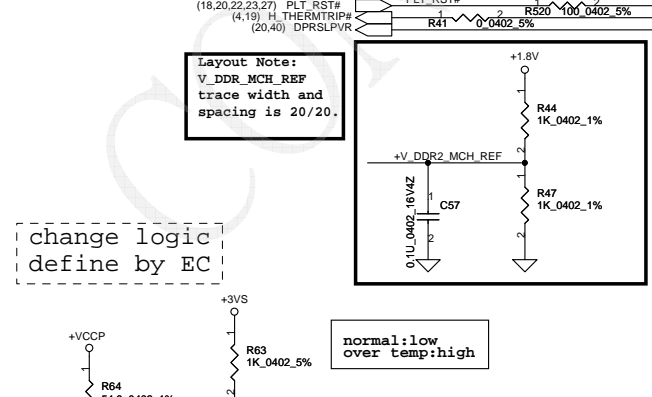
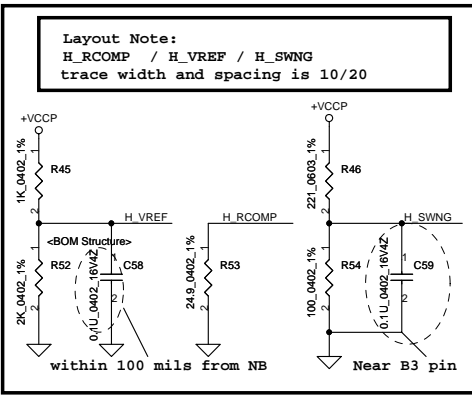
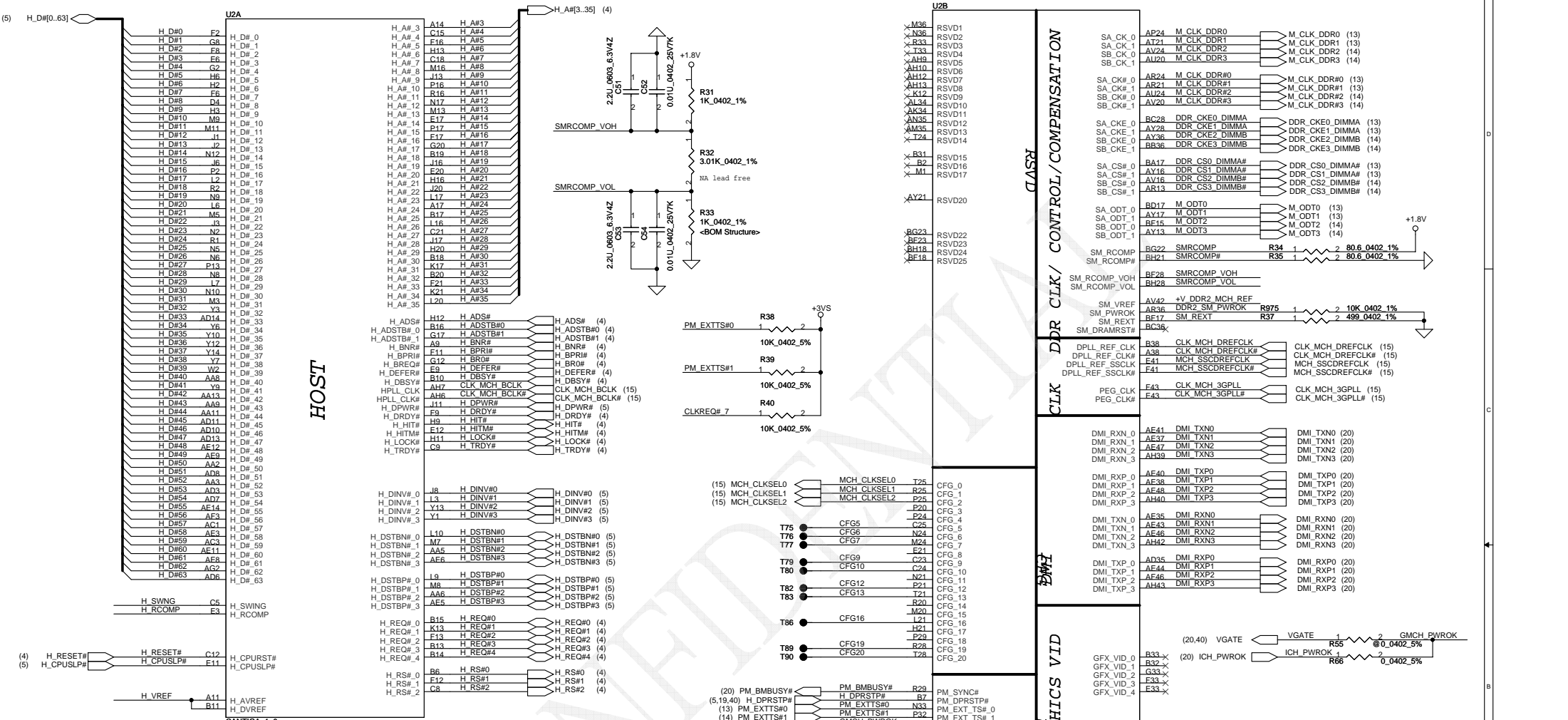



Length match within 25 mils. The trace width/space/other is 20/7/25.



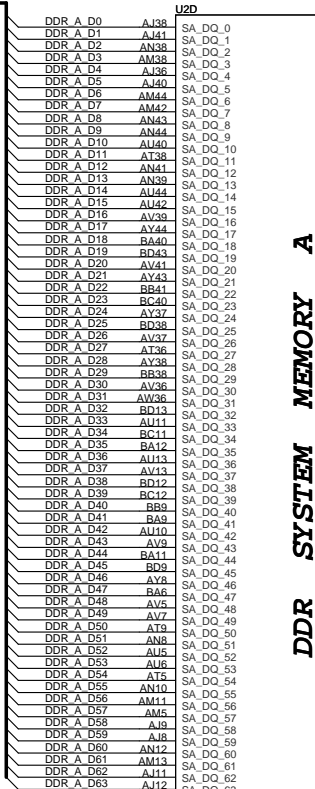


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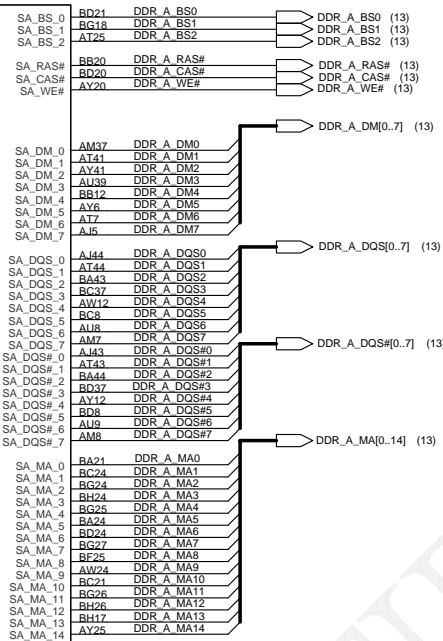


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(13) DDR_A_D[0..63]

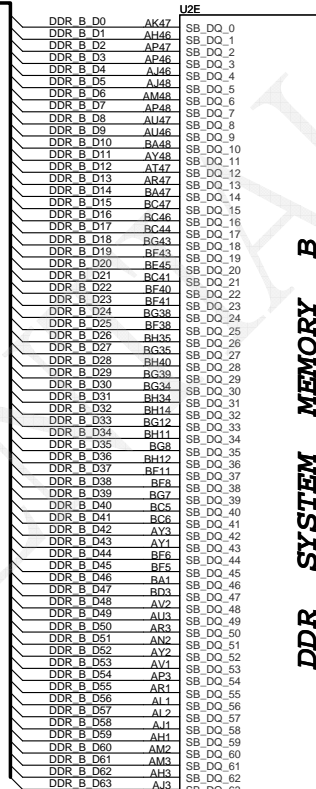


DDR SYSTEM MEMORY A

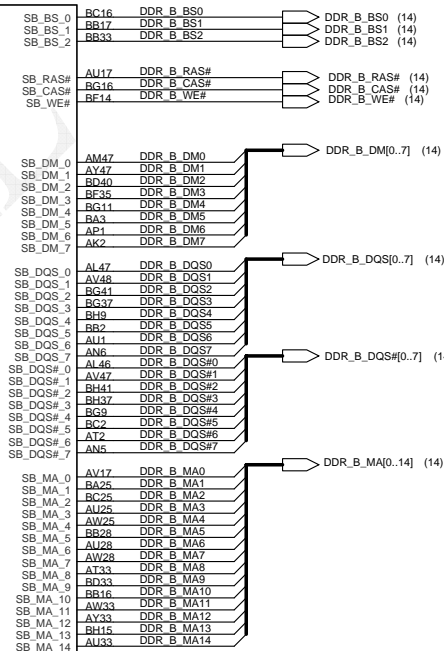


CANTIGA_1p0

(14) DDR_B_D[0..63]

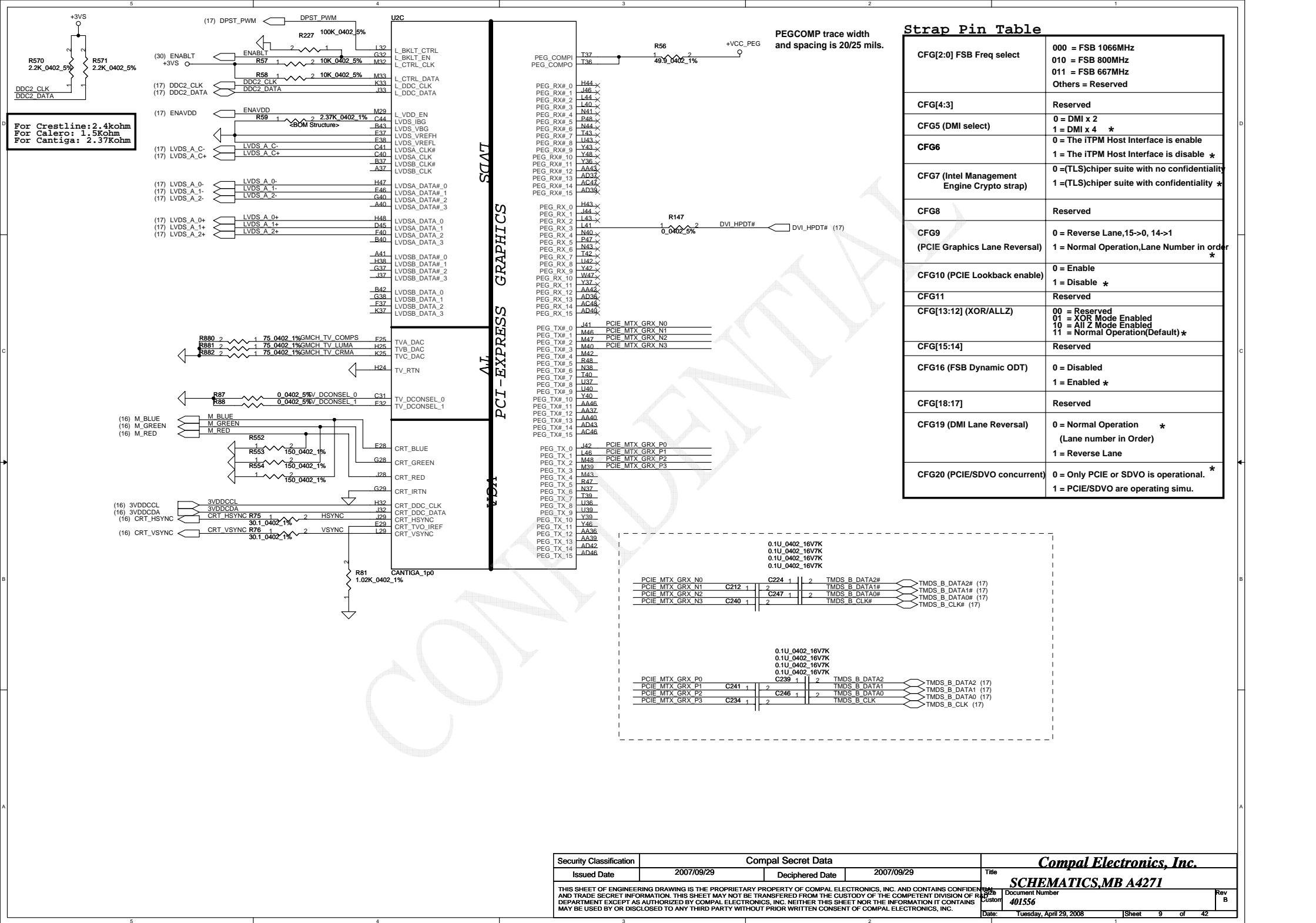


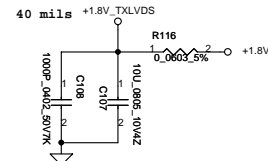
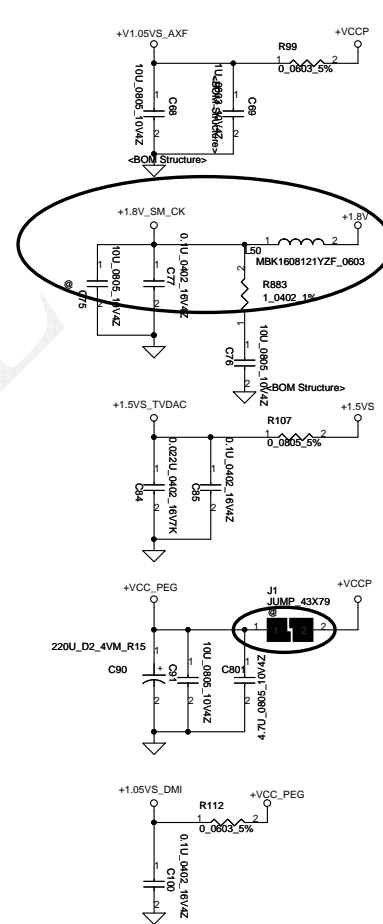
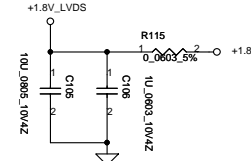
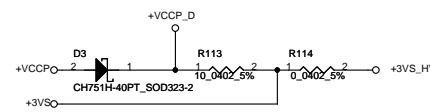
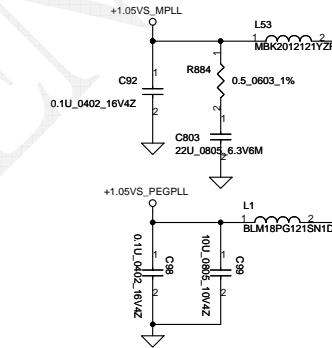
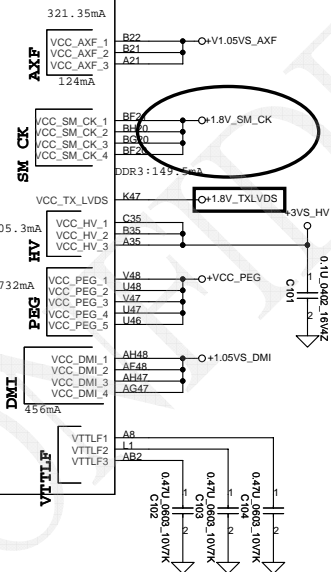
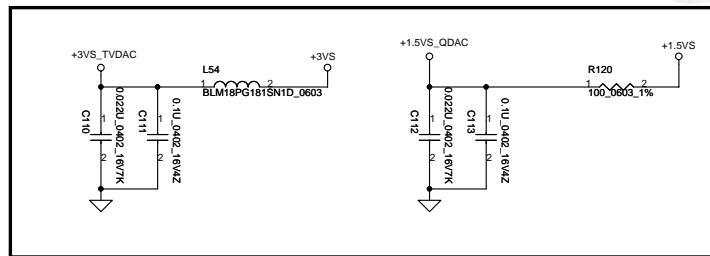
DDR SYSTEM MEMORY B



