

Model Name : AIVP1/AIVP2
File Name :

Compal Confidential

AIVP1/AIVP2 UMA M/B Schematics Document

Intel Bay Trail M

2015-01-15

REV : 0.2

14@
DA1 PCB

Part Number	Description
DA6001DH000	REV0.1 M/B

15@
DA2 PCB

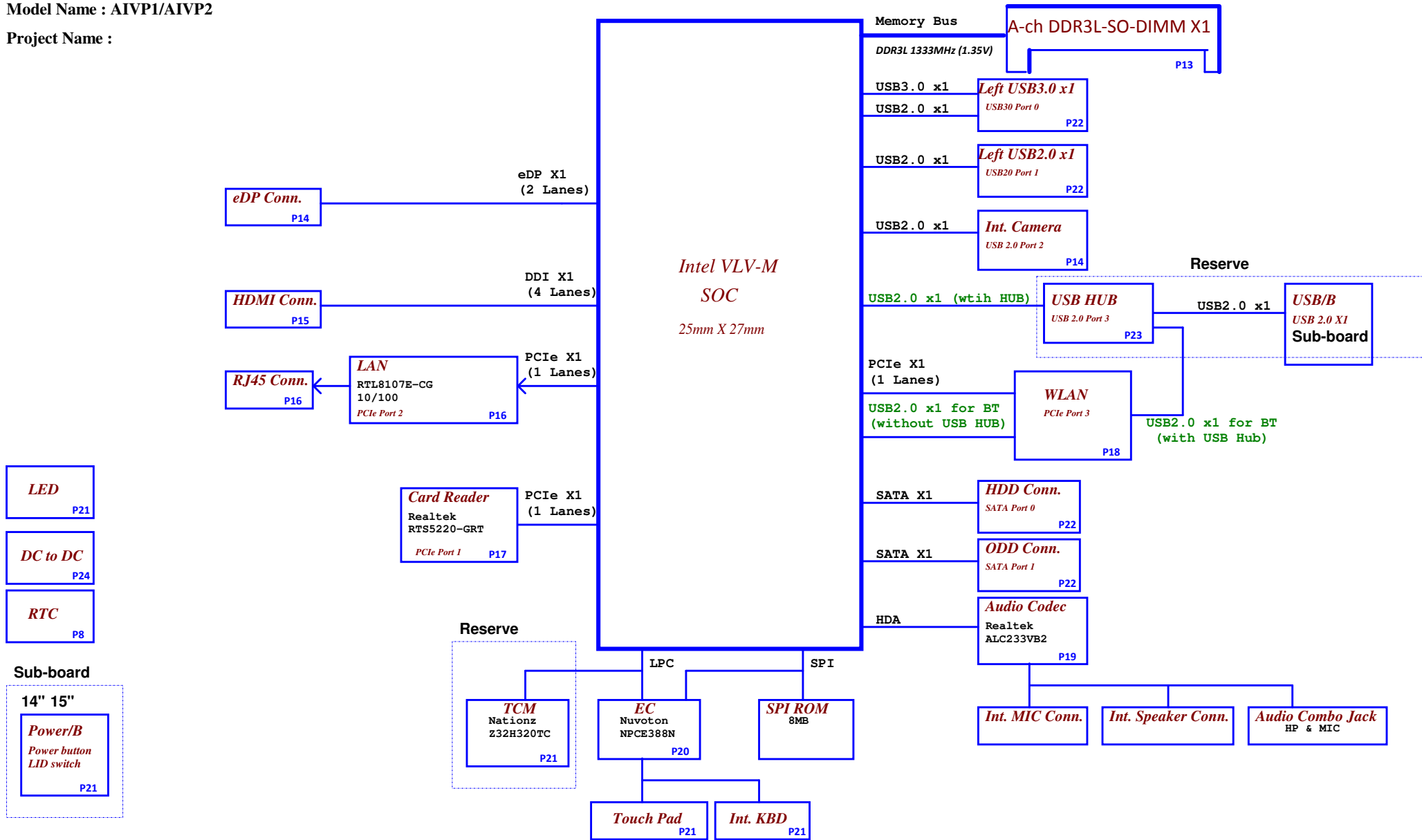
Part Number	Description
DA6001DH000	REV0.1 M/B

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				Size	Document Number	Rev
				Custom	LA-C771P	0.2
Date: Thursday, January 15, 2015				Sheet	1	of 34

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Model Name : AIVP1/AIVP2

Project Name :



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				Block Diagram		
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				Date:	Wednesday, January 14, 2015	Sheet 2 of 34

Voltage Rails

Power Plane	Description	S0	S3	S4/S5
VIN	19V Adapter power supply	ON	ON	ON
BATT+	12V Battery power supply	ON	ON	ON
B+	AC or battery power rail for power circuit. (19V/12V)	ON	ON	ON
+RTCVCC	RTC Battery Power	ON	ON	ON
+1.0VALW	+1.0v Always power rail	ON	ON	ON
+1.8VALW	+1.8v Always power rail	ON	ON	ON
+3VALW	+3.3v Always power rail	ON	ON	ON
+5VALW	+5.0v Always power rail	ON	ON	ON
+1.35V	+1.35V power rail for DDR3L	ON	ON	OFF
+SOC_VCC	Core voltage for SOC	ON	OFF	OFF
+SOC_VNN	GFX voltage for SOC	ON	OFF	OFF
+0.675VS	+0.675V power rail for DDR3L Terminator	ON	OFF	OFF
+1.0VS	+1.0v system power rail	ON	OFF	OFF
+1.05VS	+1.05v system power rail	ON	OFF	OFF
+1.35VS	+1.35v system power rail	ON	OFF	OFF
+1.8VS	+1.8v system power rail	ON	OFF	OFF
+3VS	+3.3v system power rail	ON	OFF	OFF
+5VS	+5.0v system power rail	ON	OFF	OFF
Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.				

