

MODEL NAME : *NIM10*

PCB NO : *LA-5732P (DA60000EI00)*

BOM P/N : *43178431L01*

Compal Confidential

SAMOS Schematics Document

Intel Pineview-M Processor with TigerPoint

2009-8-21

REV: 0.2

@ : Nopop Component

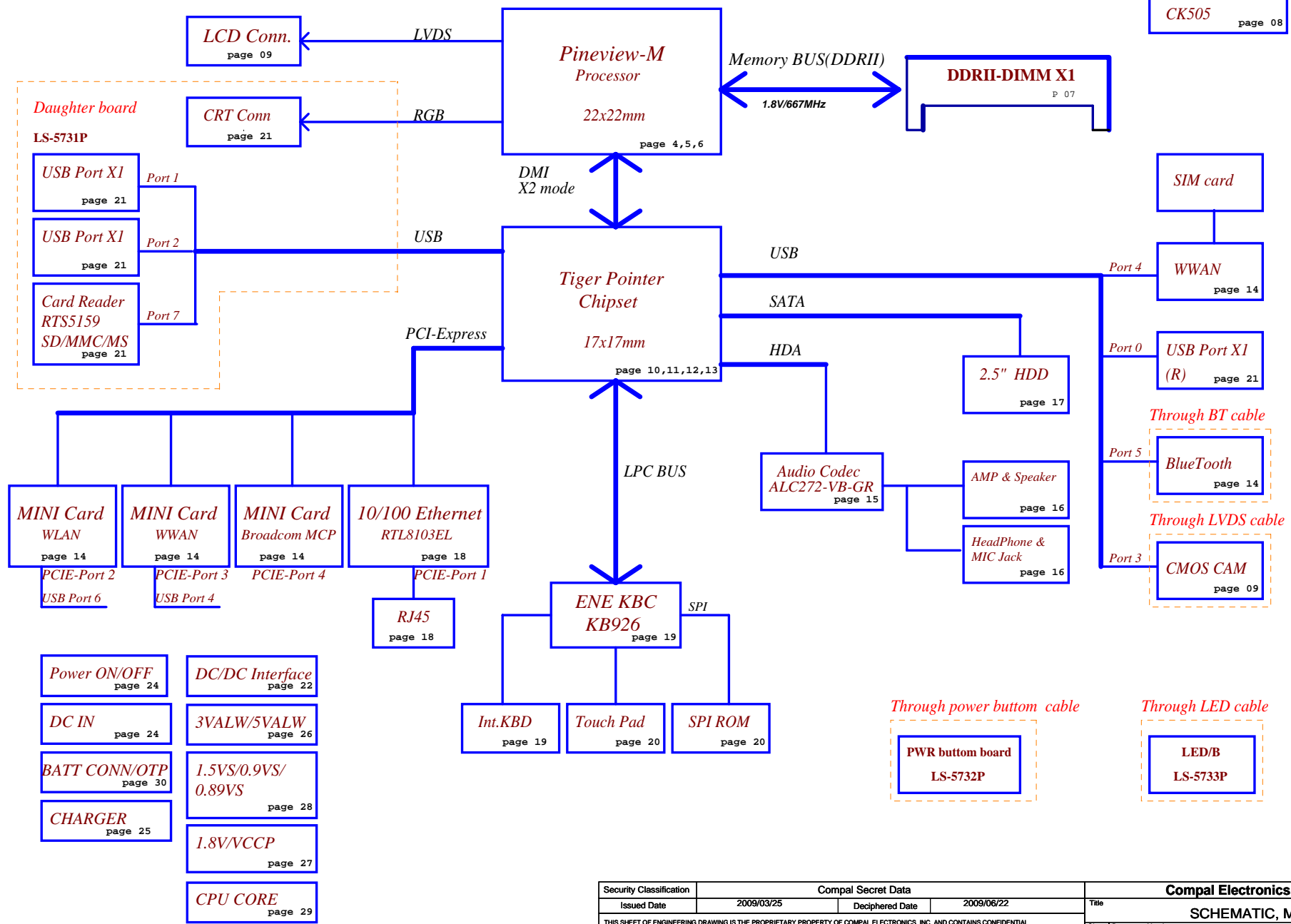
Security Classification	Compal Secret Data			Compal Electronics, Inc.		
Issued Date	2009/03/25	Deciphered Date	2009/06/22	Title	SCHEMATIC, MB A5732	
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Model Name : NIM10
 Project Code:
 Project Name : LA-5732P

Thermal Sensor
 W83L771AWG
 page 5

Clock Generator
 CK505
 page 08



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Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+0.9VS	0.9V switched power rail for DDR terminator	ON	OFF	OFF
+VCCP	VCCP switched power rail	ON	OFF	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.8V	1.8V power rail for DDR	ON	ON	OFF
+0.89VS	CORE VOLTAGE FOR CPU VGA	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	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
+VS	VS always on power rail	ON	ON	ON*
+RTCBATT	RTC power	ON	ON	ON

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

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

BOARD ID Table(Page 19)

VCC	3.3V +/- 5%					
ID	BRD ID	Ra	Rb	Vab (Min)	Vab (Type)	Vab (Max)
0	R01 (SSI)	NC	0	0V	0V	0.155V
1	R02 (ST)	100K +/- 5%	8.2K +/- 5%	0.168V	0.250V	0.362V
2	R10 (X build)	100K +/- 5%	18K +/- 5%	0.375V	0.503V	0.621V
3	Reserved	100K +/- 5%	33K +/- 5%	0.634V	0.819V	0.945V
4	Reserved	100K +/- 5%	56K +/- 5%	0.958V	1.185V	1.359V
5	Reserved	100K +/- 5%	100K +/- 5%	1.372V	1.650V	1.838V
6	Reserved	100K +/- 5%	200K +/- 5%	1.851V	2.200V	2.420V
7	MP	100K +/- 5%	NC	2.433V	3.300V	3.300V

External PCI Devices

DEVICE	IDSEL #	REQ/GNT #	PIRQ
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No PCI Device

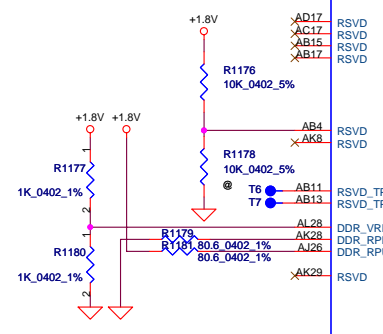
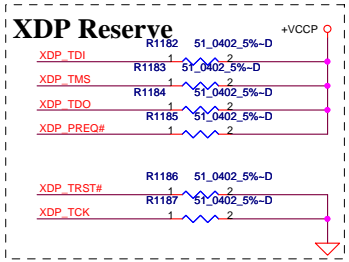
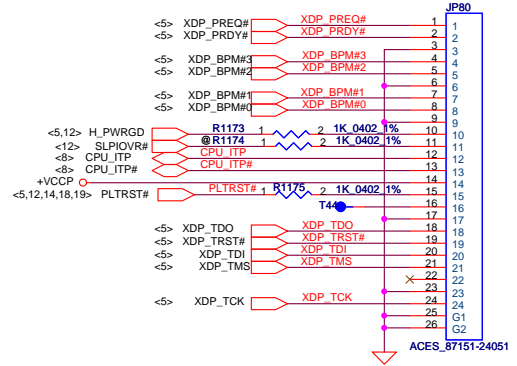
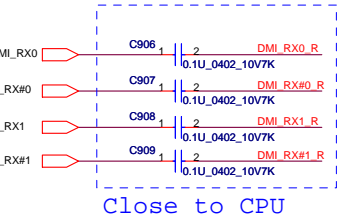
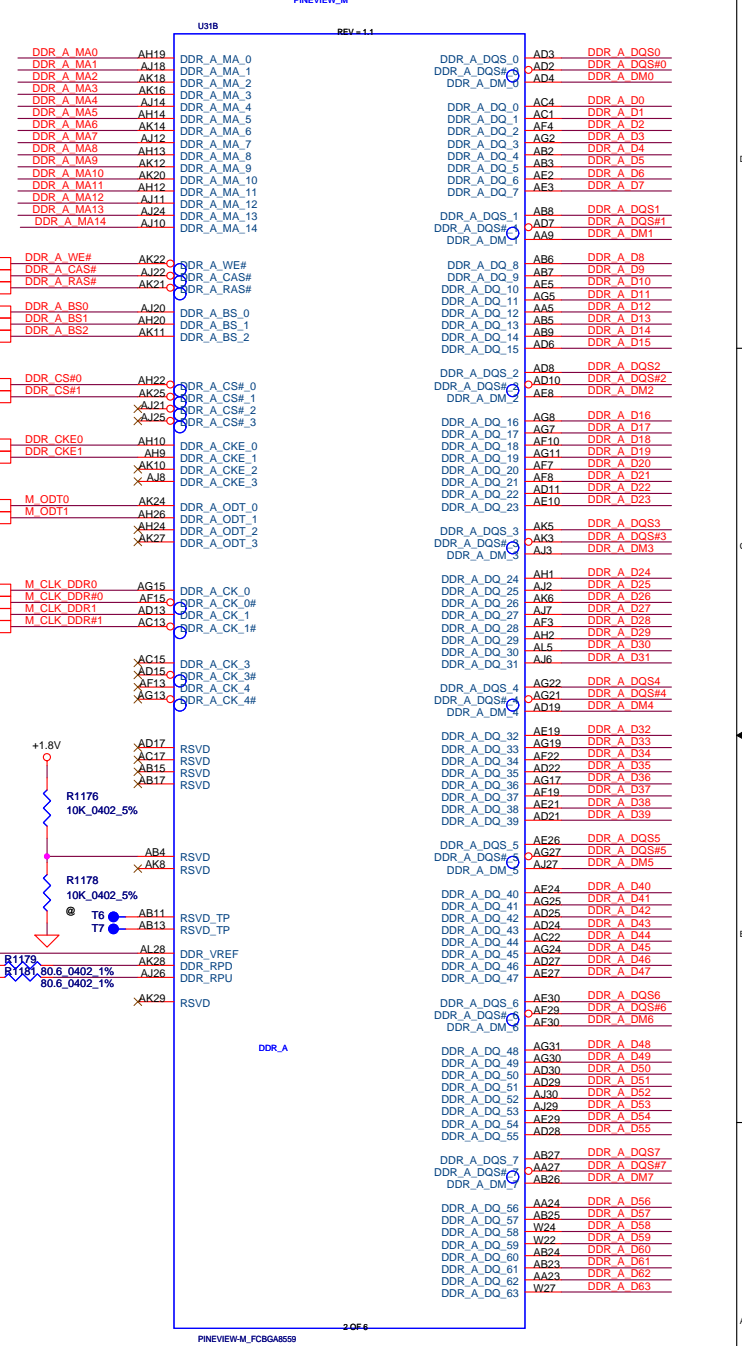
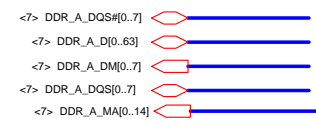
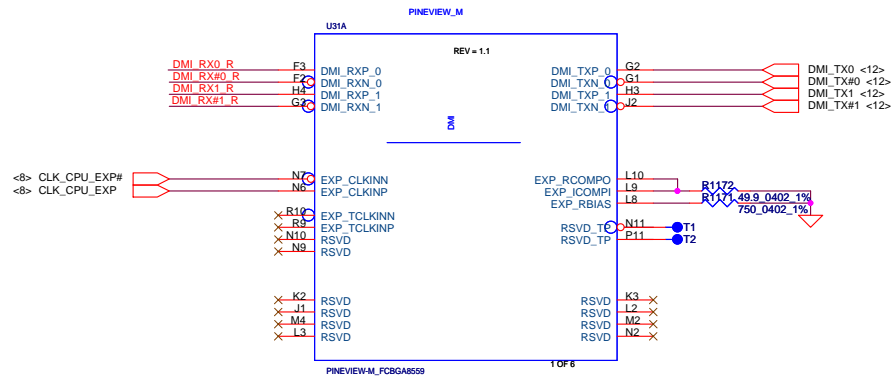
EC SM Bus1 address

EC SM Bus2 address

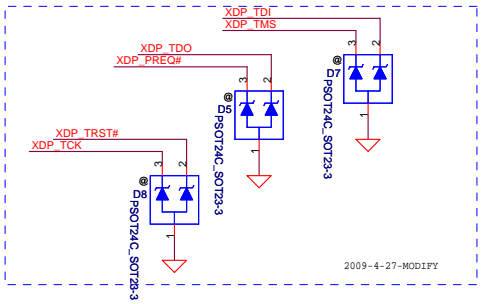
Device	Address	Device	Address
Smart Battery	0001 011X b	W83L771AWG	1001_100X b
EEPROM(24C16/02)	1010 000X b	EMC1402	100_1100X b