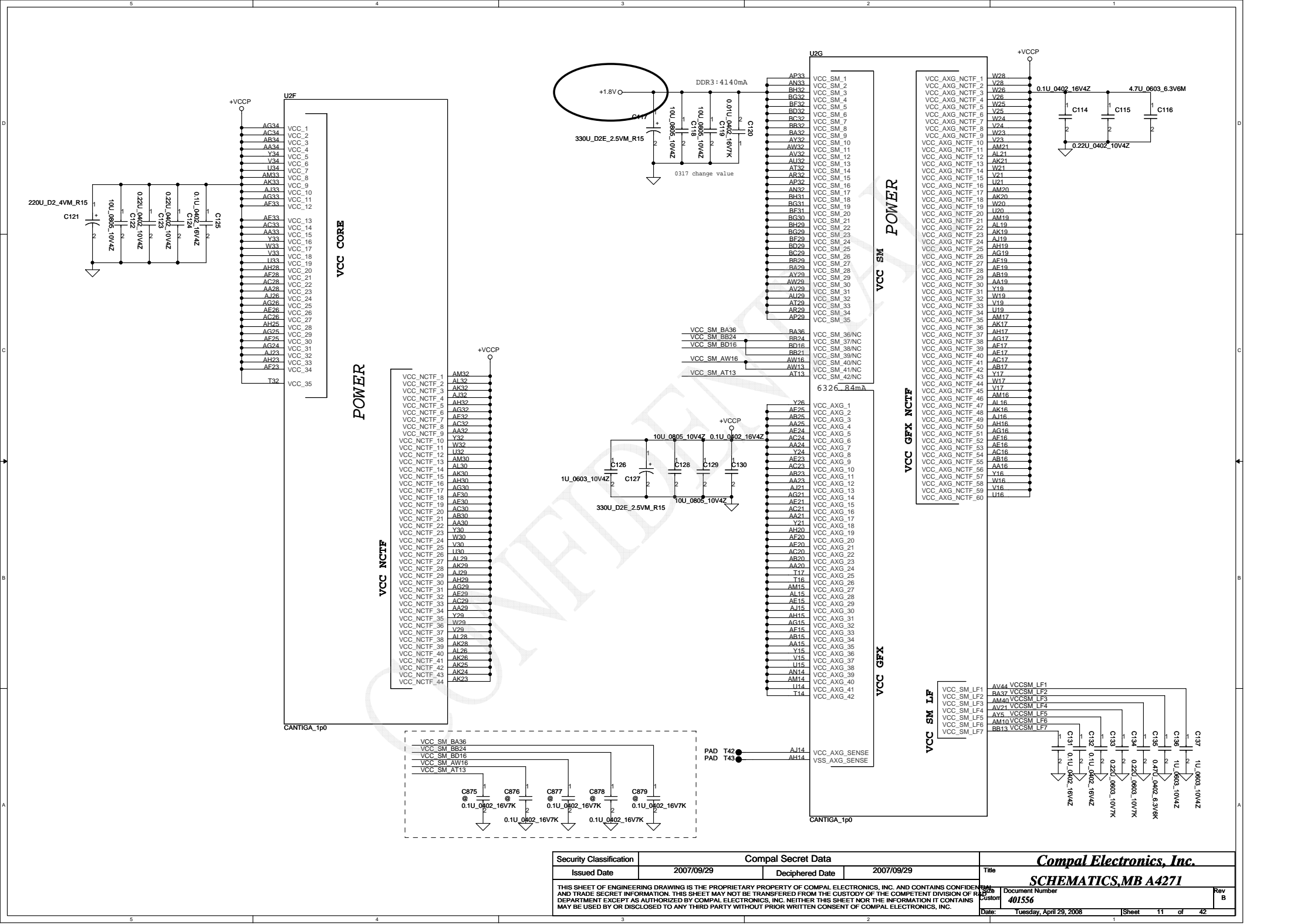
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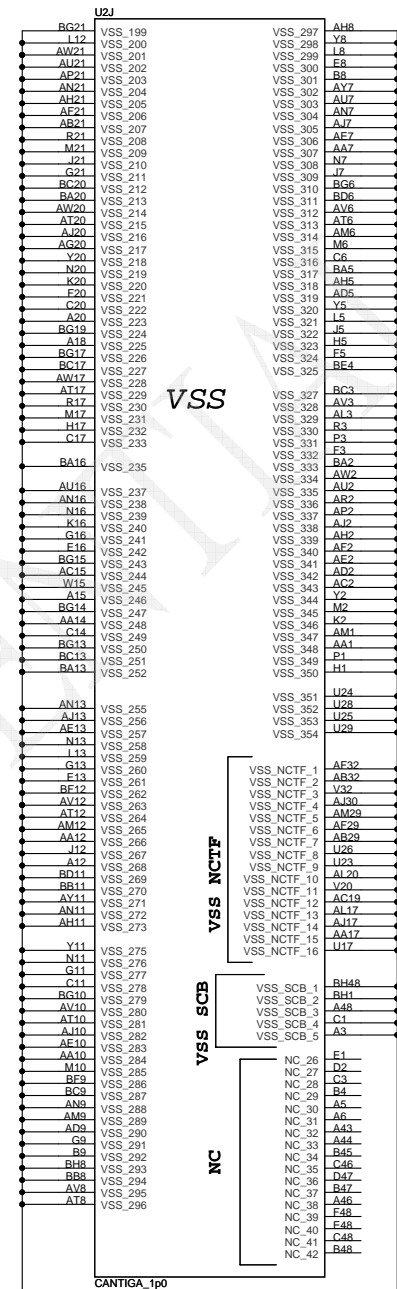
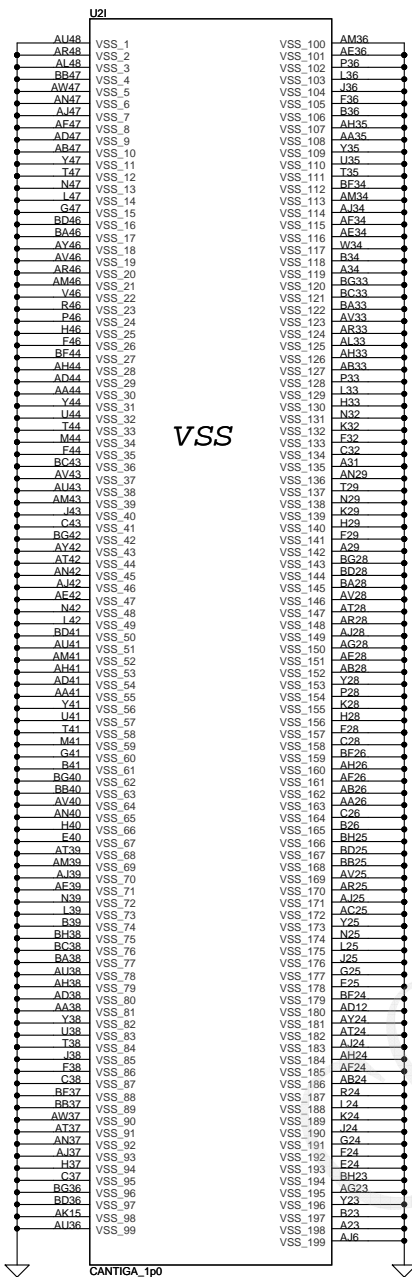
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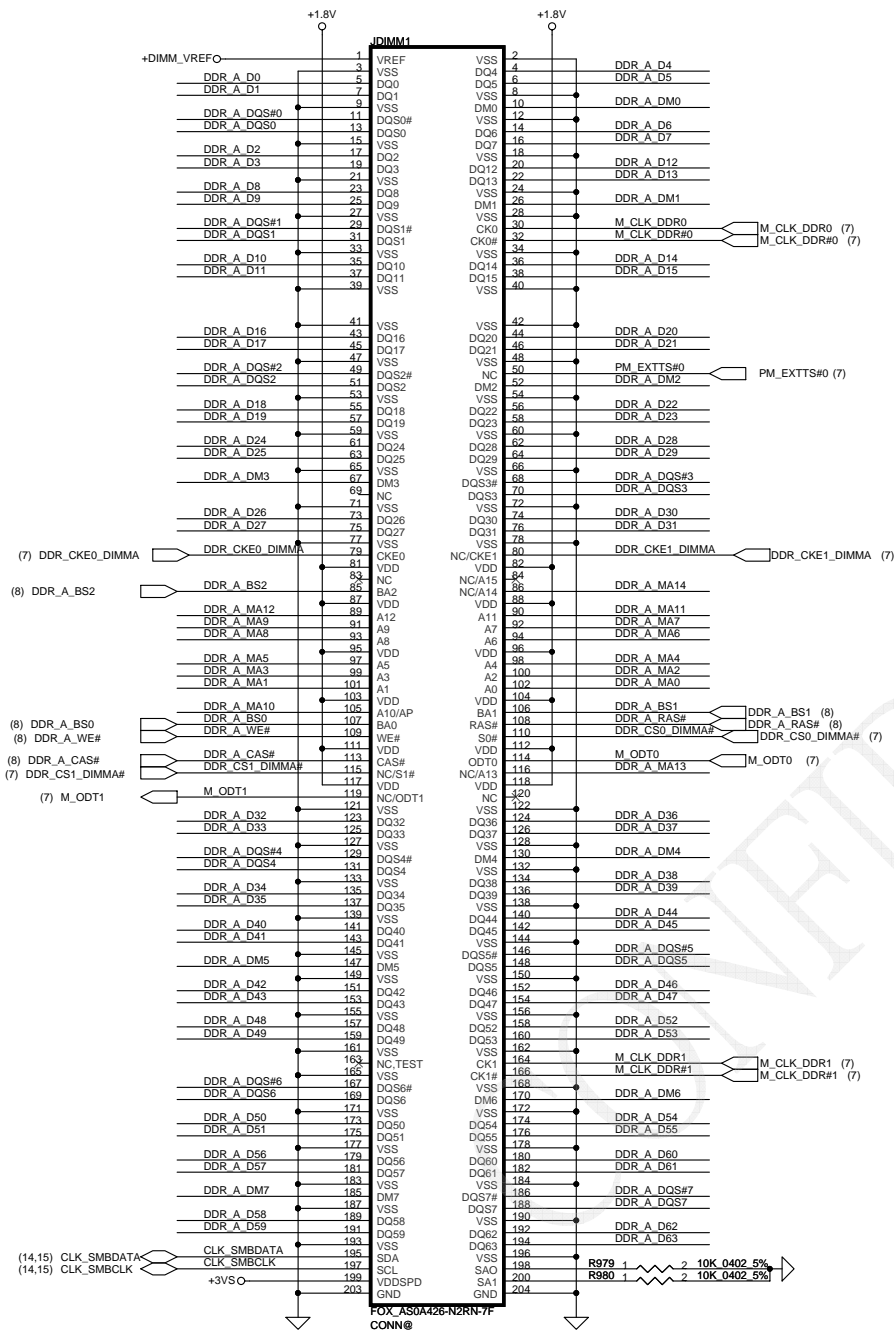




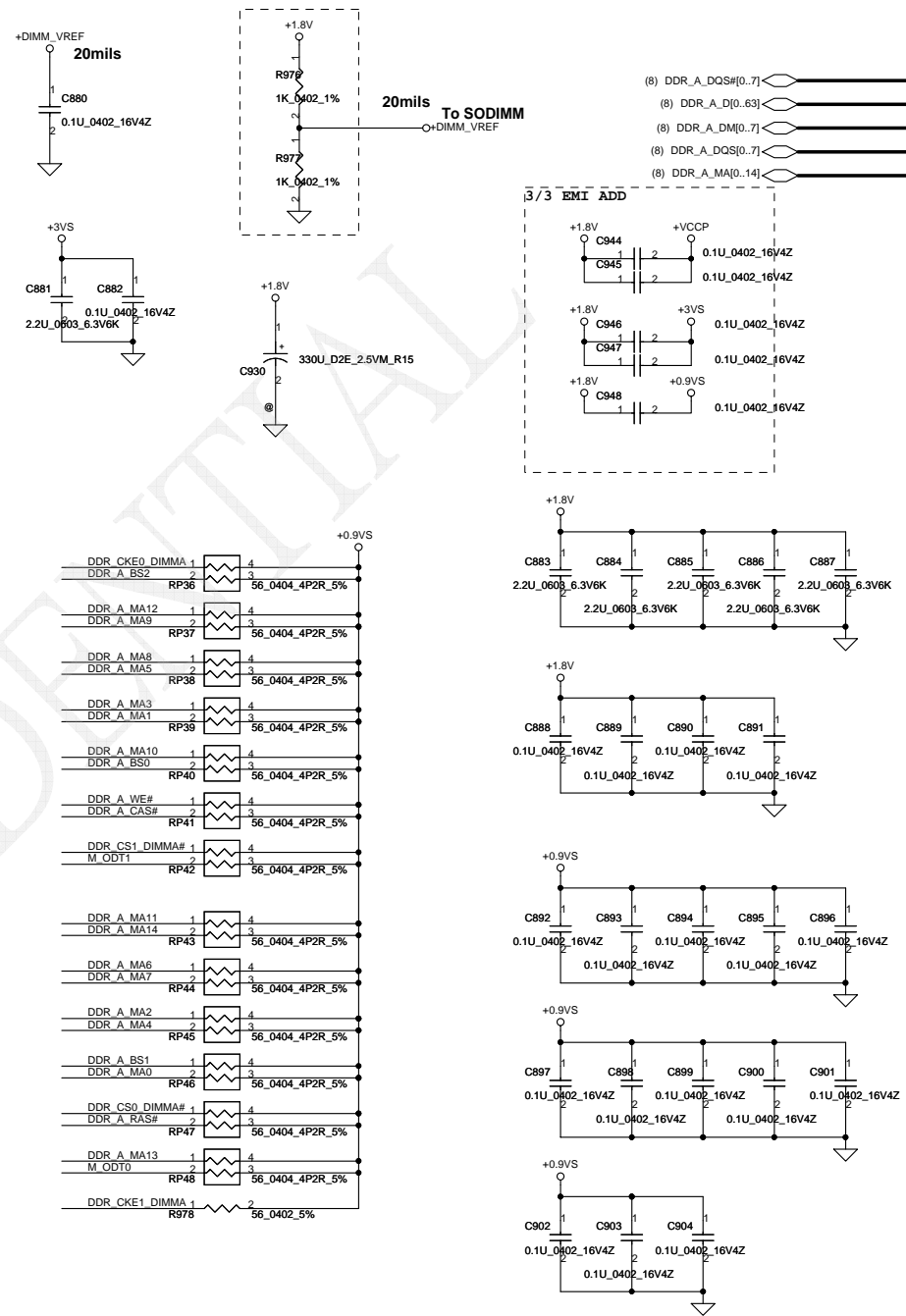
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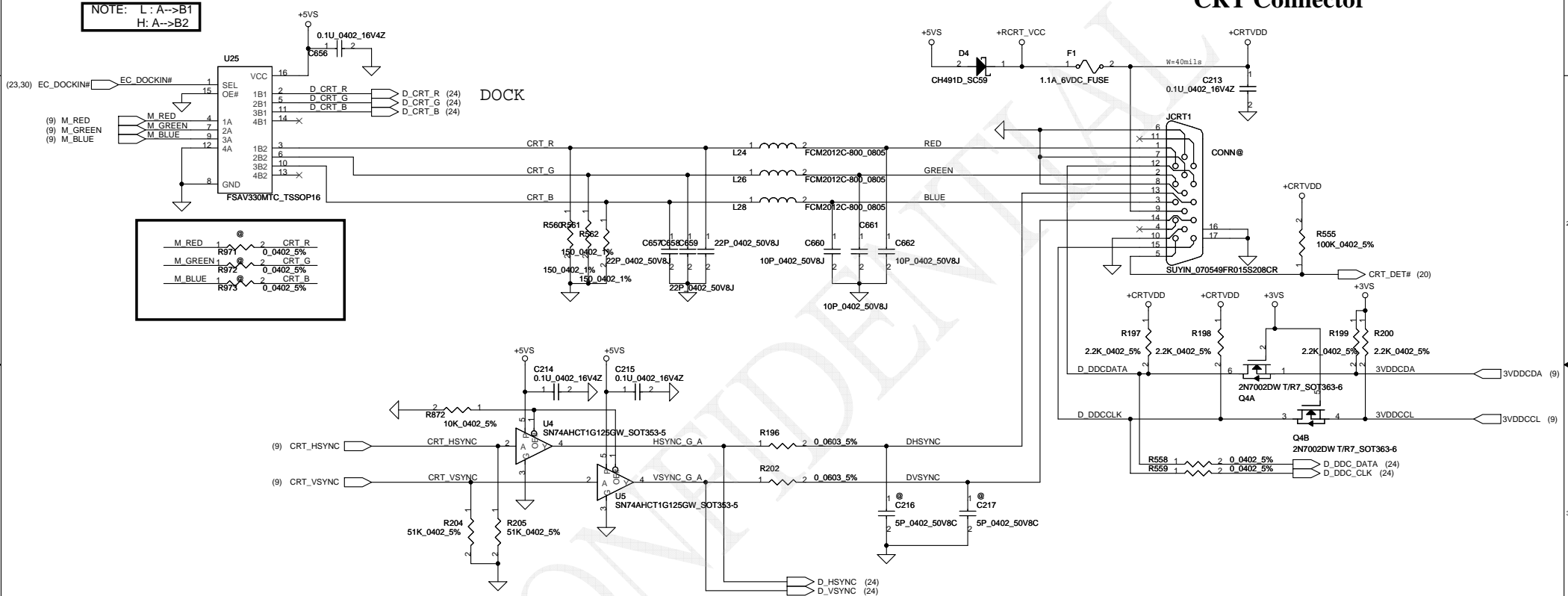