BOM Option Table

Item	BOM Structure
Unpop	@
Connector	ME@
XDP (Debug Port)	XDP@
EMC requirement	EMI@
EMC requirement unpop	@EMI@
ESD requirement	ESD@
ESD requirement unpop	@ESD@
TCM requirement	TCM@
NTCM SKU	NTCM@
Camera requirement	CMOS@
ODD requirement	ODD@
USB HUB requirement	HUB@
Port 80(Debug Port)	DB@
Bluetooth requirment	BT@
14"	14@
15"	15@

EC SM Bus1 address

EC SM Bus2 address

Device	Address
Smart Battery	0001 011X b
Charger	0b00010010 (0x12H)

SOC SM Bus address

Device	Address
SO-DIMM A (JDIMM1)	A0h

43 level BOM table

43 Level	Description	BOM Structure

UC4
N3540@

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Part Number = SA00007ZH30

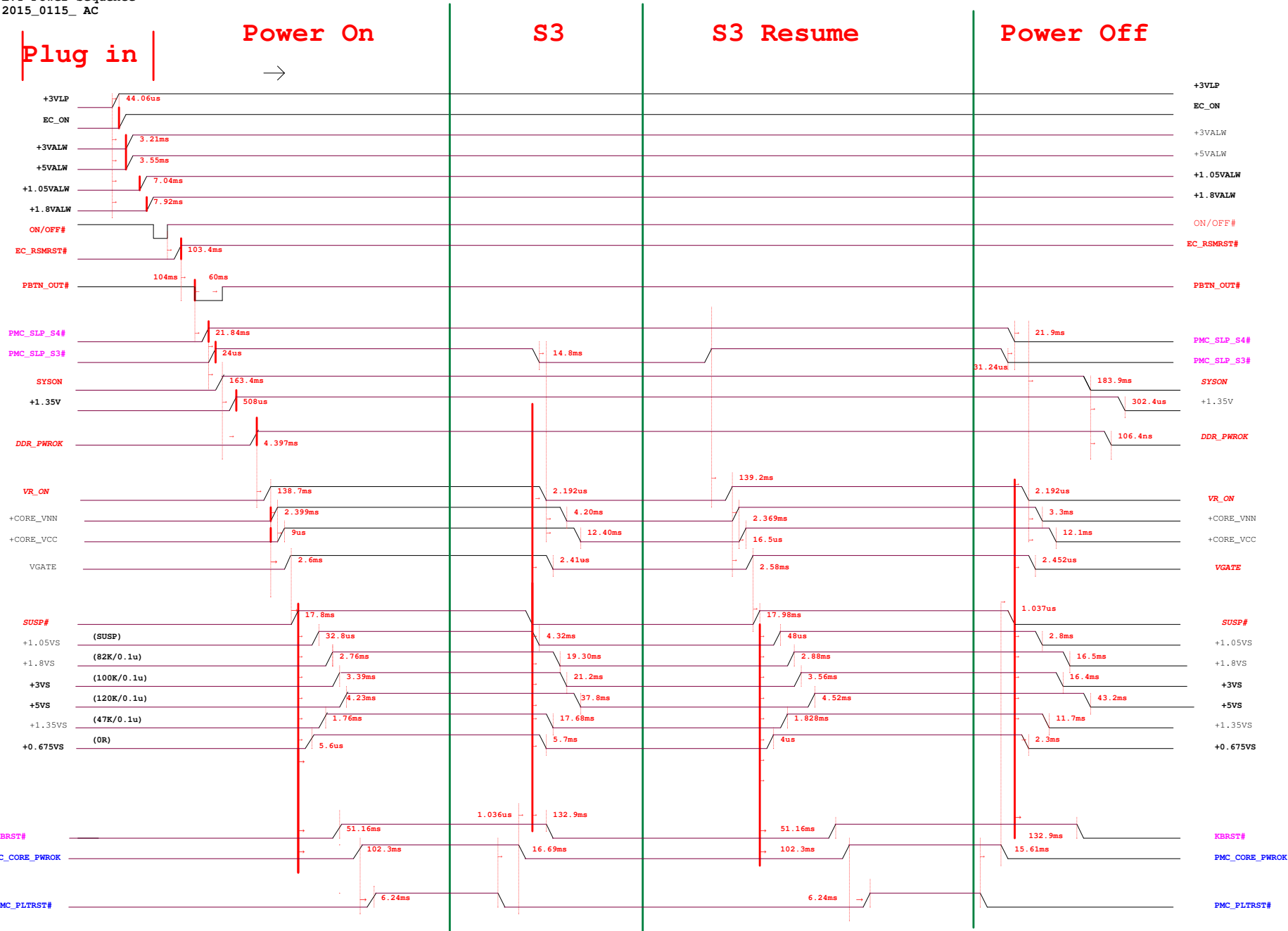
