

Compal Confidential

JAQ10 M/B Schematics Document

Intel Penryn Processor with Cantiga + DDRIII + ICH9M

2008-04-21

REV:1.0

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Voltage Rails

Power Plane	Description	S1	S3/M1	S5/M1
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
+0.75VS	0.75VS power rail for DDR3 terminator	ON	OFF/ON	OFF/ON
+1.05VS	1.05V switched power rail	ON	OFF	OFF
+1.05VM	1.05VM switched power rail	ON	OFF/ON	OFF/ON
+1.5V	1.5V power rail for HDA	ON	ON	OFF/ON
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V_LAN	3.3V power rail for LAN	ON	OFF/ON	OFF/ON
+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
+VSB	VSB 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
1394 TI	AD21	3	PIRQ-F
PCMCIA + Card Reader + Small Card	AD22	2	PIRQ-E

External PCI-e Devices

Device	PORT NO.	Interrupts
MINI CARD1 WLAN	P1	??
MINI CARD2 3G	P2	??
DOCKING PCI-E	P5	??
INTEL GIGA LAN	P6	??

EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b	ADI ADM1032	1001 100X b
		GMT G781-1	1001 101X b

EC SM Bus2 address

ICH9M SM Bus address

Device	Address
Clock Generator (ICS9LPRS365)	1101 001Xb
DDR DIMM0	1001 000Xb
DDR DIMM2	1001 010Xb
HDMI Analog S/W	1100 000Xb

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

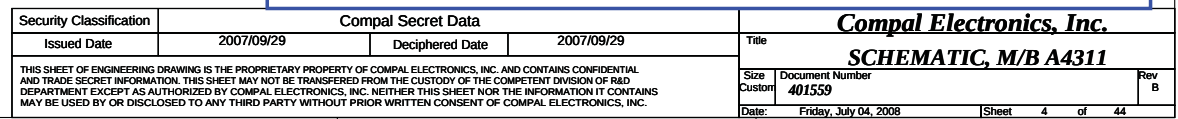
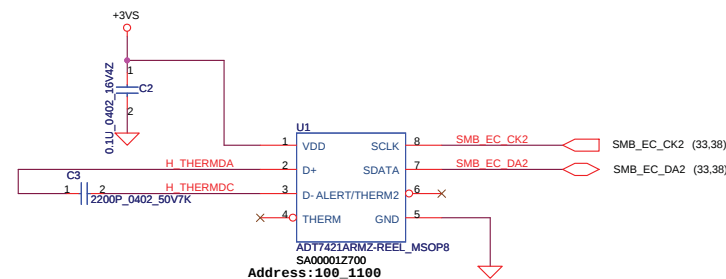
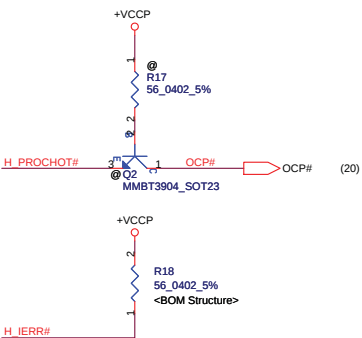
Vcc	3.3V +/- 5%			
Ra/Rc/Re	100K +/- 5%			
Board ID	Rb / Rd / Rf	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759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

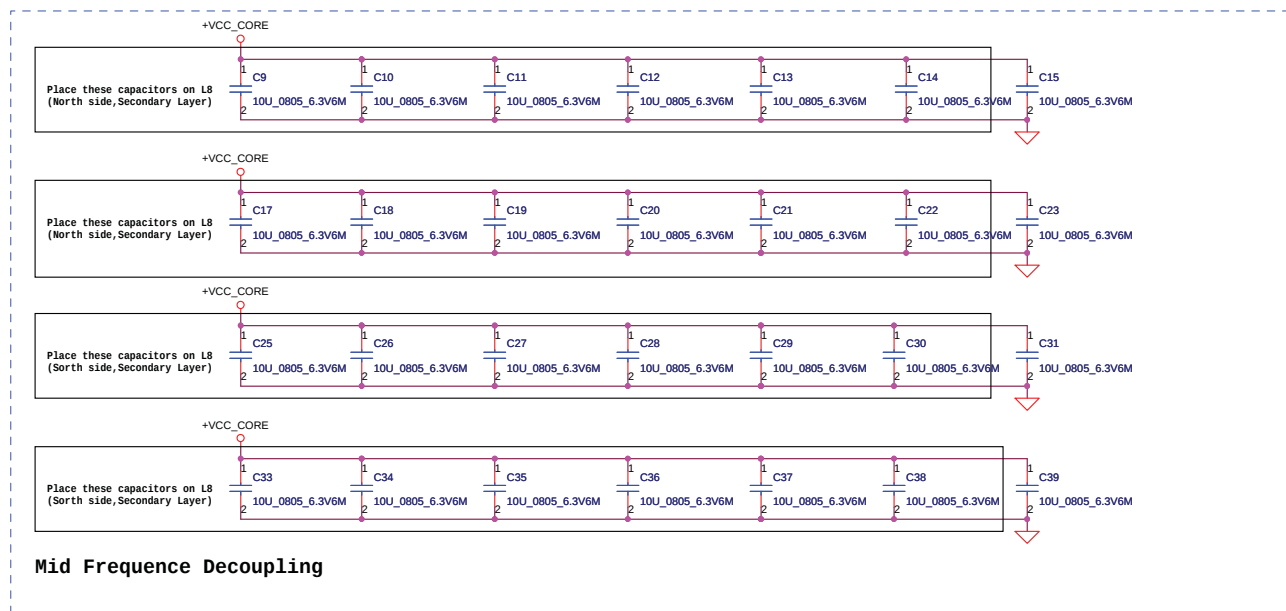
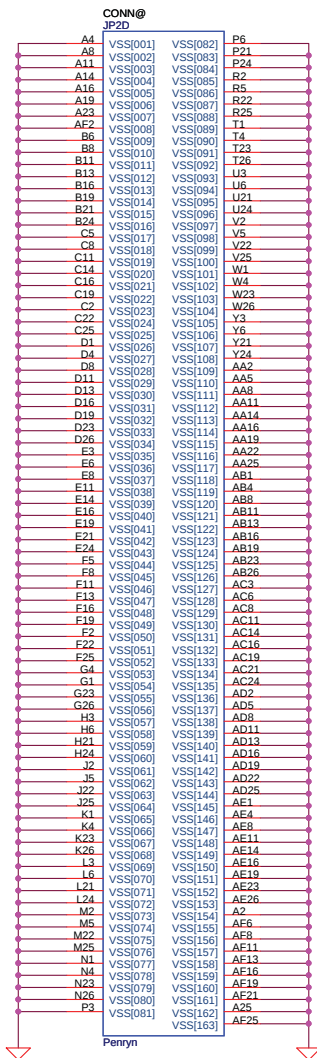
BOARD ID Table

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

BTO Option Table

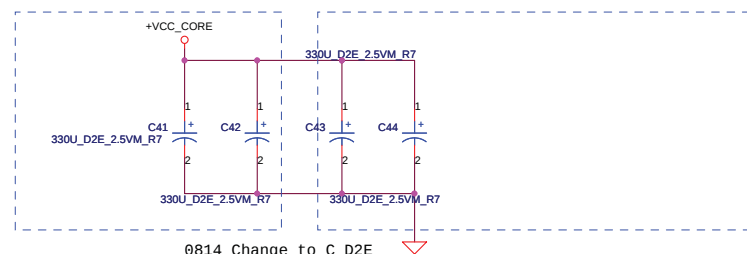
BTO Item	BOM Structure
Discrete	PM@
UMA	GM@
CIR	CIR@
8111C	8111C@
8102E	8102E@
ALC888VC	888VC@
ALC888VB	888VB@
ALC268	268@