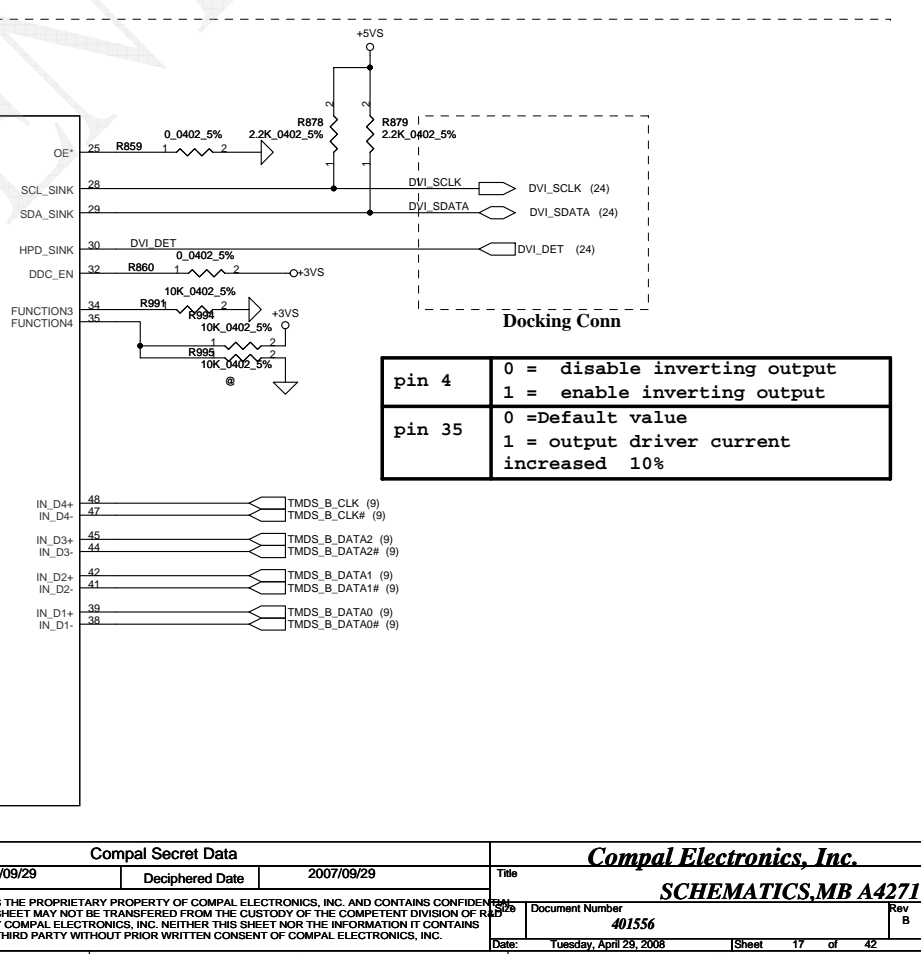
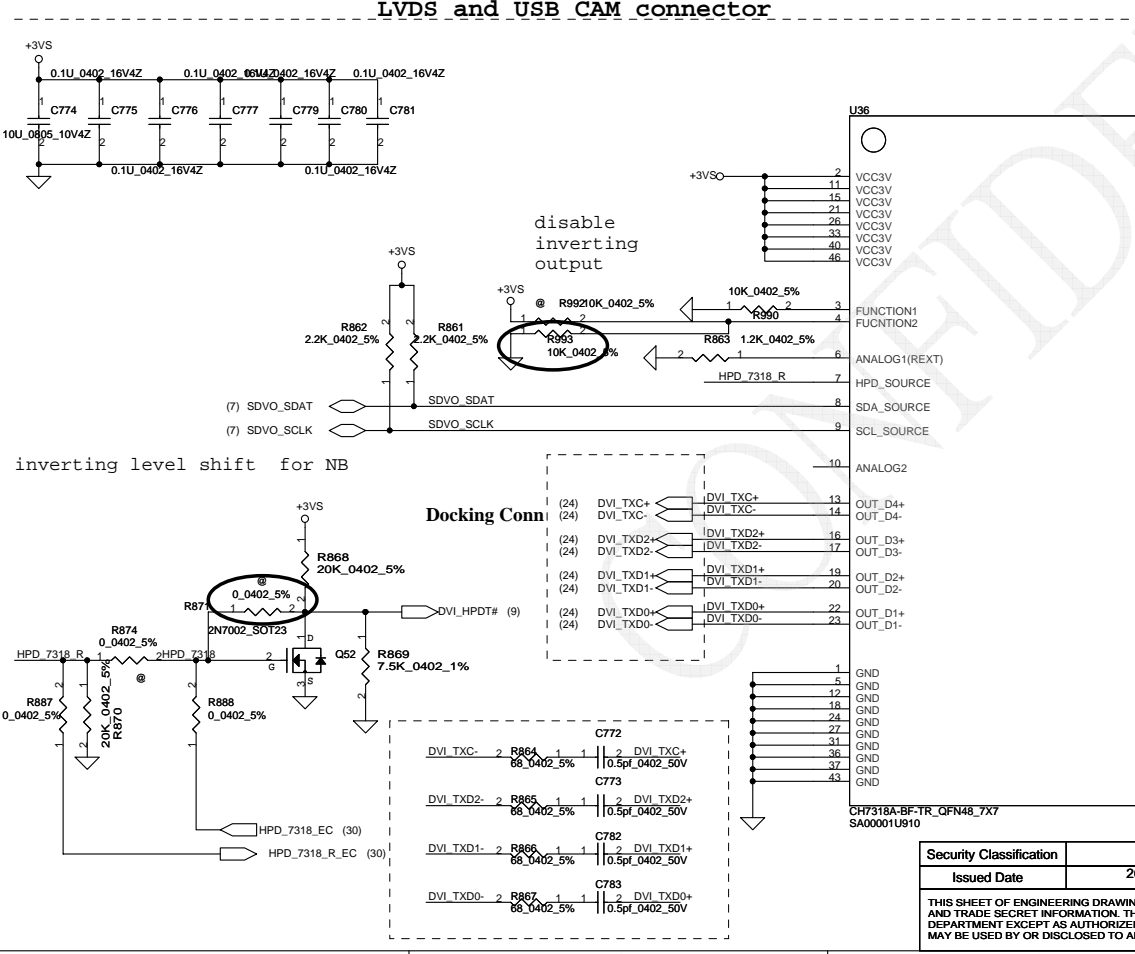
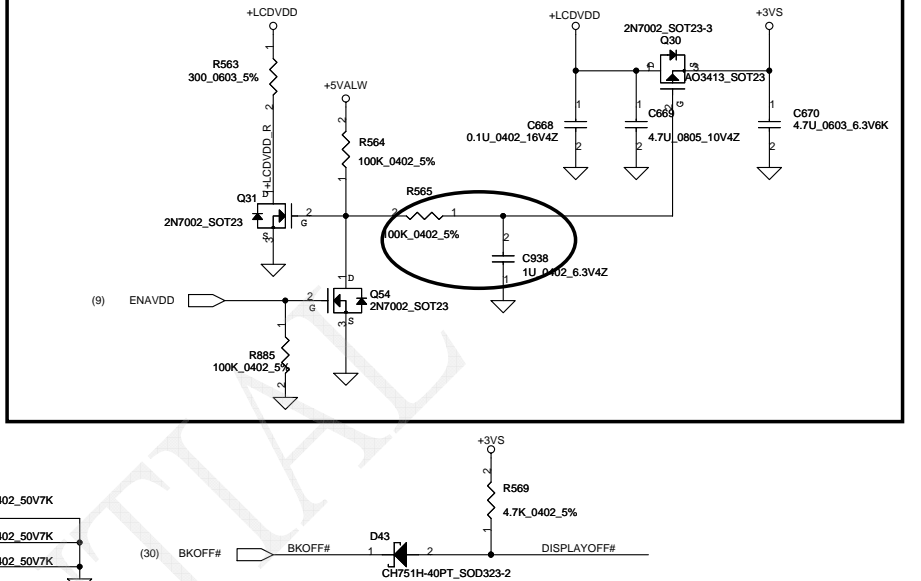
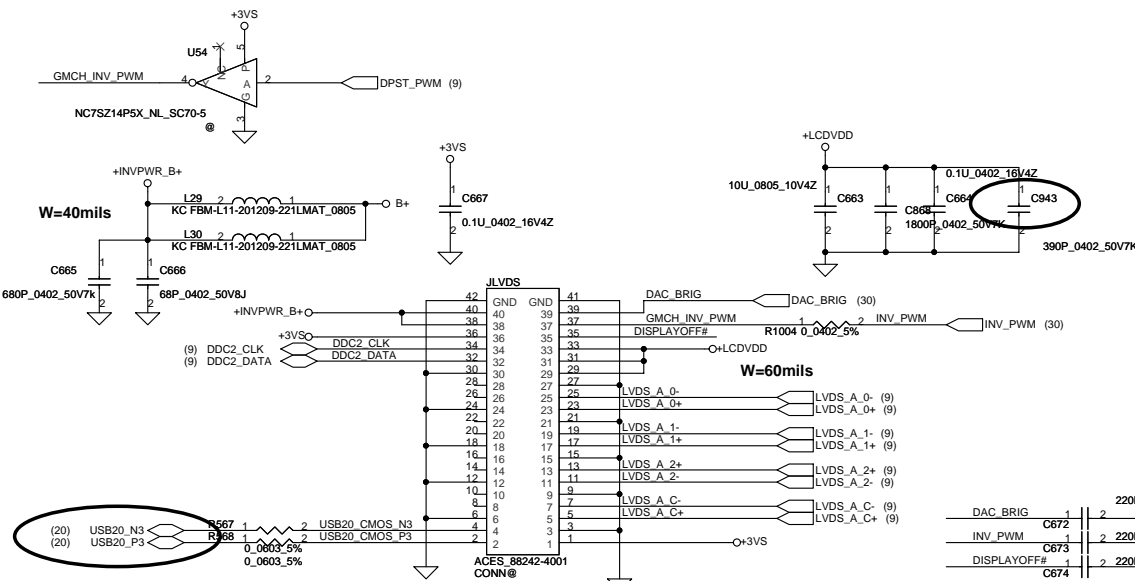
DIMM0 REV H:5.2mm (BOT)

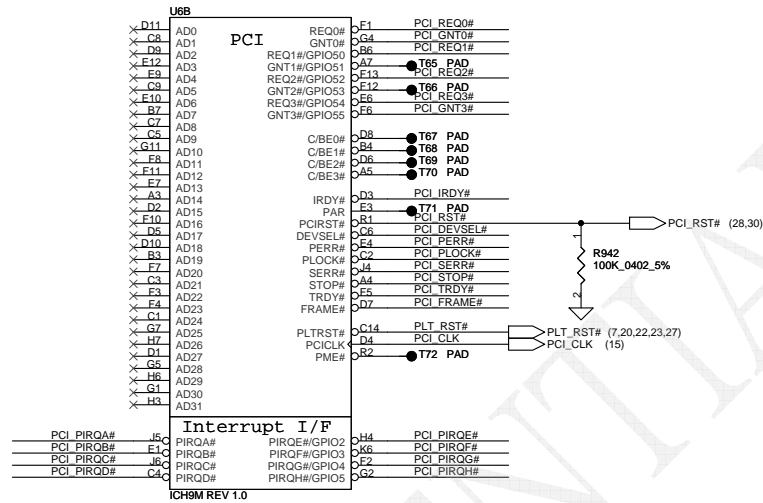
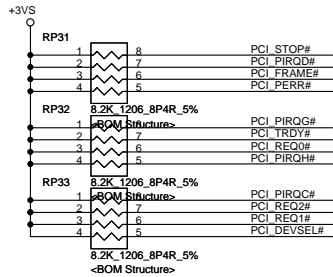
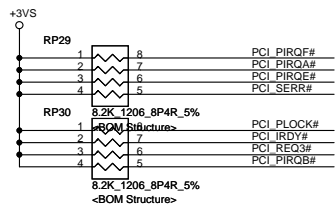


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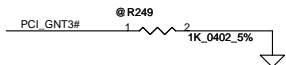




ICH9M REV 1.0

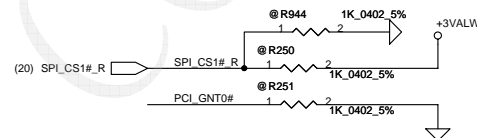
A16 swap override Strap

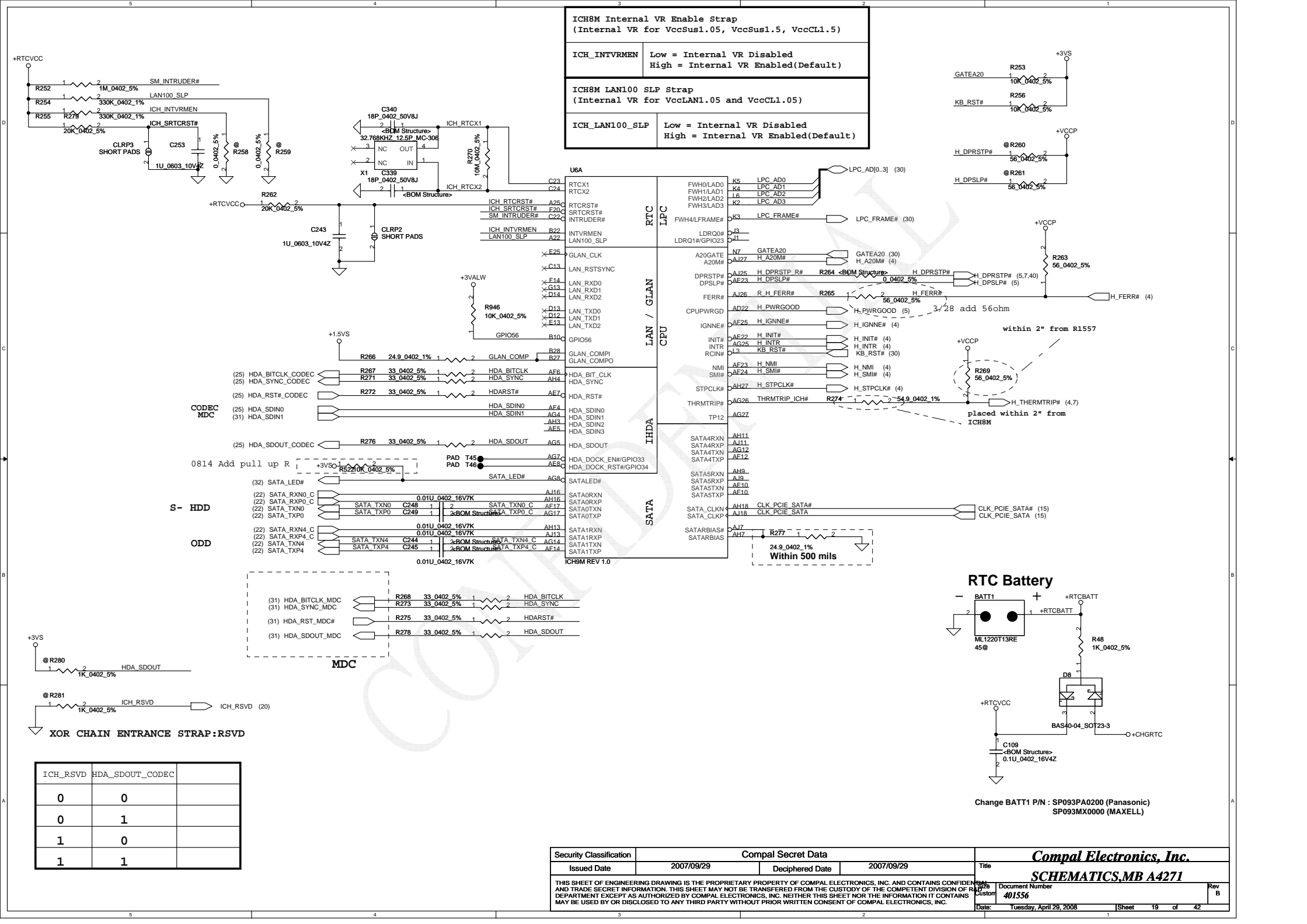
Low= A16 swap override Enable
High= Default *

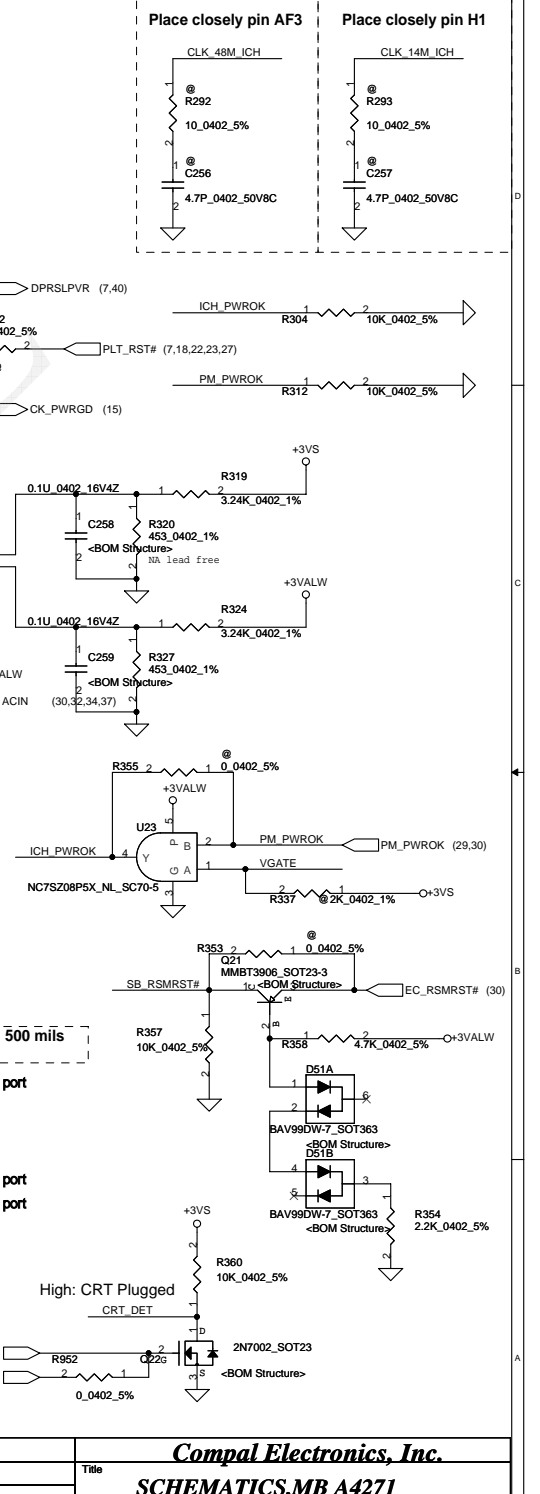
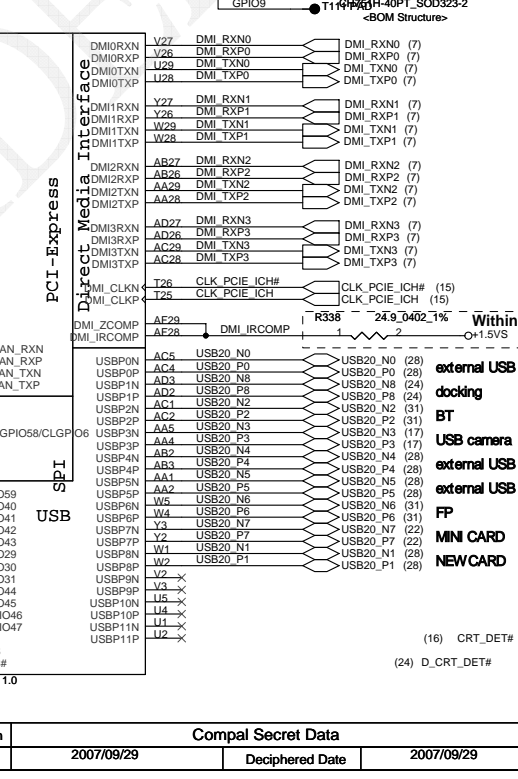
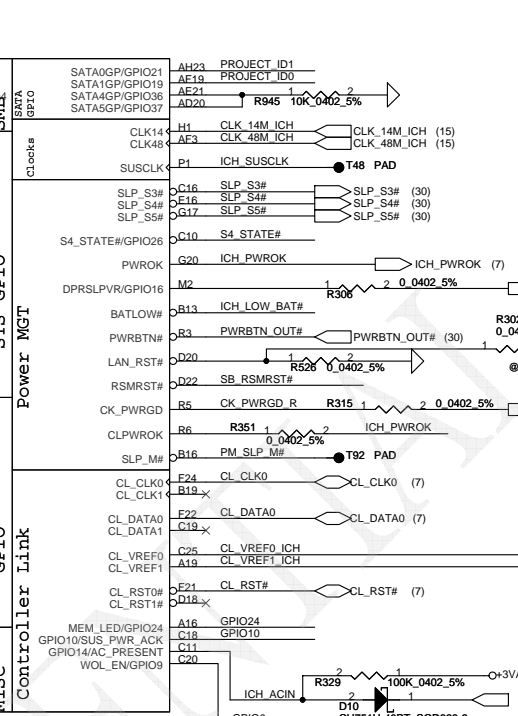
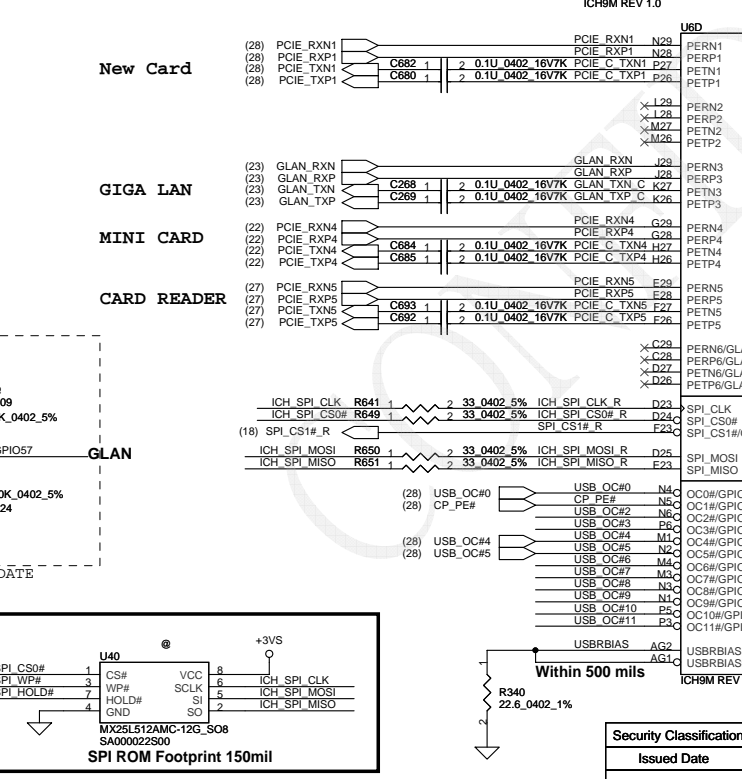
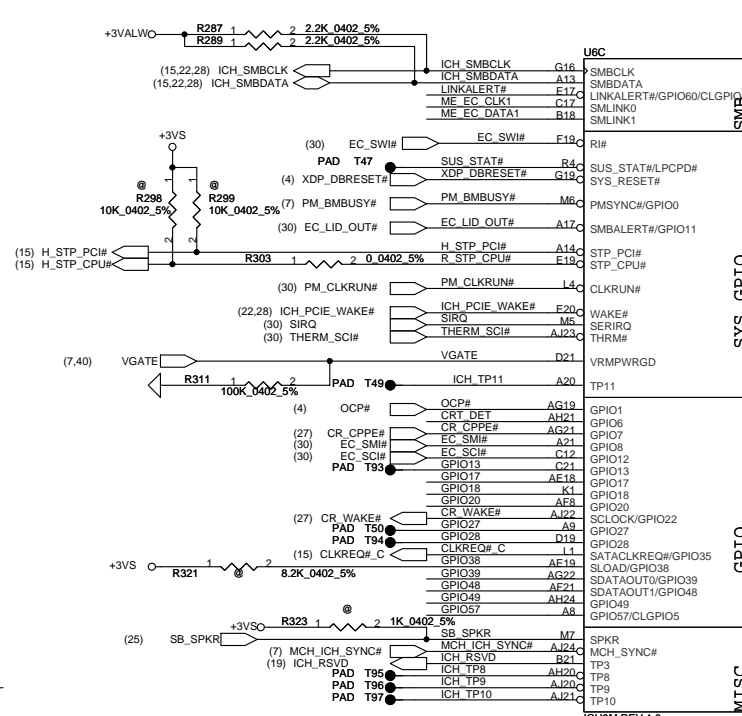
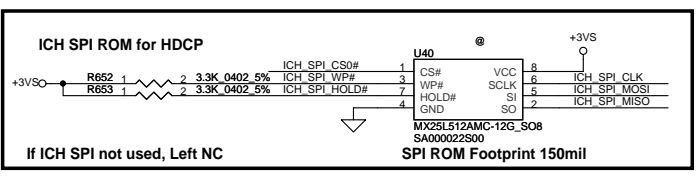
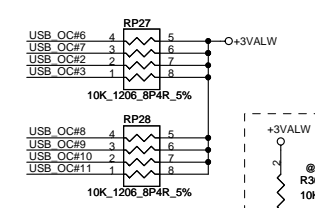
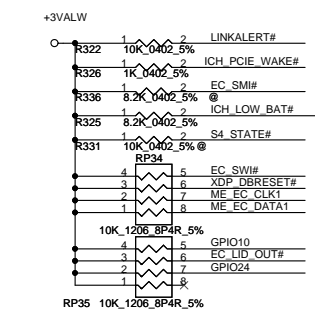
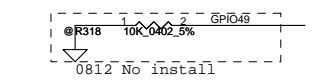
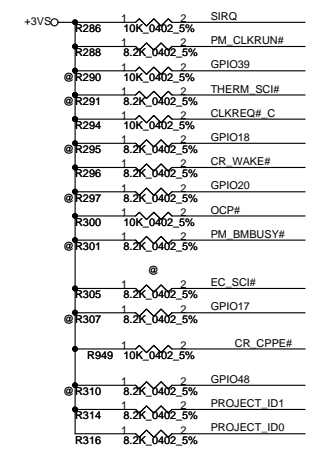