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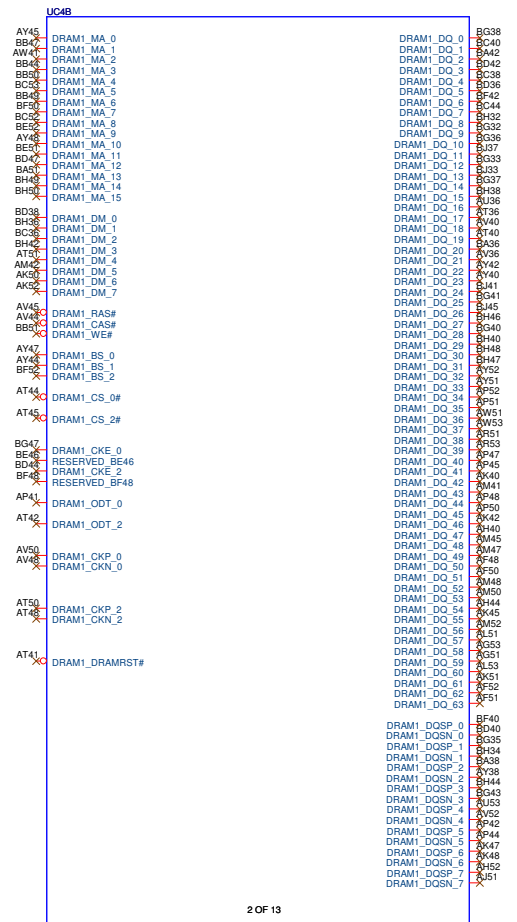
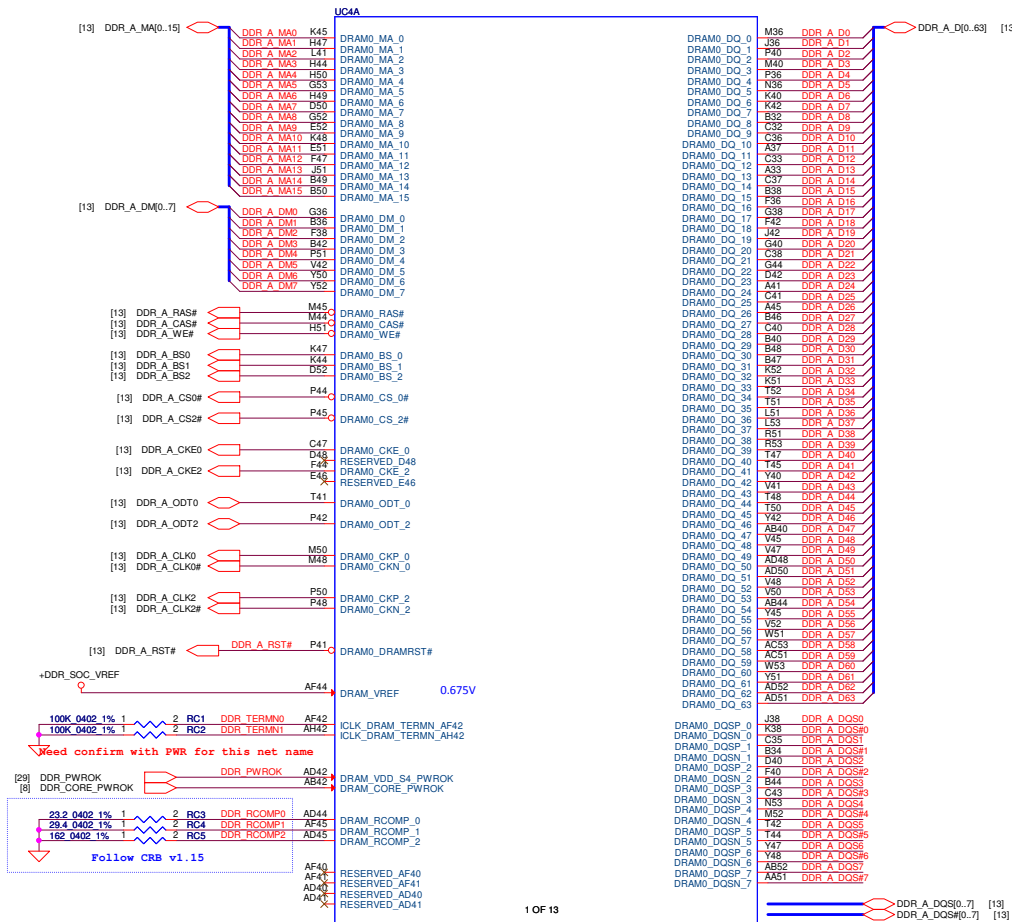
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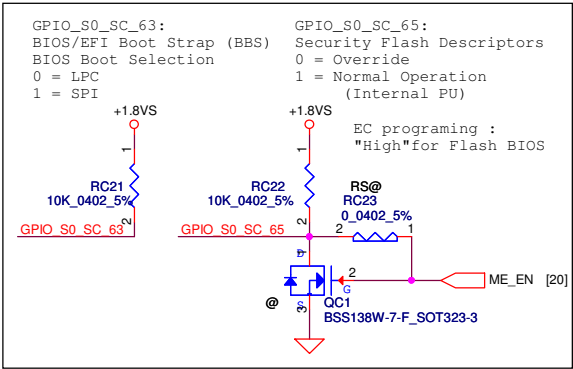
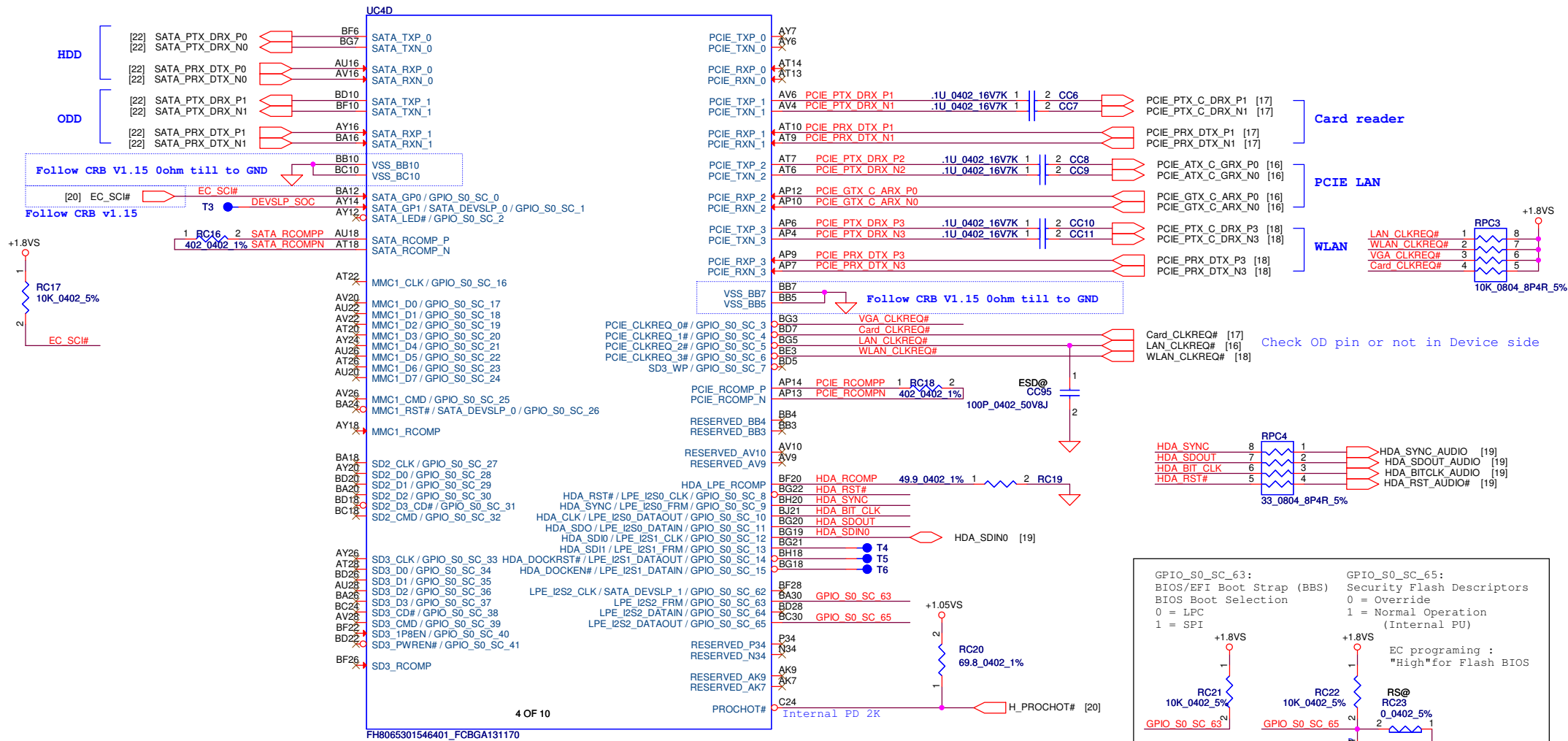
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				Date:	Wednesday, January 14, 2015	Sheet 3 of 34