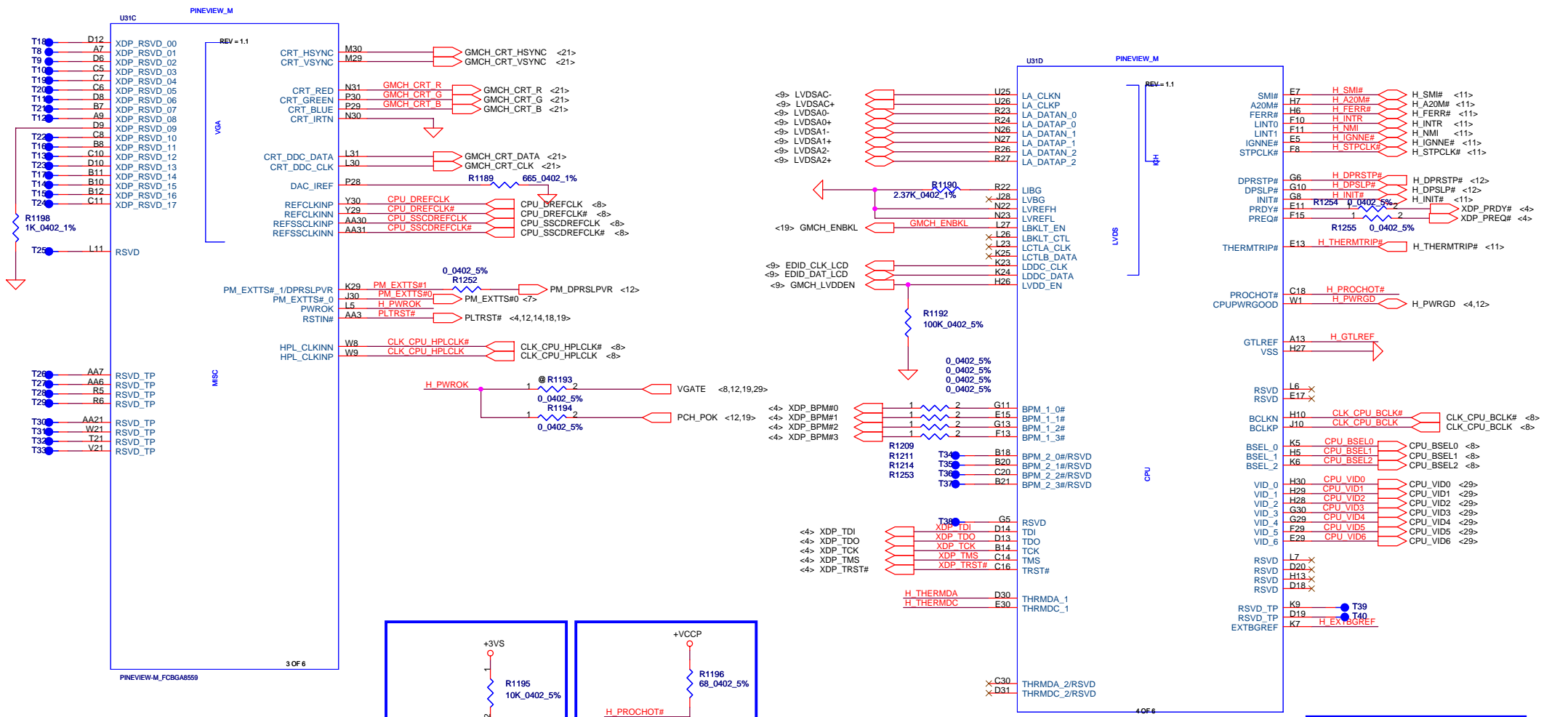
Tiger Point SM Bus address

Device	Address
Clock Generator (SLG8SP556VTR)	1101 001Xb
DDR DIMMA	1010 000Xb

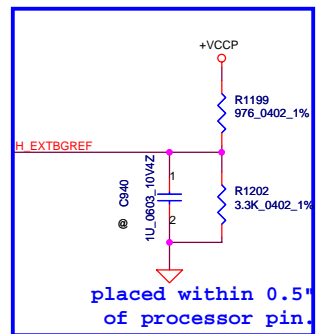
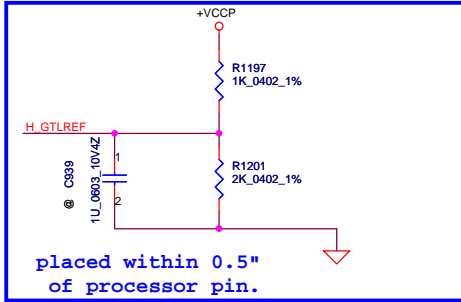
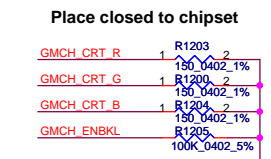
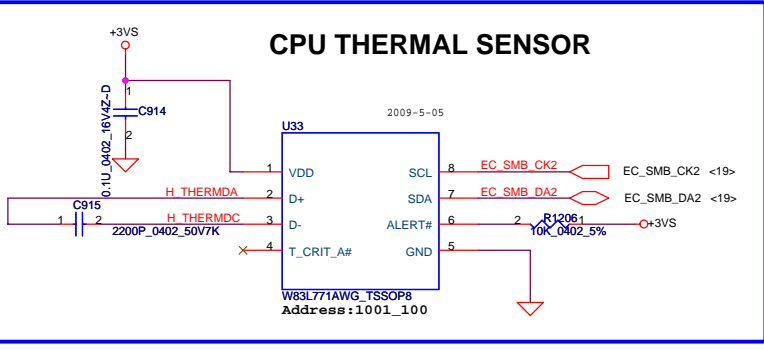
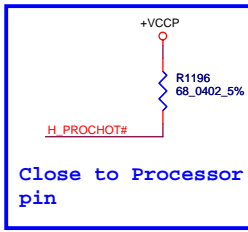
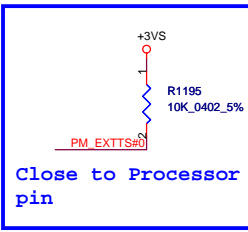


Signal Name	Description	Direction	Type
BCLKP[0] BCLKN[0]	Differential Core Clock In	I	Diff Clk CMOS
HPL_CLKINP HPL_CLKINN	Differential Host Clock In	I	Diff Clk CMOS
EXP_CLKINP EXP_CLKINN	Differential DMI Clock In	I	Diff Clk CMOS
REFCLKINP REFCLKINN	Differential PLL Clock In	I	Diff Clk CMOS
REFSSCLKINP REFSSCLKINN	Differential Spread Spectrum Clock In	I	Diff Clk CMOS





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



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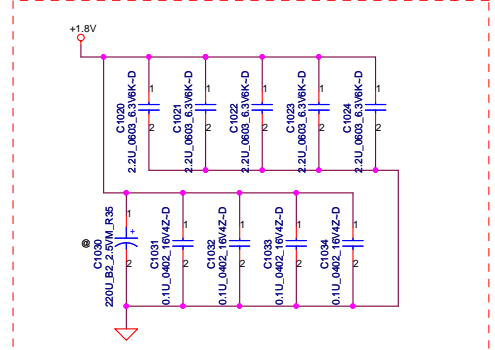
- <-> DDR_A_DQS#[0..7]
- <-> DDR_A_DQ[0..63]
- <-> DDR_A_DM[0..7]
- <-> DDR_A_DQS#[0..7]
- <-> DDR_A_MA#[0..14]

Share +DIMM_VREF for
1.DDRII VREF
2.GMCH SM_VREF_0
SM_VREF_1

Layout Note:
Place near JDIM1

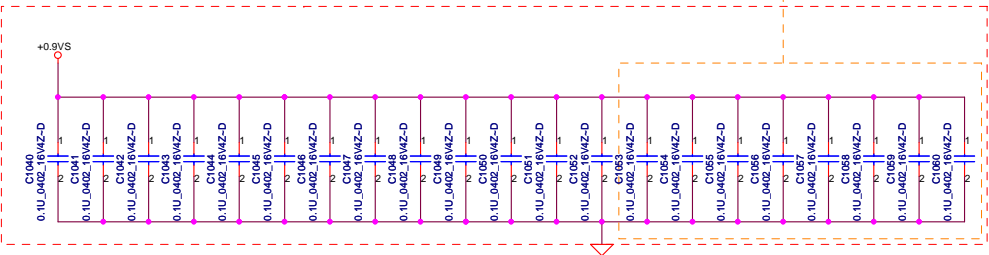
Layout Note:
Place near JDIM1

2099-5-27 modify



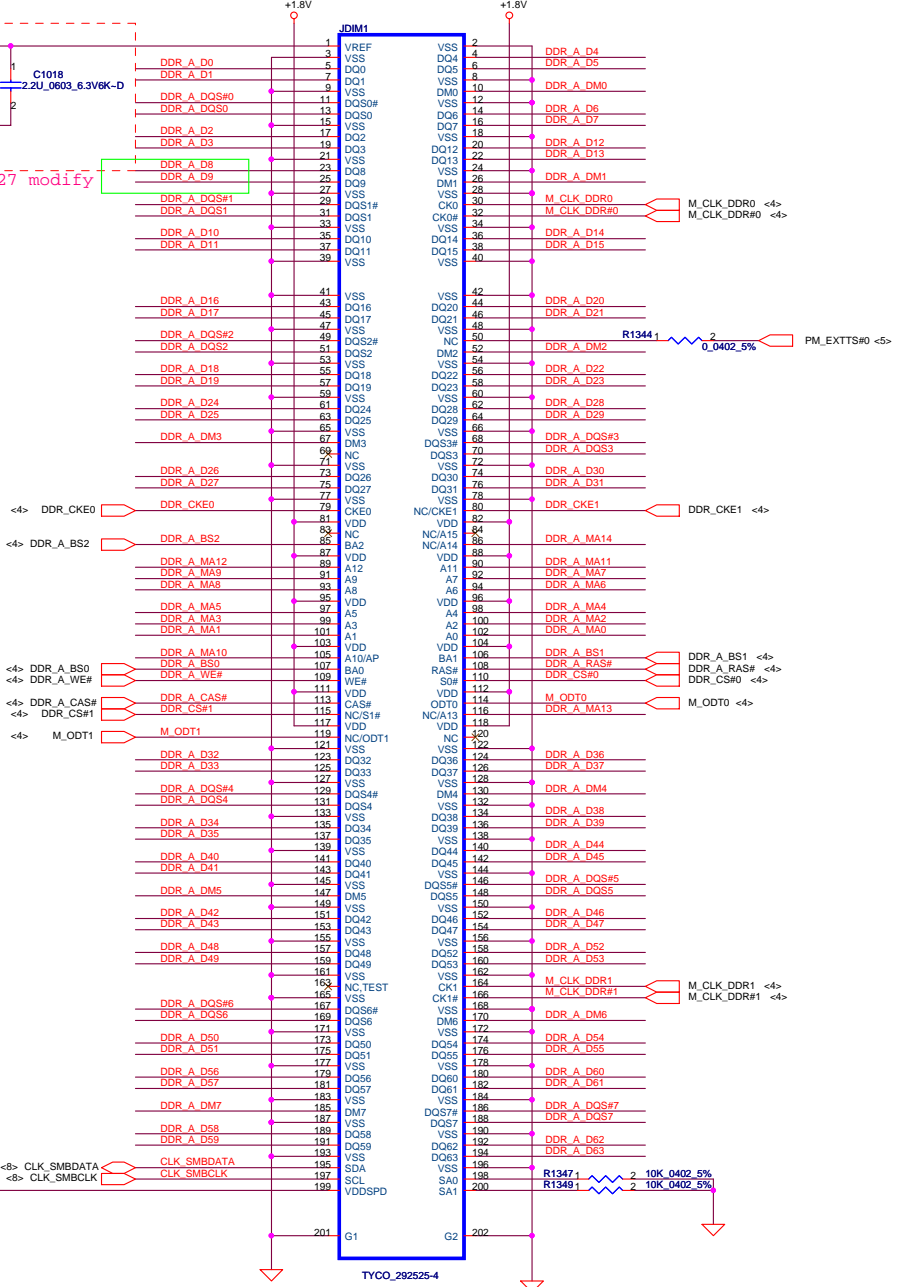
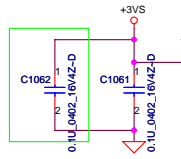
Layout Note:
Place one cap close to every 2 pull-up resistors terminated to +0.9VS.

Schematic Note:
Follow Intel check list recommend, we add 8 CAP.



Layout Note:
Place these resistor closely DIMMA, all trace length Max=1.0"

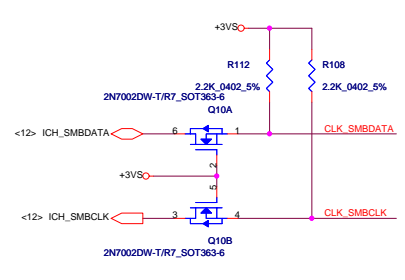
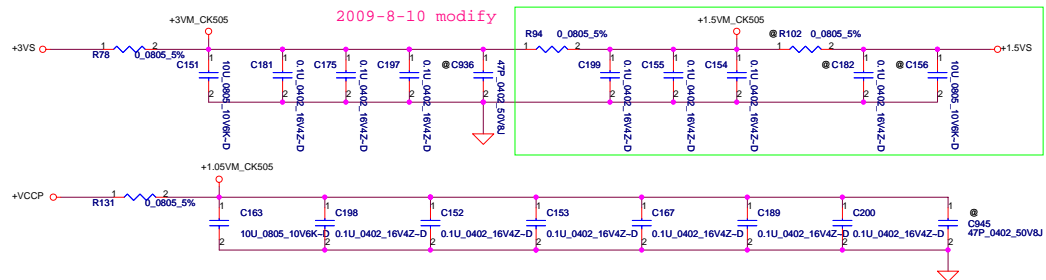
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DIMM_A (REV)

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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								



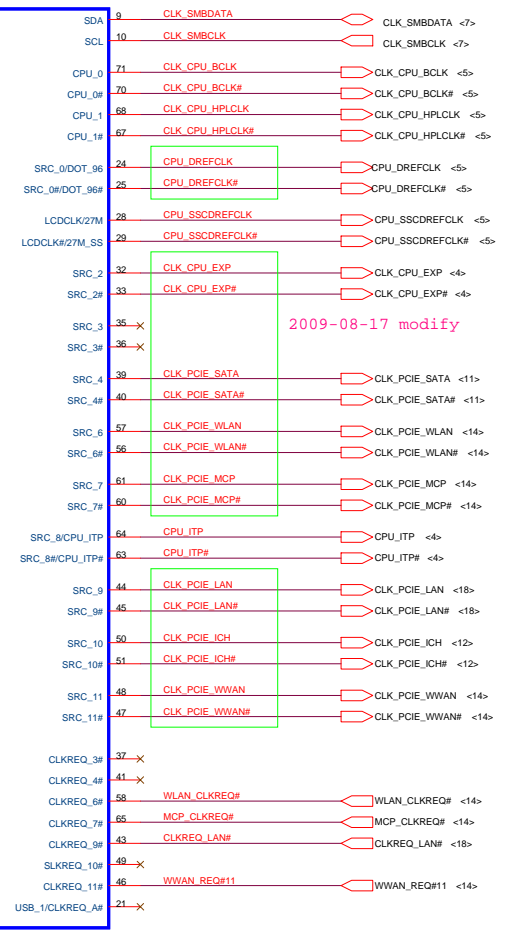
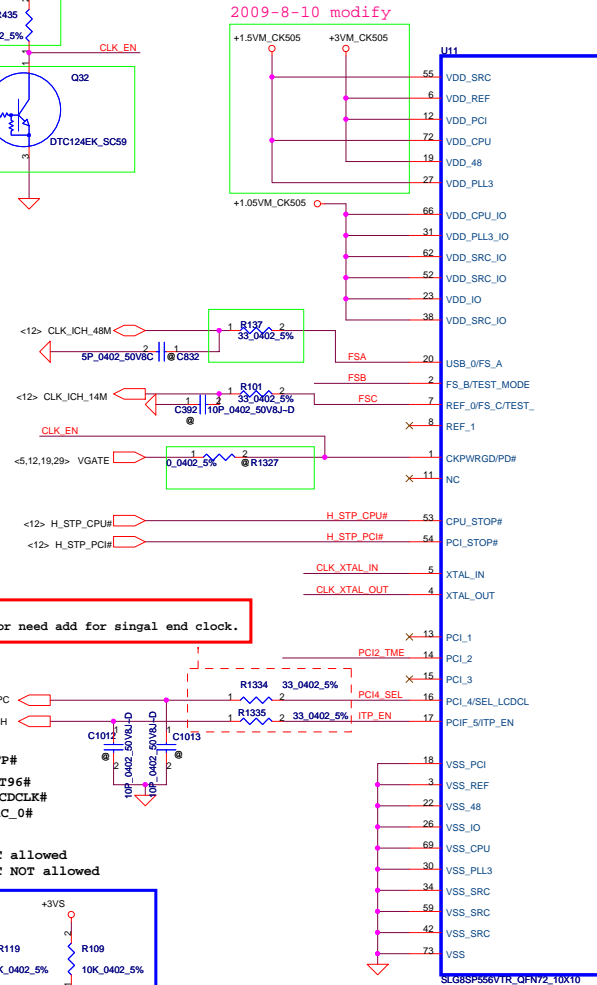
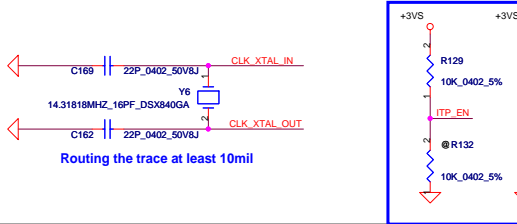
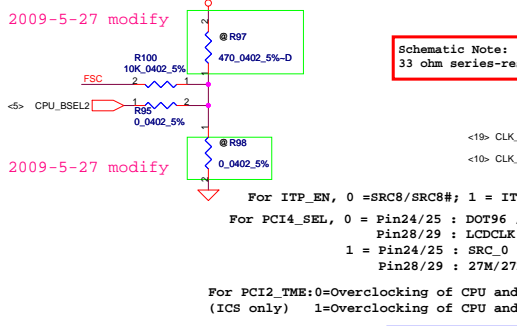
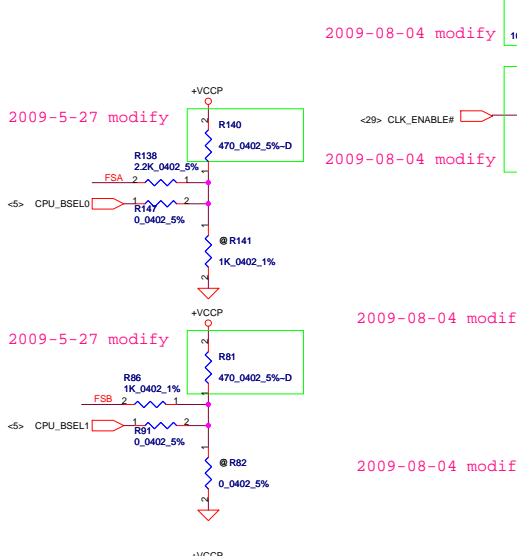
SA000020K00 (Silago : SLG8SP556VTR)
SA000020H10 (ICS : ICS9LPRS387AKLFT)