Boot BIOS Strap

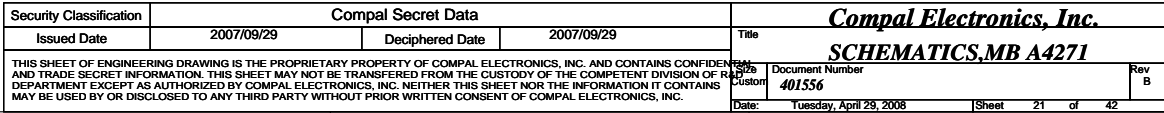
PCI_GNT0#	SPI_CS#1	Boot BIOS Location
0	1	SPI
1	0	PCI
1	1	LPC *



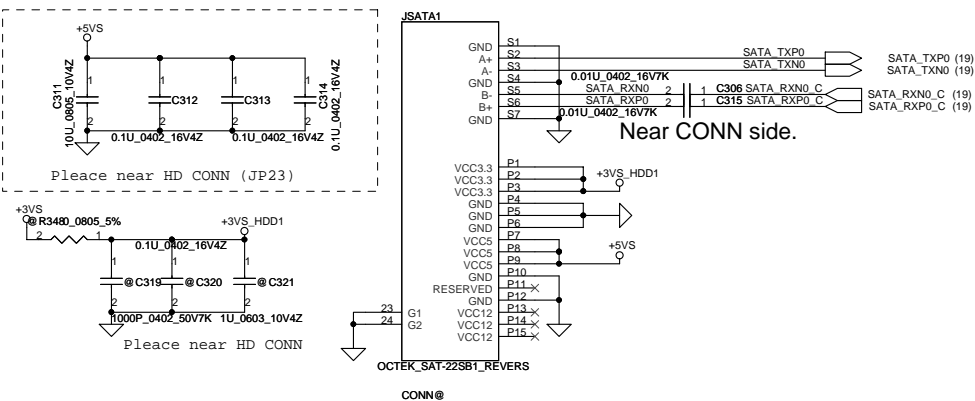




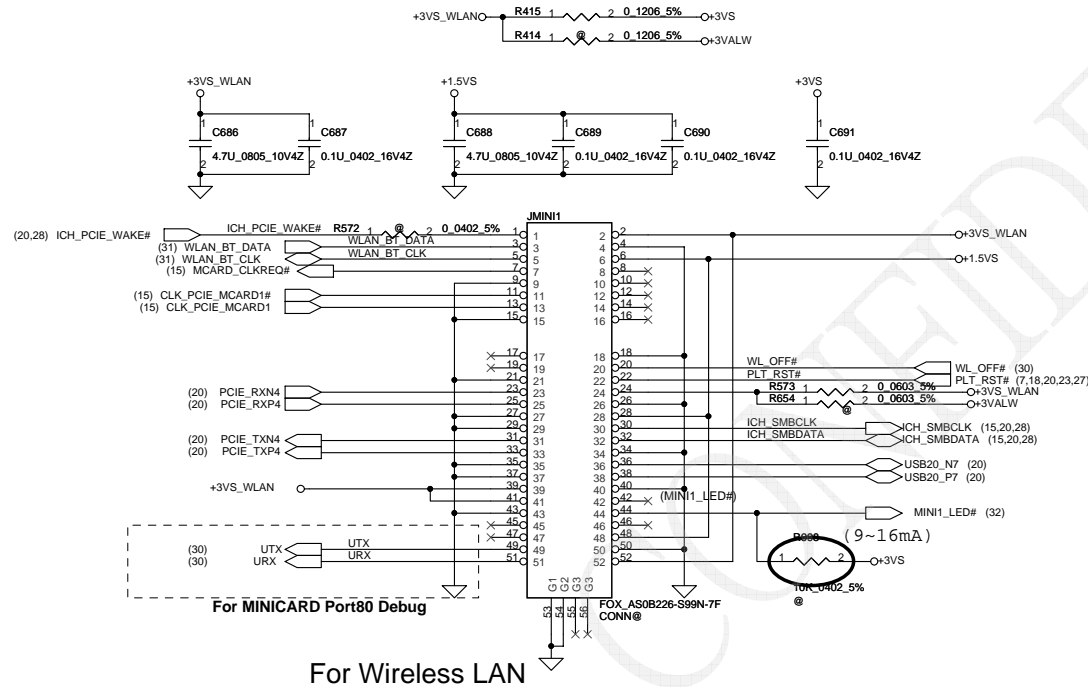
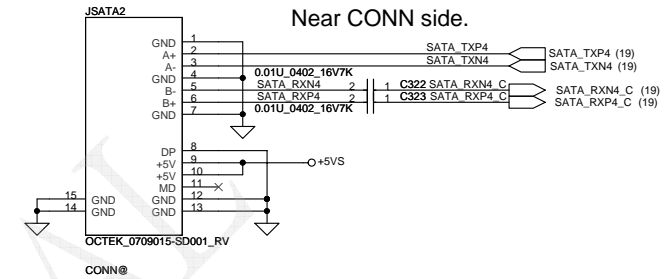
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HDD Connector

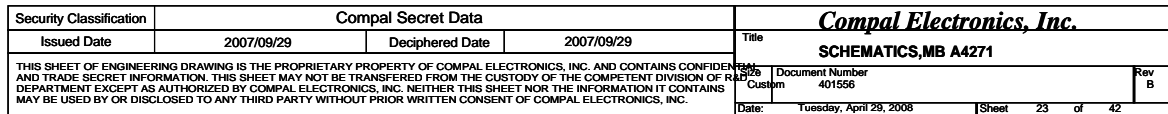


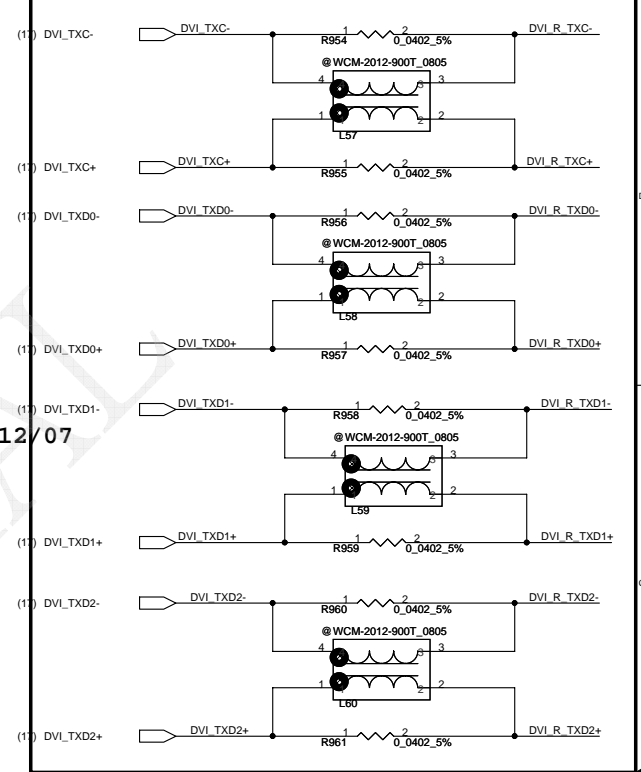
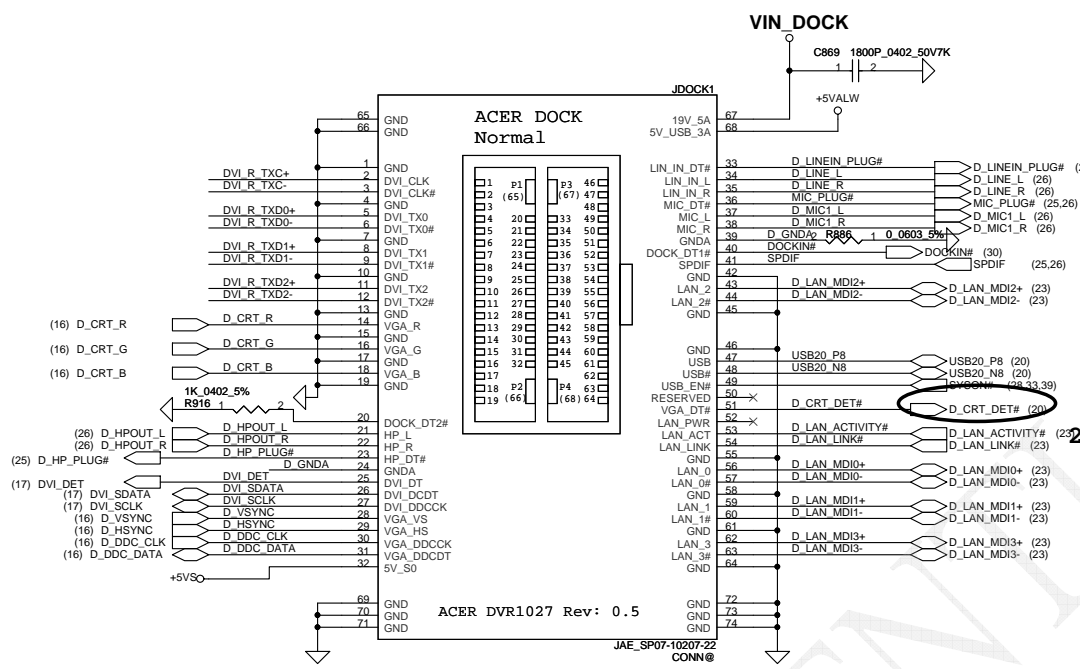
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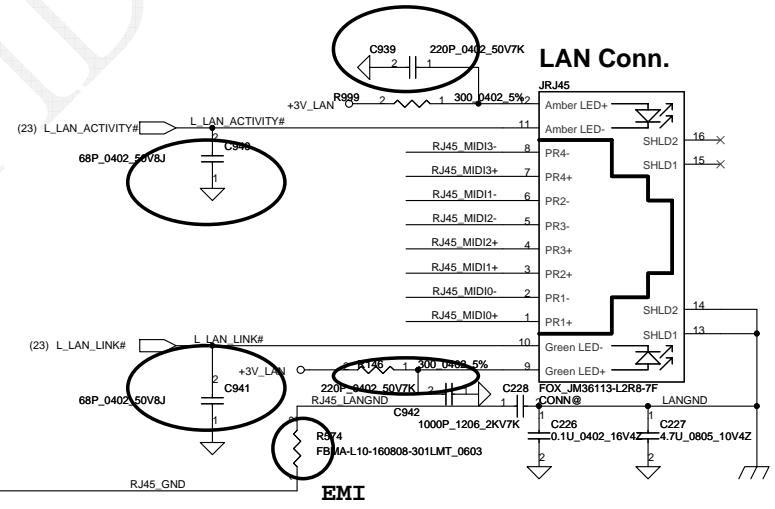
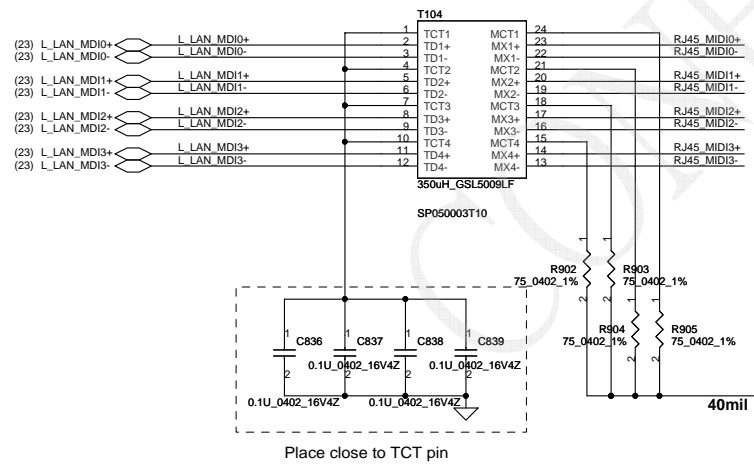
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Compal Electronics, Inc.



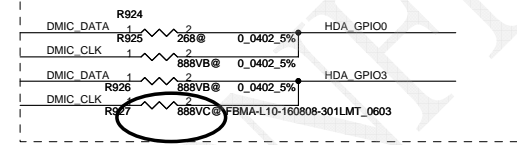
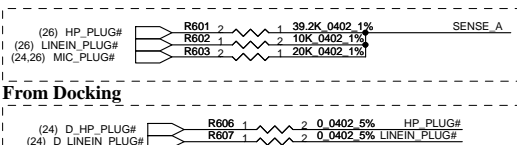
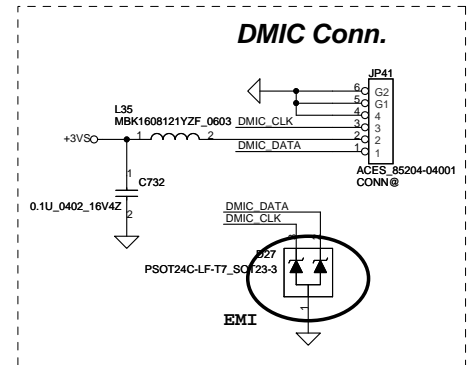
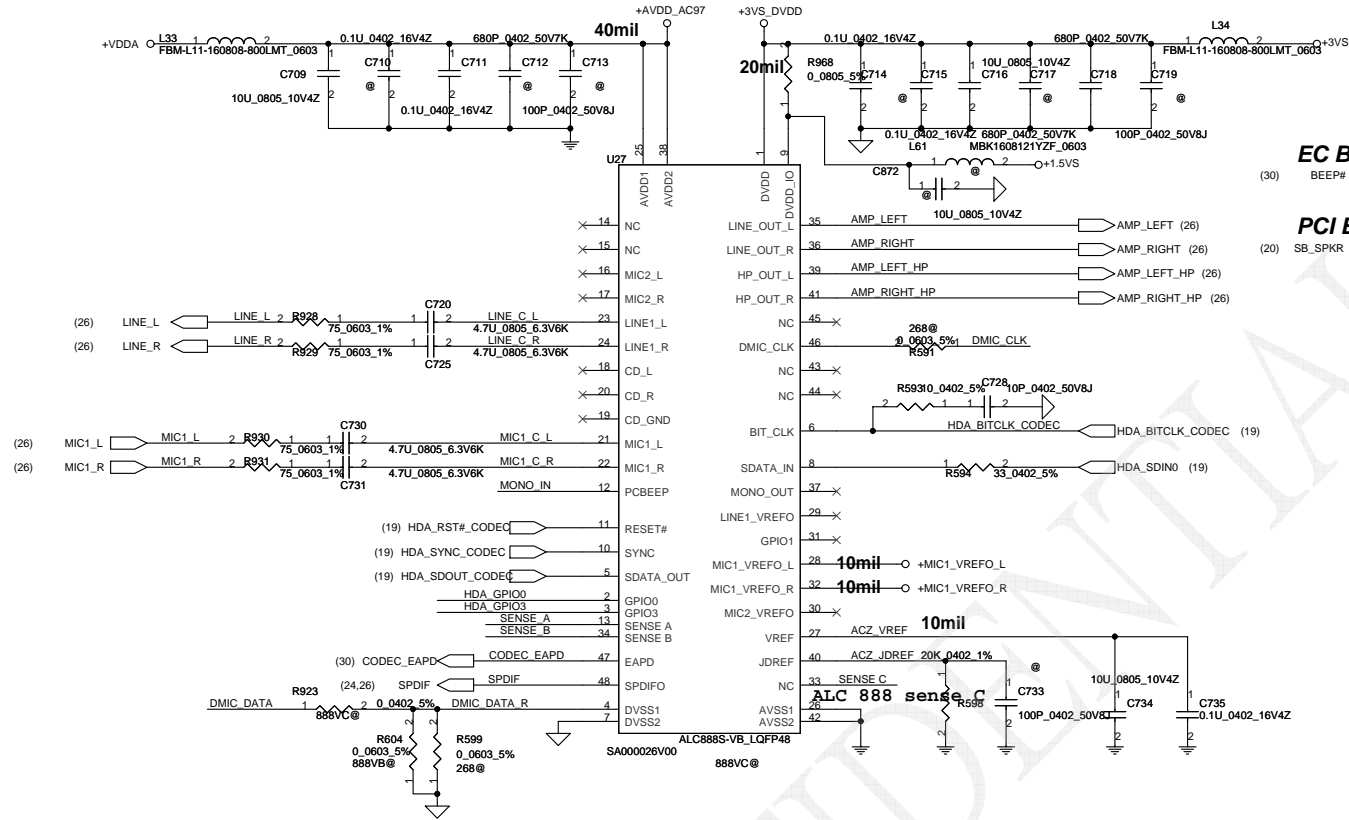