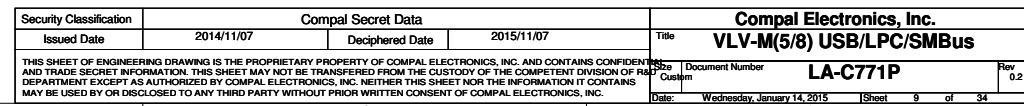


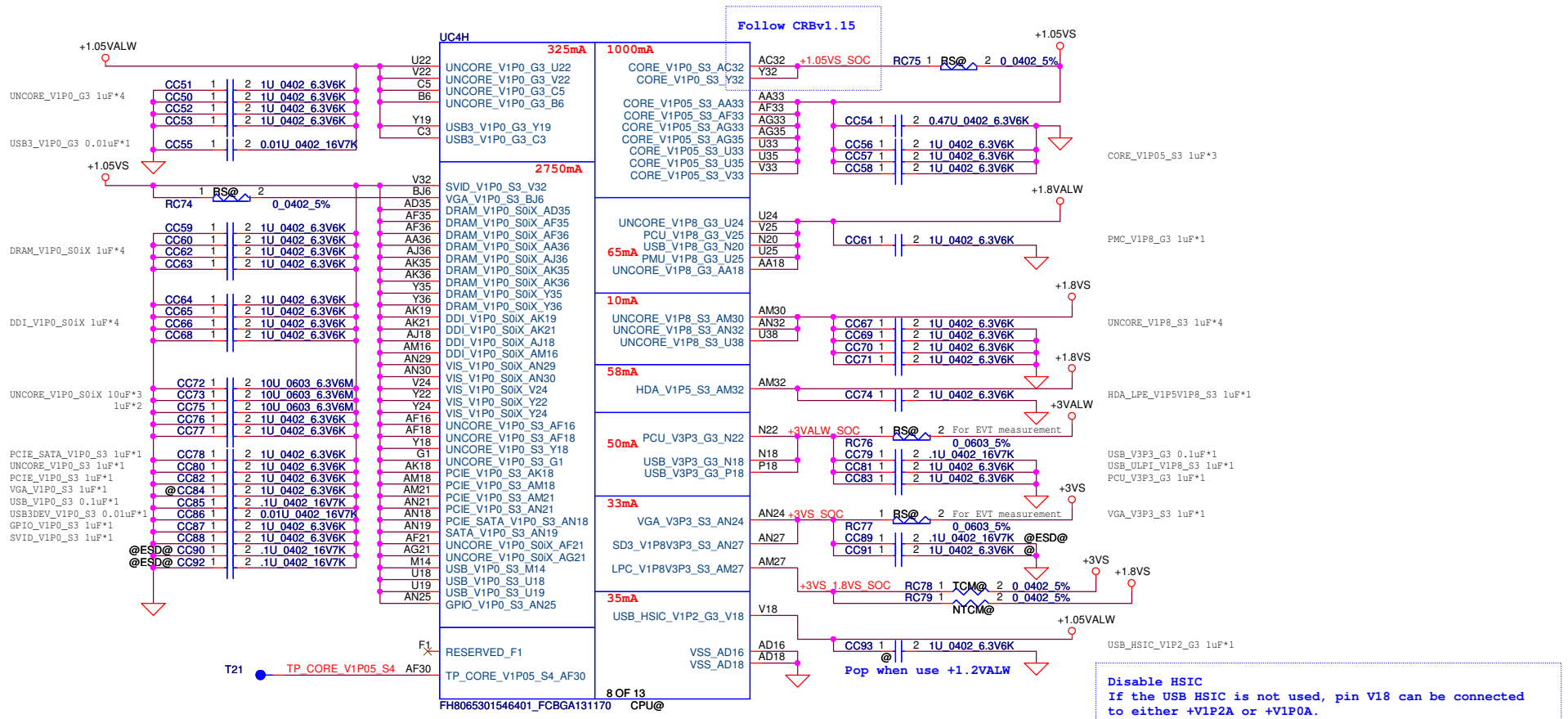
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				Date	Thursday, January 15, 2015
				Sheet	4 of 34
				Rev	0.1



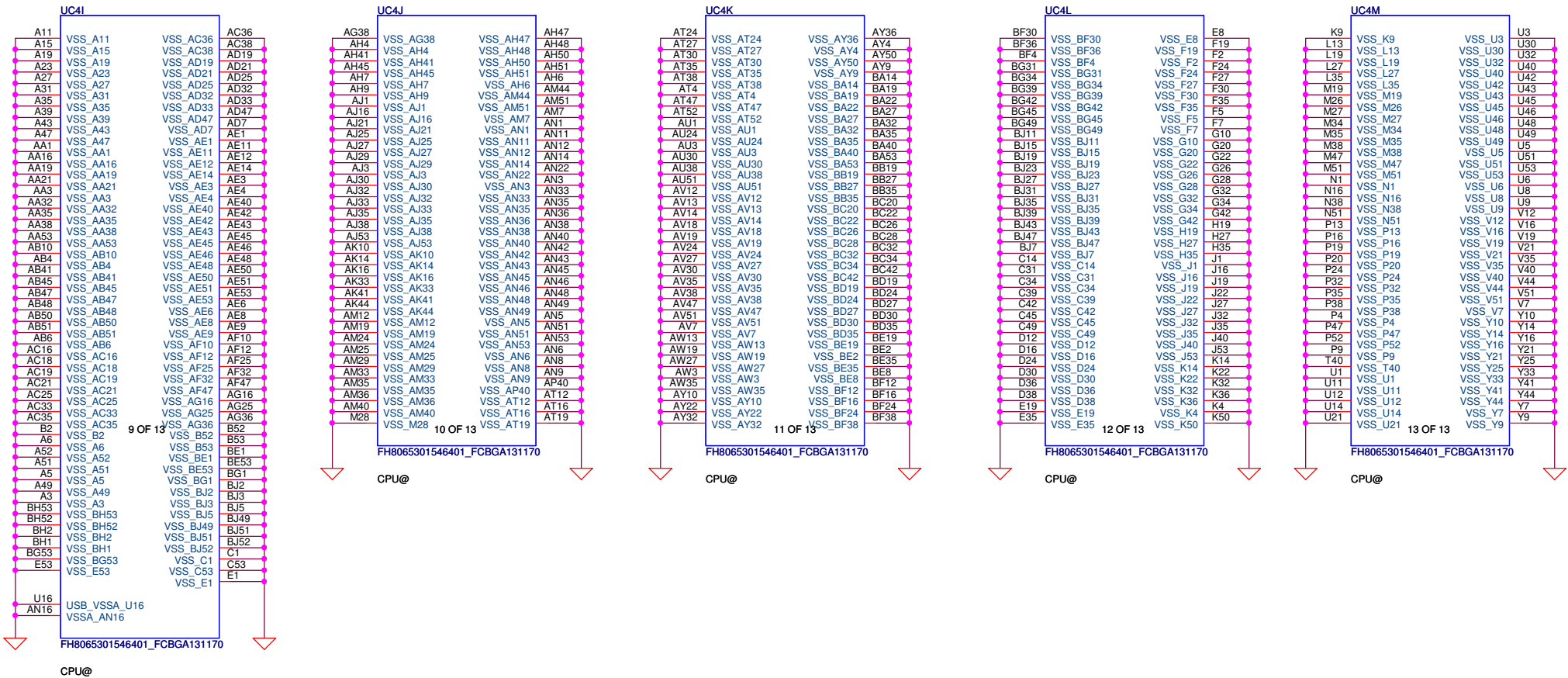


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										Rev 0.2	
										Date: Wednesday, January 14, 2015	
										Sheet 7 of 34	