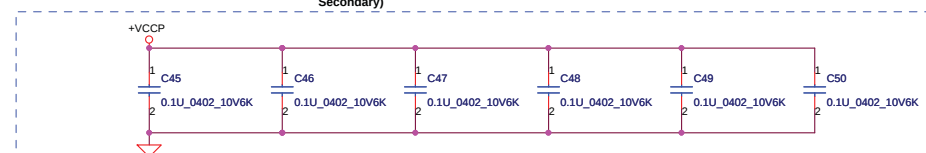


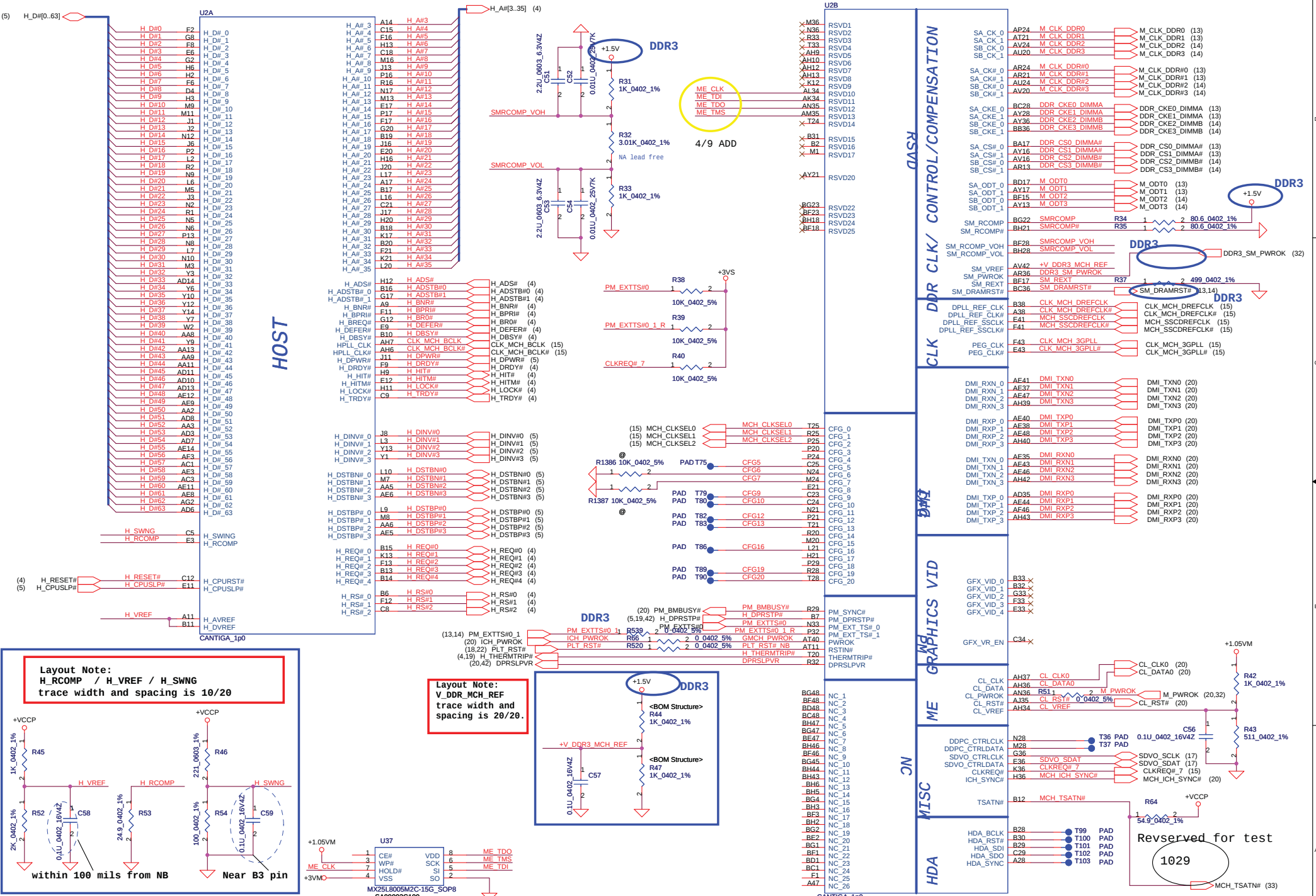
Near CPU CORE regulator

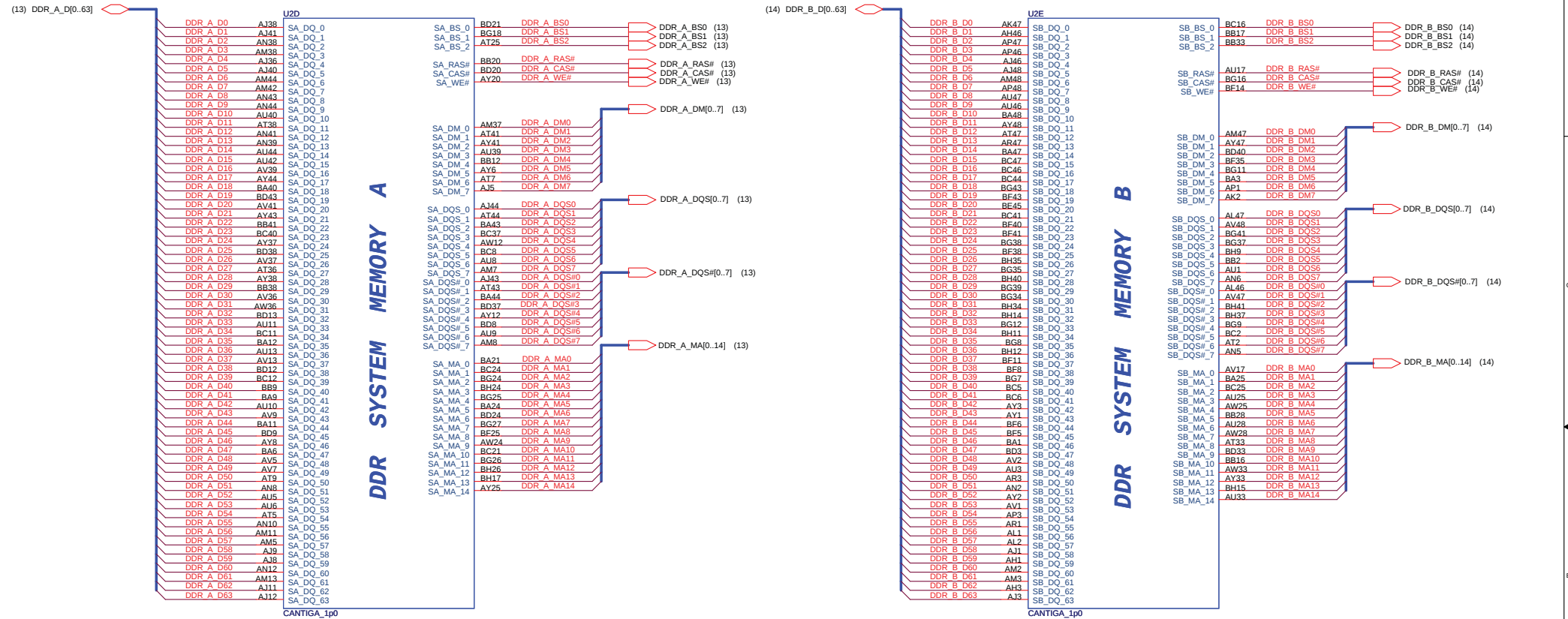
ESR <= 1.5m ohm
Capacitor > 1980uF



DEL 330U 1017



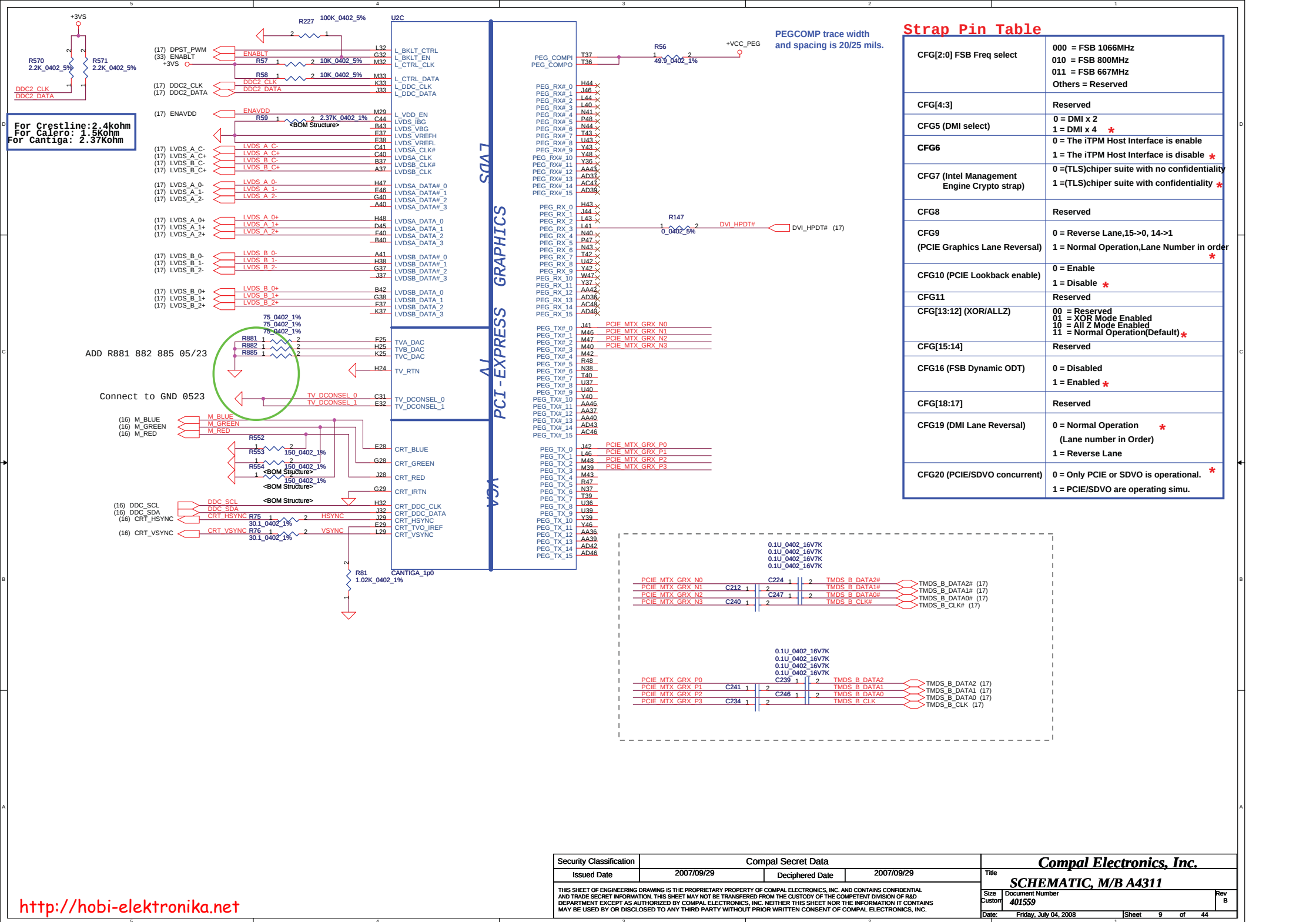


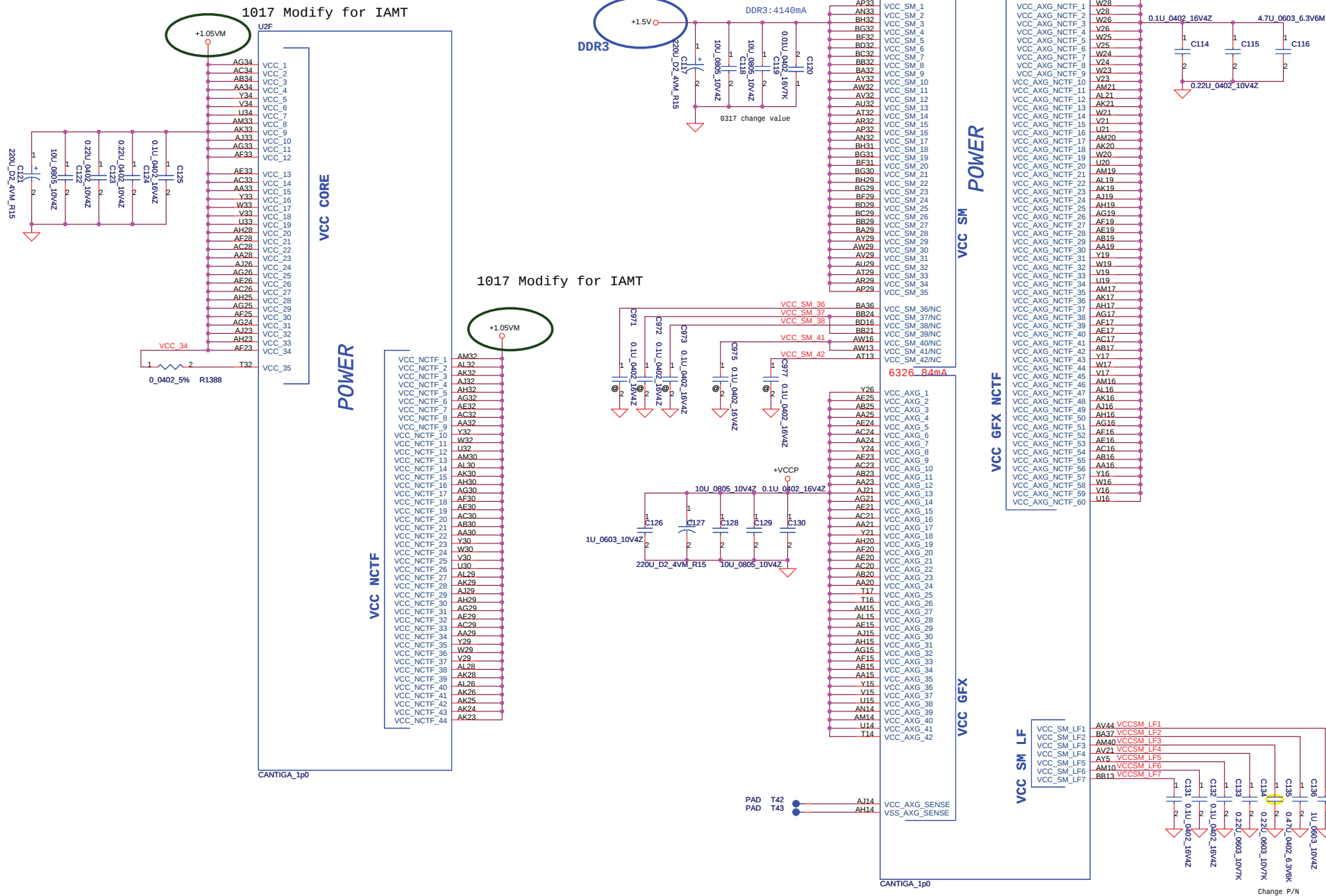


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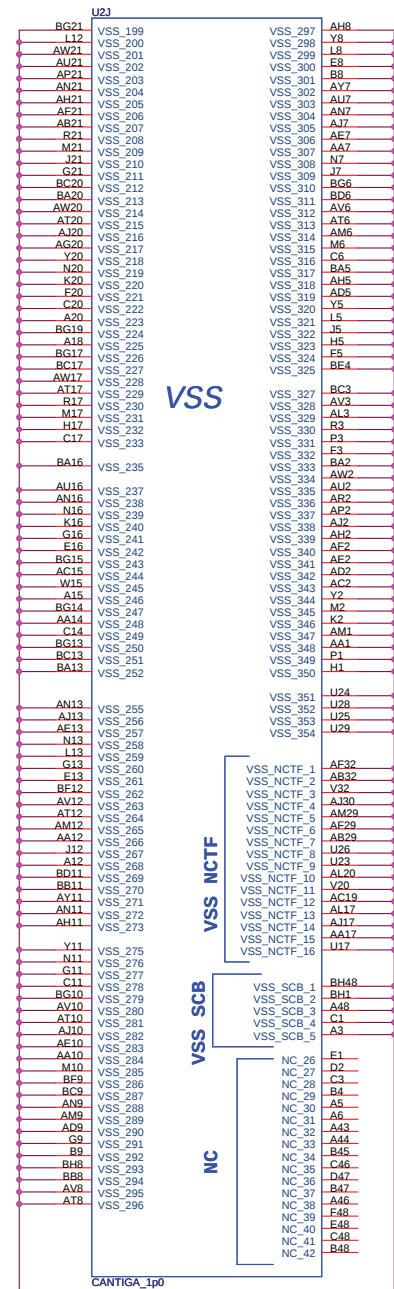
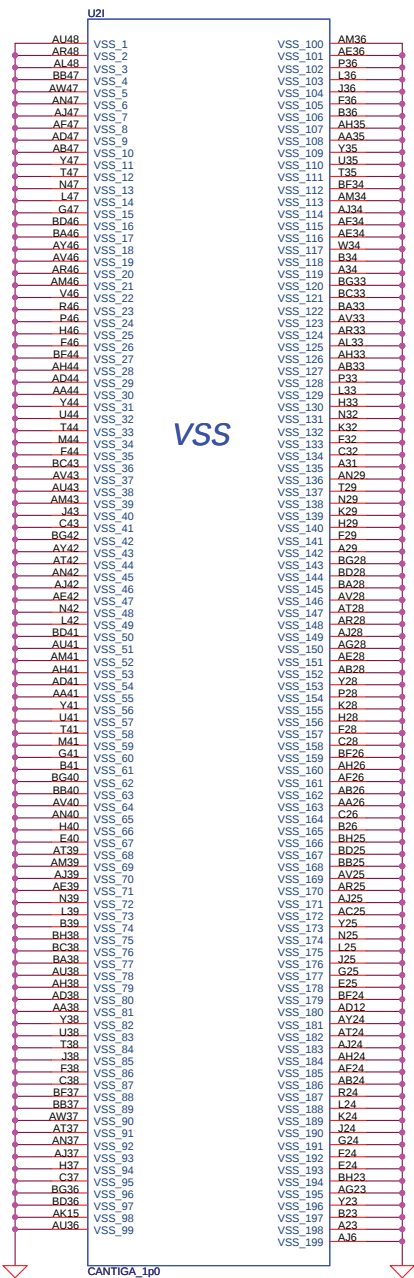
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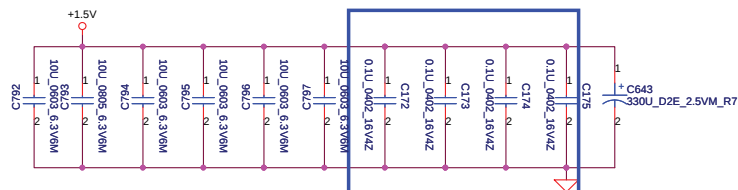
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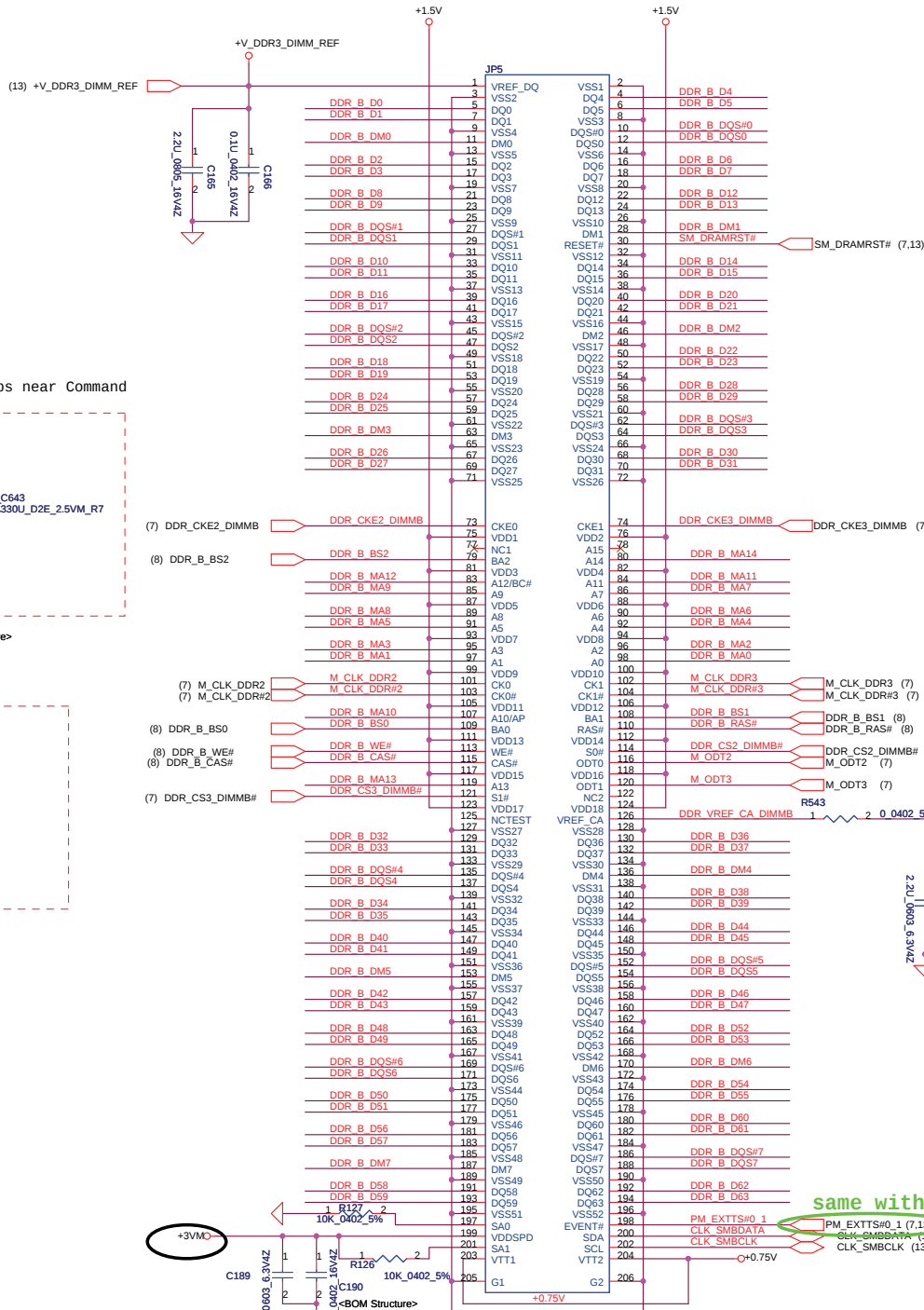
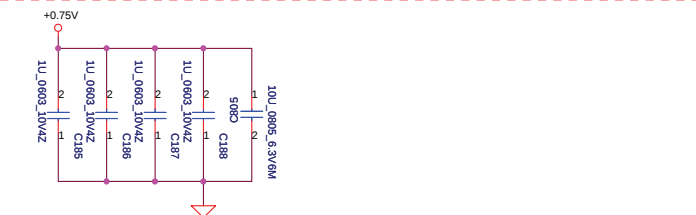
- (8) DDR_B_DQS#[0..7]
- (8) DDR_B_DQ[0..63]
- (8) DDR_B_DM[0..7]
- (8) DDR_B_DQS[0..7]
- (8) DDR_B_MA[0..14]

Layout Note:
Place near JP5

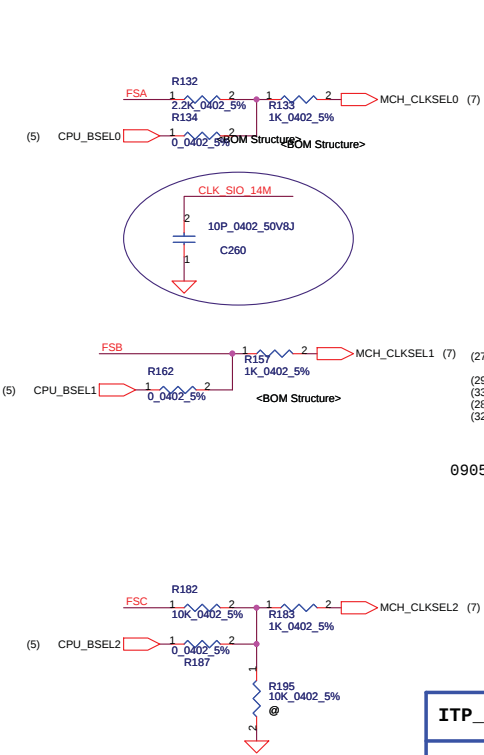
Layout Note: Place these 4 Caps near Command
and Control signals of DIMM