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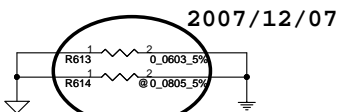
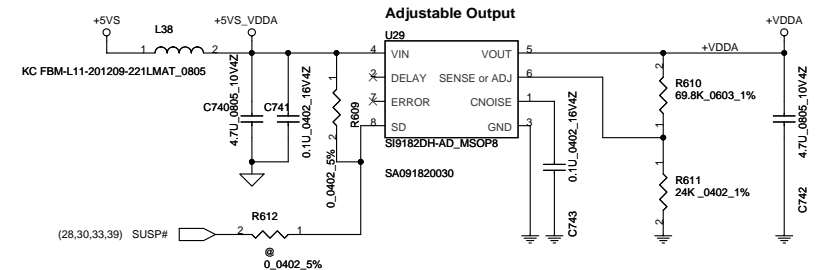


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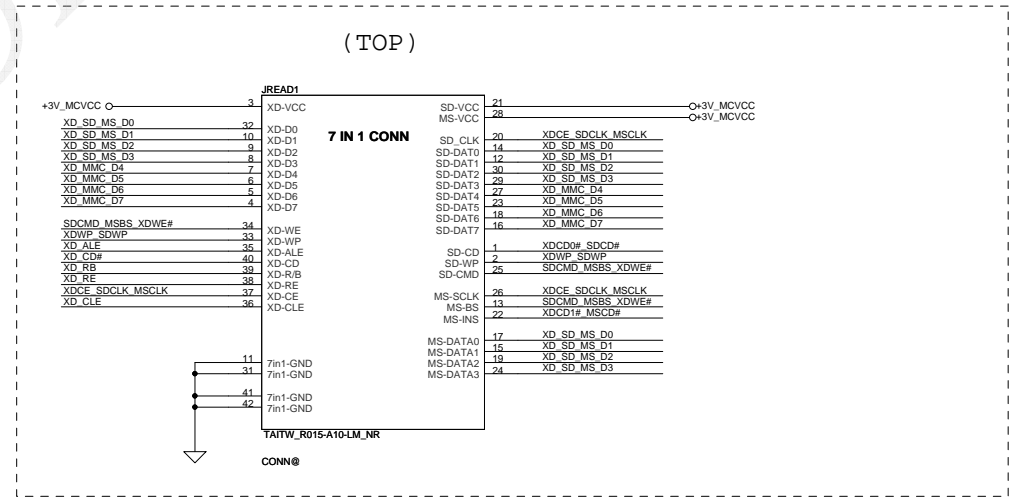
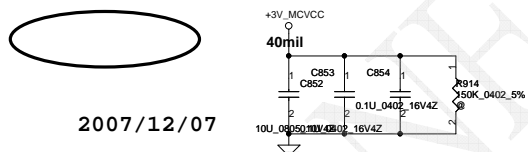
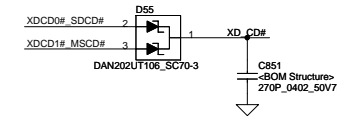
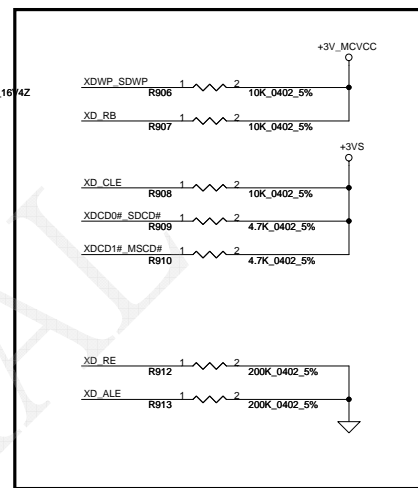
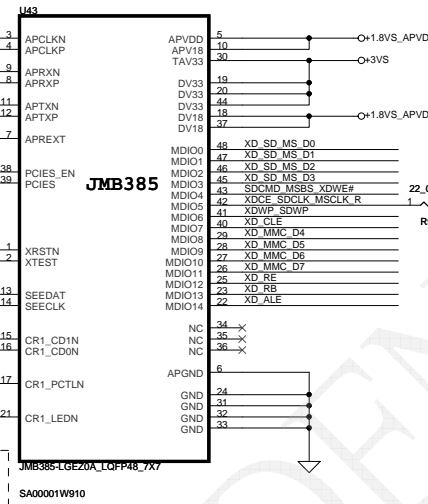
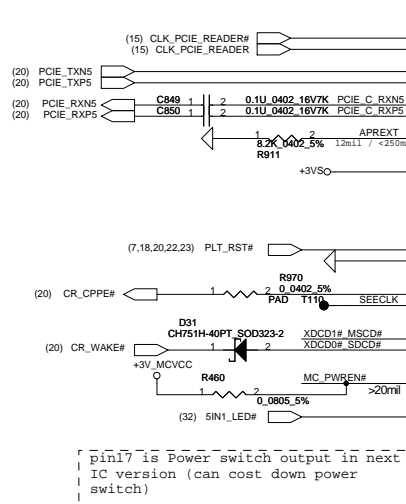
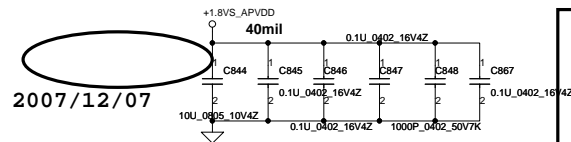
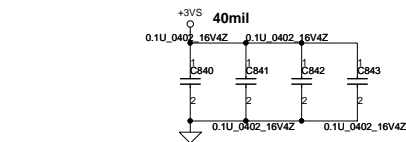
HD Audio Codec



Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 45, 46)
SENSE C	39.2K	CD
	20K	1st S/PDIF Out
	10K	2nd S/PDIF Out
	5.1K	S/PDIF-IN

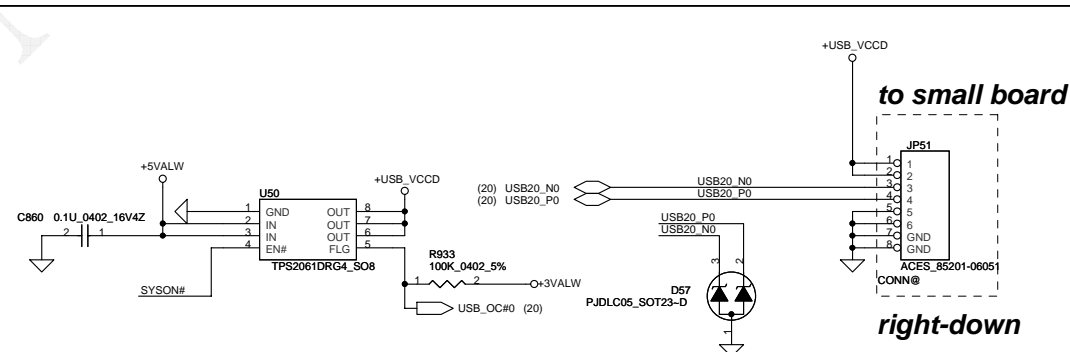
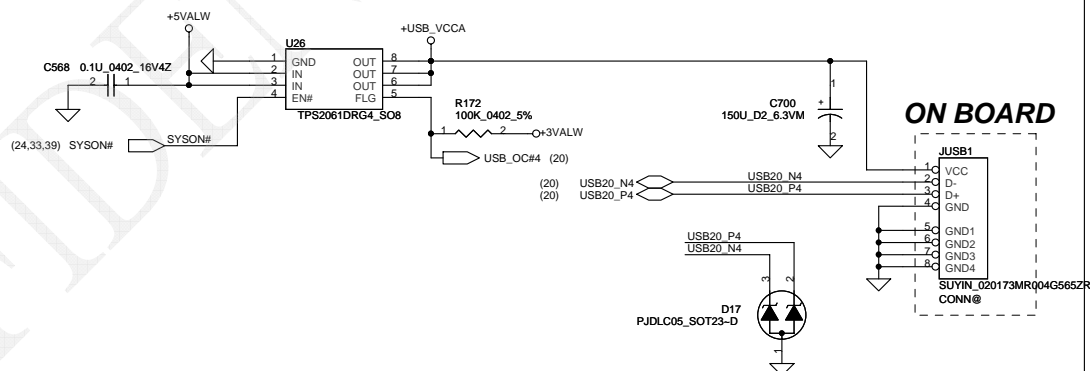
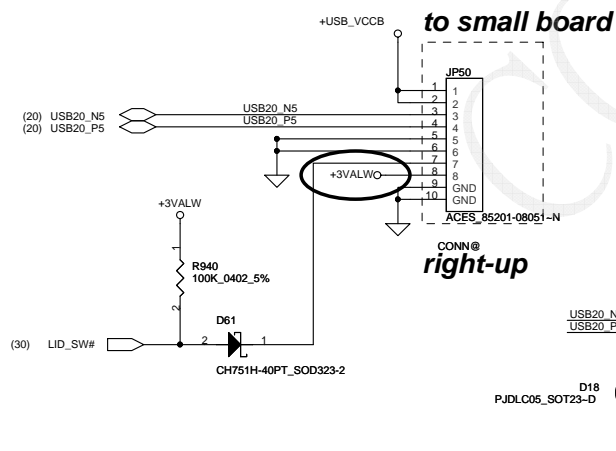
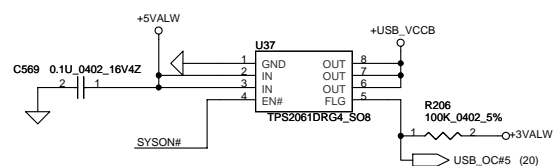
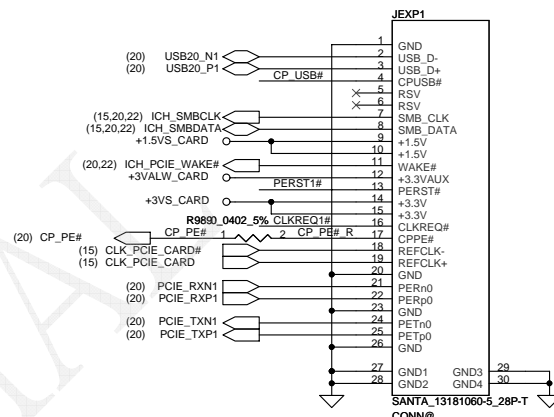
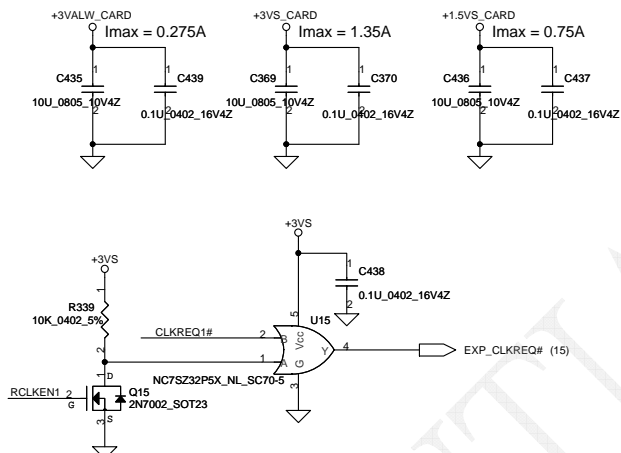
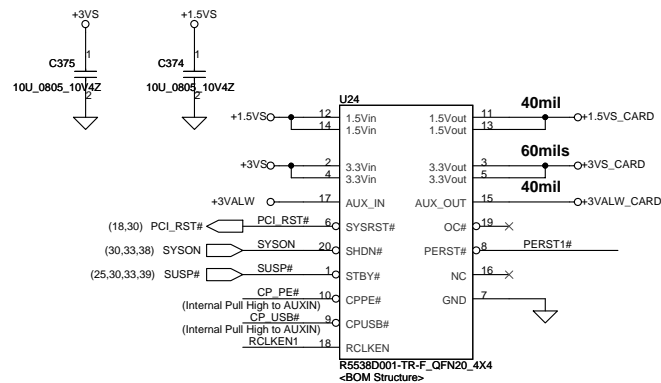


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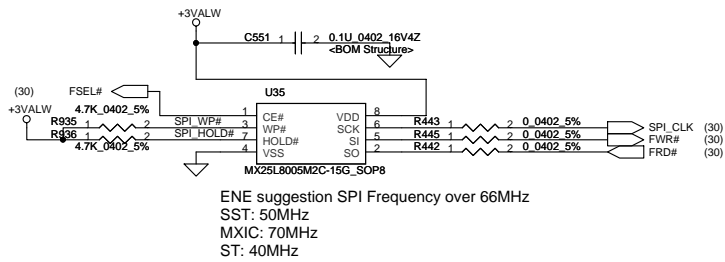
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New Card Power Switch



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BIOS

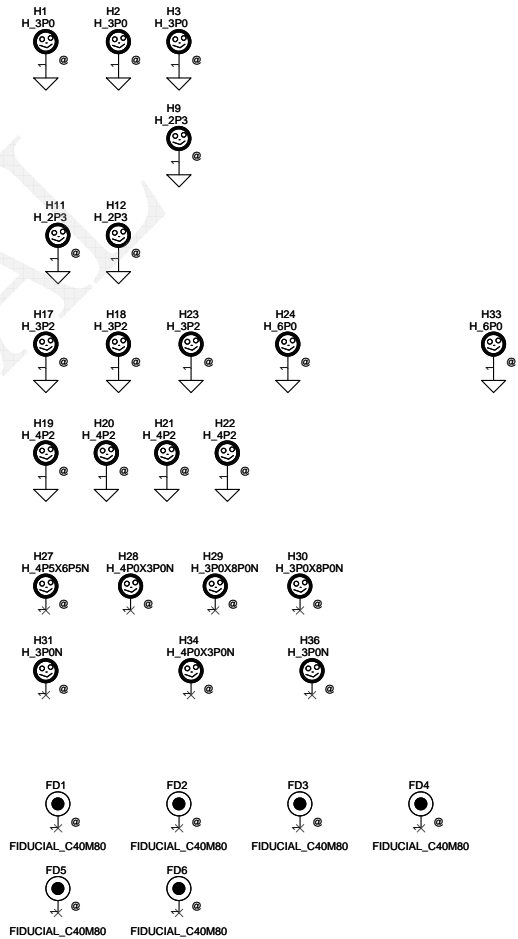
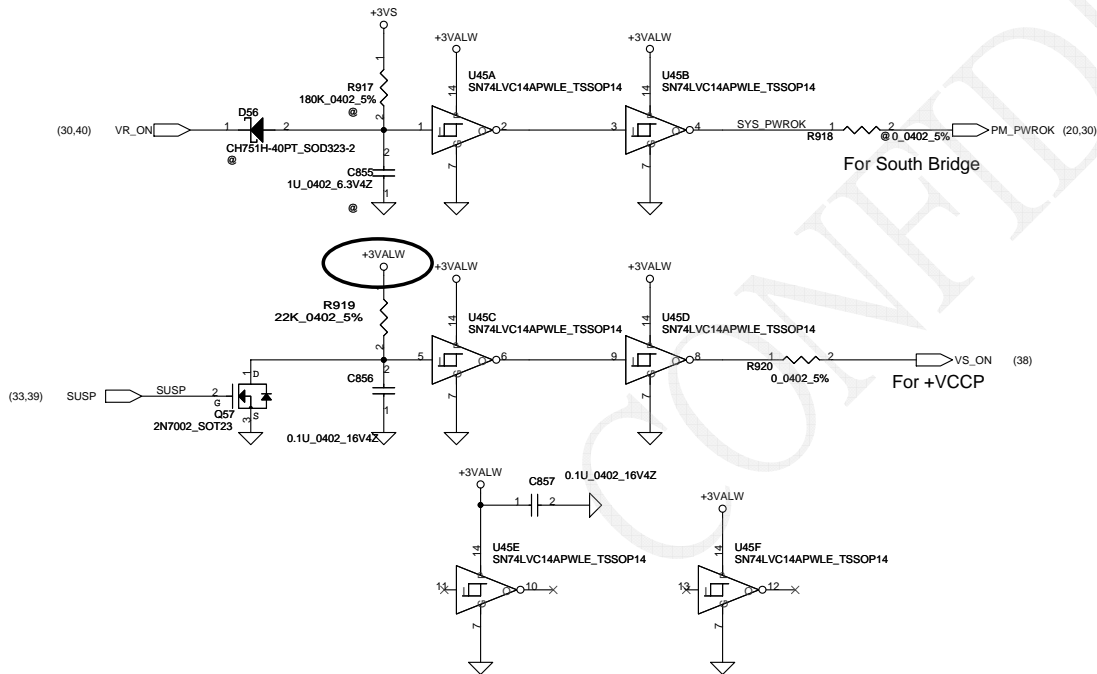