Co-Layout circuit

Silago, ICS	+3VS	De-pop R102, pop R94
Realtek	+3VS, +1.5VS	De-pop R94, pop R102

SRC PORT LIST

PORT	DEVICE
SRC0	CPU_VGA
SRC2	DMI
SRC3	
SRC4	PCIE_SATA
SRC6	PCIE_WLAN
SRC7	PCIE_MCP
SRC8	CPU_XDP
SRC9	PCIE_LAN
SRC10	PCIE_TigerPoint
SRC11	PCIE_WWAN



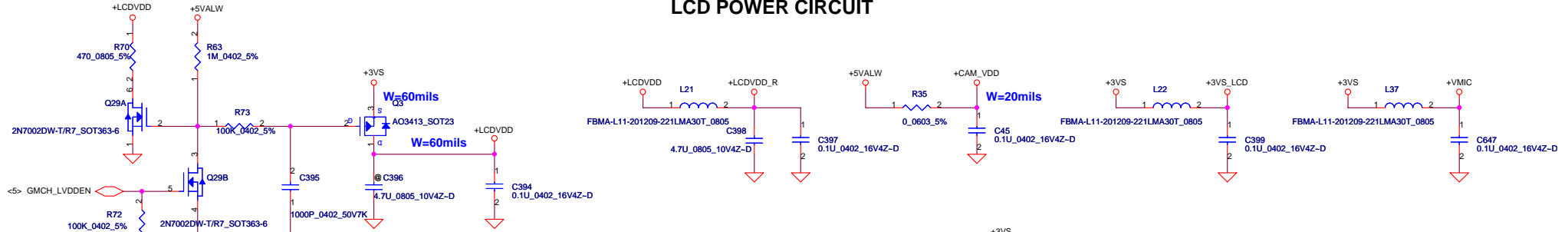
Schematic Note:
 33 ohm series-resistor need add for singal end clock.

For ITP_EN, 0 =SRC8/SRC8#; 1 = ITP/ITP#
 For PCI4_SEL, 0 = Pin24/25 : DOT96 / DOT96#
 Pin28/29 : LCDCLK / LCDCLK#
 1 = Pin24/25 : SRC_0 / SRC_0#
 Pin28/29 : 27M/27M_SS

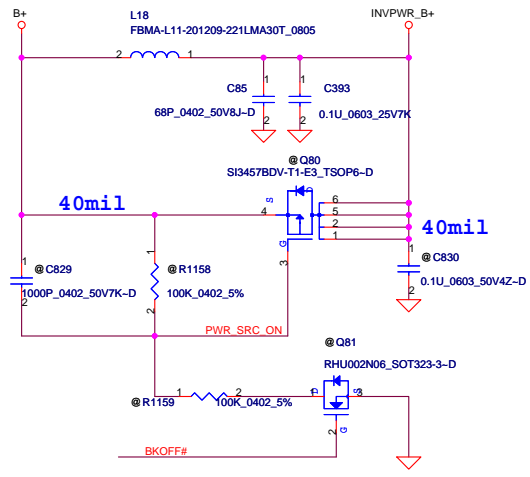
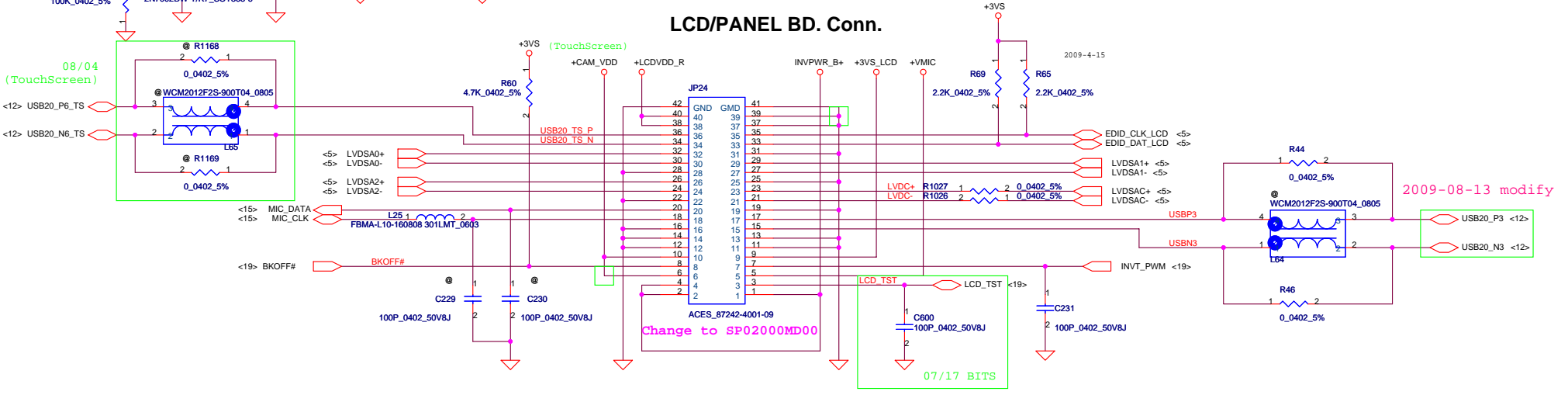
For PCI2_TME:=Overclocking of CPU and SRC allowed
 (ICS only) 1=Overclocking of CPU and SRC NOT allowed

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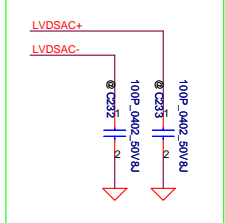
LCD POWER CIRCUIT



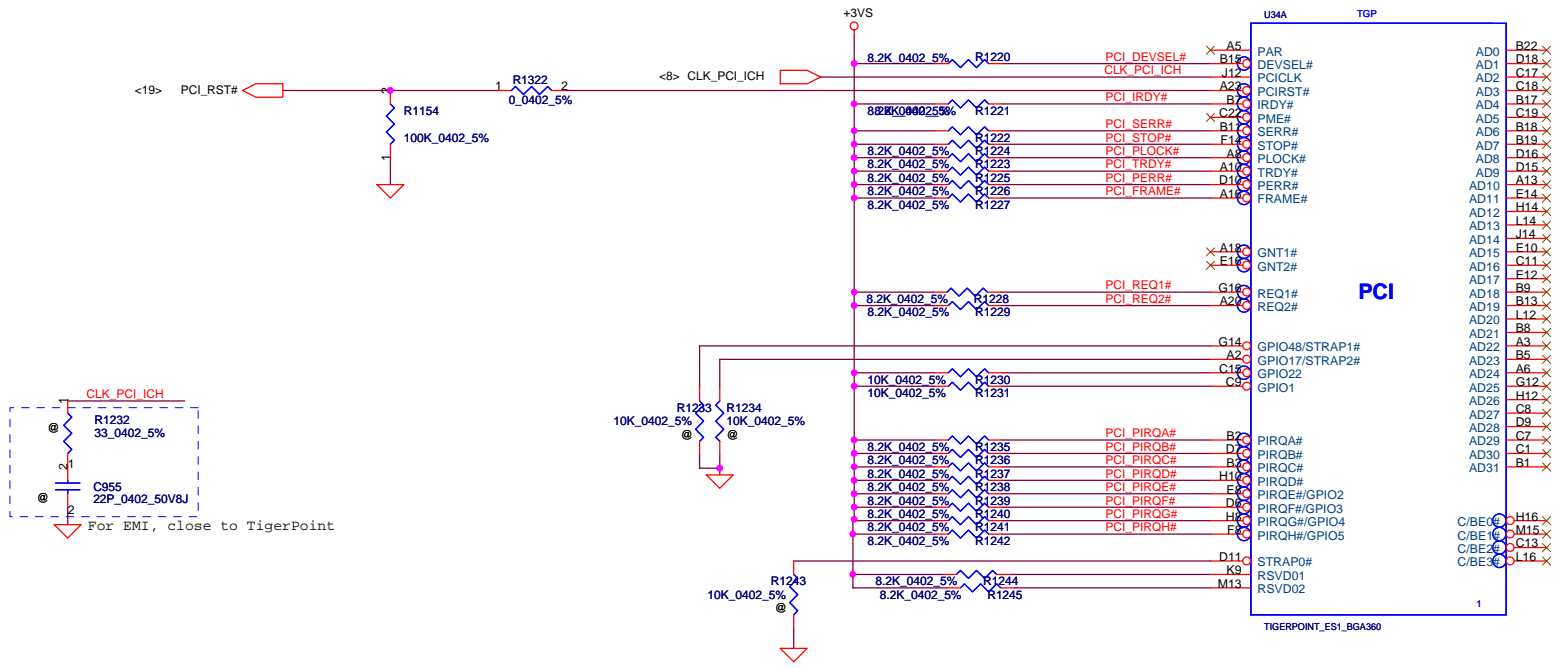
LCD/PANEL BD. Conn.



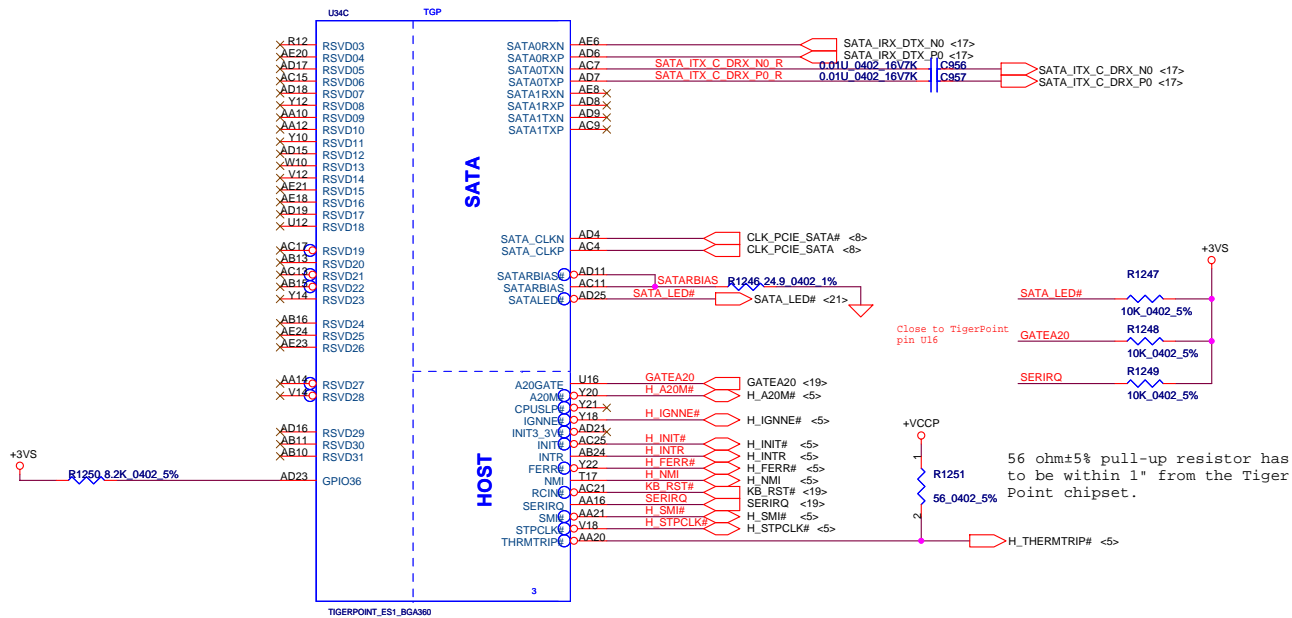
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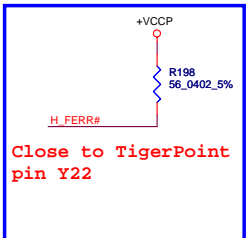