Layout Note:
Place near JP5.203 & JP5.204

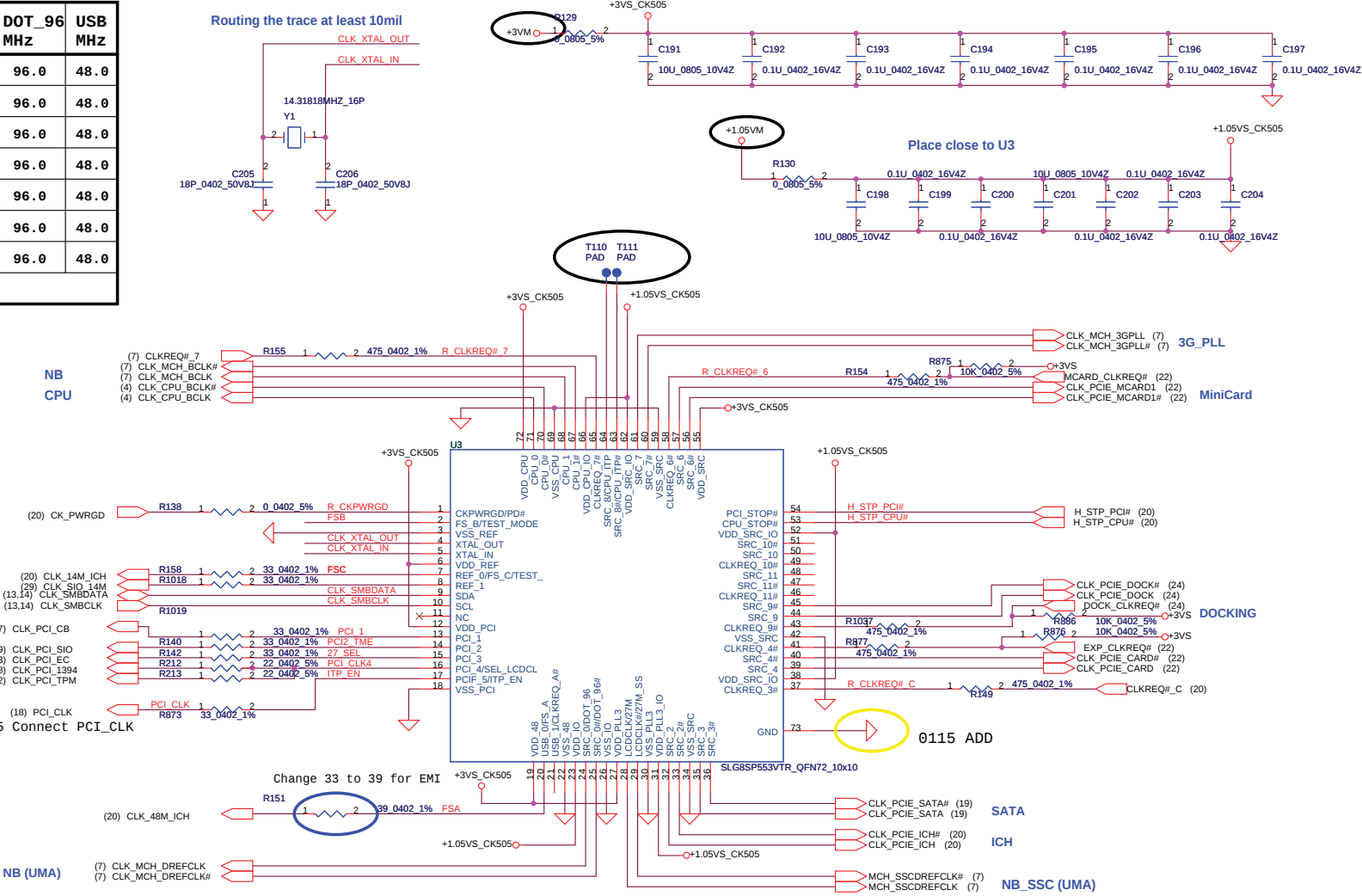


FSC	FSB	FSA	CPU	SRC	PCI	REF	DOT_96	USB
CLKSEL2	CLKSEL1	CLKSEL0	MHZ	MHZ	MHZ	MHZ	MHZ	MHZ
0	0	0	266	100	33.3	14.318	96.0	48.0
0	0	1	133	100	33.3	14.318	96.0	48.0
0	1	0	200	100	33.3	14.318	96.0	48.0
0	1	1	166	100	33.3	14.318	96.0	48.0
1	0	0	333	100	33.3	14.318	96.0	48.0
1	0	1	100	100	33.3	14.318	96.0	48.0
1	1	0	400	100	33.3	14.318	96.0	48.0
1	1	1	Reserved					



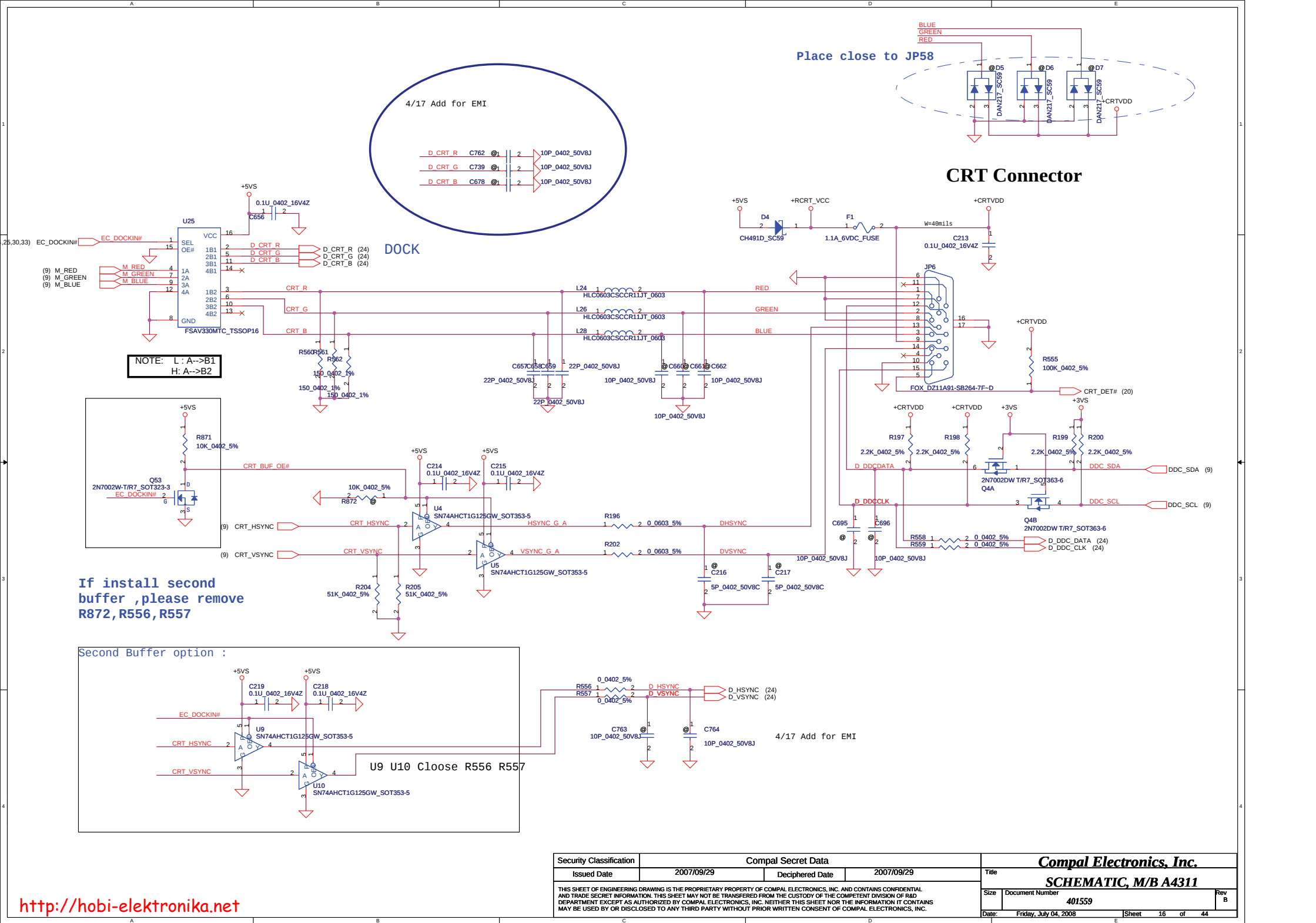
2007/09/26

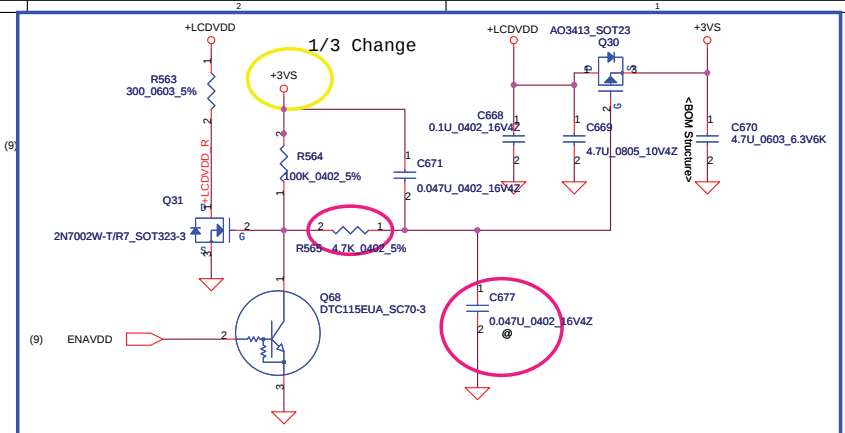
for ICS Overclocking setting
 0=overclocking of CPU and SRC allowed
 1=overclocking of CPU and SRC NOT allowed



ITP_EN	0 = SRC8/SRC8# 1 = ITP/ITP#
PCI_CLK3	0 = Enable DOT96 & SRC1(UMA) 1 = Enable SRC0 & 27MHz(DIS)

M:ICS P/N:
S: Silego





(33) BKOFF#

2N7002W-T1R7_SOT323-3 Q39

+5VS

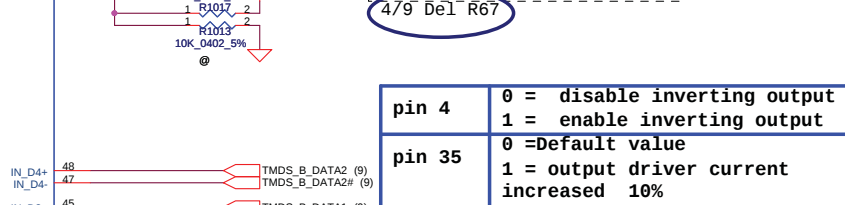
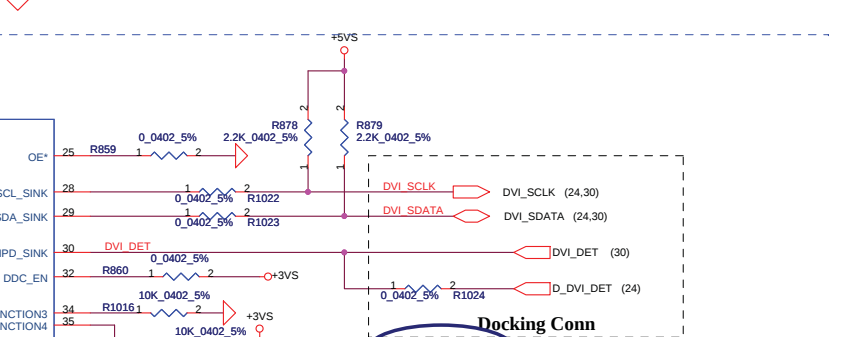
+3VS

R569 4.7K_0402_5%

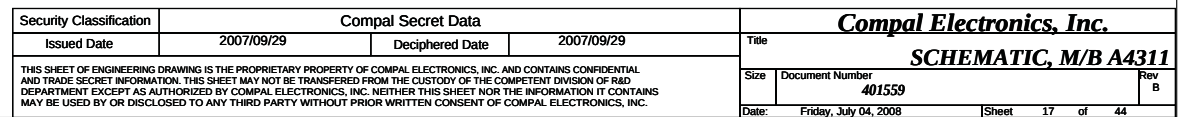
470

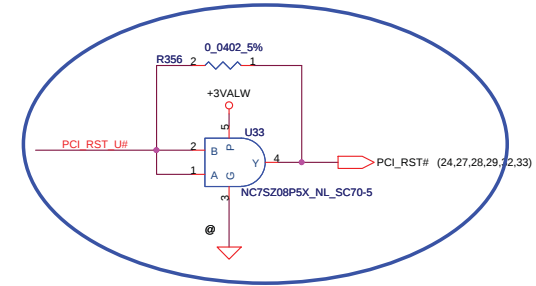
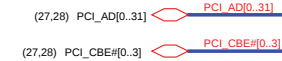
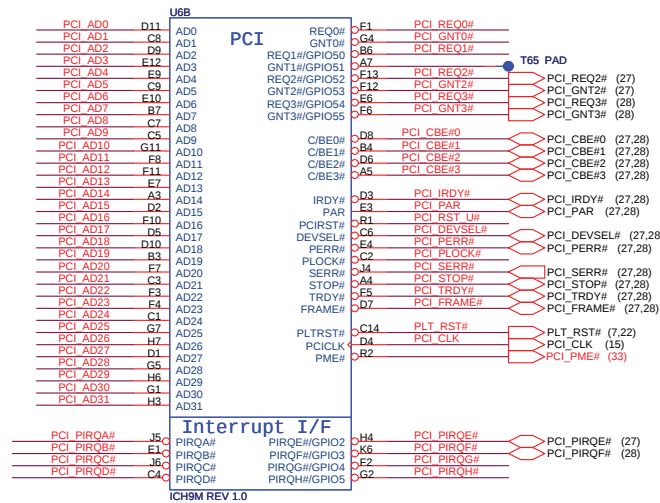
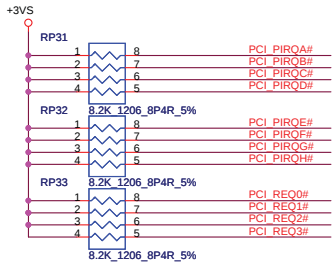
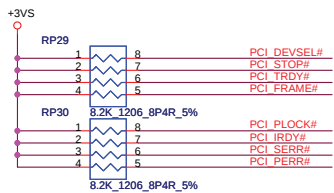
D43 CH751H-40FT_SOD323-2