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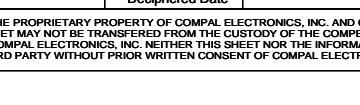
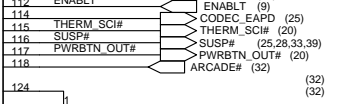
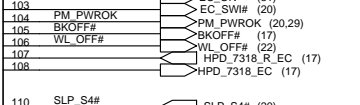
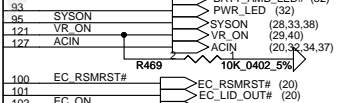
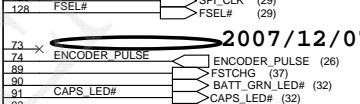
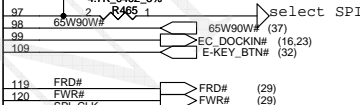
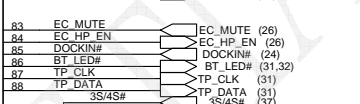
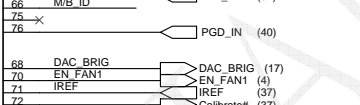
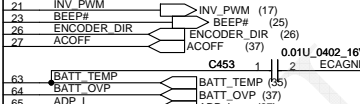
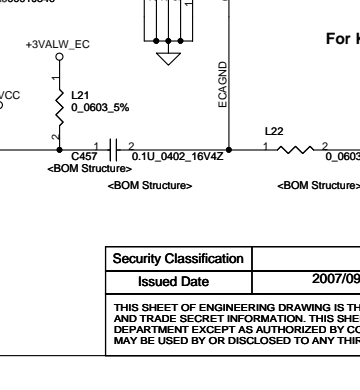
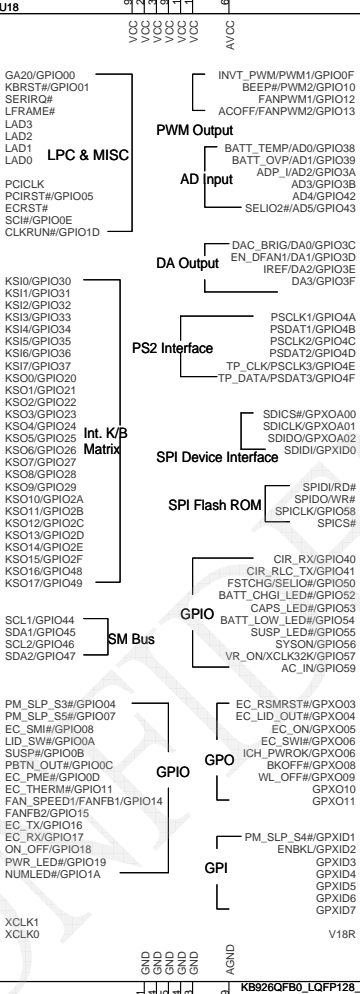
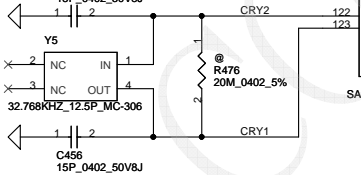
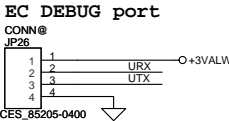
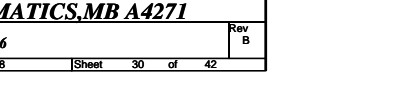
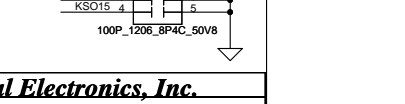
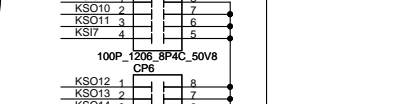
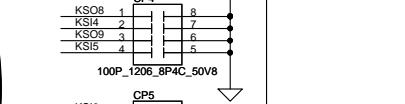
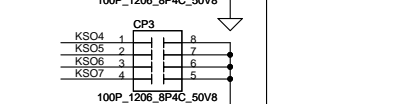
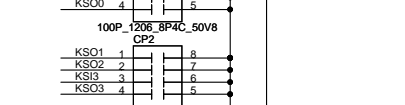
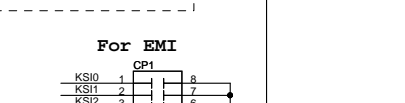
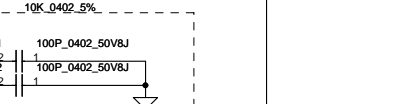
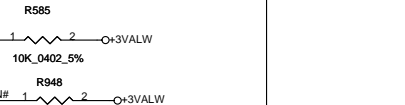
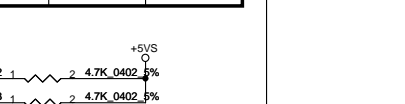
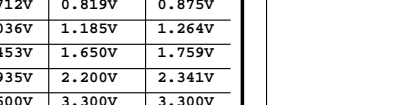
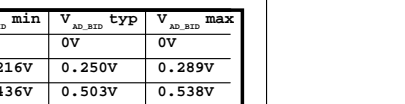
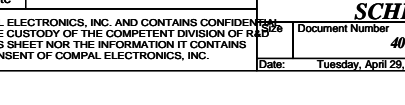
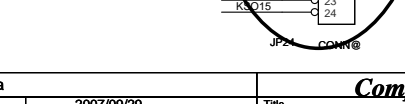
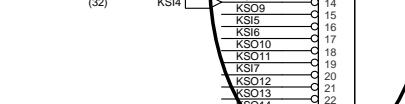
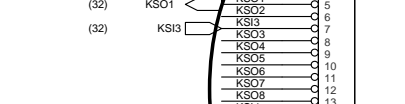
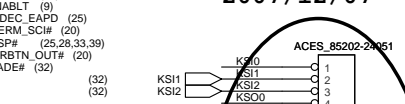
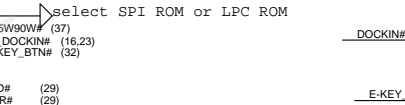
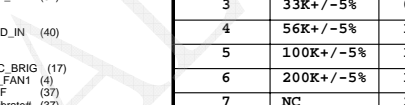
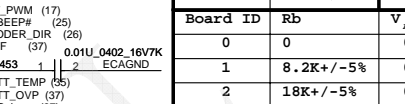
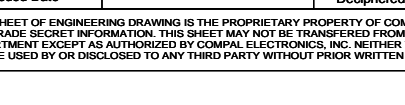
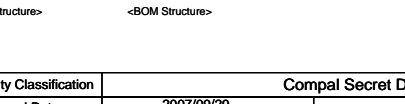
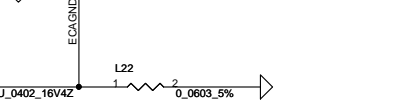
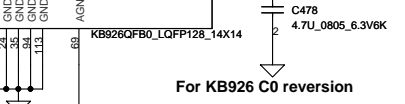
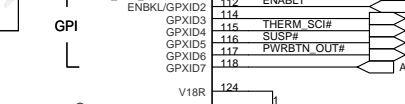
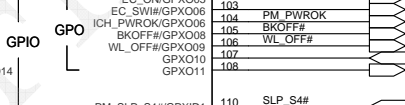
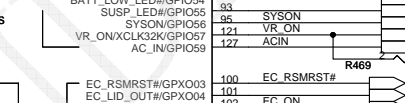
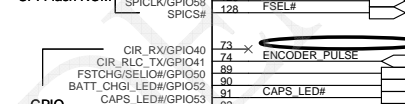
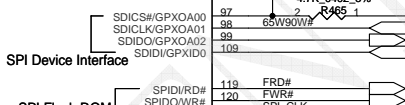
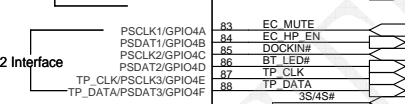
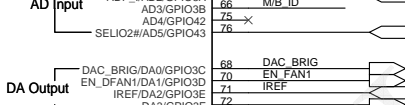
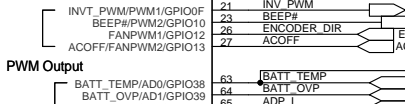
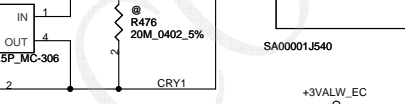
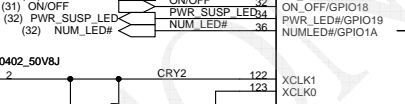
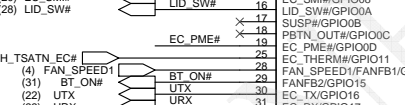
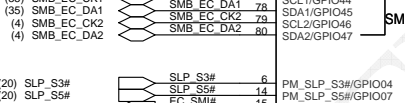
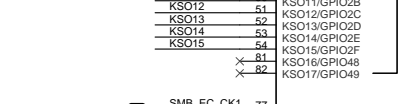
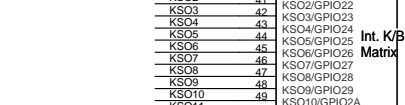
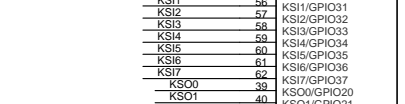
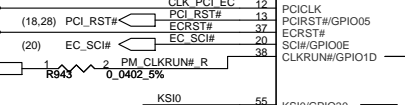
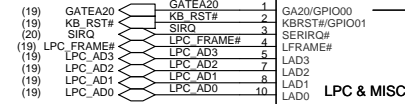
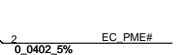
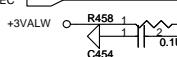
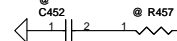
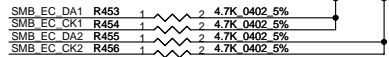
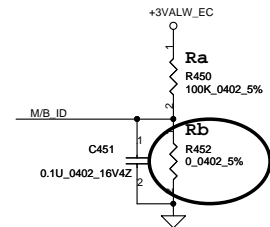
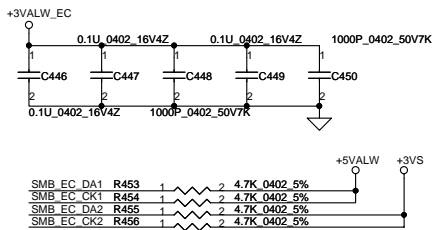
reserve


VS_ON will be driven by EC

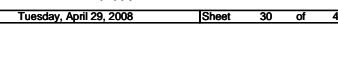
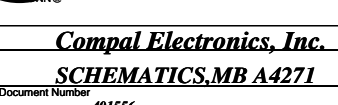
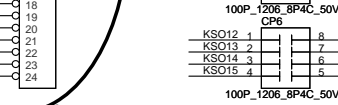
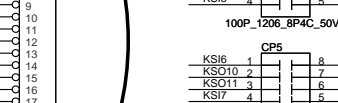
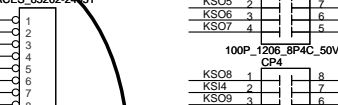
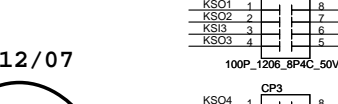
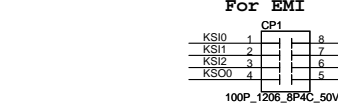
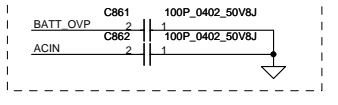
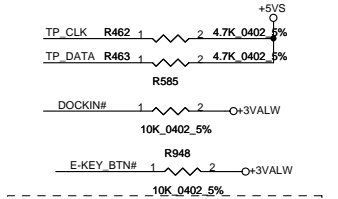
Power ON Circuit



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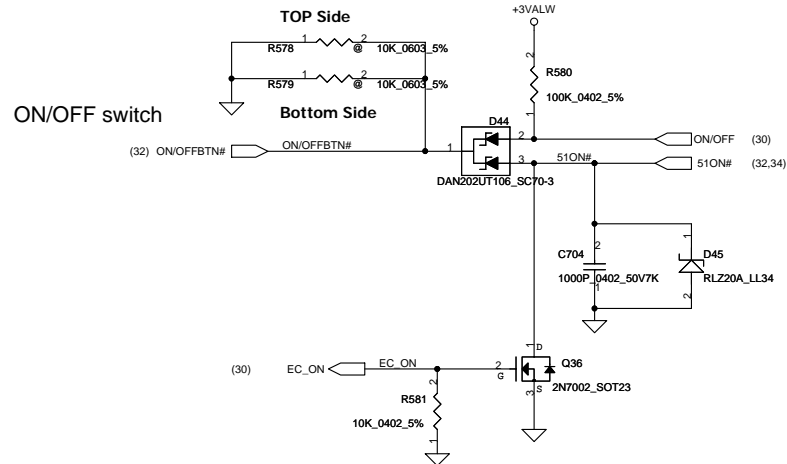
VCC	3.3V+/-5%			
Ra	100K+/-5%			
Board ID	Rb	V _{AD_RID} min	V _{AD_RID} typ	V _{AD_RID} max
0	0	0V	0V	0V
1	8.2K+/-5%	0.216V	0.250V	0.289V
2	18K+/-5%	0.436V	0.503V	0.538V
3	33K+/-5%	0.712V	0.819V	0.875V
4	56K+/-5%	1.036V	1.185V	1.264V
5	100K+/-5%	1.453V	1.650V	1.759V
6	200K+/-5%	1.935V	2.200V	2.341V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



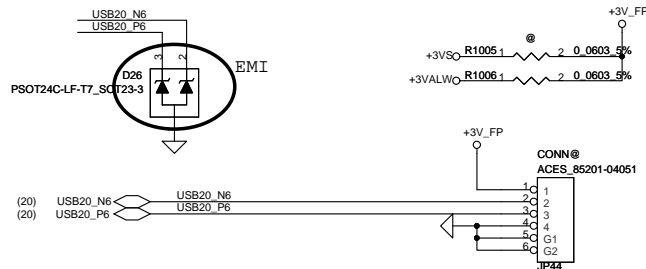
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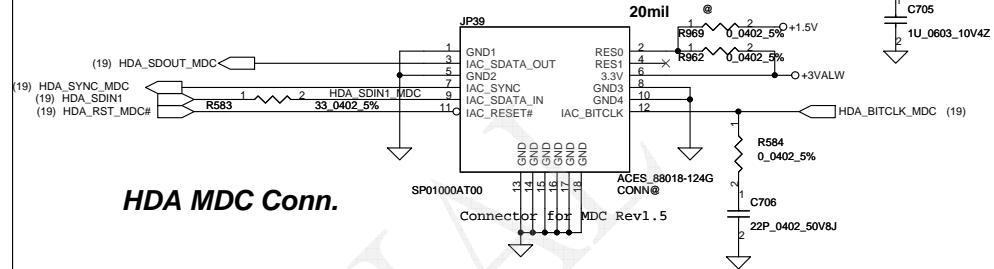
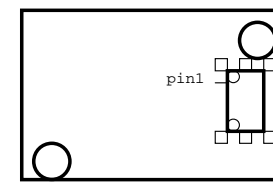
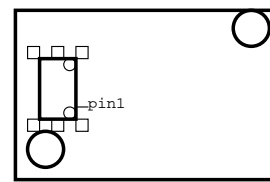
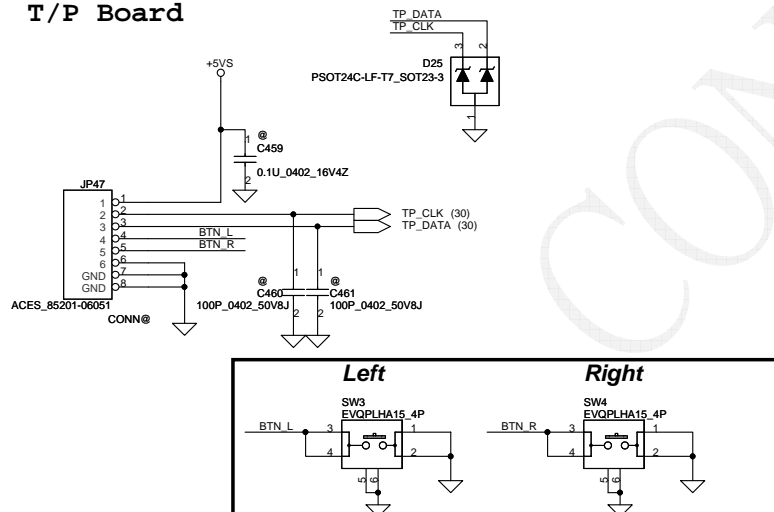
Power Button



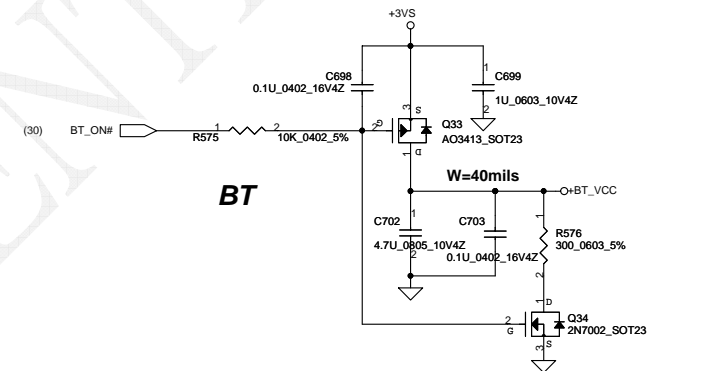
Finger Print Conn



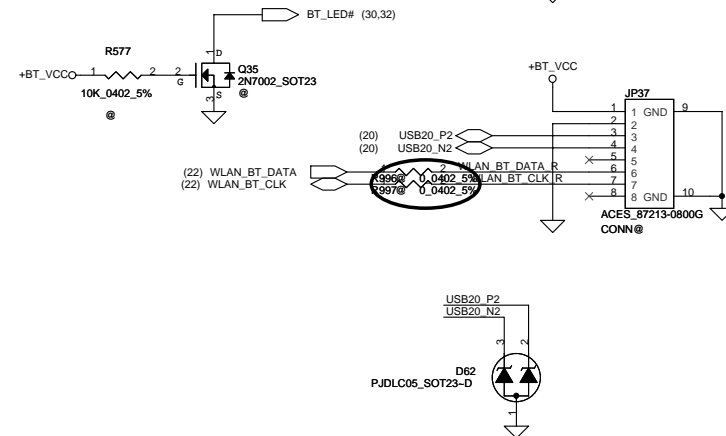
T/P Board



HDA MDC Conn.



BT

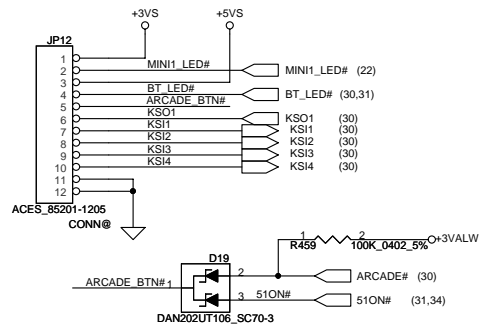


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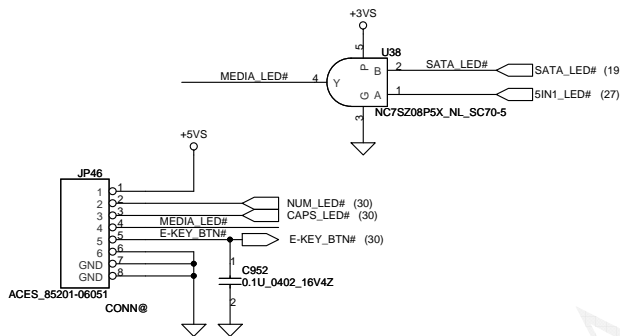
SCHEMATICS, MB A4271

TO S/W B

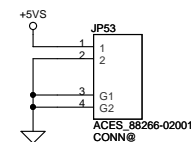
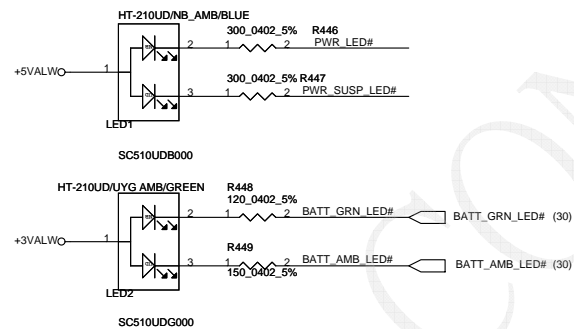
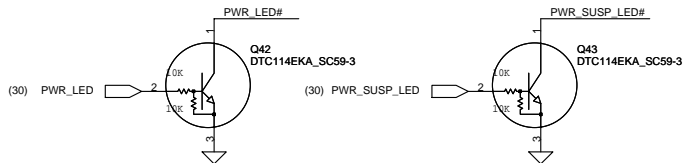
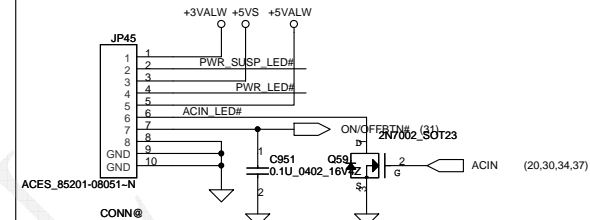