Close to TigerPoint pin U16

+3VS

+VCCP

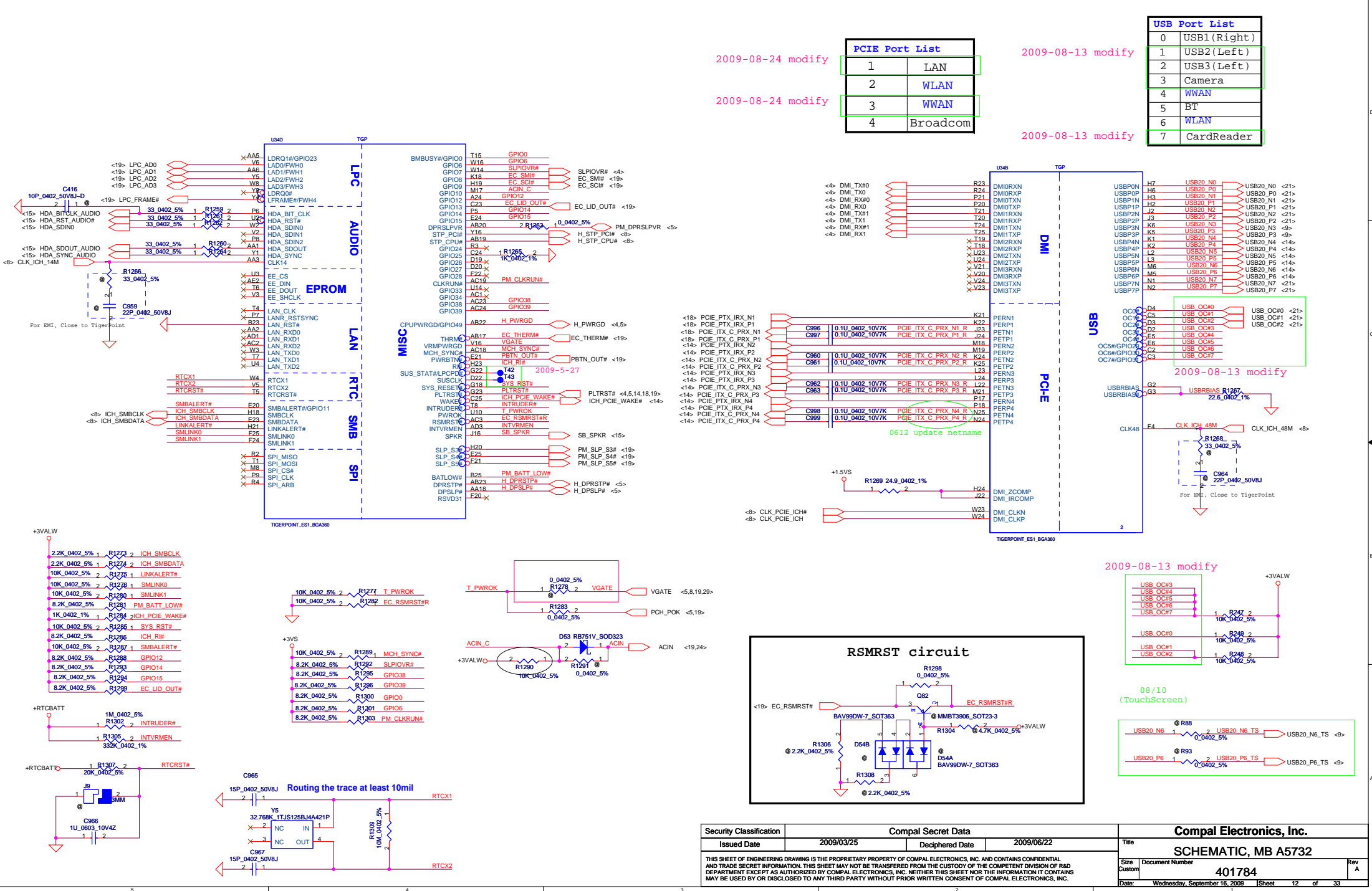
56 ohm+5% pull-up resistor has to be within 1" from the Tiger Point chipset.



ESD request

H_A20M#	C450	2	100P_0402_50V8J
H_IGNNE#	C451	2	100P_0402_50V8J
H_INIT#	C452	2	100P_0402_50V8J
H_INTR	C453	2	100P_0402_50V8J
H_FERR#	C454	2	100P_0402_50V8J
H_NMI#	C455	2	100P_0402_50V8J
H_SMI#	C456	2	100P_0402_50V8J
H_STPCLK#	C457	2	100P_0402_50V8J

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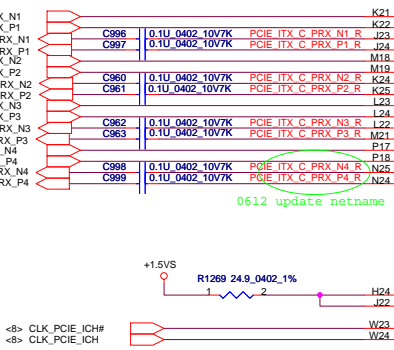


PCIe Port List	
1	LAN
2	WLAN
3	WWAN
4	Broadcom

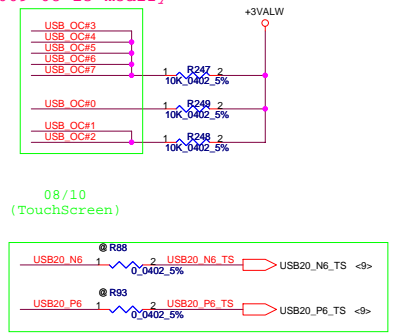
2009-08-24 modify
2009-08-24 modify

2009-08-13 modify
2009-08-13 modify

USB Port List	
0	USB1(Right)
1	USB2(Left)
2	USB3(Left)
3	Camera
4	WWAN
5	BT
6	WLAN
7	CardReader

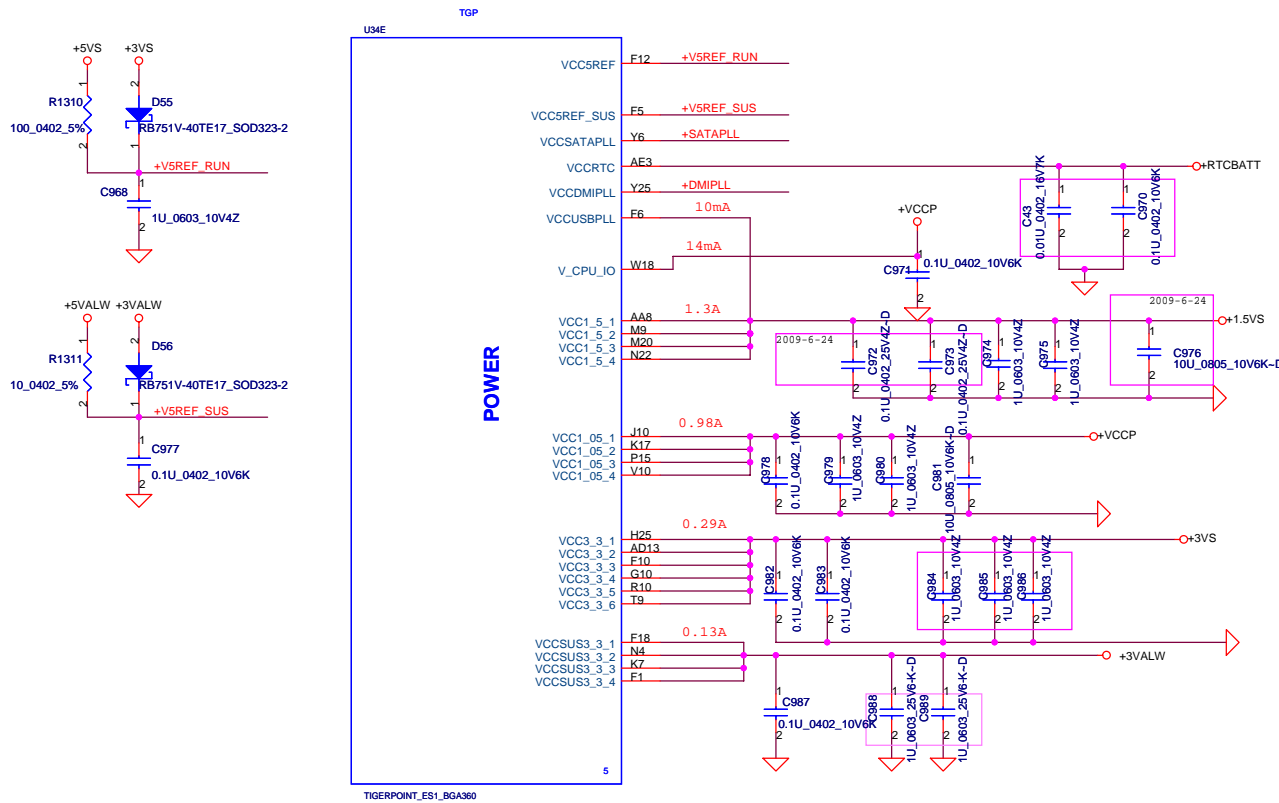


RSMRST circuit

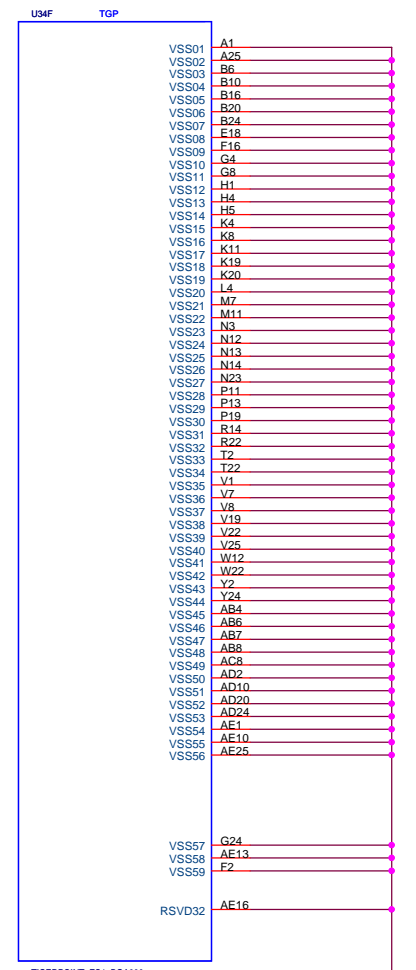


2009-08-13 modify
08/10 (TouchScreen)

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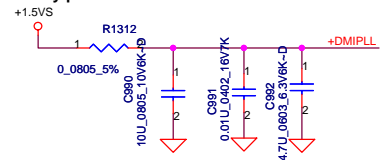


TIGERPOINT_ES1_BGA360

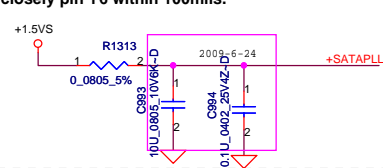


TIGERPOINT_ES1_BGA360

Place closely pin Y25 within 100mlis.

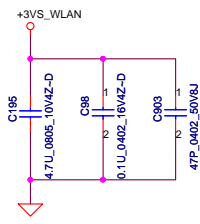


Place closely pin Y6 within 100mlis.

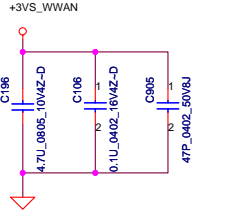
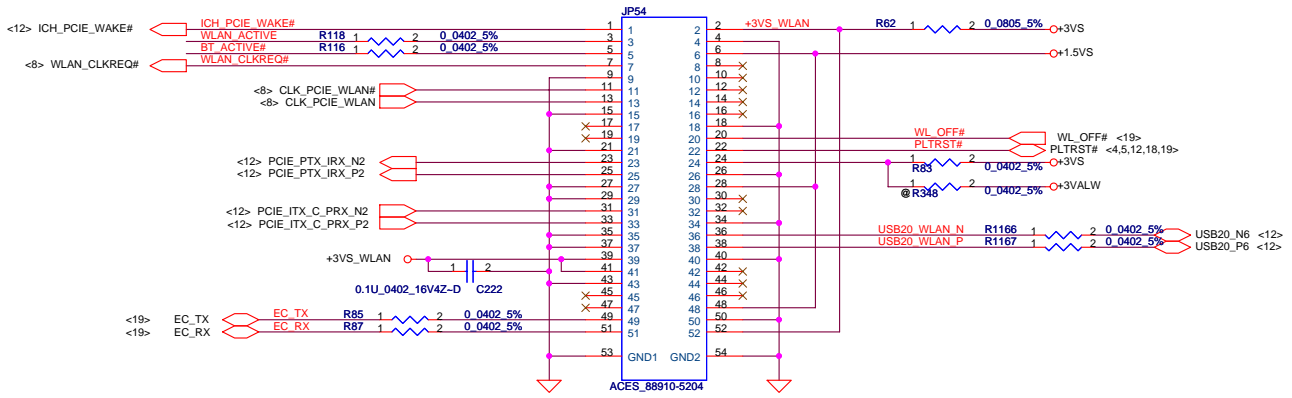
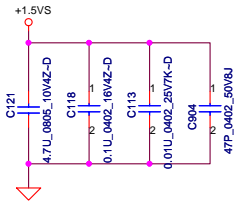


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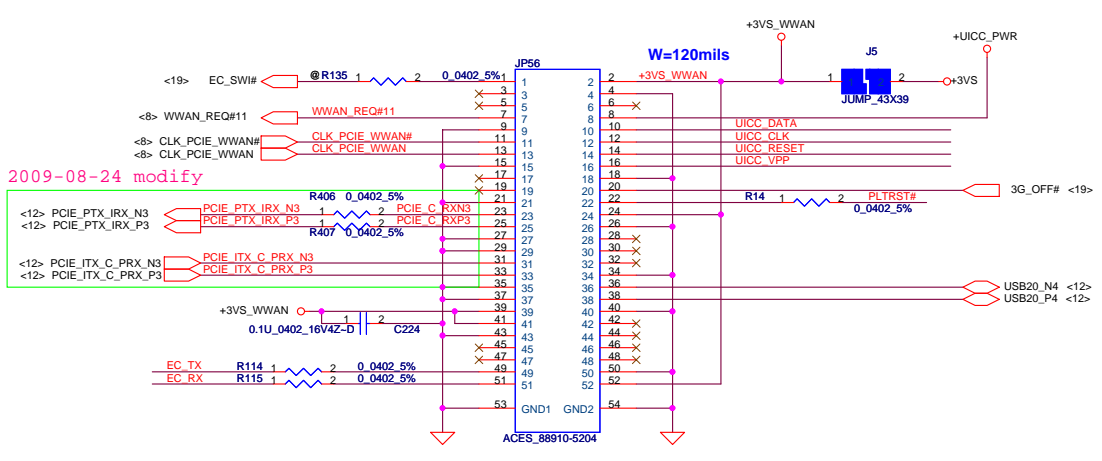
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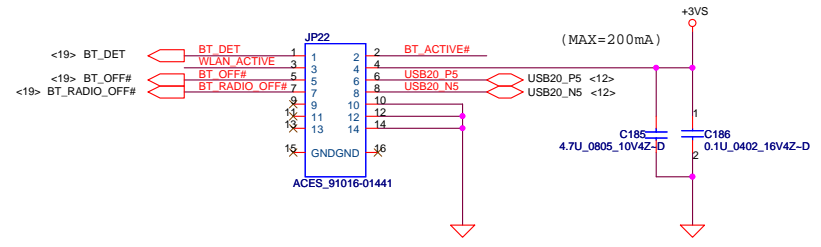
Mini-Express Card for WLAN