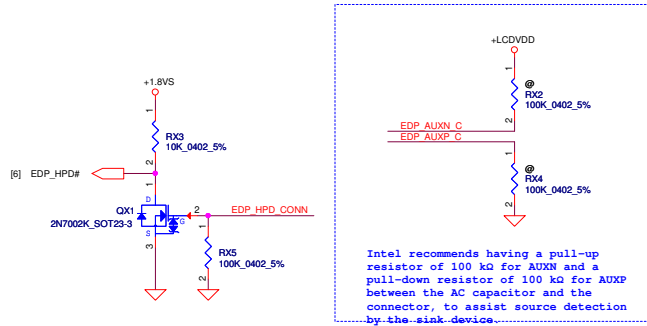
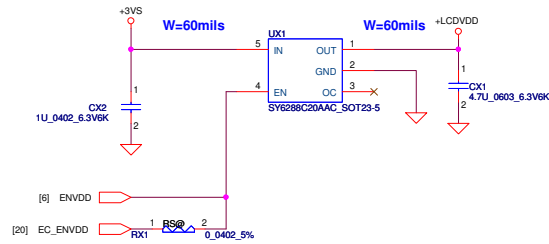


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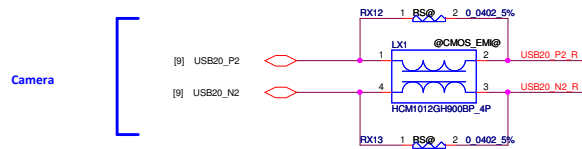
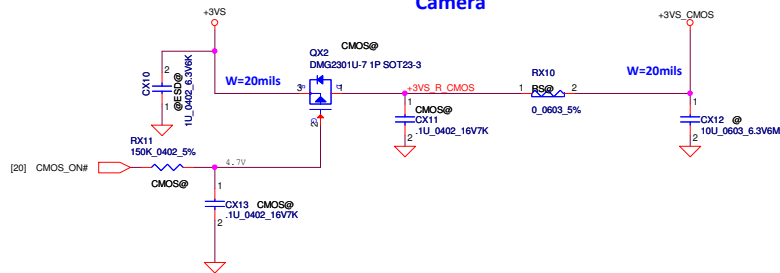


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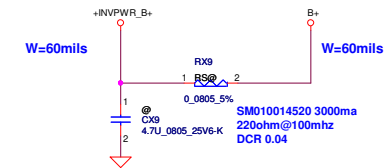
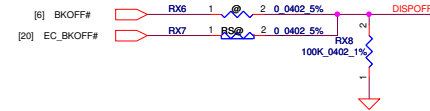
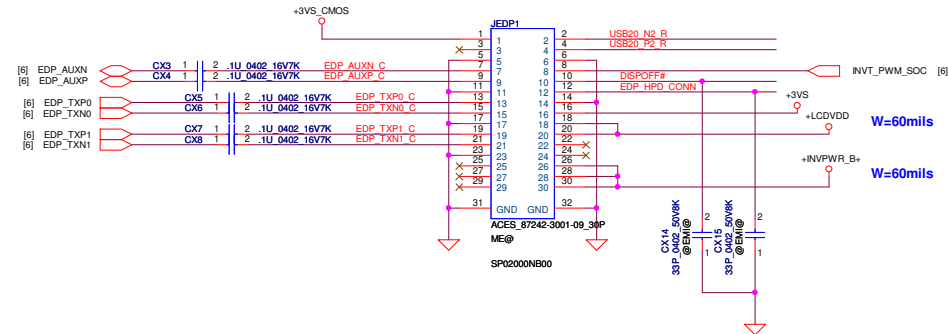
LCD POWER CIRCUIT



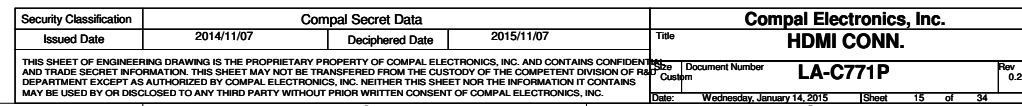
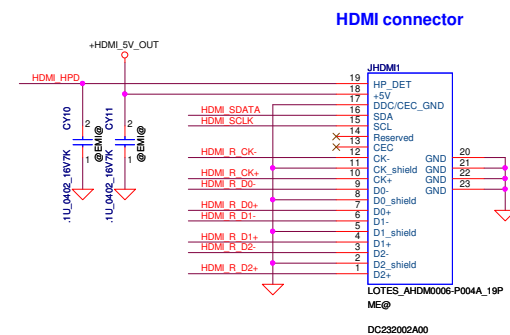
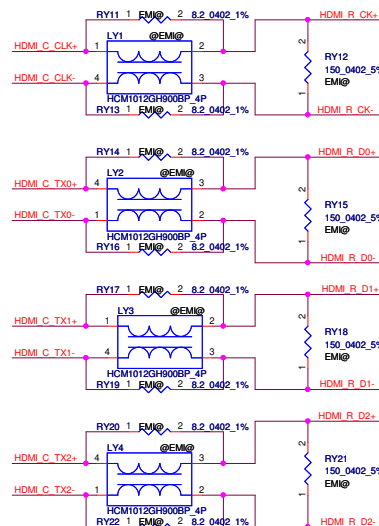
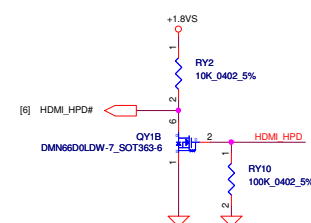
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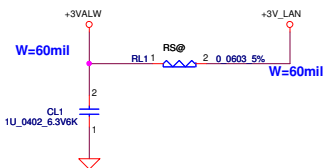