DISPLAYOFF#



0 (9)
0# (9) From GM





ADD Buffer for 4/9

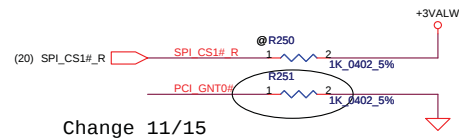
A16 swap override Strap

Low= A16 swap override Enble
High= Default *

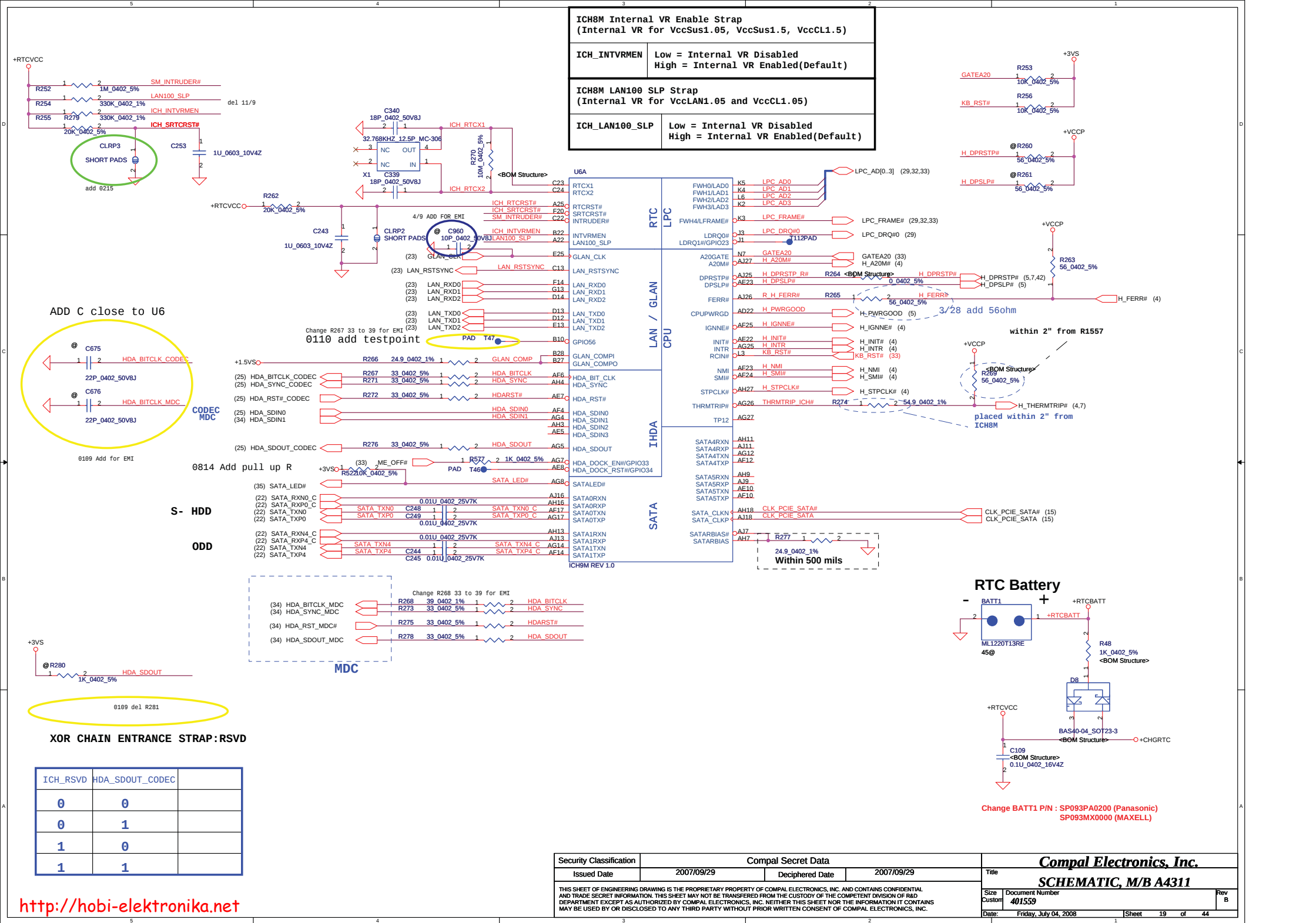


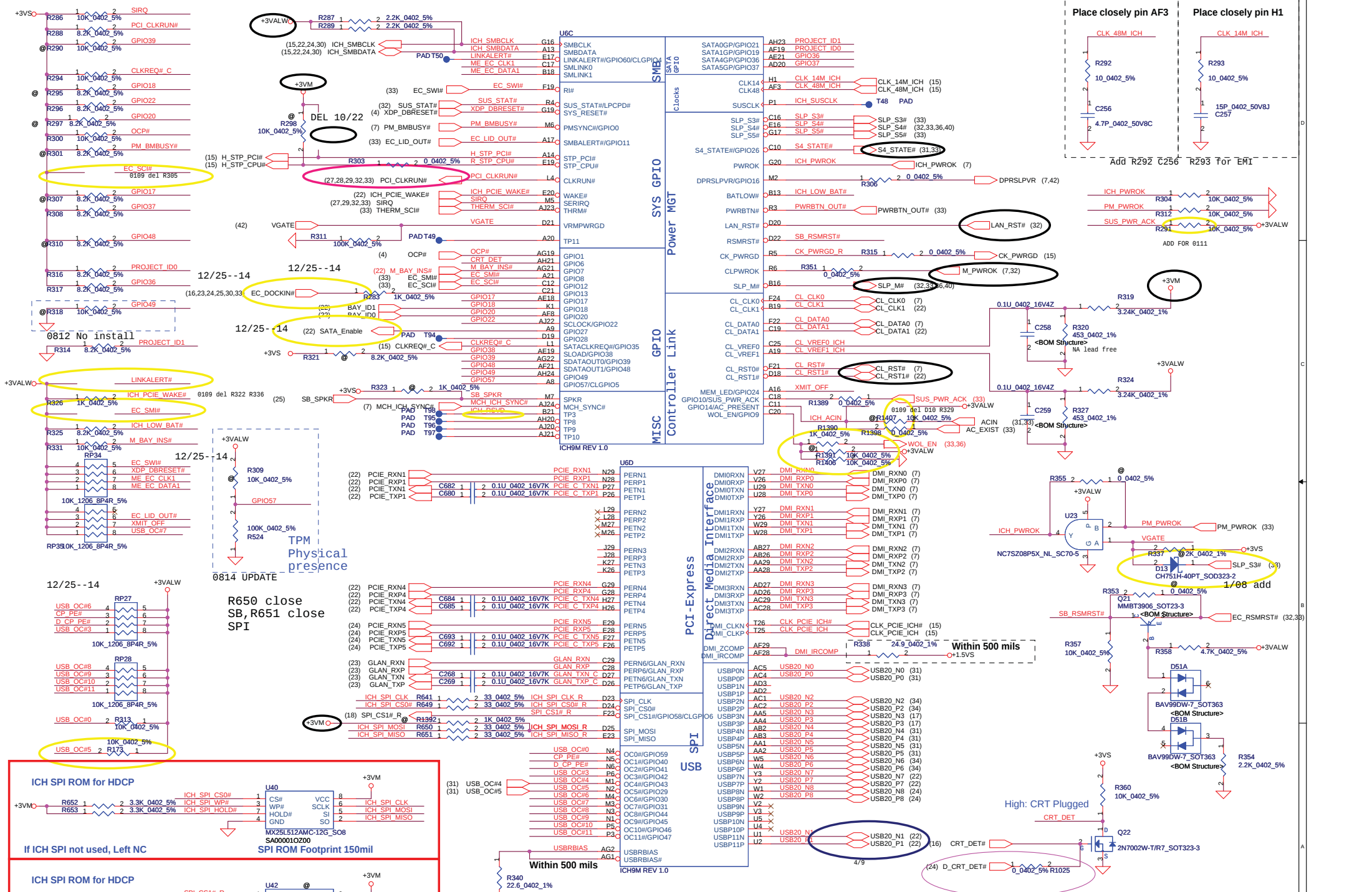
Boot BIOS Strap

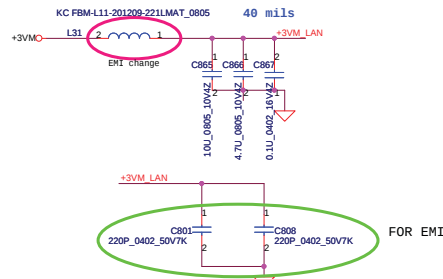
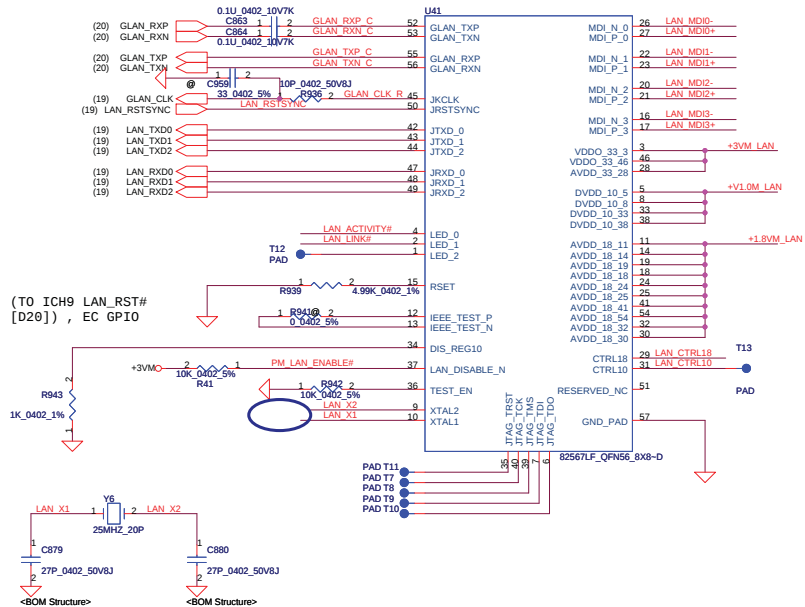
PCI_GNT0#	SPI_CS#1	Boot BIOS Location
0	1	SPI
1	0	PCI
1	1	LPC *



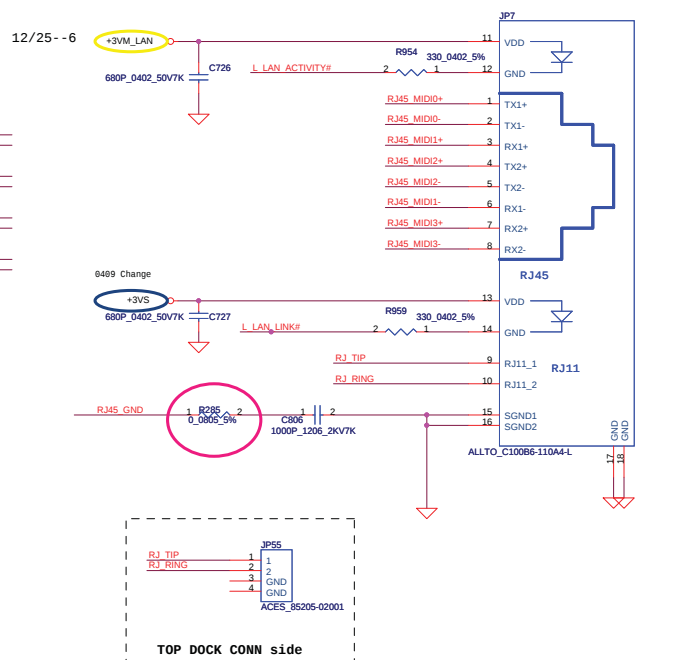
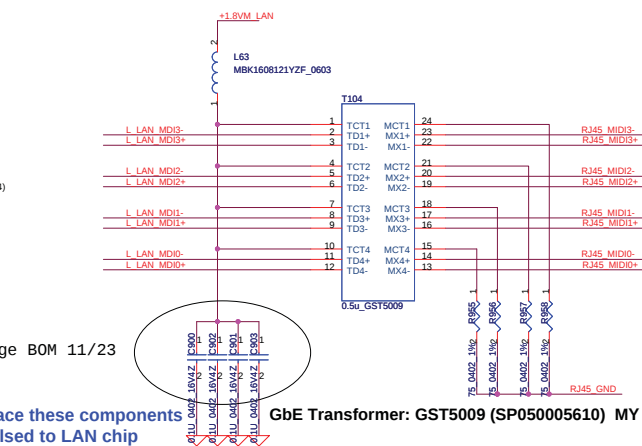
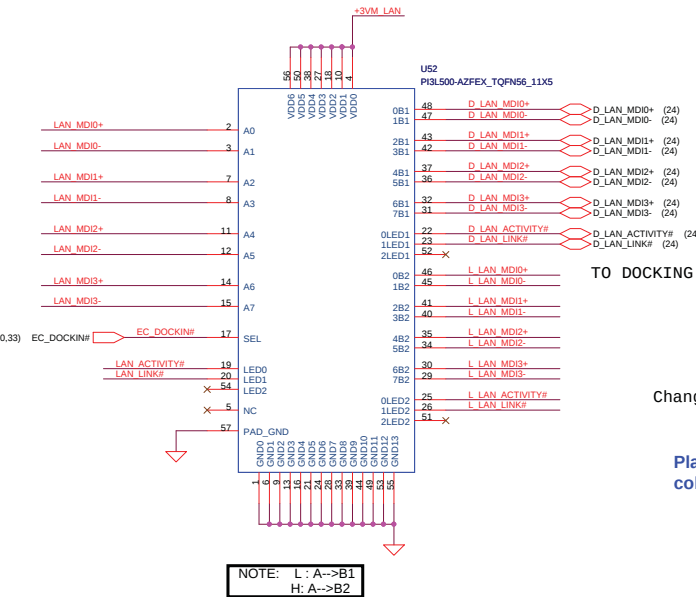
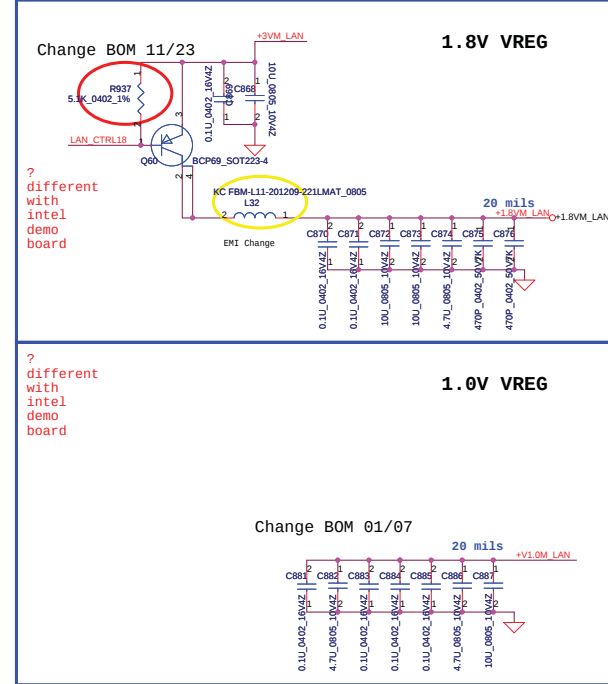
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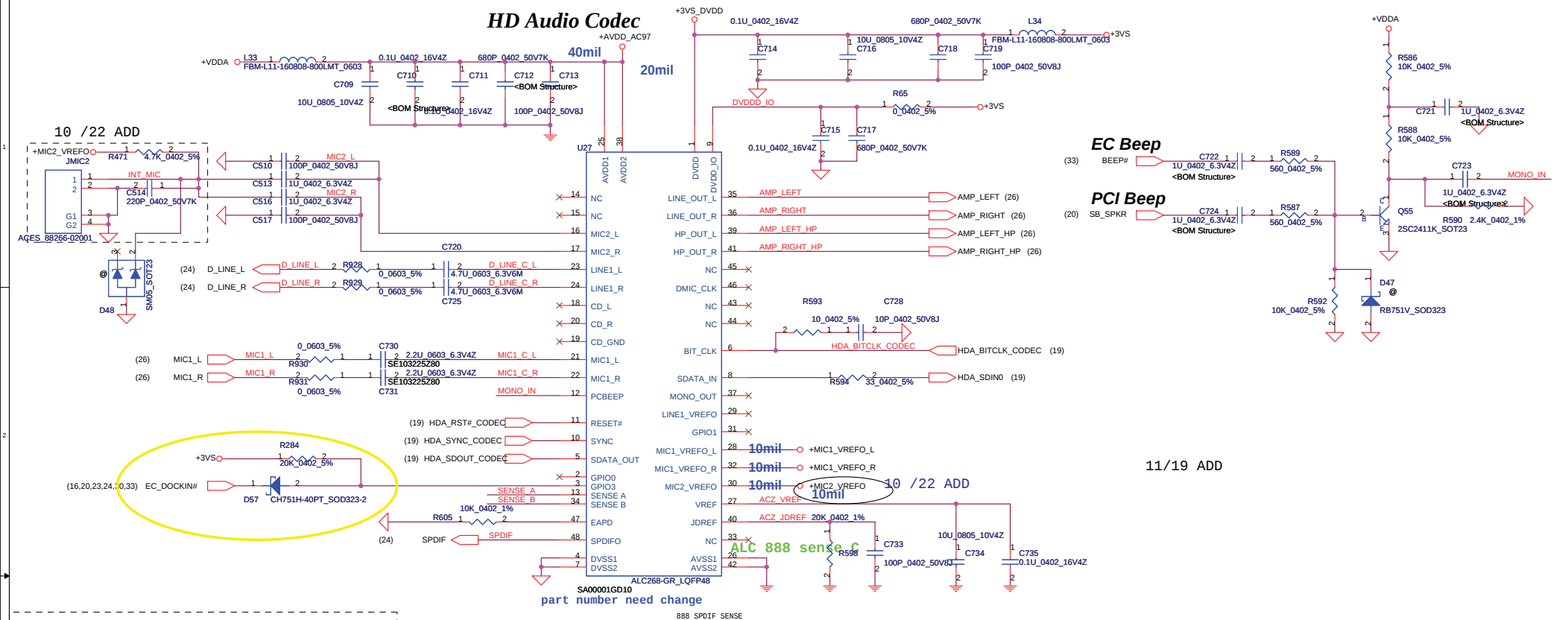




FOR 1.0V LVRI	FOR 1.0V LVRD
STUFF :	STUFF :
R4	R6 O2 C19 C28 R18
EMPTY :	EMPTY :
O2 C19 C28 R18	R4



HD Audio Codec



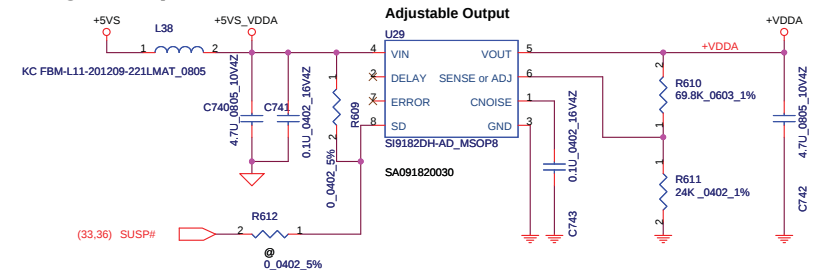
268 did not have sense C ! How
can I know SPDIF IN OR HP IN ??