	KSO1
KSI1	WL_BTN#
KSI2	BT_BTN#
KSI3	EMAIL_BTN#
KSI4	IE_BTN#

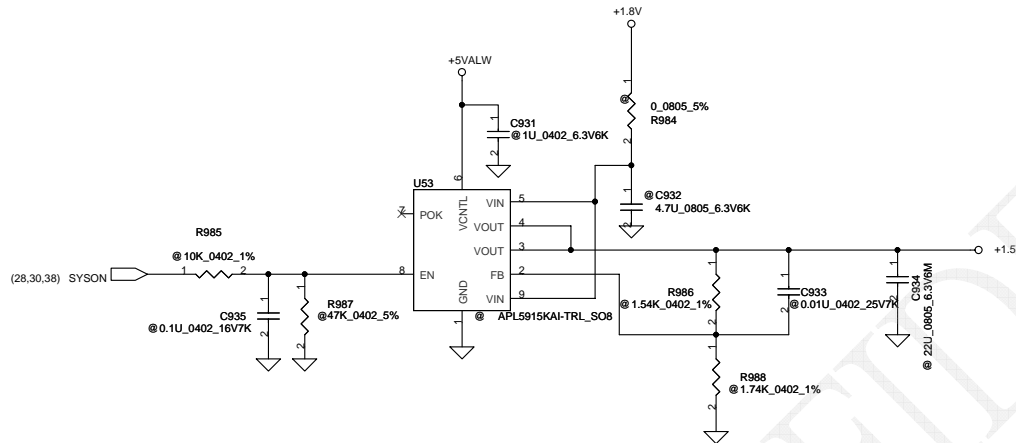
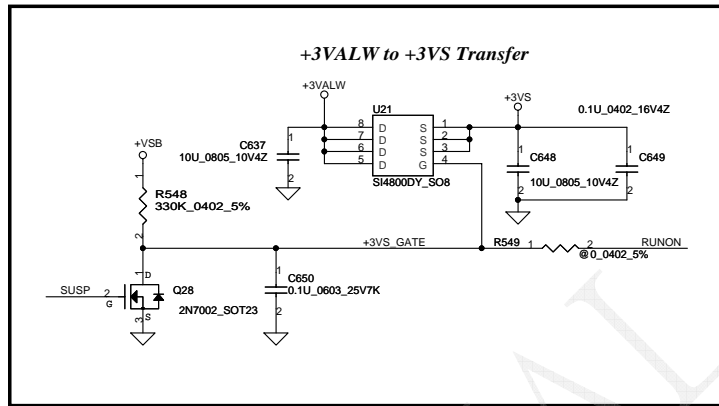
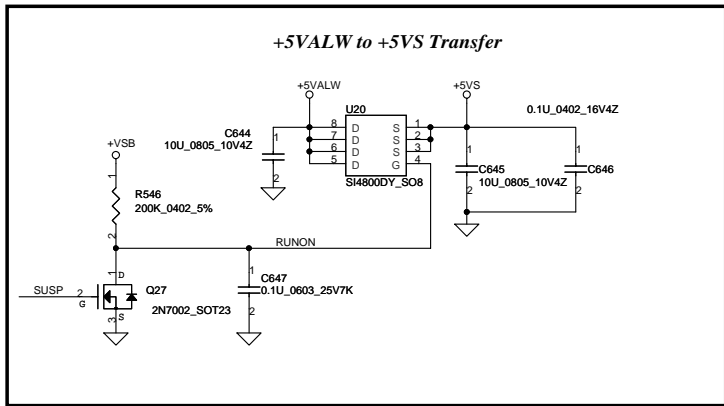
LED & E-BTN/B



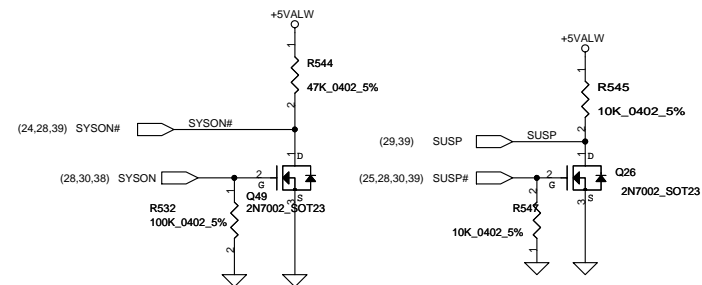
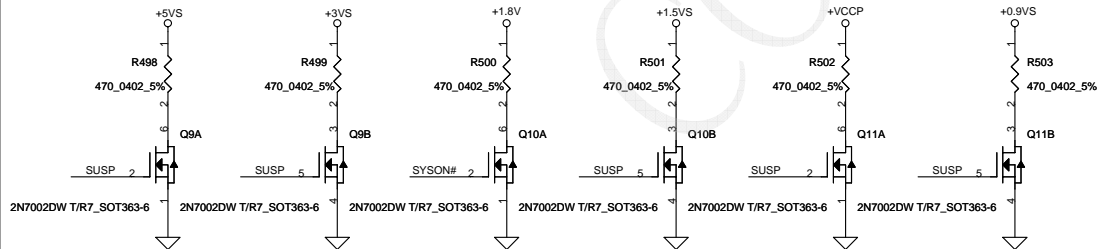
TO POWER BTN/B



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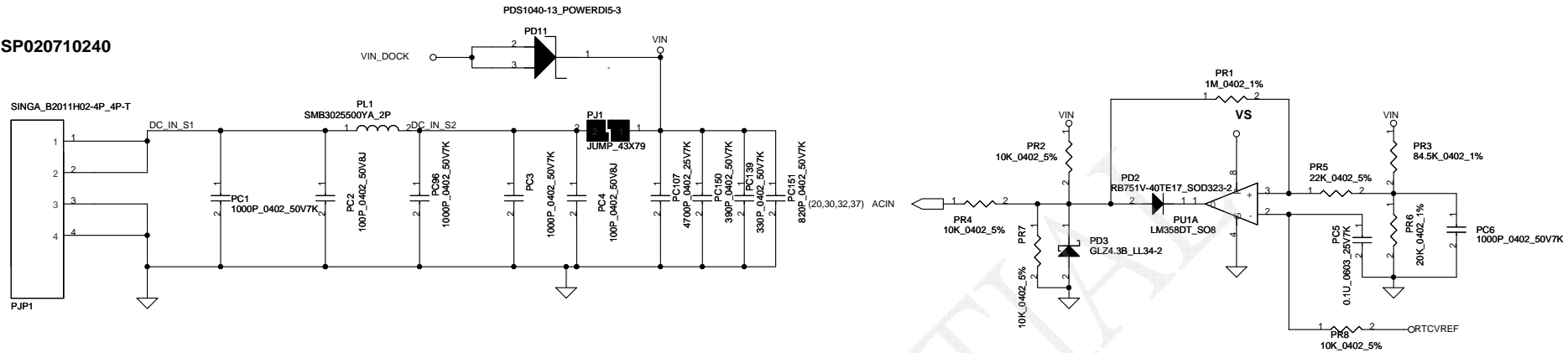


Discharge circuit

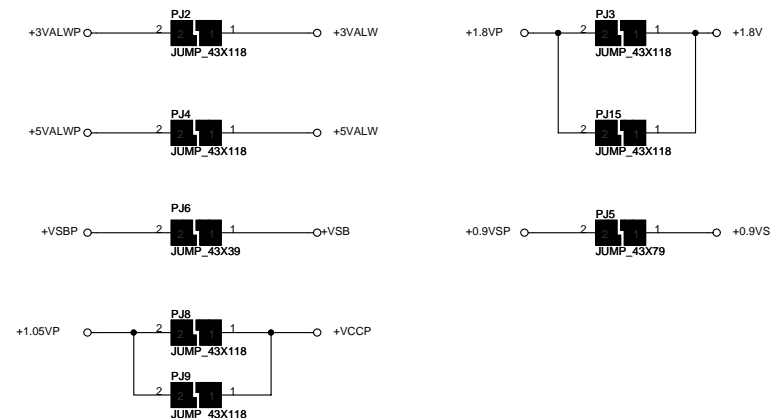
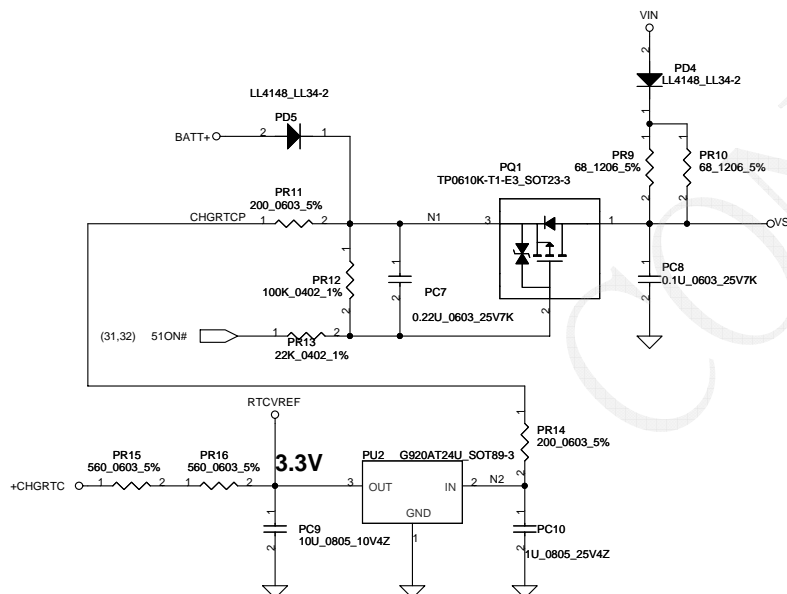


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SP020710240

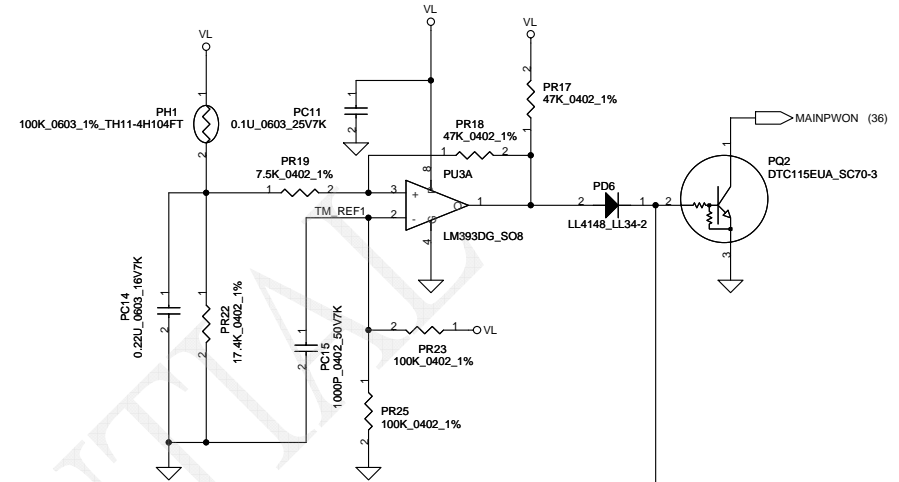
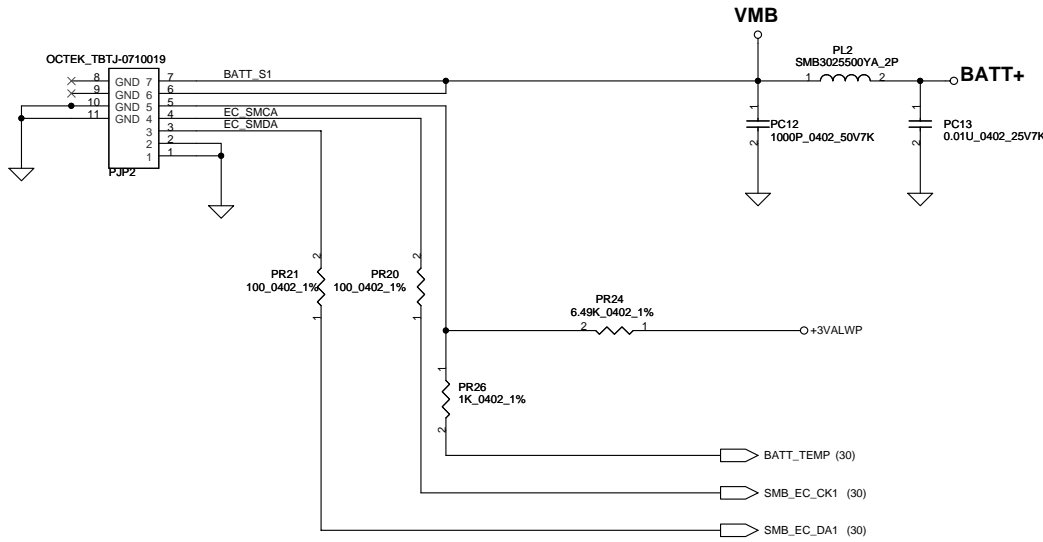


Vin Dectector			
	Min.	Typ	Max.
H-->L	16.976V	17.525V	17.728V
L-->H	17.430V	17.901V	18.384V

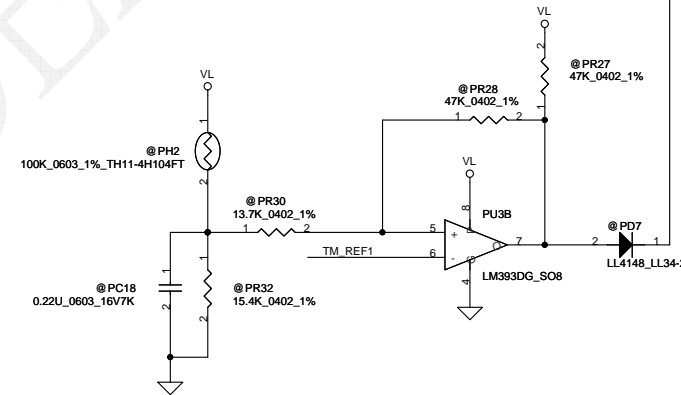
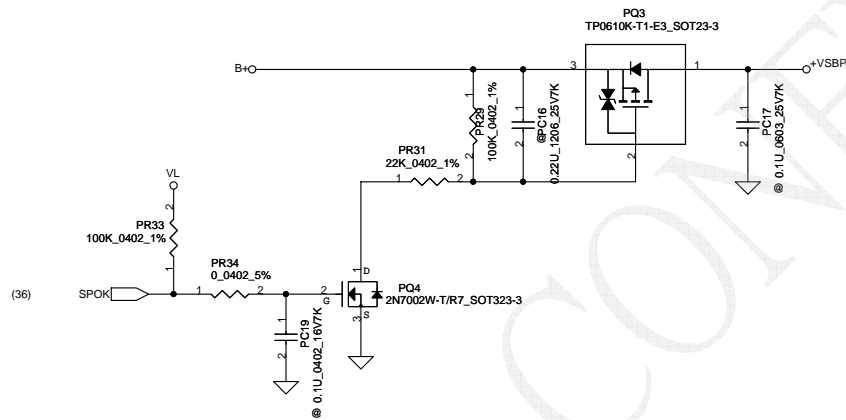


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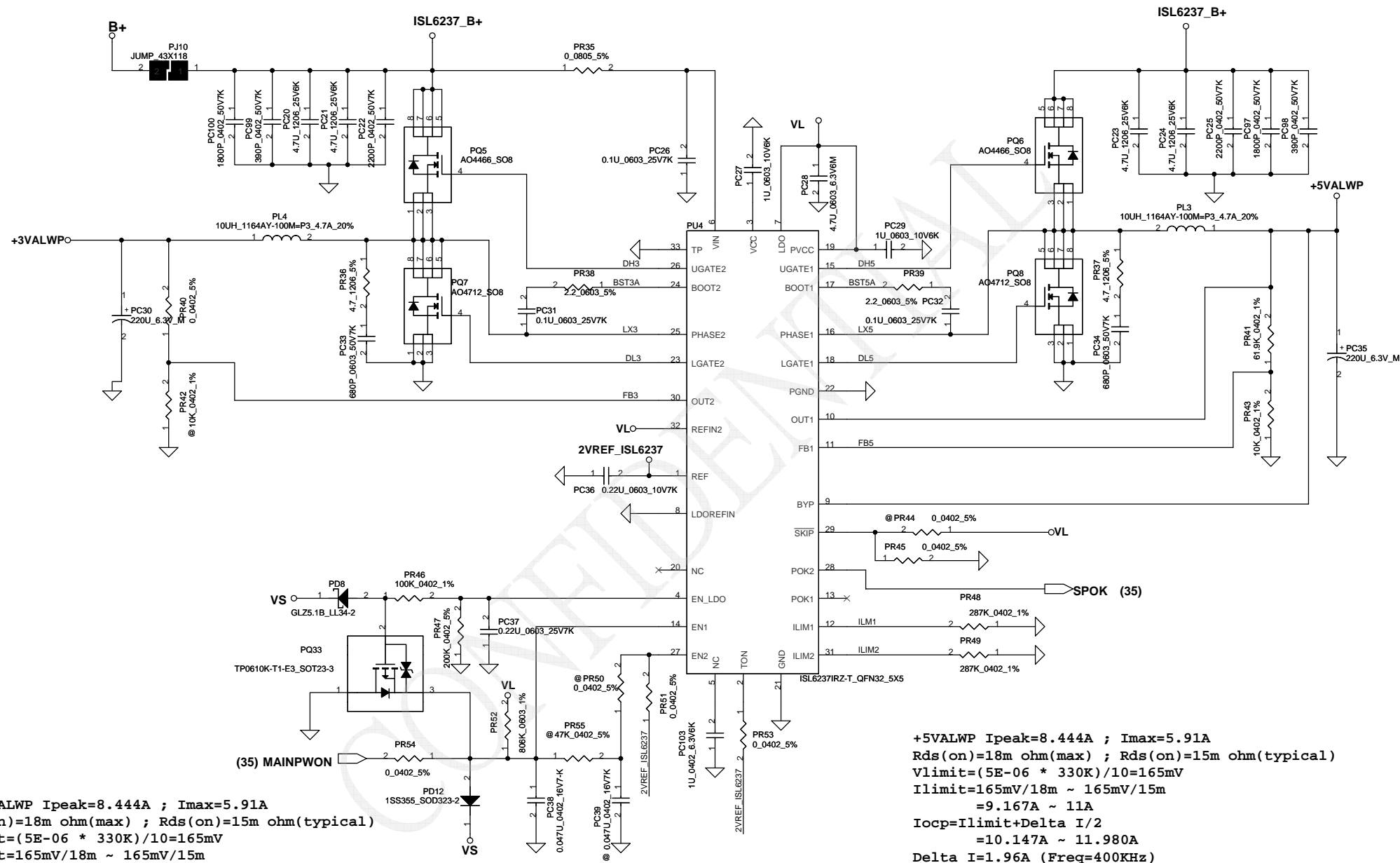
PH1 under CPU botten side :
CPU thermal protection at 82 degree C
Recovery at 56 degree C