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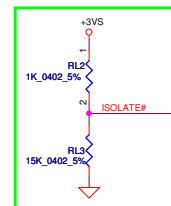
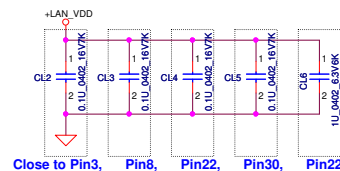
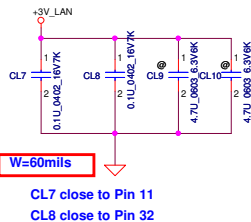


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				LA-C771P	0.2
Date: Wednesday, January 14, 2015				Sheet	14 of 34

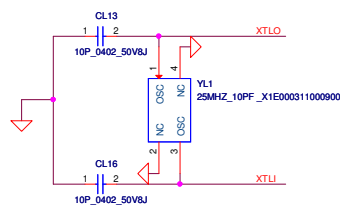
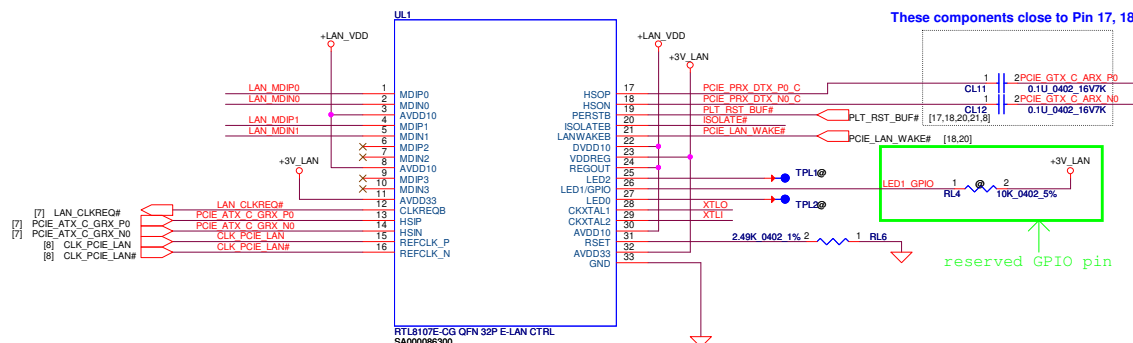
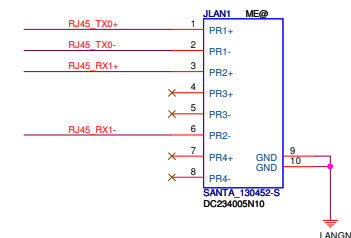