10 /22 ADD

11/19 ADD

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

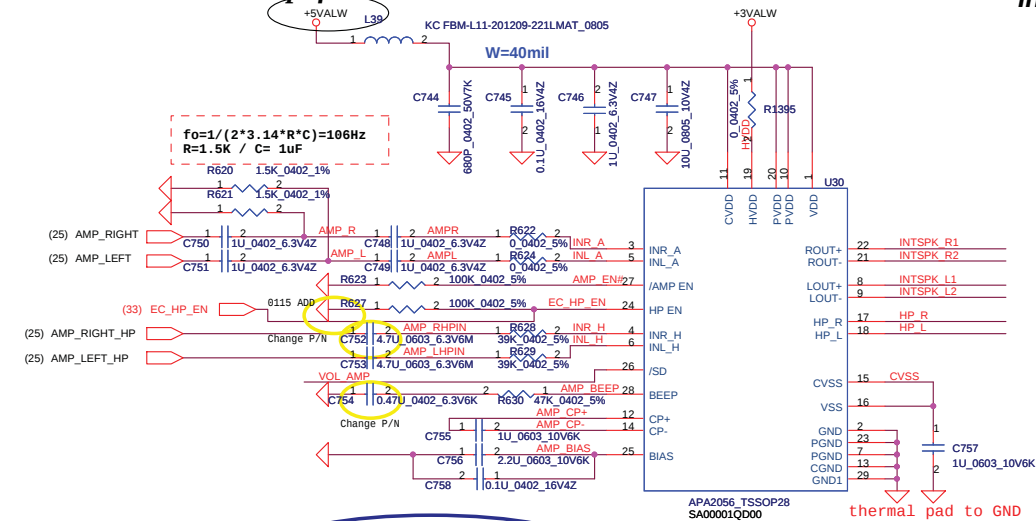
Regulator for CODEC



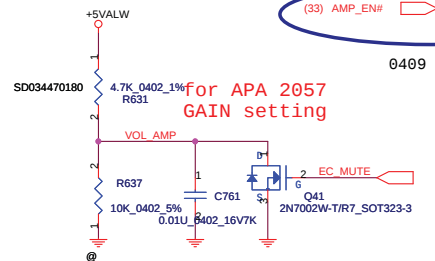
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<http://hobi-elektronika.net>

APA2056 SPK/HP Amplifier



IN_A Gain = 10dB (Internal Speaker)
IN_H Gain = 0dB (Headphone)

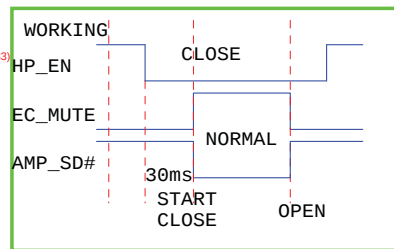


APA2057 gain setting table

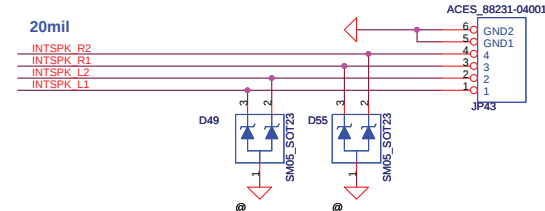
gain \ V	V(low)	V(high)
8	3.21	3.27
9	3.33	3.39
10	3.45	3.51

(dB)

```
current
setting(3.48V)
```

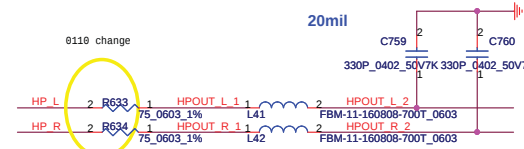


Int. Speaker Conn.

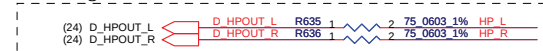


DEL SPDIF POWER 11/20

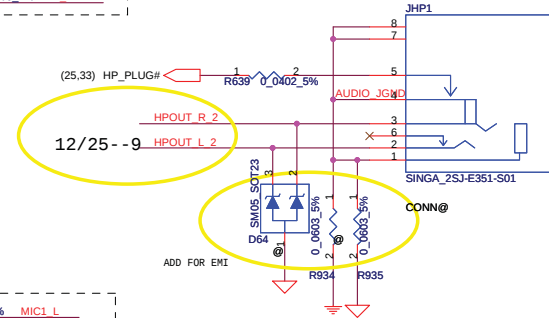
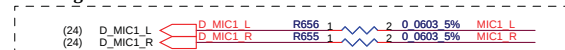
LINE Out/Headphone Out
S/PDIF Out JACK



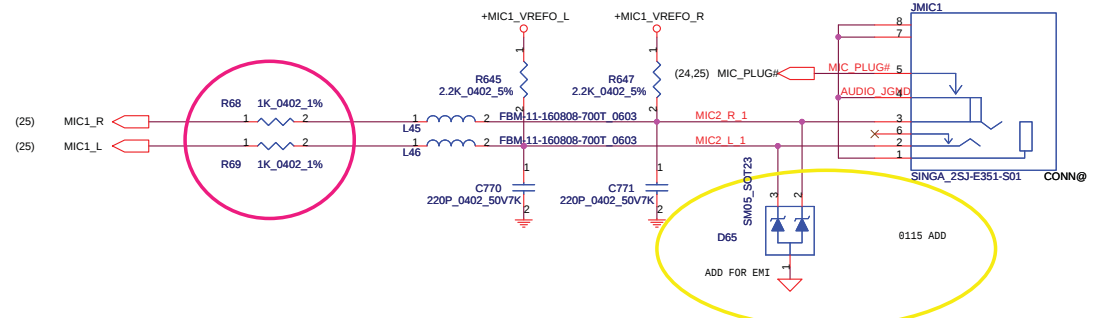
Docking Conn



Docking Conn

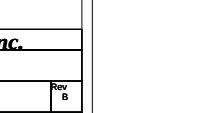
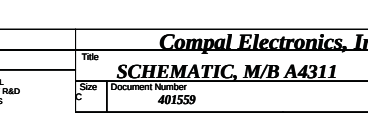
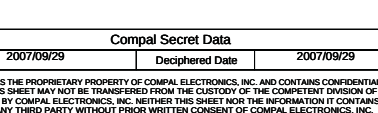
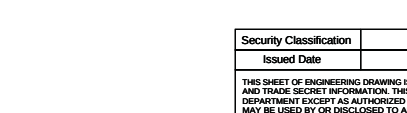
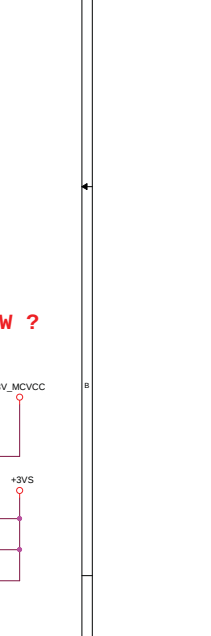
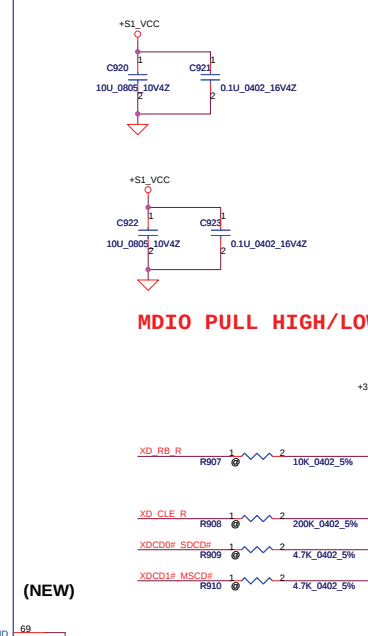
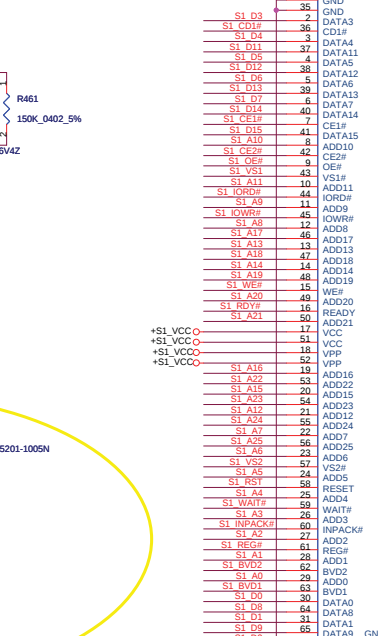
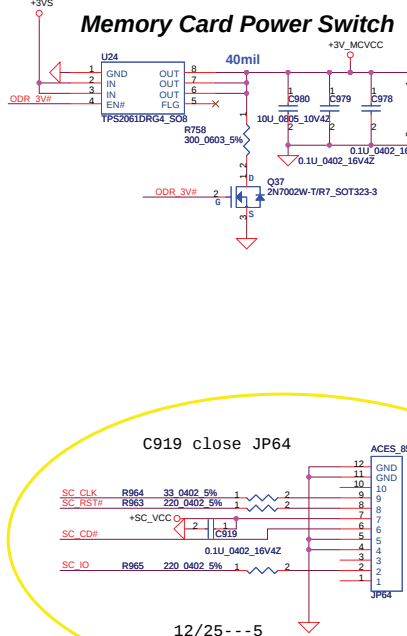
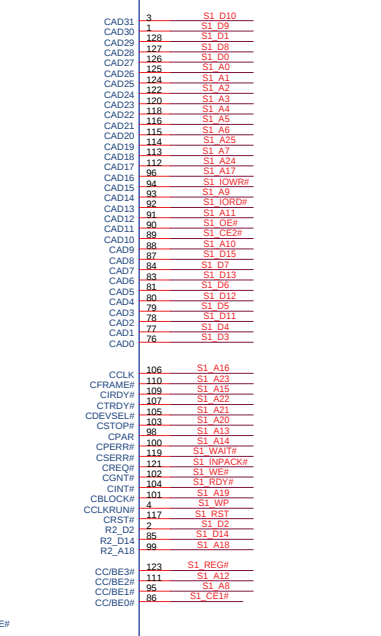
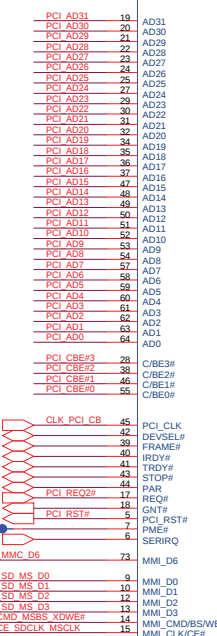
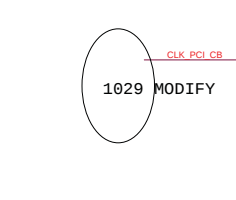
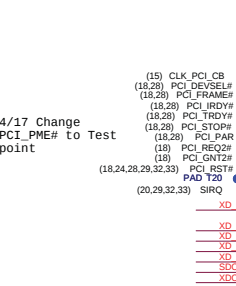
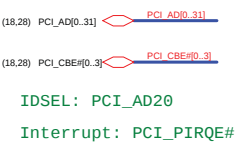
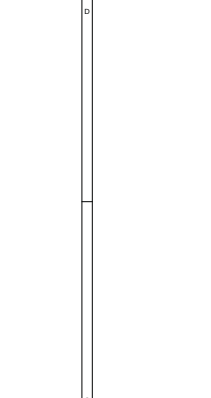
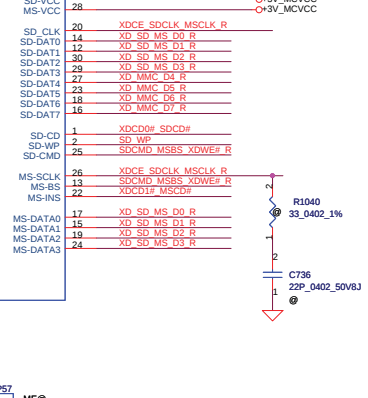
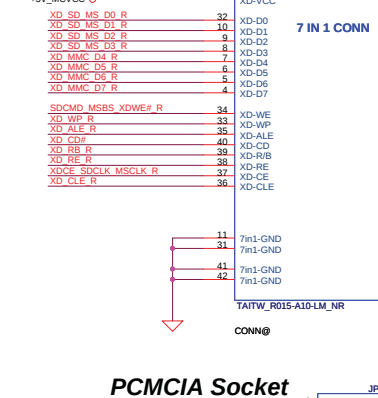
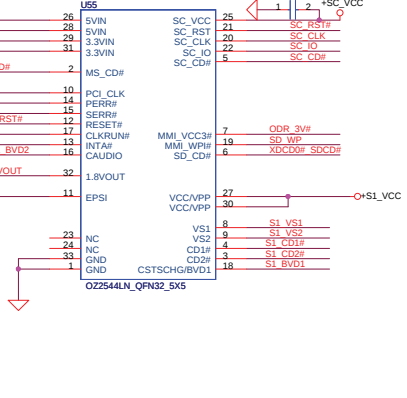
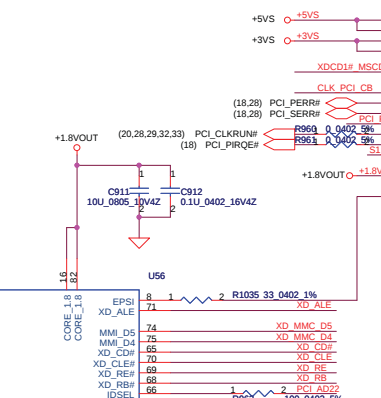
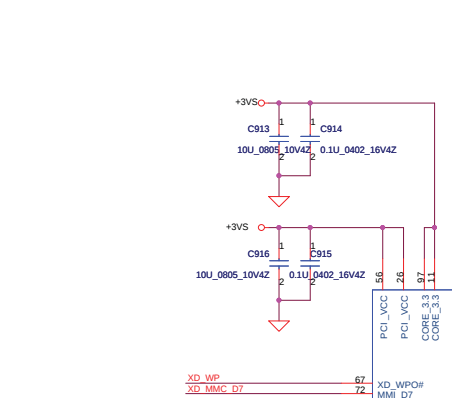
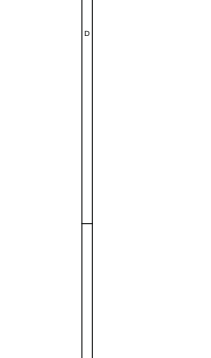
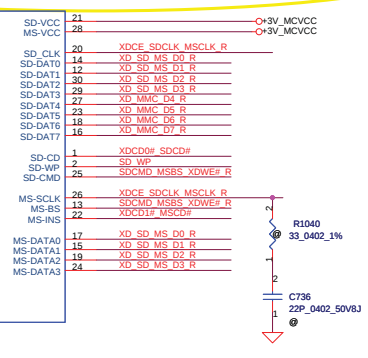
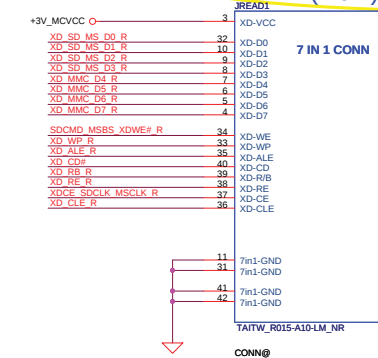
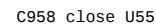
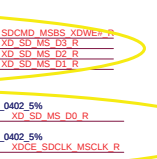
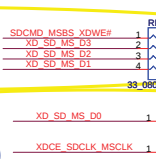
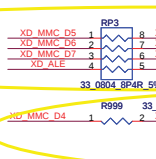
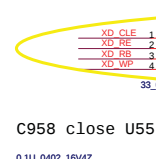
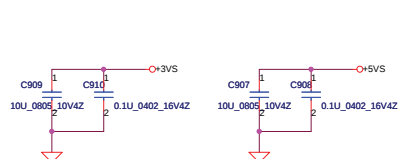