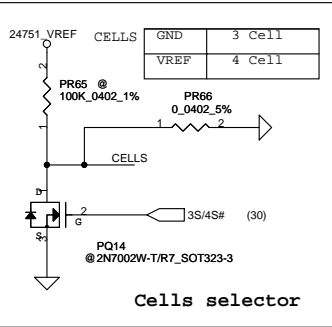
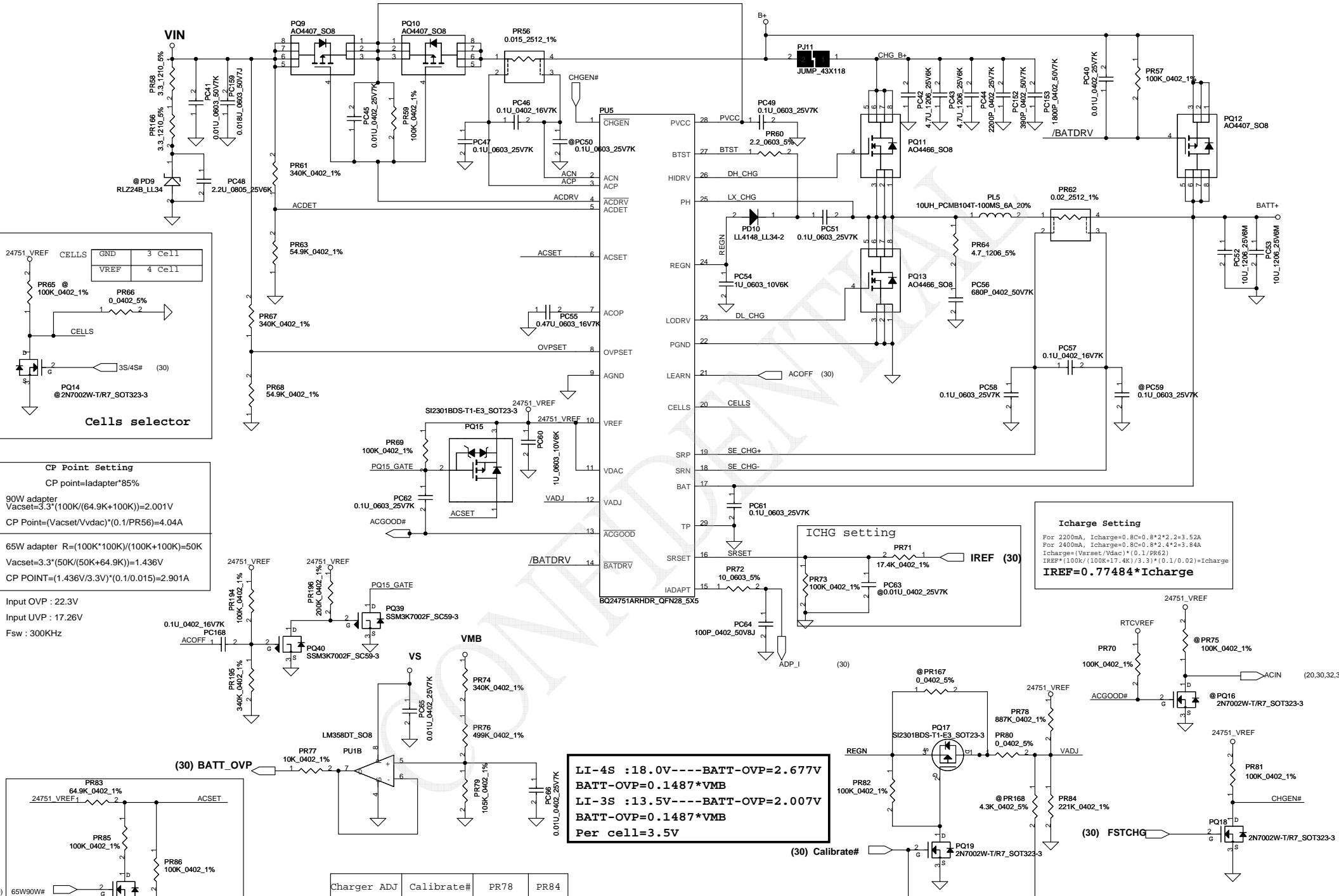
PH2 near main Battery CONN :
BAT. thermal protection at 92 degree C
Recovery at 56 degree C



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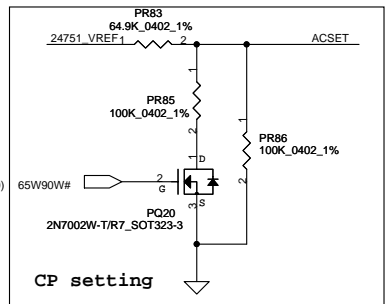


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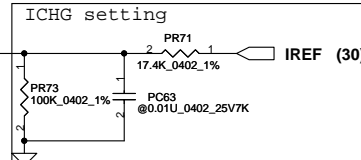
CP Point Setting
CP point=ladapter*85%
90W adapter
 $V_{acset}=3.3 \cdot (100K/(64.9K+100K))=2.001V$
 $CP\ Point=(V_{acset}/V_{vdac}) \cdot (0.1/PR56)=4.04A$
65W adapter $R=(100K \cdot 100K)/(100K+100K)=50K$
 $V_{acset}=3.3 \cdot (50K/(50K+64.9K))=1.436V$
 $CP\ POINT=(1.436V/3.3V) \cdot (0.1/0.015)=2.901A$

Input OVP : 22.3V
Input UVP : 17.26V
Fsw : 300KHz



Charger ADJ	Calibrate#	PR78	PR84
4.0V	L	@	0
4.1V	L	887K	221K
4.2V	H	@	@

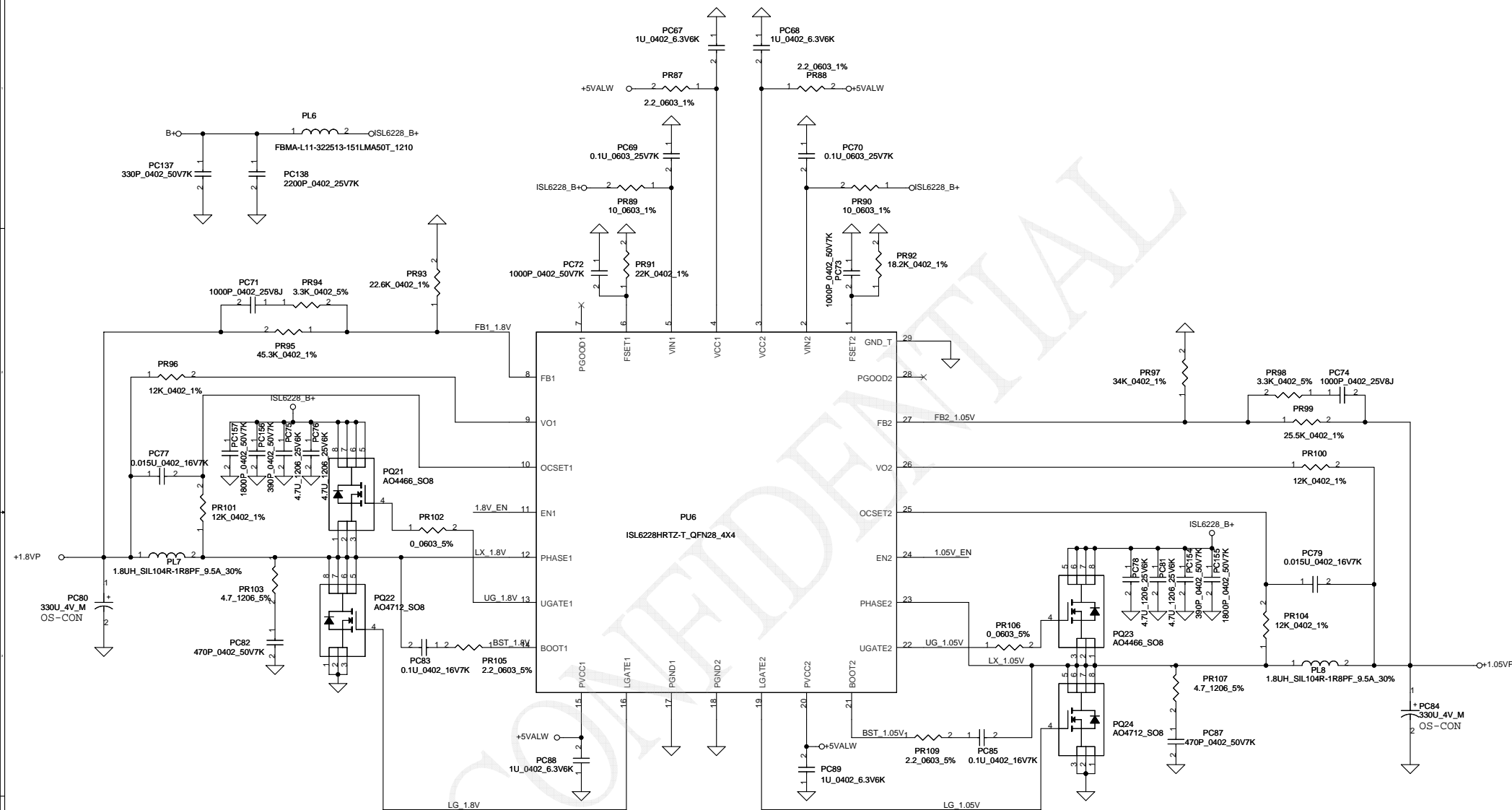
LI-4S : 18.0V---BATT-OVP=2.677V
BATT-OVP=0.1487*VMB
LI-3S : 13.5V---BATT-OVP=2.007V
BATT-OVP=0.1487*VMB
Per cell=3.5V



Icharge Setting
For 2200mA, $I_{charge}=0.8C \cdot 0.8 \cdot 2 \cdot 2=3.52A$
For 2400mA, $I_{charge}=0.8C \cdot 0.8 \cdot 2 \cdot 2=3.84A$
 $I_{charge}=(V_{acset}/V_{vdac}) \cdot (0.1/PR62)$
 $IREF \cdot (100K/(100K+17.4K)/3.3) \cdot (0.1/0.02)=I_{charge}$
IREF=0.77484*Icharge

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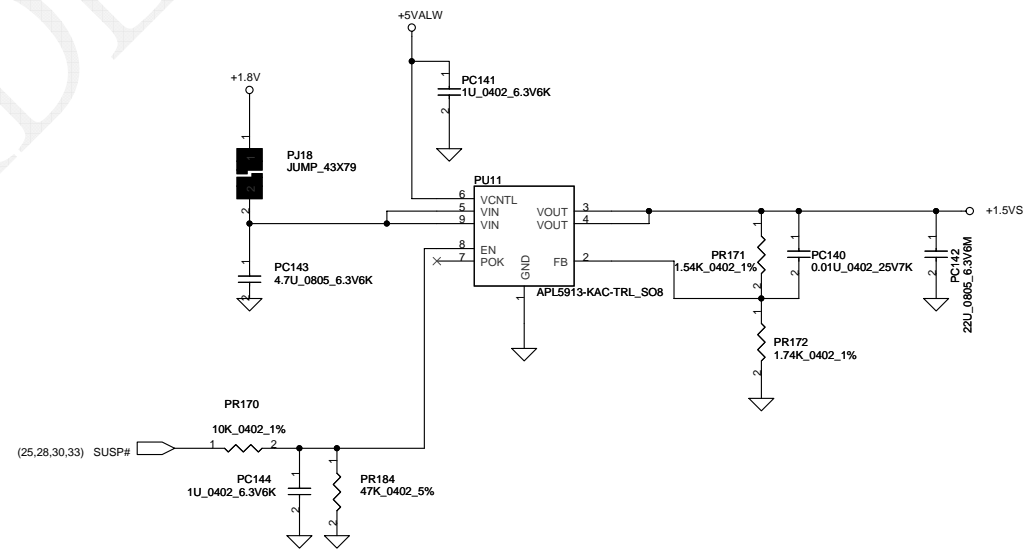
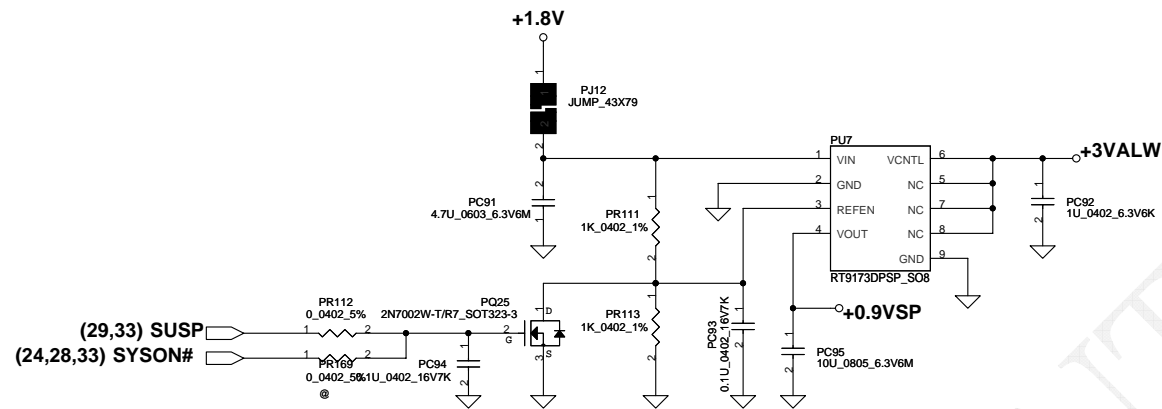
1.8VP Ipeak=9.45A ; Imax=6.615A
 DCR=10m ohm (max)
 $R_{ocset} = (I_{ocp} * DCR) / 10E-06 = 12K \text{ ohm}$
 $I_{ocp} = 12A$
 $C_{sen} = L / (R_{ocset} * DCR) = 0.015uF$

Freq=303KHz
 $R_{fset} = 1 / (1.5E-10 * Freq) = 22K$

1.05VP Ipeak=8.8A ; Imax=6.16A
 DCR=10m ohm (max)
 $R_{ocset} = (I_{ocp} * DCR) / 10E-06 = 12K \text{ ohm}$
 $I_{ocp} = 12A$
 $C_{sen} = L / (R_{ocset} * DCR) = 0.015uF$

Freq=366KHz
 $R_{fset} = 1 / (1.5E-10 * Freq) = 18.2K$

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Version change list (P.I.R. List)

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for PWR

Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1	Exchange battery connector pin	Use wrong model		35	Swap pin definition of PJP2	2007 12/12	EVT
2		For 2nd source of ISL6237		36	Add PC103 SE107105M80(S CER CAP 1U 6.3V M X5R 0603) on pin 5 of PU4	2007 12/12	EVT
3		Some risk in heavy load		37	Change PL5 to SH000005Z80(S COIL 10UH +-20% PCMB104T-100MS 6A)	2007 12/12	EVT
4		For EN function of PU4		36	Add PD12 SC100001K00(S DIO 1SS355 SOD323 T/R-5K) on pin 3 of PQ33 to VS	2007 12/12	EVT
5		Down size		36	Change PC38 from 0603 to 0402(SE076473K80)	2007 12/12	EVT
6		Down size		34	Change PC7 from 1206 to 0603(SE000005Z80)	2007 12/12	EVT
7		Down size		37	Change PC49 from 0805 to 0603(SE042104K80)	2007 12/12	EVT
8		Down size		36	Change PC28 from 0805 to 0603(SE107475M80)	2007 12/12	EVT
9		Down size		39	Change PC91 from 0805 to 0603(SE107475M80)	2007 12/12	EVT
10		Down size		39	Change PC96 from 0805 to 0603(SE107475M80)	2007 12/12	EVT
11		Down size		39	Change PC92 from 0603 to 0402(SE000000K80)	2007 12/12	EVT
12		Down size		39	Change PC97 from 0603 to 0402(SE000000K80)	2007 12/12	EVT
13		Down size		40	Change PC110 from 0603 to 0402(SE000000K80)	2007 12/12	EVT
14		Down size		35	Change PC14 from 0805 to 0603(SE026224K80)	2007 12/12	EVT
15		Down size		35	Change PC18 from 0805 to 0603(SE026224K80)	2007 12/12	EVT
16		For EMI		34	Add PC107 SE075472K80(S CER CAP 4700P 25V K X7R 0402) from VIN to GND	2007 12/12	EVT
17		For EMI		34	Add PC139 SE074331K80(S CER CAP 330P 50V K X7R 0402) from VIN to GND	2007 12/12	EVT
18		For EMI		40	Add PC135 SE074182K80(S CER CAP 1800P 50V K X7R 0402) from CPU_B+ to GND	2007 12/12	EVT
19		For EMI		40	Add PC136 SE025472K80(S CER CAP 4700P 50V K X7R 0603) from B+ to GND	2007 12/12	EVT
20		For EMI		38	Add PR103 SD001470B80(S RES 1/4W 4.7 +-5% 1206) from pin 12 of PU6 to PC82	2007 12/12	EVT
21		For EMI		38	Add PC82 SE074471K80(S CER CAP 470P 50V K X7R 0402) from PR103 to GND	2007 12/12	EVT
22		For EMI		38	Add PR107 SD001470B80(S RES 1/4W 4.7 +-5% 1206) from pin 23 of PU6 to PC82	2007 12/12	EVT
23		For EMI		38	Add PC87 SE074471K80(S CER CAP 470P 50V K X7R 0402) from PR107 to GND	2007 12/12	EVT

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Version change list (P.I.R. List)

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for PWR

Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
24		For more current		34	Change PD11 in SCS00002F00(S SCH DIO PDS1040-13 POWERDI5)	2007 12/12	EVT
25		Space is not enough		34	Delete PD1	2007 12/18	EVT
26				37	Change PR70 Pin 1 to RTCVREF	2007 12/18	EVT
27		Down size		37	Change PC56 from 0603 to 0402(SE074681K80)	2007 12/18	EVT
28		Down size		40	Change PC112 from 0603 to 0402(SE074681K80)	2007 12/18	EVT
29		Down size		40	Change PC121 from 0603 to 0402(SE074681K80)	2007 12/18	EVT
30		Down size		36	Change PC103 from 0603 to 0402(SE000000K80)	2007 12/18	EVT
31		Down size		40	Change PC128 from 0603 to 0402(SE000003W00)	2007 12/20	EVT
32	APL5913 EN pin impedance must keep under 20K	For APL5913 EN risk		39	Change PR184 from 47K to 20K(SD028200280)	2007 12/31	EVT
33		Improve 3V/5V OCP		36	Change PR48, PR49 from 330K to 287K(SD000005D80) Change PL3, PL4 from 4.7uH to 10uH(SH000008R80)	2008 02/25	DVT
34		Improve Load line		40	Change PR165 from 4.42K to 3.24K(SD034324180)	2008 02/25	DVT
35		For EMI		34	Add PC96 1000pF(SE074102K80)	2008 02/25	DVT
36		For EMI			Add PC97, PC98, PC99, PC100, PC145, PC146, PC147, PC148, PC149, PC150, PC151, PC152, PC153, PC154, PC155, PC156, PC157 Delete PR64, PC56 "@"-mark Change PR38, PR39, PR60, PR105, PR109, PR130, PR144 from 0 to 2.2	2008 02/27	DVT
37							
38		Prevent ACOP issue		37	Add PC168, PQ39, PQ40, PR194, PR195, PR196	2008 02/27	DVT
39		HW request		39	Change PC144 to 1uF , delete PR184 "@" mark	2008 02/27	DVT
40		For EMI			Add PC158, PC159	2008 03/03	DVT
41		Thermal request		35	Change PR19 from 13.7K to 7.5K (SD034750180) Change PR22 from 15.4K to 17.4K (SD034174280)	2008 03/14	PVT1
42							
43							
44							
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