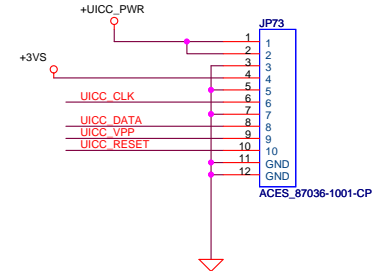
Mini-Express Card for WWAN



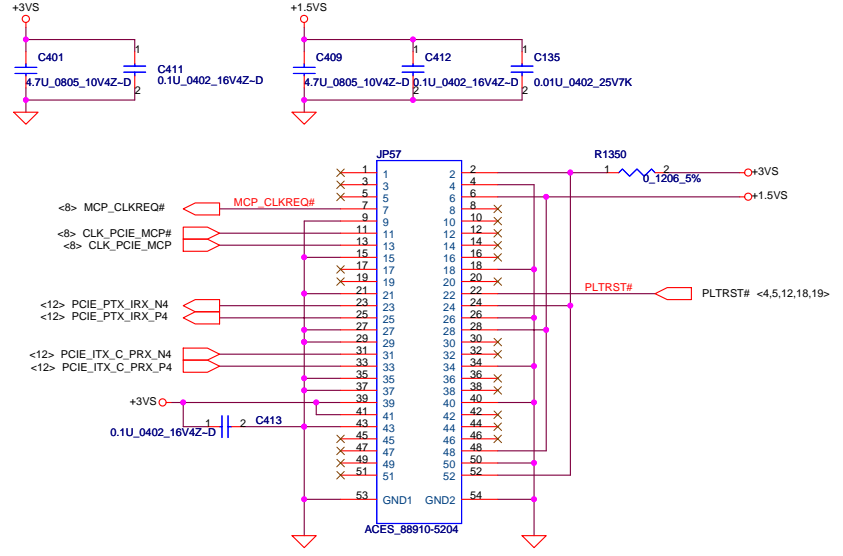
BlueTooth Interface



SIM Interface



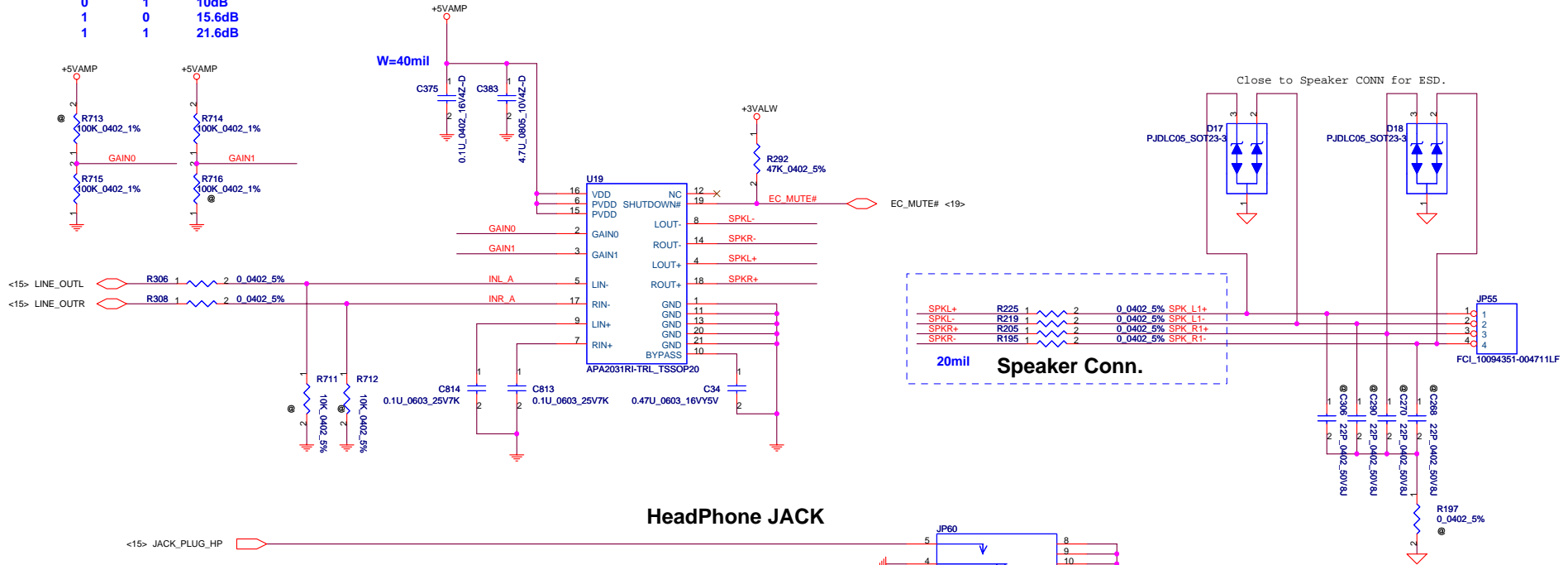
Mini-Express Card for Broadcom MCP



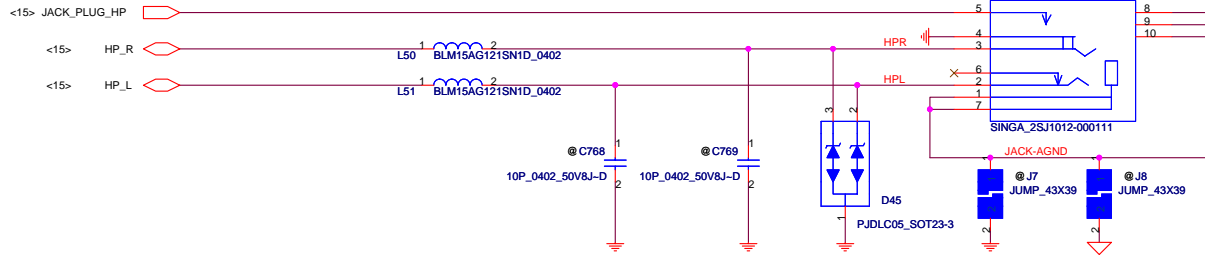
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APA2031A SPK Amplifier

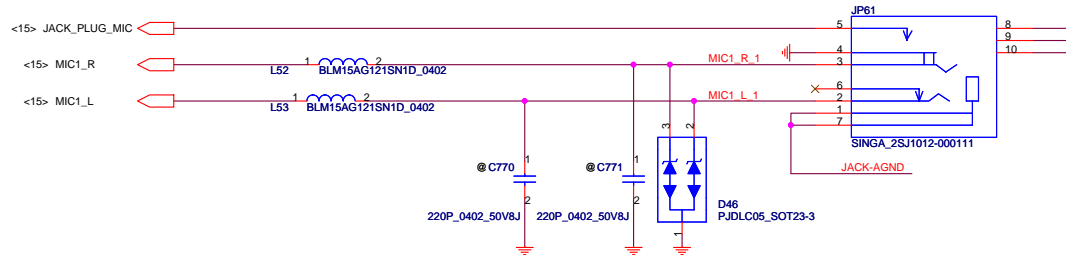
GAIN0	GAIN1	
0	0	6dB
0	1	10dB
1	0	15.6dB
1	1	21.6dB



HeadPhone JACK

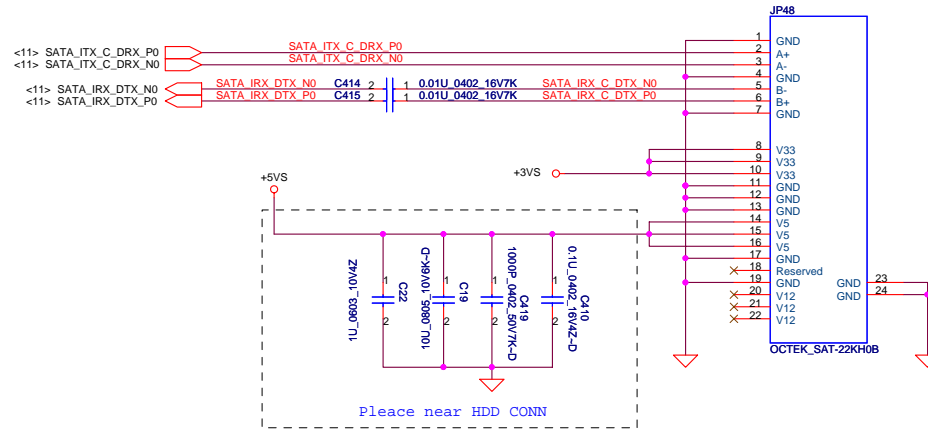


Ext.MIC JACK



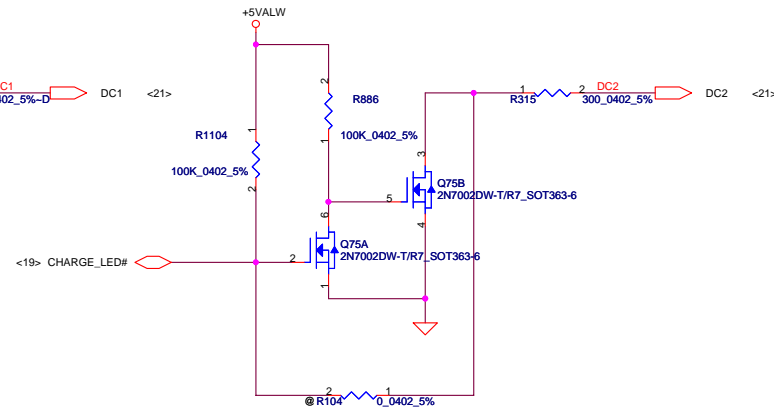
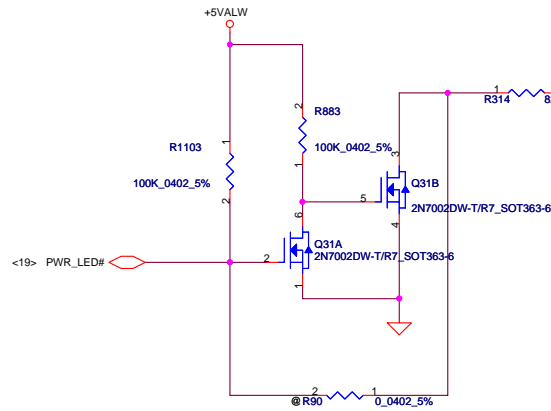
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For SATA HDD



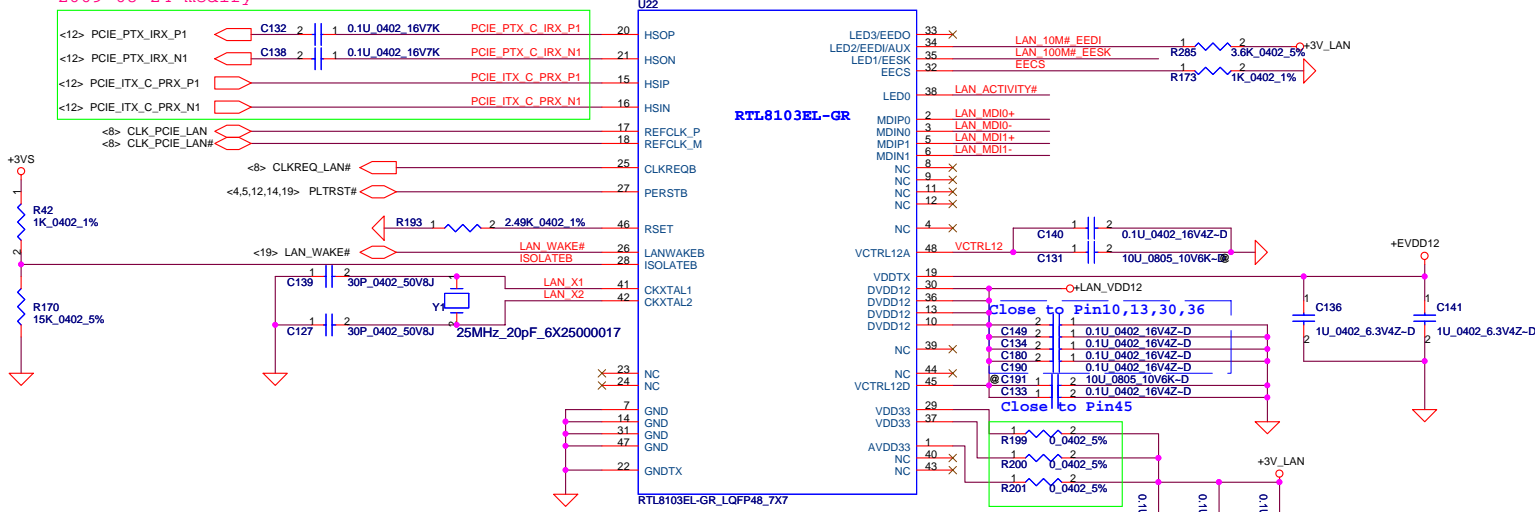
POWER LED

BATT CHARGE LED



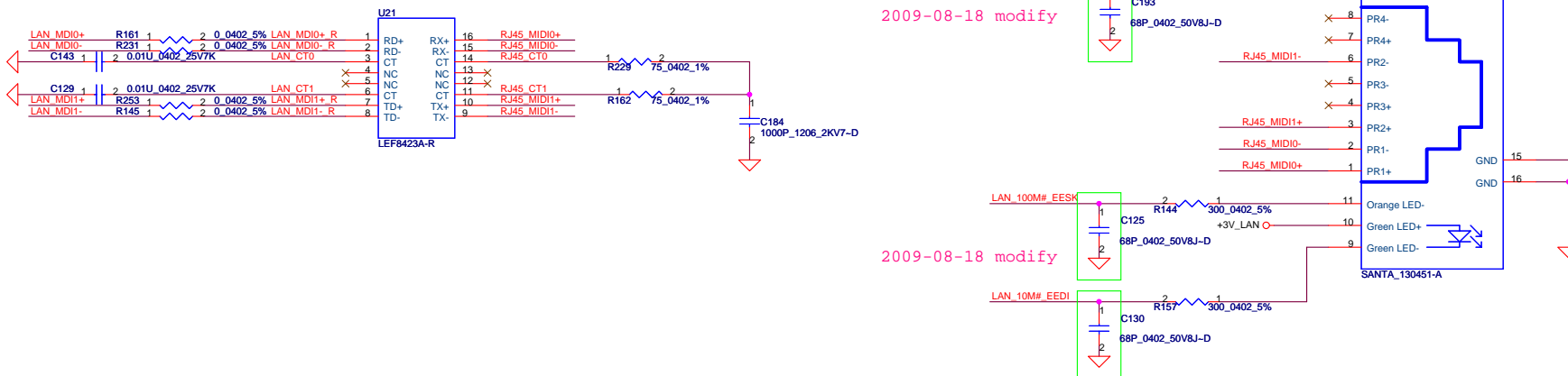
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2009-08-24 modify