MIC JACK



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Change library U55/U56

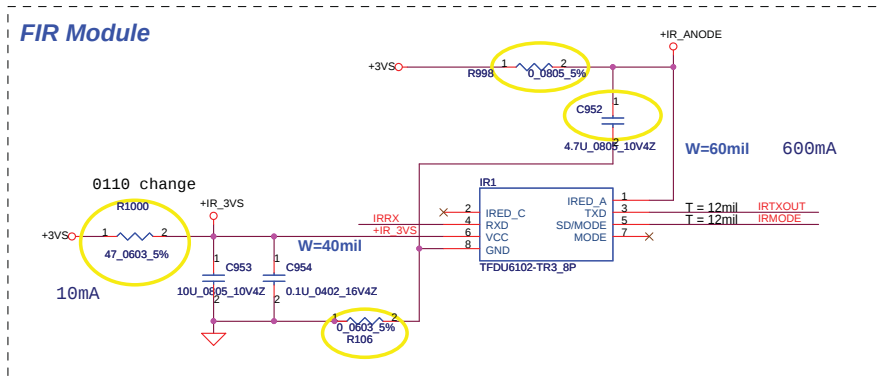
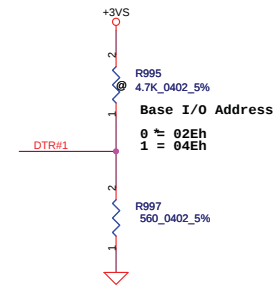
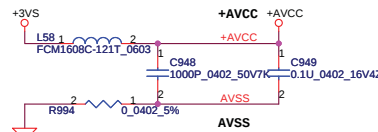
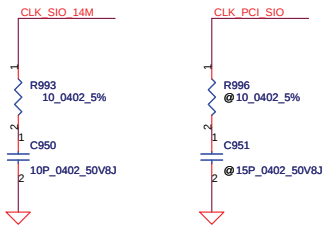
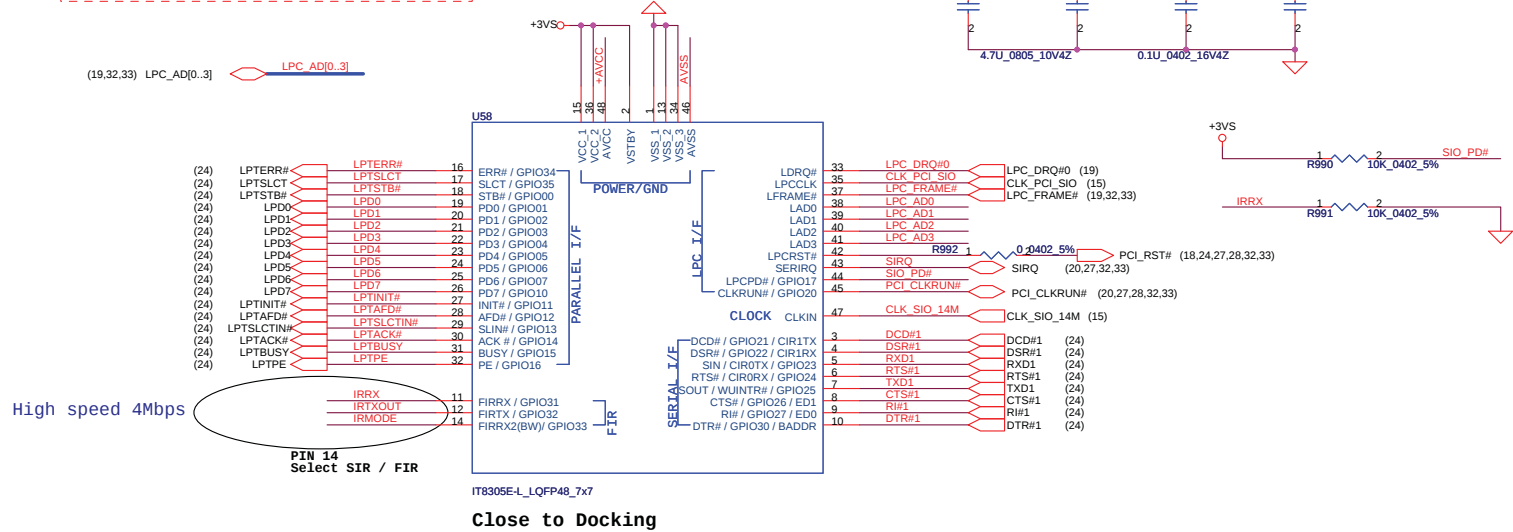


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SUPER I/O ITE IT8305E

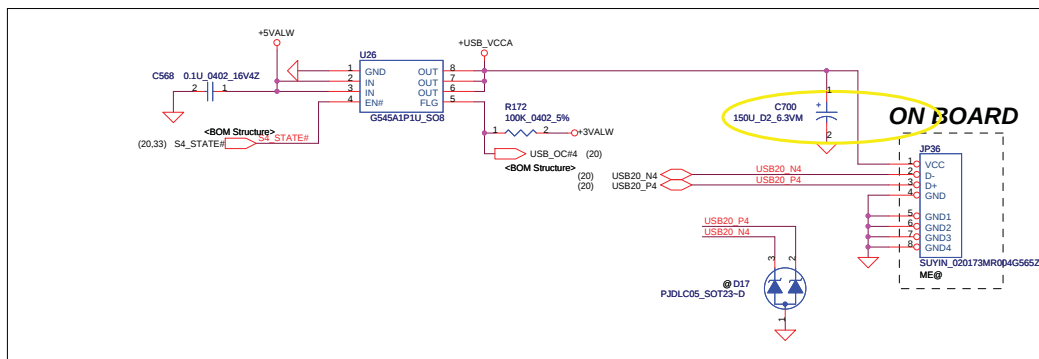
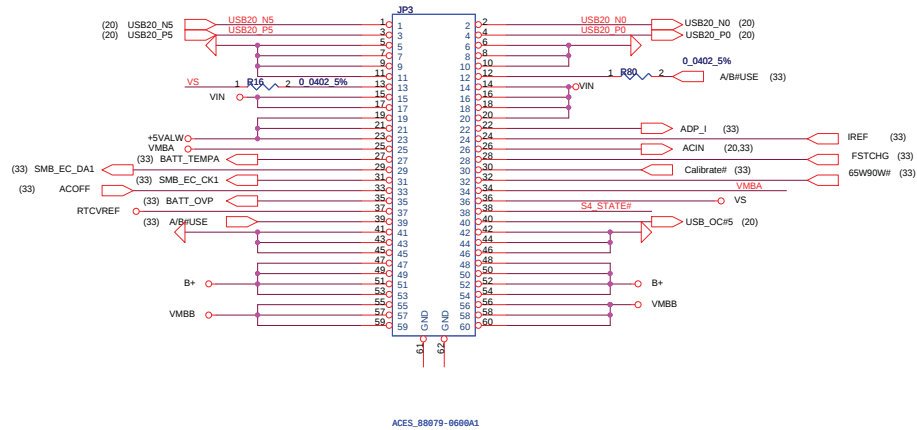
Note for pin 2:
If needs to support power on from IT8305 CIR, please connect pin2 for "VSTBY".
If don't need to support power on from IT8305 CIR, please connect pin2 for "V33".

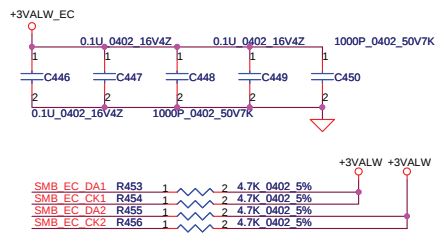
From External CLK for 14.318MHz(default) or 48MHz



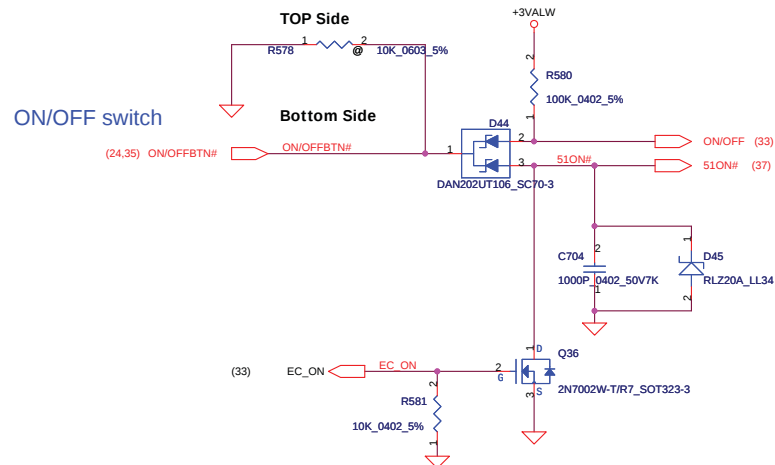
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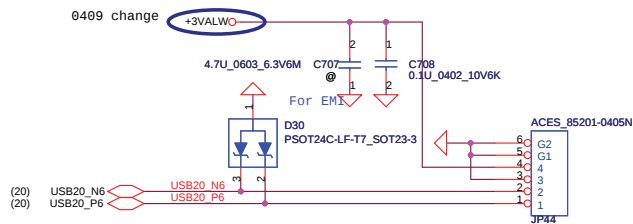




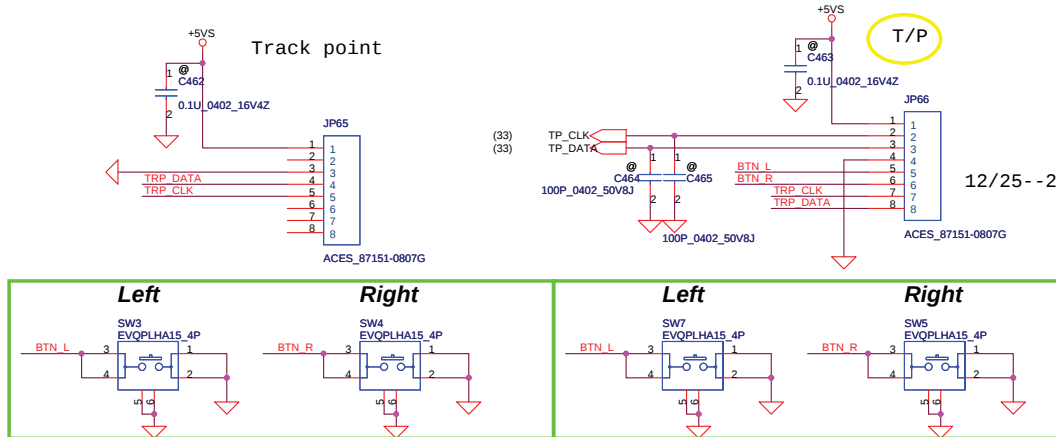
Power Button



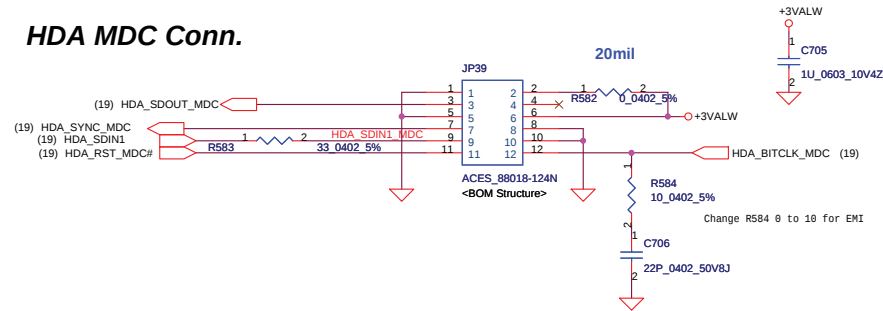
Finger Print Conn



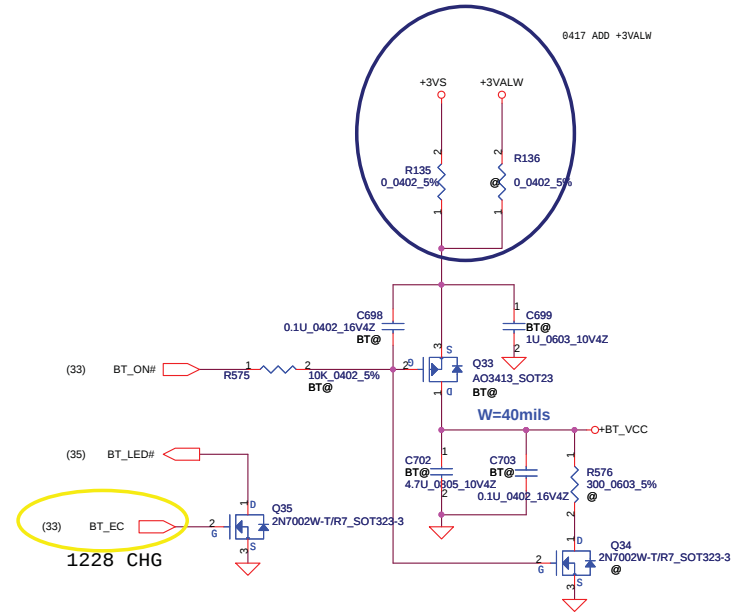
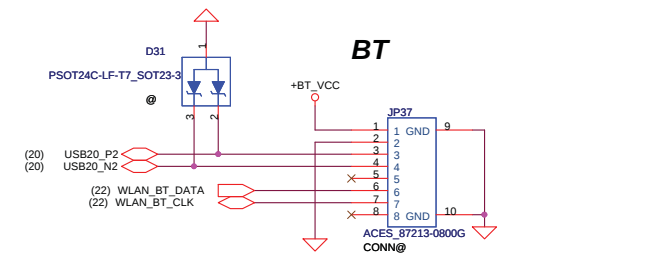
CHECK CONN



HDA MDC Conn.