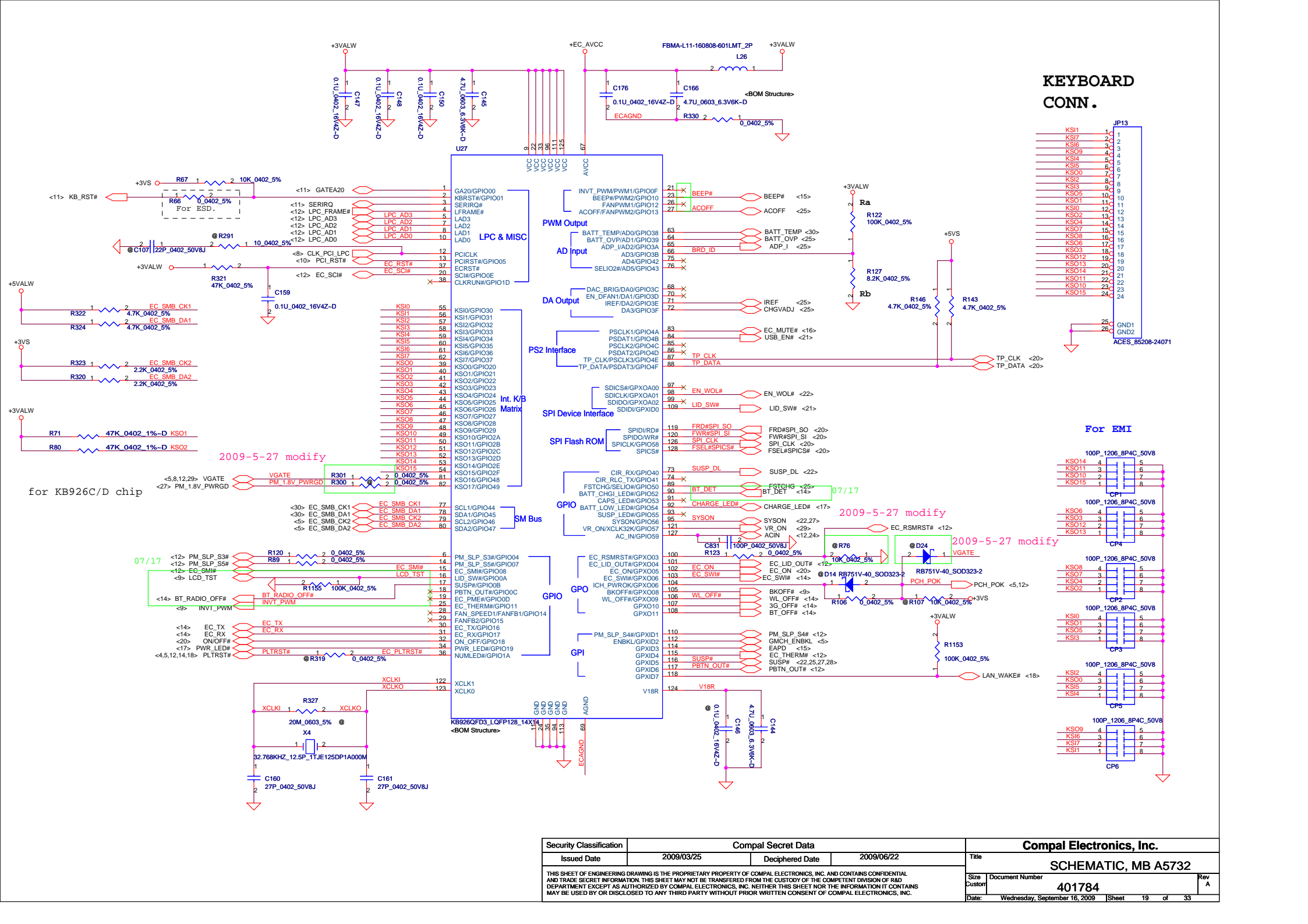


2009-08-18 modify

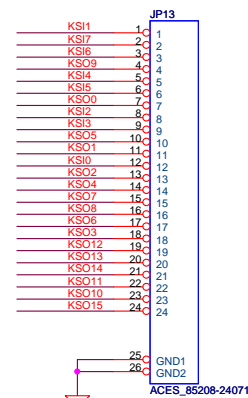
RJ45 symbol need update



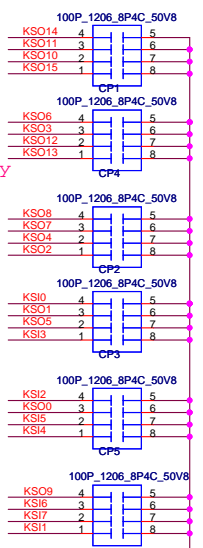
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KEYBOARD CONN.



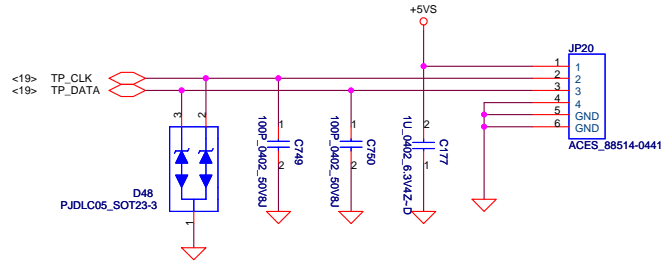
For EMI



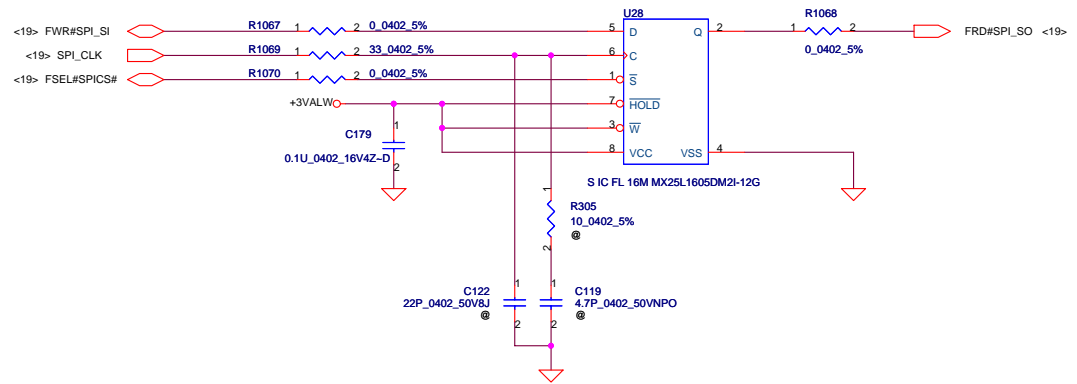
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Need to create symbol and footprint for MX SPI ROM

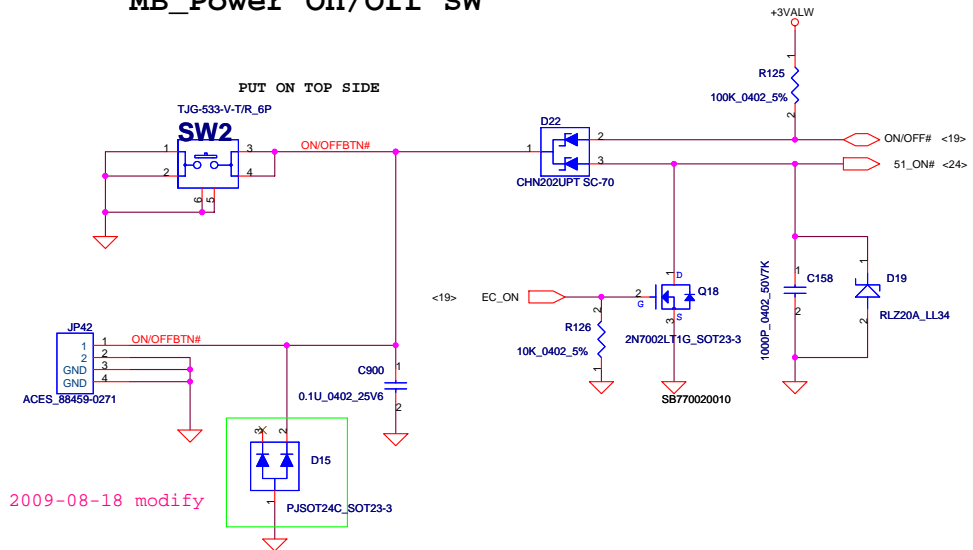
Touch/B Connector



System SPI Flash ROM (16Mb)

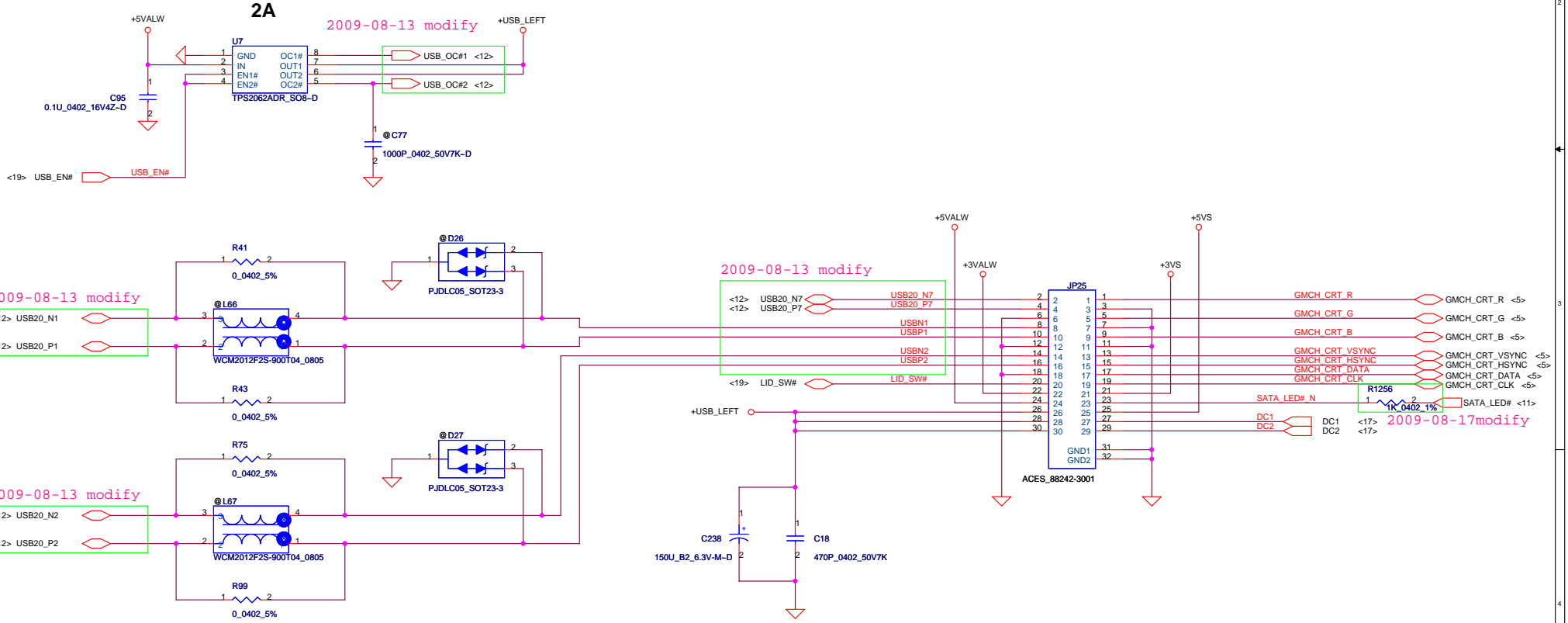
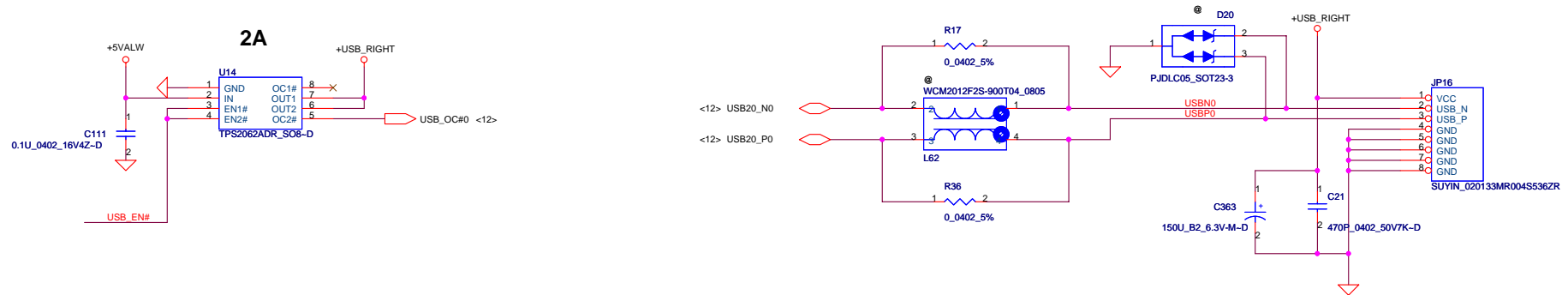


MB_Power On/Off SW

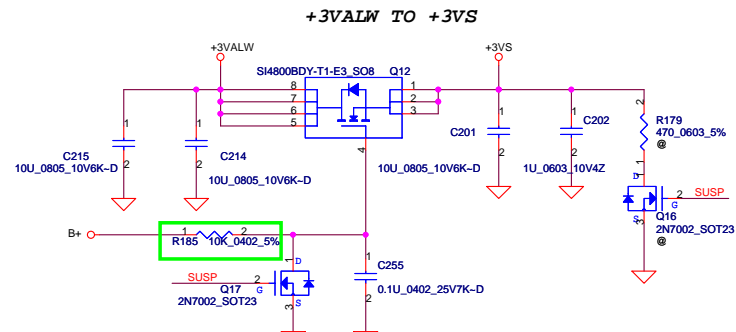
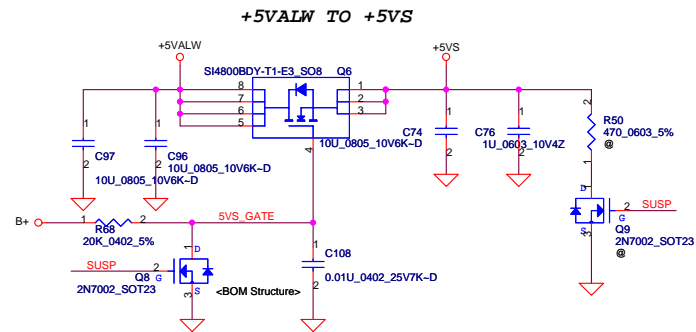


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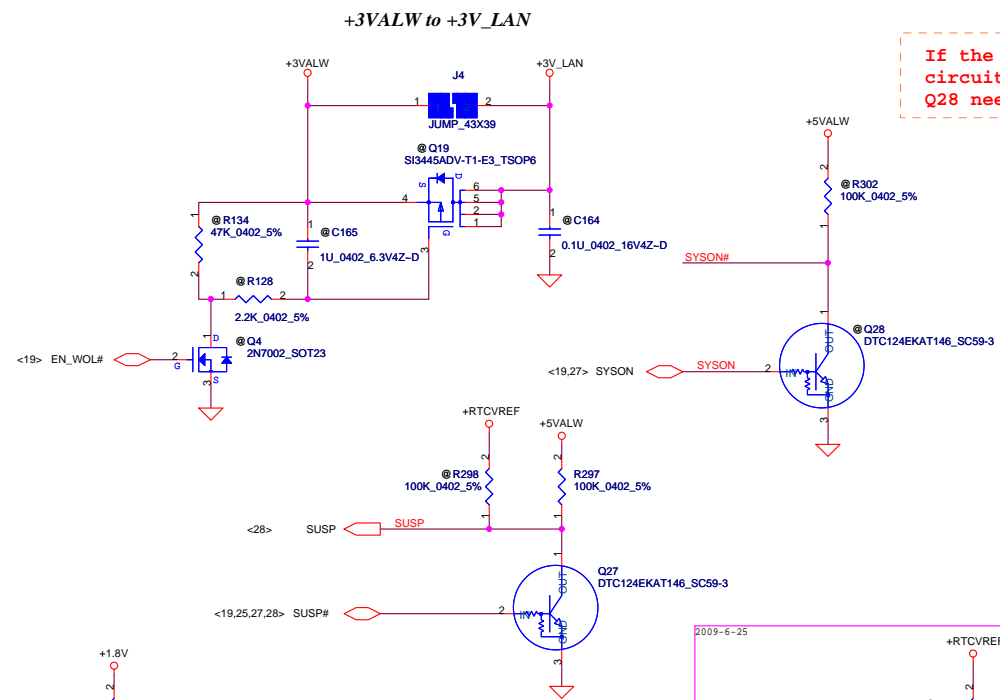
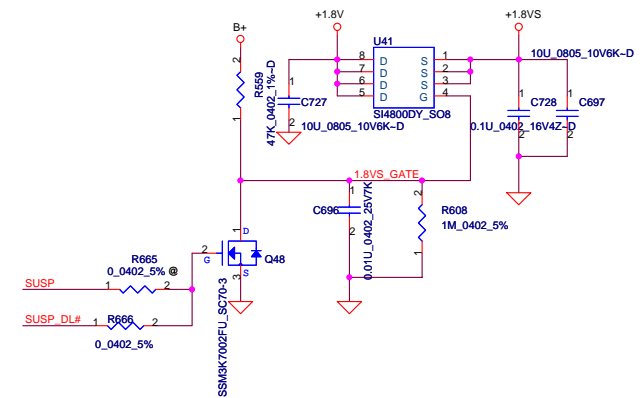
On Board USB Connector



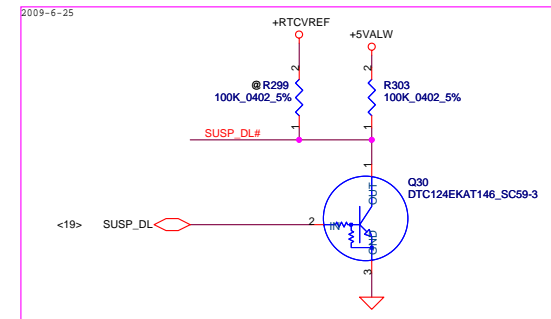
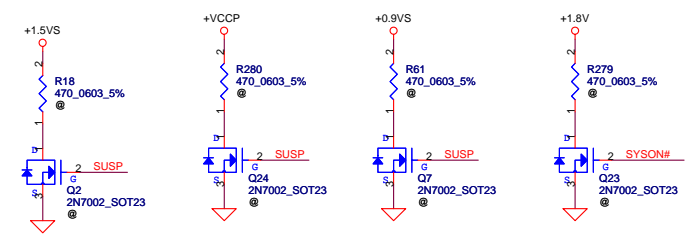
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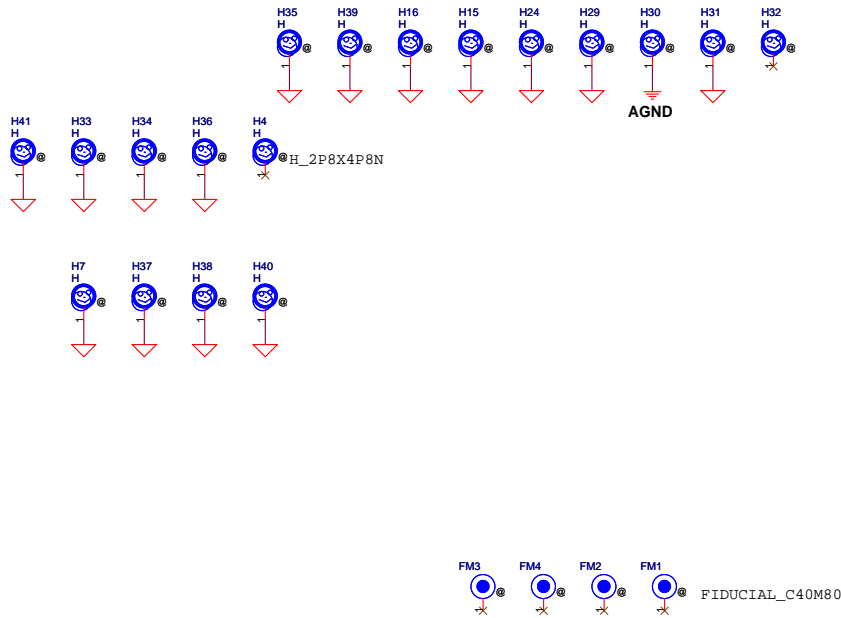
+1.8V to +1.8VS Transfer



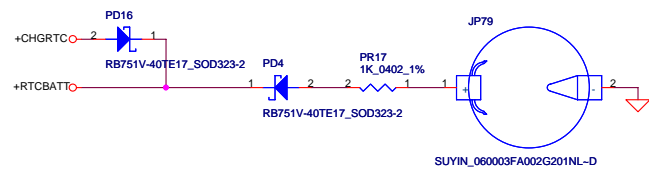
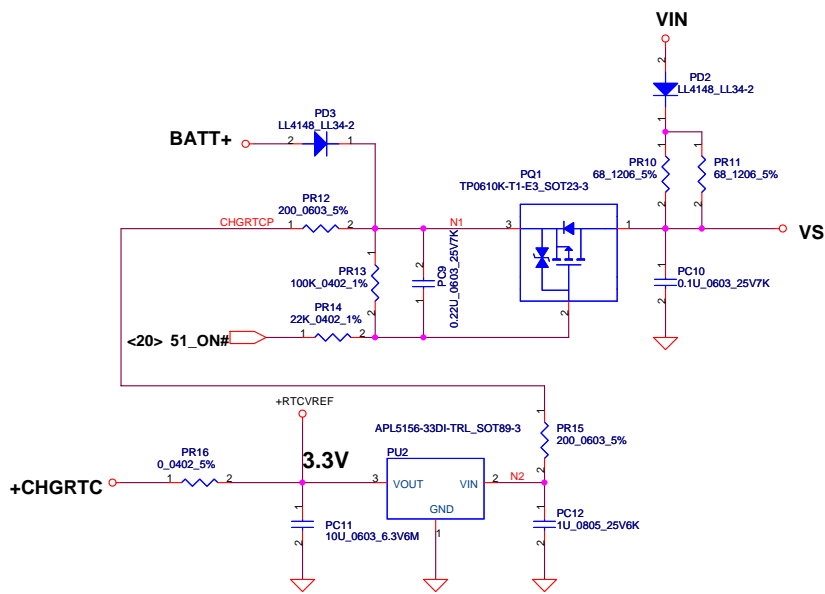
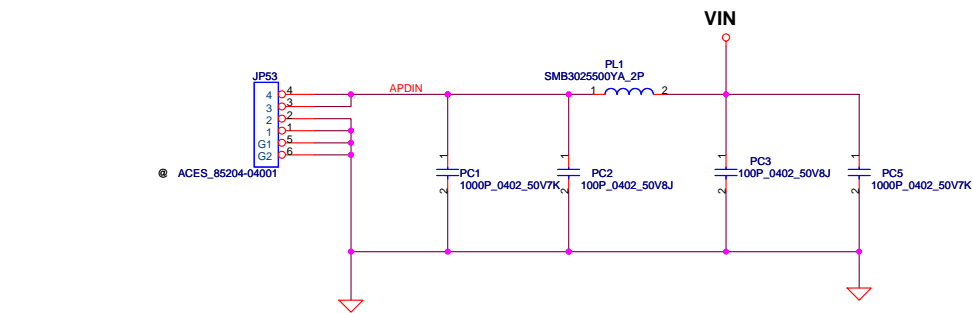
If the +1.8V discharge circuit is pop, R302, Q28 need pop.



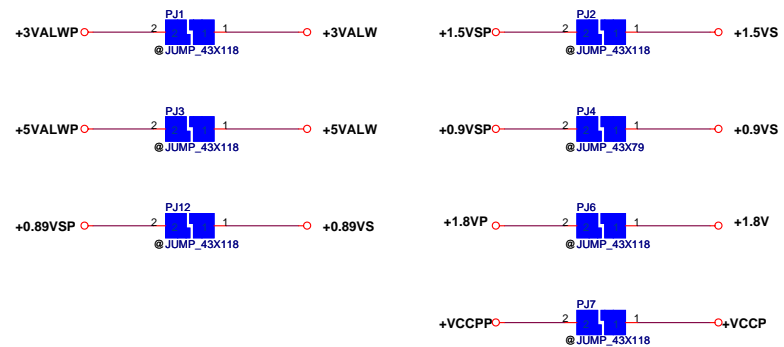
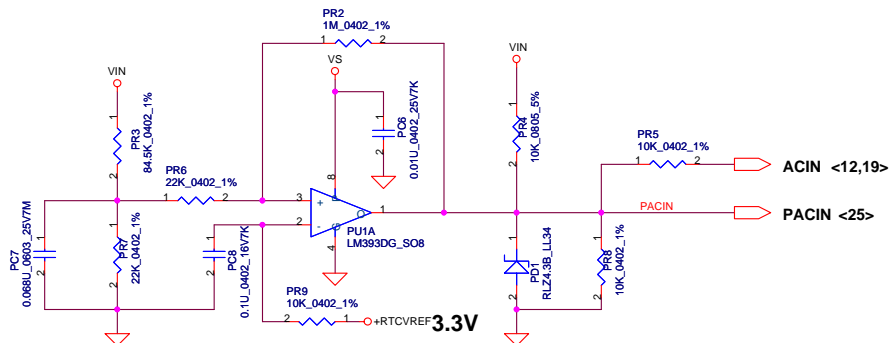
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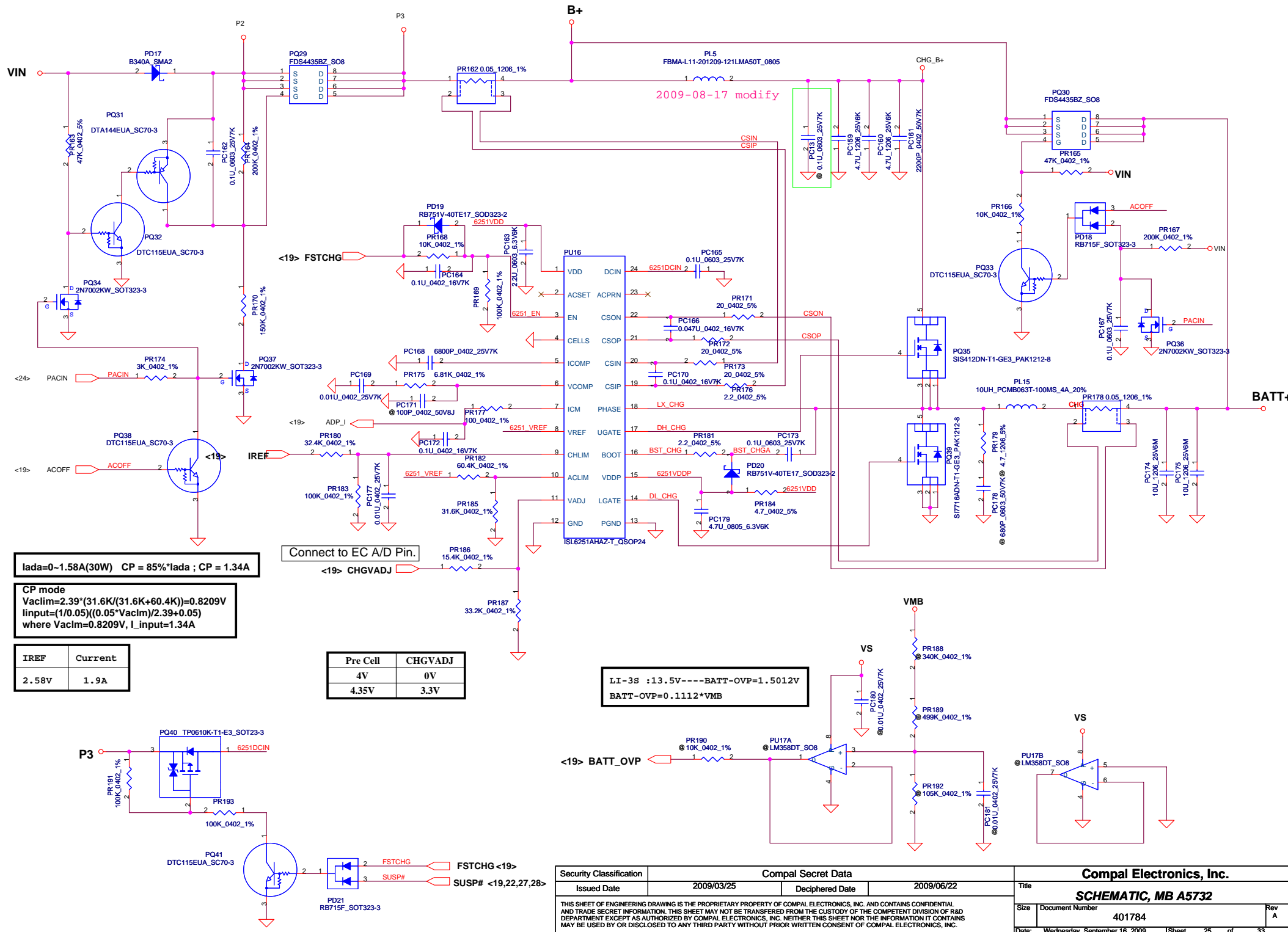
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Vin Detector		
High	17.944	17.706
Low	16.242	16.027
	17.470	15.808



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lada=0-1.58A(30W) CP = 85%*lada ; CP = 1.34A

CP mode
 $V_{acim} = 2.39 * (31.6K / (31.6K + 60.4K)) = 0.8209V$
 $I_{input} = (1/0.05) * ((0.05 * V_{acim}) / 2.39 + 0.05)$
 where $V_{acim} = 0.8209V$, $I_{input} = 1.34A$

IREF	Current
2.58V	1.9A

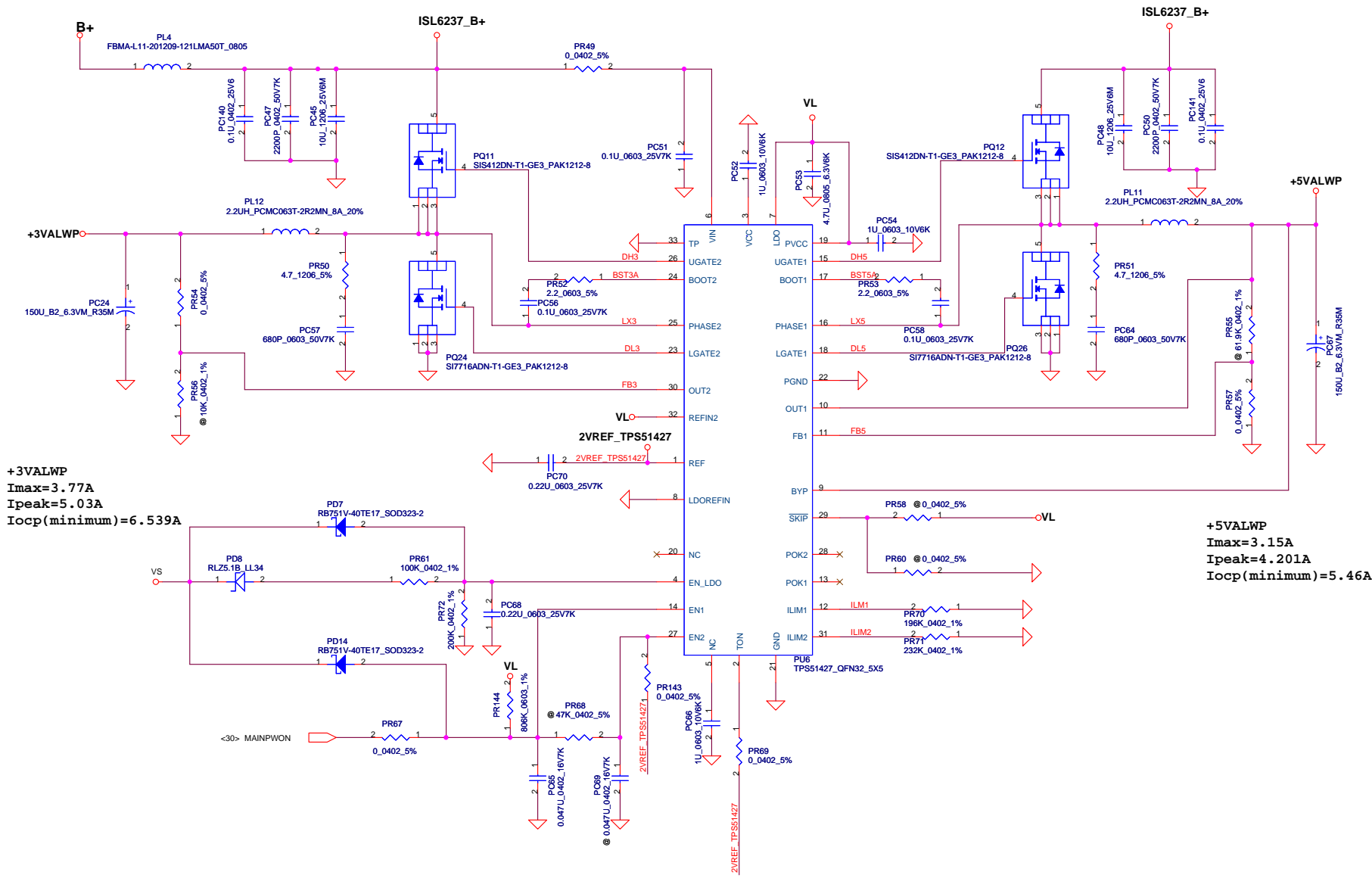
Connect to EC A/D Pin.