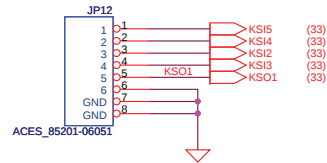


BT



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TO S/W B

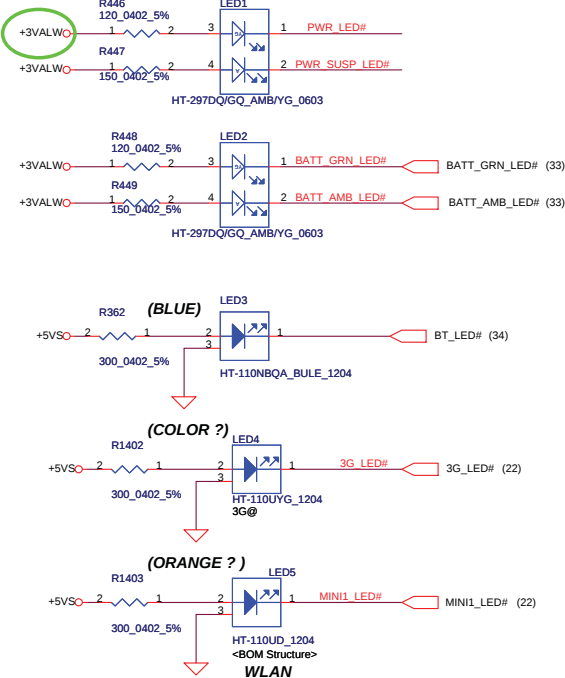


	KSO1	KSO2
KSI2	SYNC_BTN#	EMAIL_BTN#
KSI3	BRIEF_BTN#	PROGRAM_BTN#
KSI4	LOCK_BTN#	IE_BTN#
KSI5	E-KEY_BTN#	
KSI6		3G ON#
KSI7	WL ON#	BT ON#

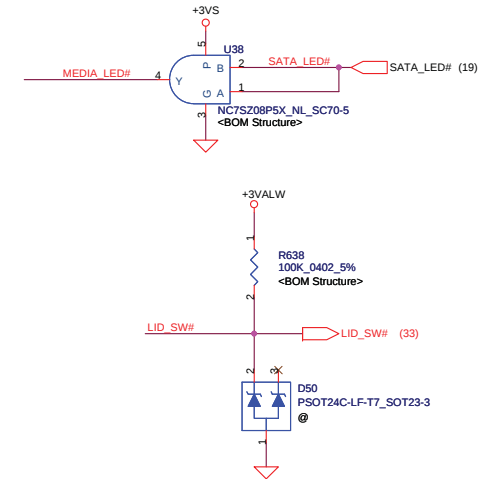
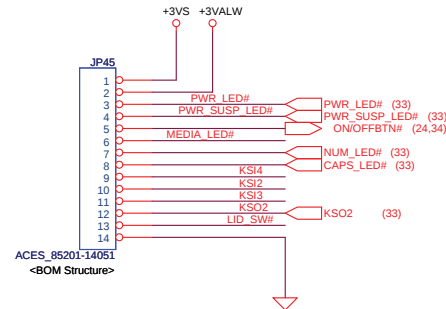
0103 Change1

Change +3vs to +3valw

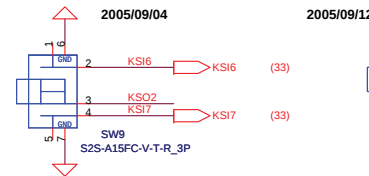
Compal Footprint



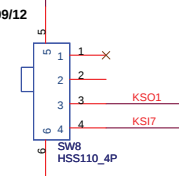
TO POWER BTN/B



BT_SW & 3G_SW



WL_SW

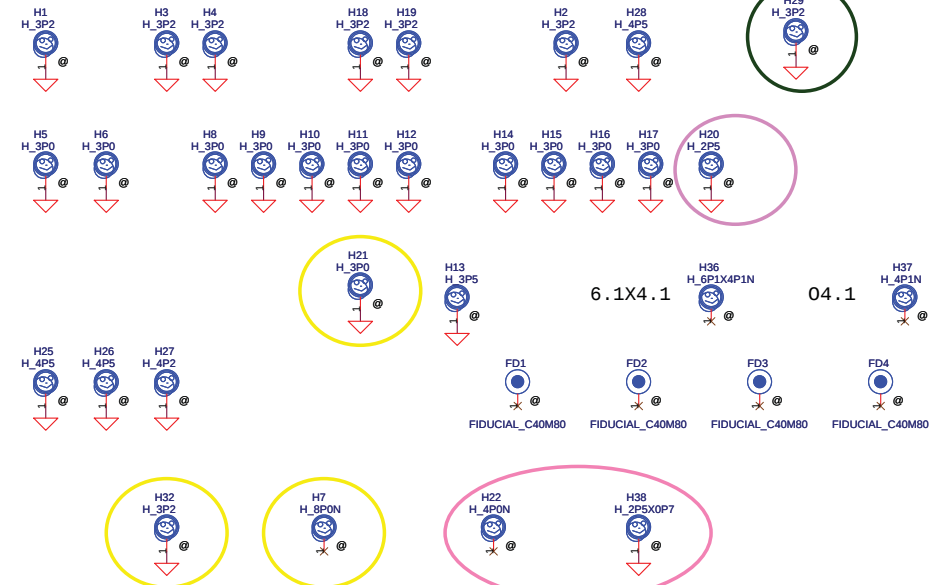


06 03.2

9 X 9 03

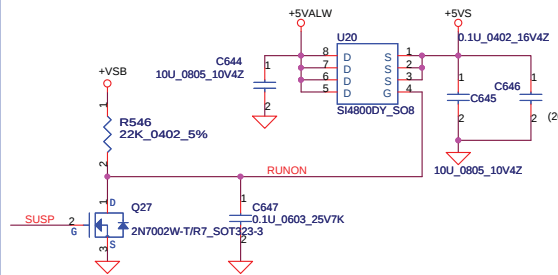
04.2

02.5

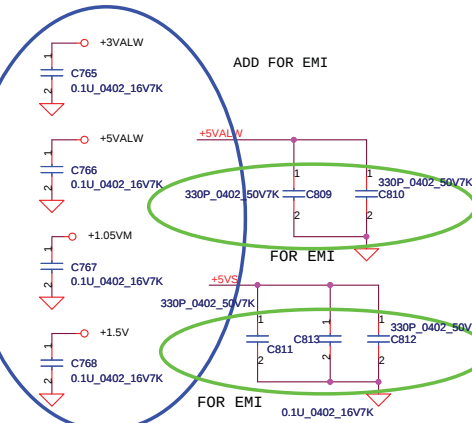
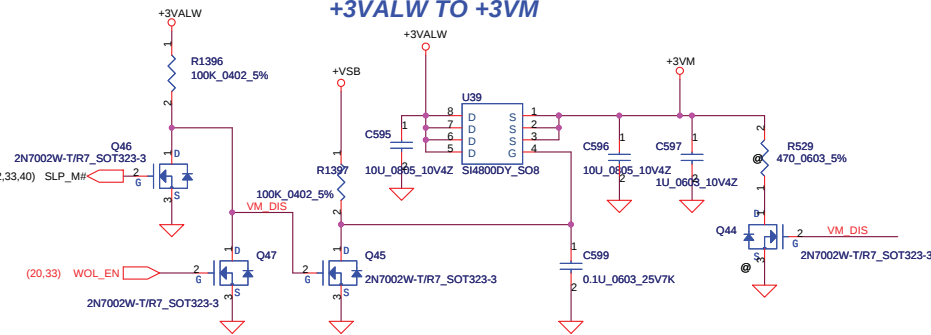


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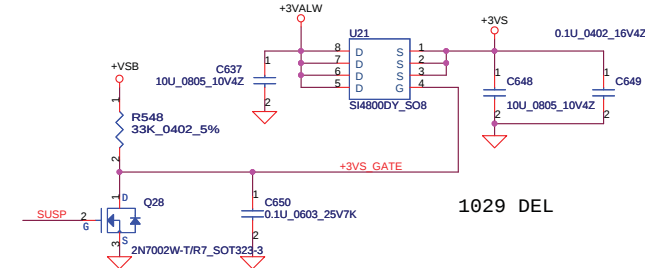
+5VALW to +5VS Transfer



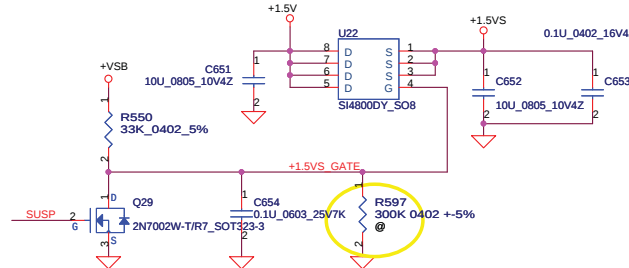
+3VALW TO +3VM



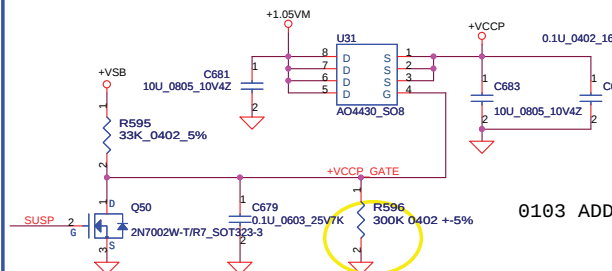
+3VALW to +3VS Transfer



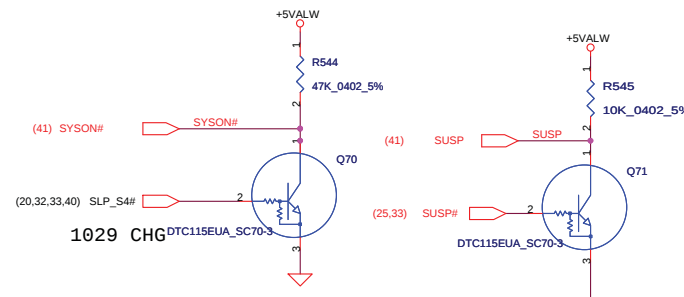
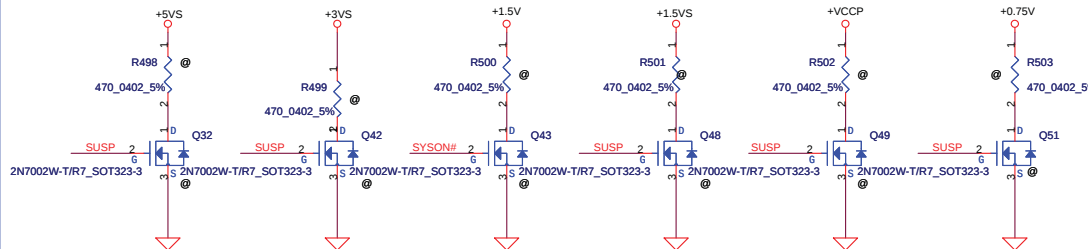
+1.5V to +1.5VS Transfer



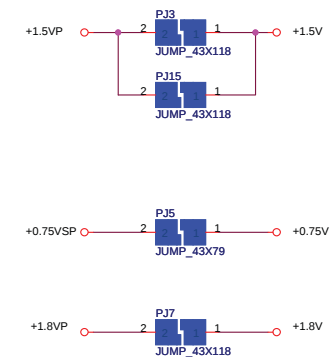
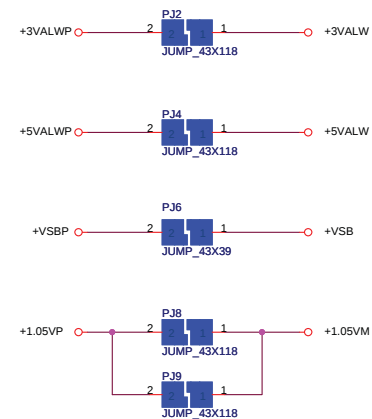
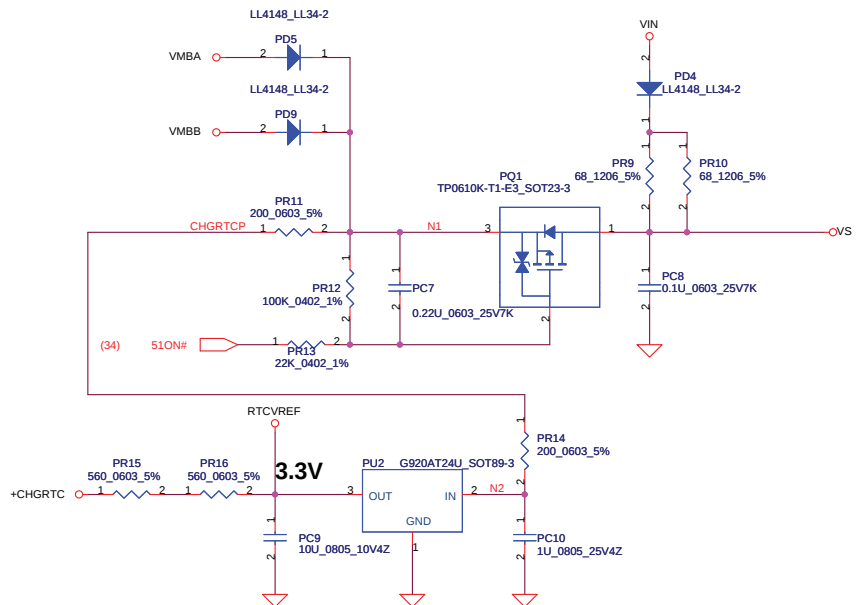
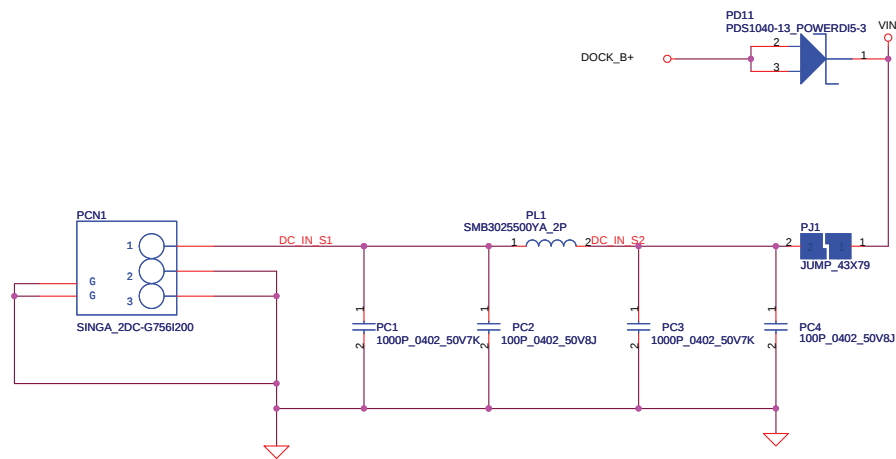
need power confirm +1.05VM to +VCCP Transfer