Pre Cell	CHGVADJ
4V	0V
4.35V	3.3V

LI-3S : 13.5V ---- BATT-OVP = 1.5012V
 BATT-OVP = 0.1112 * VMB

<19> BATT_OVP

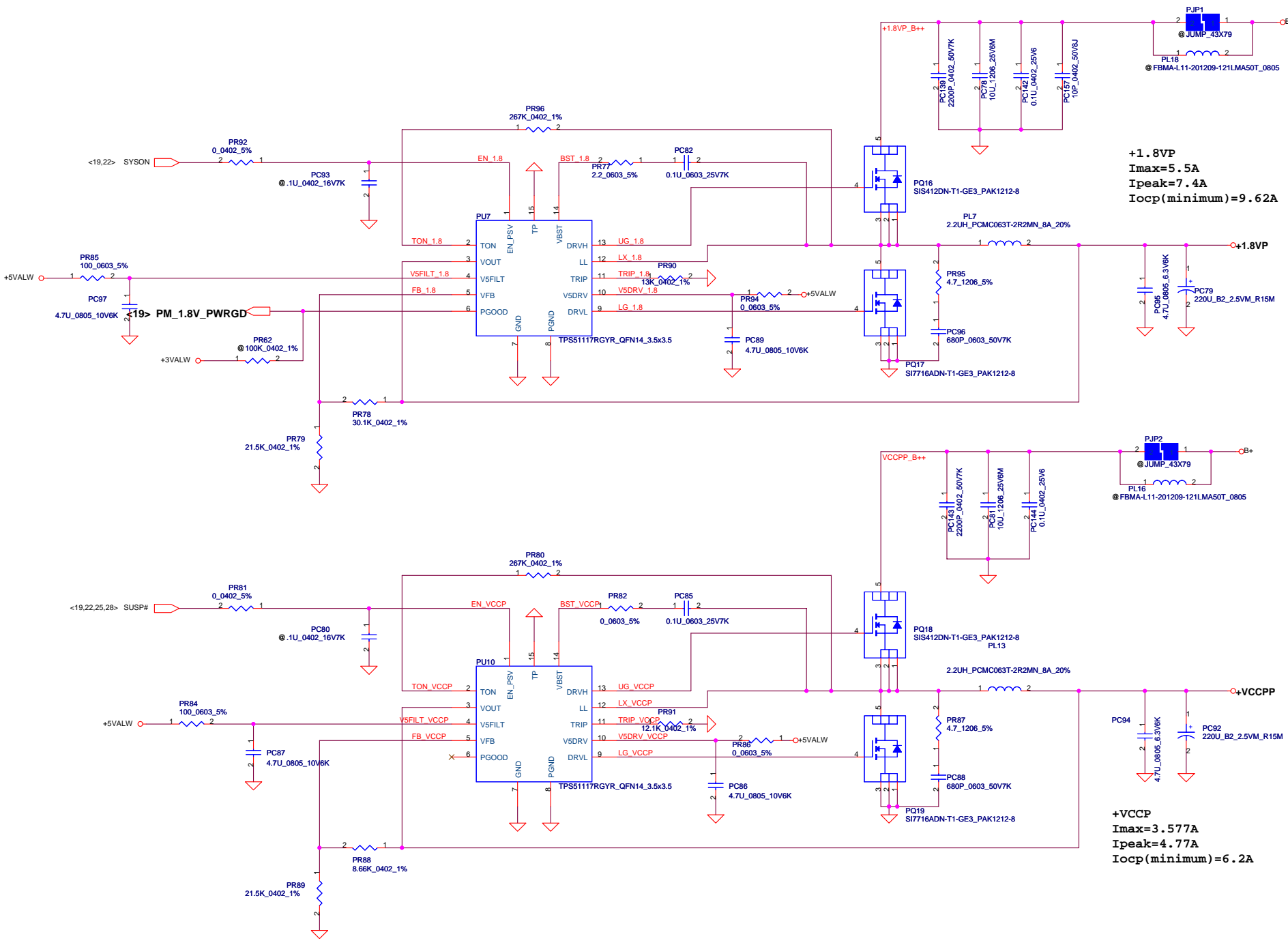
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+3VALWP
 $I_{max} = 3.77A$
 $I_{peak} = 5.03A$
 $I_{ocp}(minimum) = 6.539A$

+5VALWP
 $I_{max} = 3.15A$
 $I_{peak} = 4.201A$
 $I_{ocp}(minimum) = 5.46A$

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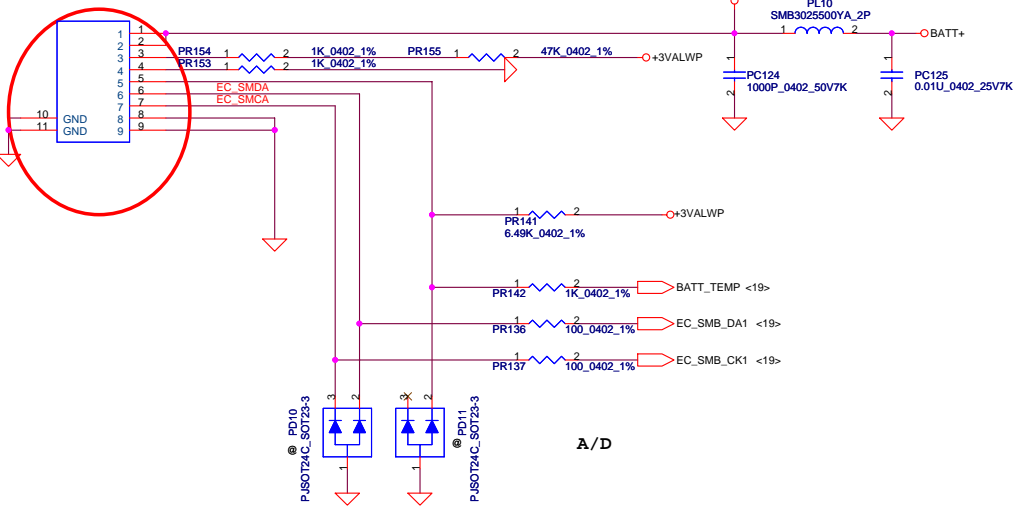


+1.8VP
 $I_{max}=5.5A$
 $I_{peak}=7.4A$
 $I_{ocp(minimum)}=9.62A$

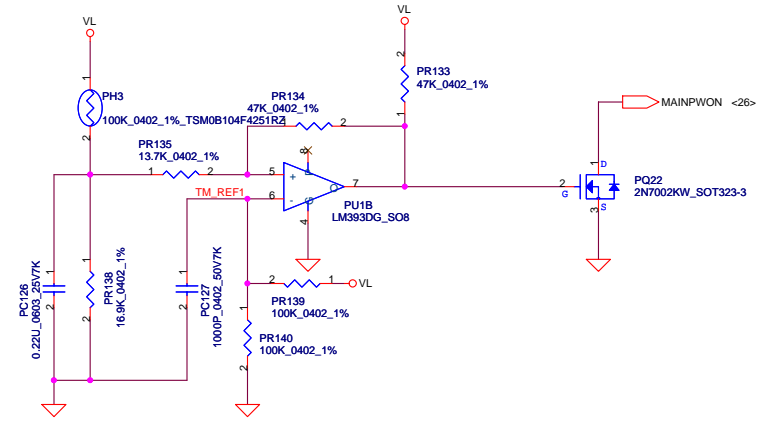
+VCCP
 $I_{max}=3.577A$
 $I_{peak}=4.77A$
 $I_{ocp(minimum)}=6.2A$

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JBATT1



PH3 under CPU botten side :
CPU thermal protection at 90 degree C
Recovery at 50 degree C



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

Item	Reason for change	Rev.	PG#	Modify List	Date	Phase
1	Reserve bead to prevent noise issue happen		P27, P28	Reserve PL16, PL17, PL18	2009.07.24	PT
2	EMI request add snubber to reduce power board band.		P26, P27 P28, P29	Change PR77, PR206 to 2.2_0603_5%. Add PR87, PR95, PR50, PR51, PR115 4.7_1206_5% into BOM. Add PC88, PC96, PC57, PC64, PC109 680P_0603_50V. Add PC157 10P_0402_50V	2009.08.05	PT
3	Reserve 0.89V LDO soultion		P28	Reserve PU11, PC131, PC103, PC155, PC154, PC105 PR99, PR157, PR100	2009.08.05	PT
4	Adjust the +1.5VSP LDO feedback		P28	Change PC129 to 220P 25V K NPO 0402		
5						
6						
7						
8						
9						
10						

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Item	Date	Fixed Issue	Rev.	PG#	Modify List
01	2009/07/20	MEMO LIST: BOM Structure Error	0.2		Mount C170,C996,C997,C106,C196,C224,C905,R114,R115,R139,R406,R407,R185
02	2009/07/20	WWAN PLTRST#	0.2	P.14	Floating Pin17,30,32 and Mount R14 to connect PLTRST#
03	2009/07/20	Unify the quality of the capacitance	0.2	P.06	Change C56,C924,C933-22U from Y5V(SE00000868L) to X5R(SE000000I10)
04	2009/07/20	Intel MoW-WW28-glitch issue	0.2	P.08	Add R121,R124 pull-up STP_PCI# and STP_CPU# to +3.3VS
05	2009/07/20	Add LCD BIST function.	0.2	P.09/19	JP24 pin3 add LCD_TST and U27 pin16 add LCD_TST
06	2009/07/20	Add USB signal for touch screen function.	0.2	P.09	JP24-pin34,pin36 add USB signal/ pin6 connect to +5VALW and pin39 connect to GND
07	2009/07/20	Change USB connector.	0.2	P.21	Change JP16 connector.
08	2009/07/20	Change board ID to R02	0.2	P.19	Change R122 to 100K,R127 to 8.2K
09	2009/07/20	Change RJ45 LAN connector.	0.2	P.18	Change JP71 connector.
10	2009/07/20	Change BT connector.	0.2	P.14	Change JP22 connector.
11	2009/07/20	Add EC GPIO Function	0.2	P.19	Add Pin16-LCD_TST, Pin17-BT_RADIO_OFF# and Pin90-BT_DET
12	2009/07/20	For DELL Request	0.2	P.14	Pop R116, R118 for WLAN/BT co-existence control
13	2009/07/31	Change M/B to IO/B connector.	0.2	P.21	Change JP25 from 40 pin to 30 pin
14	2009/07/31	Change SIM Card connector.	0.2	P.14	Change JP73 connector.
15	2009/07/31	Add Stand off	0.2	P.23	Add H16
16	2009/08/04	Change battery connector.	0.2	P.30	Change JBATT1 connector.
17	2009/08/04	Change SATA HDD connector.	0.2	P.17	Change JP48 connector.
18	2009/08/04	Change RTC battery connector.	0.2	P.24	Change JP79 connector.
19	2009/08/04	For EMI concern circuit	0.2	P.09	Add ESD diode L65
20	2009/08/04	For EMI concern circuit	0.2	P.08	Remove RTS5159_48M; Change R137 from 22Ω to 33Ω
21	2009/08/04	Change 2P(Power board)connector.	0.2	P.20	Change JP42 connector.
22	2009/08/05	WLAN module pin define	0.2	P.14	Swap JP54.3 and JP54.5
23	2009/08/05	Change Audio Jack	0.2	P.16	Change JP60, JP61 connector.
24	2009/08/10	For TouchScreen circuit	0.2	P.12	Add R88, R93
25	2009/08/10	For Realtek Clock Generator Co-lay circuit	0.2	P.08	Add R94,R102,C182,C156; Change U3.27,U3.55,U3.72 to +1.5VM_CK505

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Item	Date	Fixed Issue	Rev.	PG#	Modify List
26	2009/08/10	For Layout placement	0.2	P.18	Remove U9 and C126
27	2009/08/13	I/O board USB ports cannot detect issue	0.2	P.09, P.12, P.21	Swap USB port 1 and port 3, port 2 and port 7
28	2009/08/17	For Layout placement	0.2	P.08	Remove Clock Generator SRC-0ohm
29	2009/08/17	For LED circuit	0.2	P.21	Change R1256 from 0Ω to 1KΩ
30	2009/08/17	For RF concern circuit	0.2	P.25	Reserve PC13 0.1uF on CHG_B+
31	2009/08/17	For RF concern circuit	0.2	P.09	Reserve C232, C233 100pF on LVDSAC+, LVDSAC-
32	2009/08/18	For EMI concern circuit	0.2	P.09	Change R1007 to L25, remove R1006.
33	2009/08/18	For EMI concern circuit	0.2	P.18	Add R199, R200, R201 on LAN chip pin29, pin37, pin1
34	2009/08/18	For EMI concern circuit	0.2	P.20	Add D15 to ON/OFFBTN#
35	2009/08/19	For EMI concern circuit	0.2	P.18	pop C193, C125, C130
36	2009/08/24	For BIOS concern circuit	0.2	P.12, P.14, P.18	Swap PCIE port 1 and port 3

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