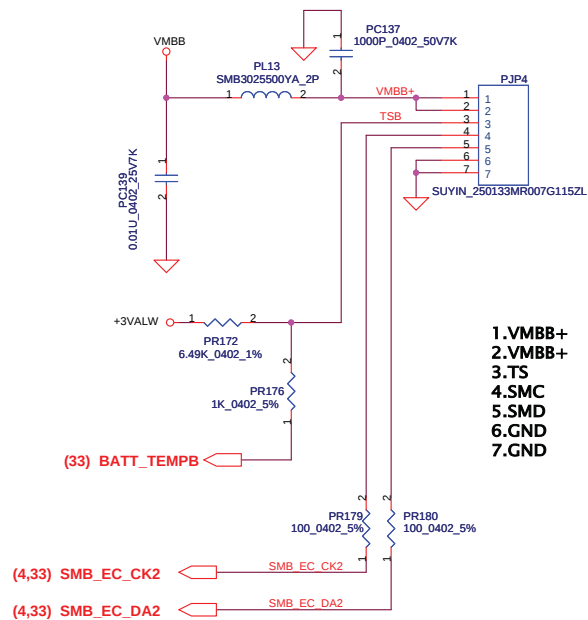
Discharge circuit



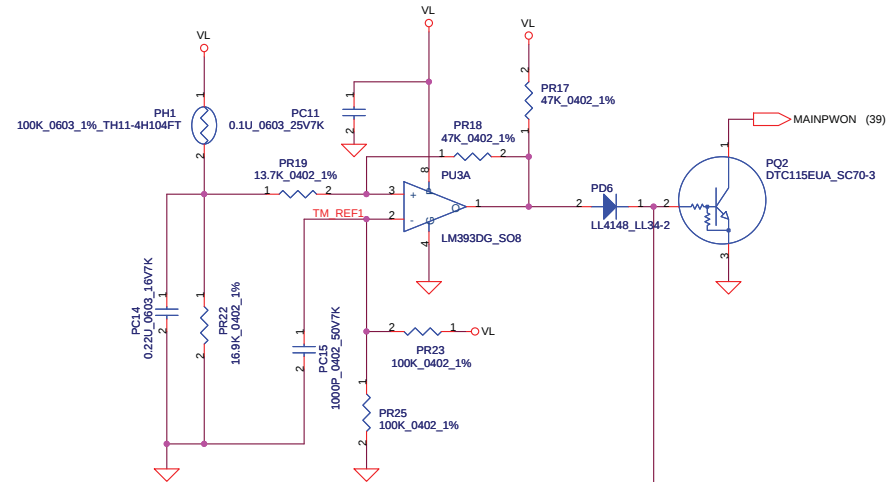
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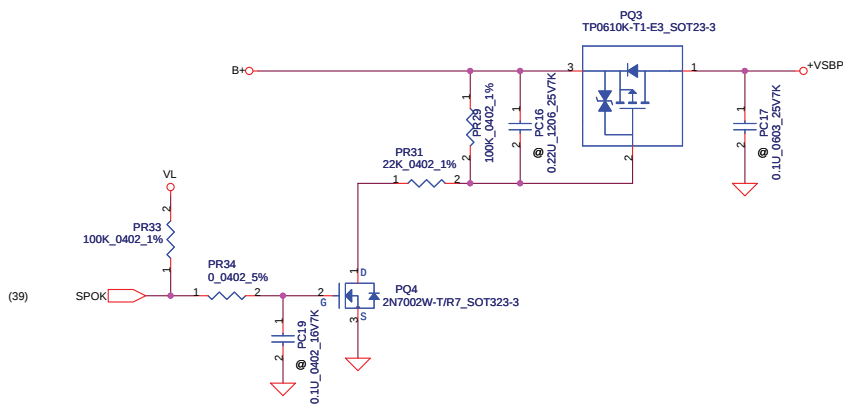
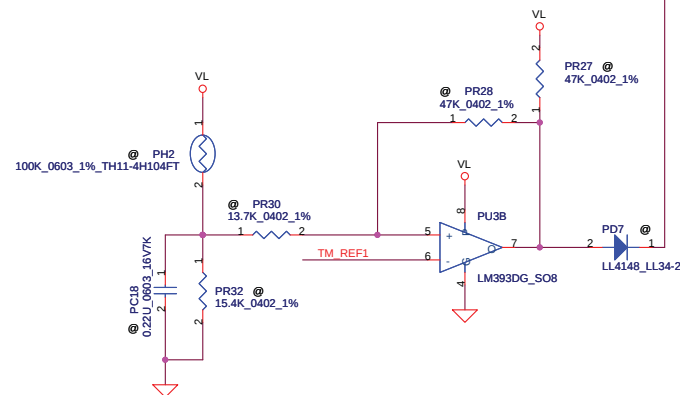
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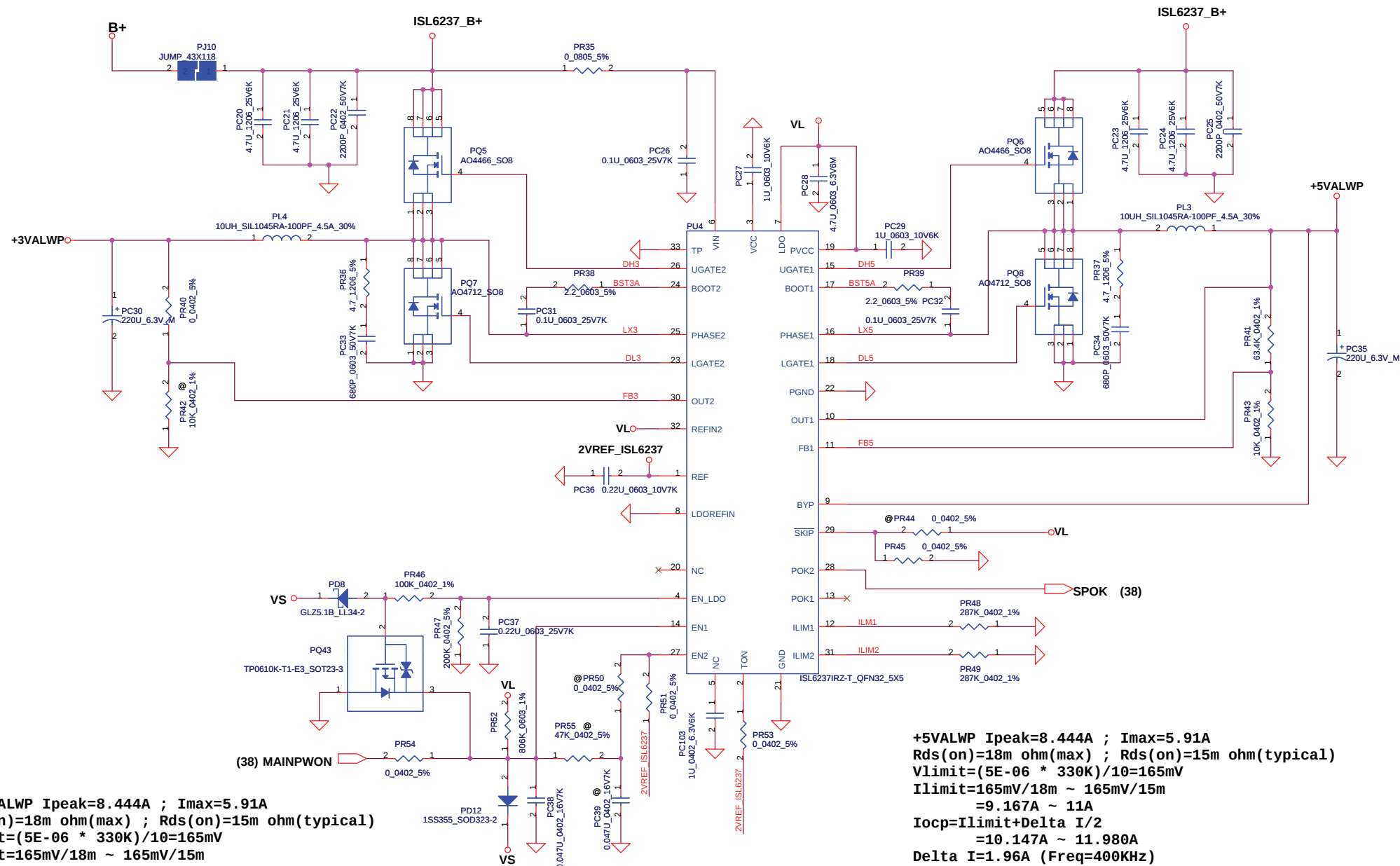
PH1 under CPU bottom side :
CPU thermal protection at 86 degree C
Recovery at 56 degree C



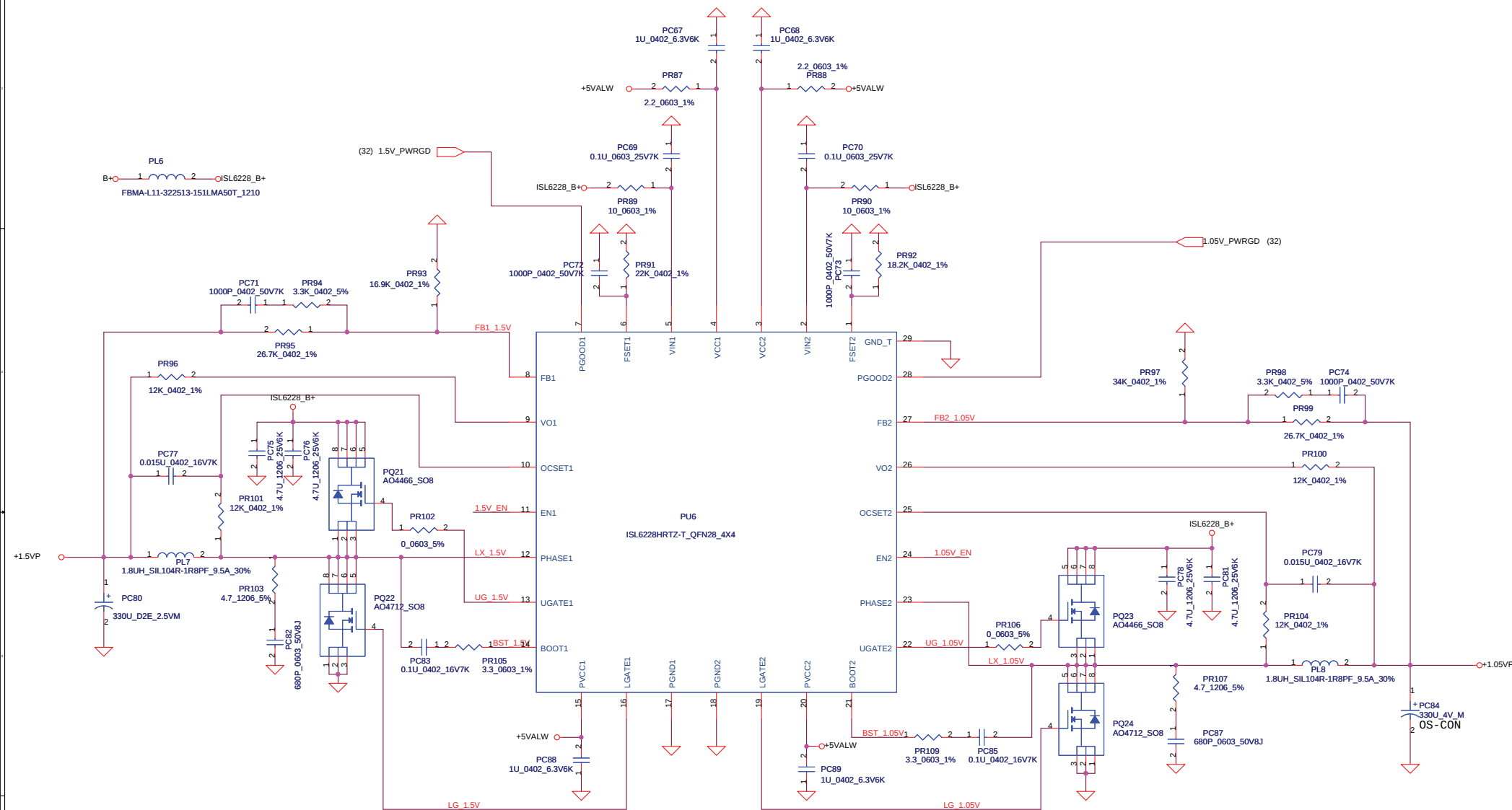
PH2 near main Battery CONN :
BAT. thermal protection at 92 degree C
Recovery at 56 degree C



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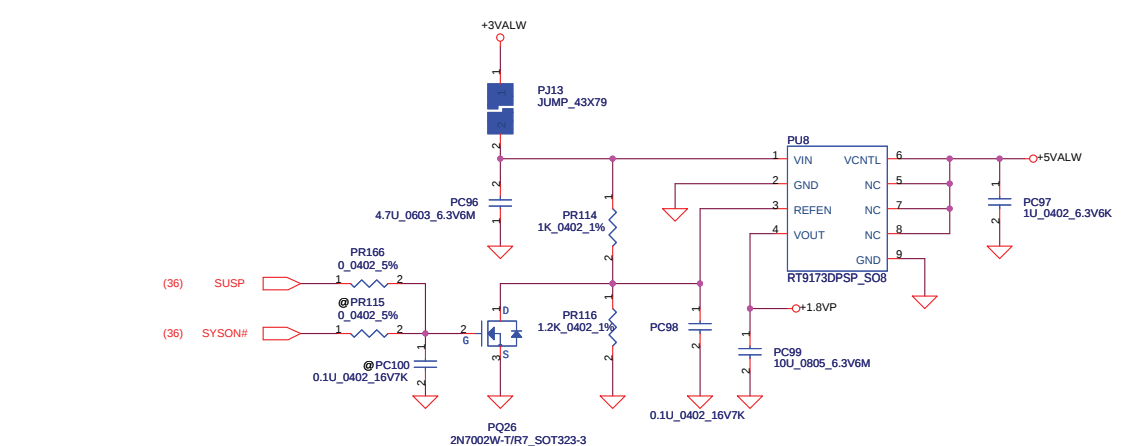
1.5VP Ipeak=9.45A ; Imax=6.615A
 DCR=10m ohm (max)
 $R_{ocset} = (I_{ocp} \cdot DCR) / (10E-06) = 12K \text{ ohm}$
 $I_{ocp} = 12A$
 $C_{sen} = L / (R_{ocset} \cdot DCR) = 0.015uF$

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

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

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

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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1		For 2nd source of ISL6237		39	Add PC103 SE000000K80(S CER CAP 1U 6.3V K X5R 0402) on Pin5 of PU4 to GND	2007 12/26	EVT
2		For EN function of PU4		39	Add PD12 SC100001K00(S DIO 1SS355 S0D323 T/R-5K)on pin 3 of PQ43 to VS	2007 12/26	EVT
3		Down size		39	Change PC38 from 0603 to 0402(SE076473K80)	2007 12/26	EVT
4		Down size		39	Change PC28 from 0805 to 0603(SE107475M80)	2007 12/26	EVT
5		Down size		37	Change PC7 from 1206 to 0603(SE0000005Z80)	2007 12/26	EVT
6		For more current		37	Change PD11 in SCS00002F00(S SCH DIO PDS1040-13 POWERDI5)	2007 12/26	EVT
7		For more current		37	Change PD1 in SCS00002F00(S SCH DIO PDS1040-13 POWERDI5)	2007 12/26	EVT
8		Down size		41	Change PC91 from 0805 to 0603(SE107475M80)	2007 12/26	EVT
9		Down size		41	Change PC96 from 0805 to 0603(SE107475M80)	2007 12/26	EVT
10		Down size		41	Change PC92 from 0603 to 0402(SE000000K80)	2007 12/26	EVT
11		Down size		41	Change PC97 from 0603 to 0402(SE000000K80)	2007 12/26	EVT
12		Down size		42	Change PC110 from 0603 to 0402(SE000000K80)	2007 12/26	EVT
13		Down size		42	Change PC112 from 0603 to 0402(SE074681K80)	2007 12/26	EVT
14		Down size		42	Change PC121 from 0603 to 0402(SE074681K80)	2007 12/26	EVT
15		Down size		42	Change PC128 from 0603 to 0402(SE0000003W00)	2007 12/26	EVT
16		Down size		38	Change PC14 from 0805 to 0603(SE026224K80)	2007 12/26	EVT
17		Down size		38	Change PC18 from 0805 to 0603(SE026224K80)	2007 12/26	EVT
18		Sourcer request		40	Change PC71、PC74 from NP0 to X7R (SE074102K80)	2008 01/14	EVT
19		DFX		37	Delete PD1	2008 01/14	EVT
20		OCP adjust		39	Change PL3、PL4 from 4.7uH to 10uH (SH0000002L80)	2008 01/14	EVT
21		OCP adjust		39	Change PR48、PR49 from 330K to 287K (SD0000005D80)	2008 01/14	EVT
22	HW request	Set 1.5V==>1.54V, 1.05V==>1.07V		40	Change PR95、PR99 from 25.5K to 26.7K (SD034267280)	2008 01/14	EVT
23	HW request	Set 5V==>5.138V		39	Change PR41 from 61.9K to 63.4K (SD03463K280)	2008 04/17	DVT

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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	Date	Phase
24	Thermal request	Change protect point from 92 to 86 degree C		38	Change PR22 from 15.4K to 16.9K (SD034169280)	2008 04/17	DVT
25		3G EMI request			Delete PR36、PR37、PR103、PR107、PC33、PC34、PC82、PC87 "@" mark	2008 04/22	DVT
26					Change PR105、PR109、PR130、PR144 from 0 to 2.2		
27		3G EMI request		40	Change PR105、PR109 from 2.2 to 3.3	2008 05/21	PVT
28	EPA power	HW request		41	Add PR167, mark "@" PR112	2008 05/27	PVT
29		EMI request		37	Delete PJ4, add PL12 (SM010020720)	2008 05/27	PVT
30		3G EMI request		39	Change PR38、PR39 from 0 to 2.2	2008 05/29	PVT
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2008
06/06
delete

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