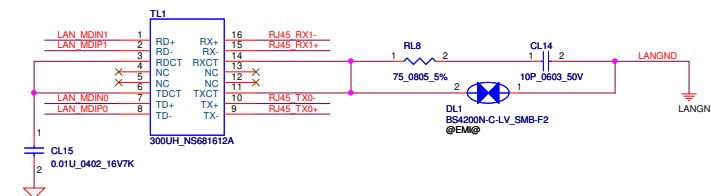
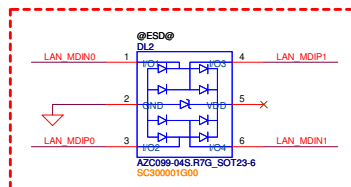
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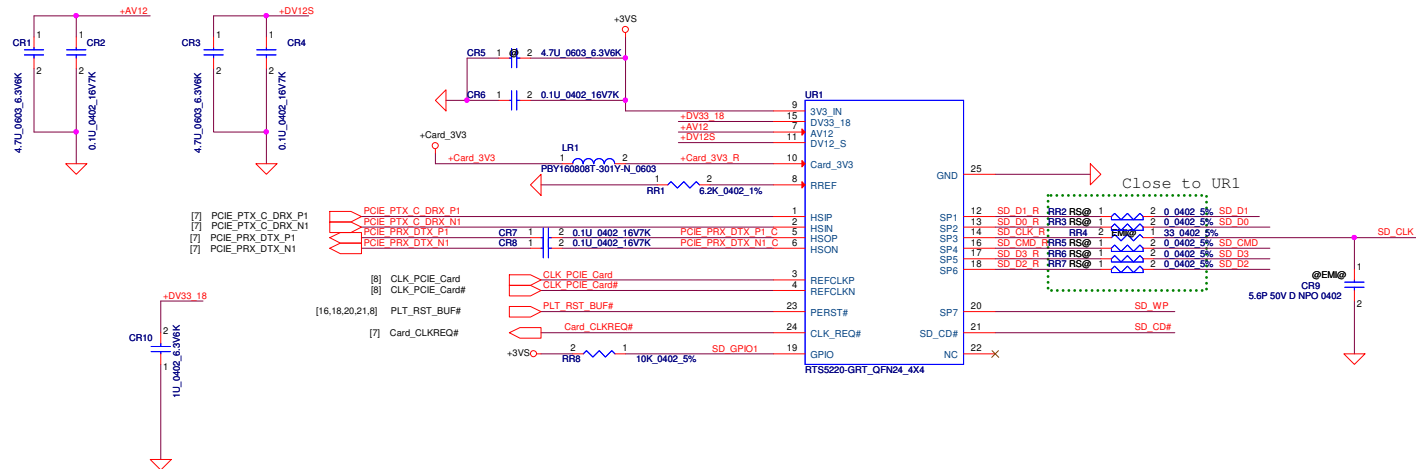
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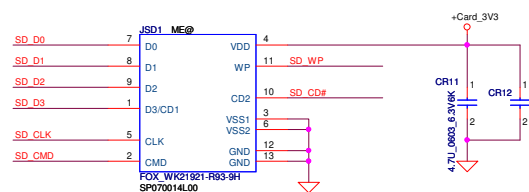
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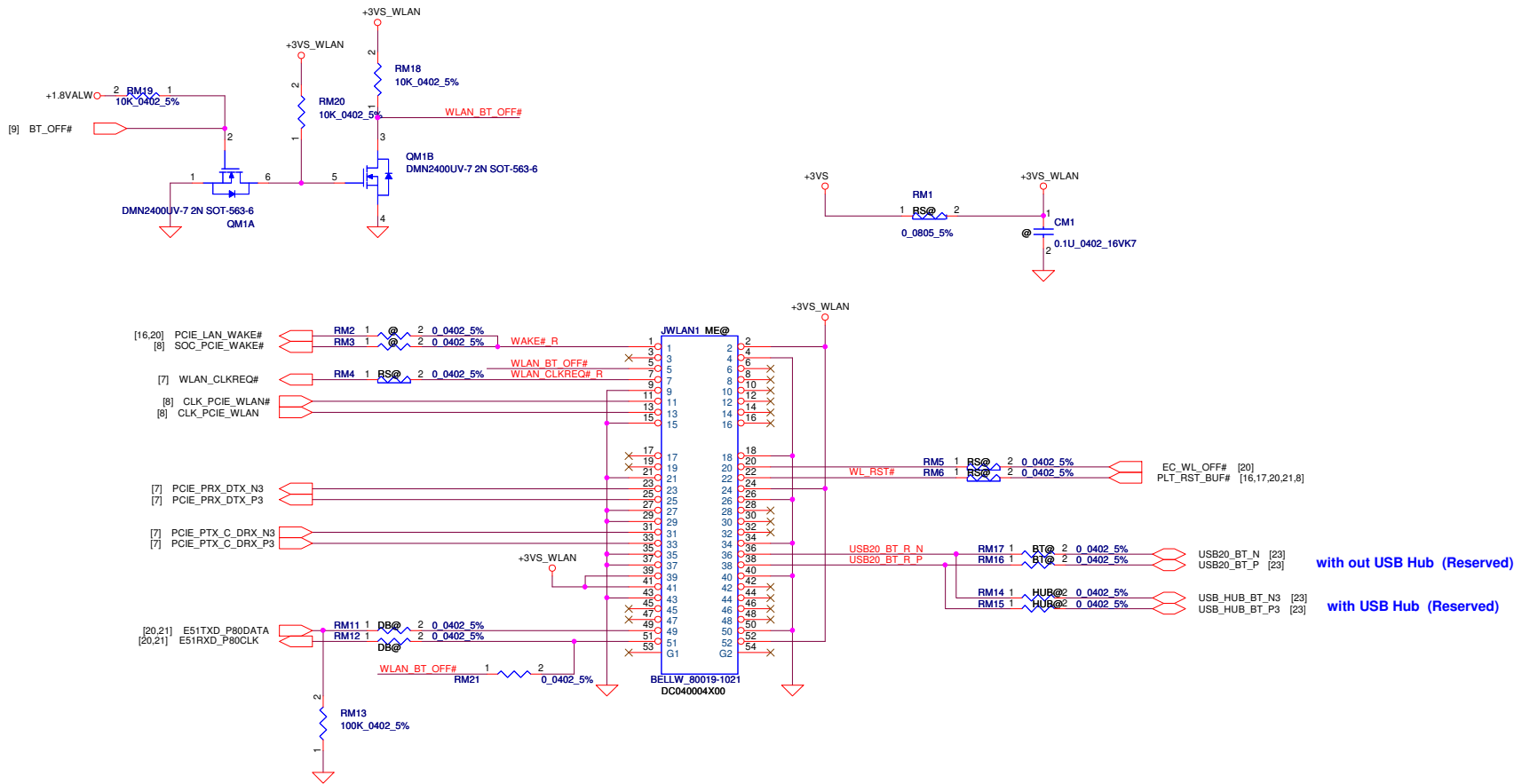
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				LA-C771P
				Rev 0.2
				Date: Wednesday, January 14, 2015
				Sheet 16 of 34



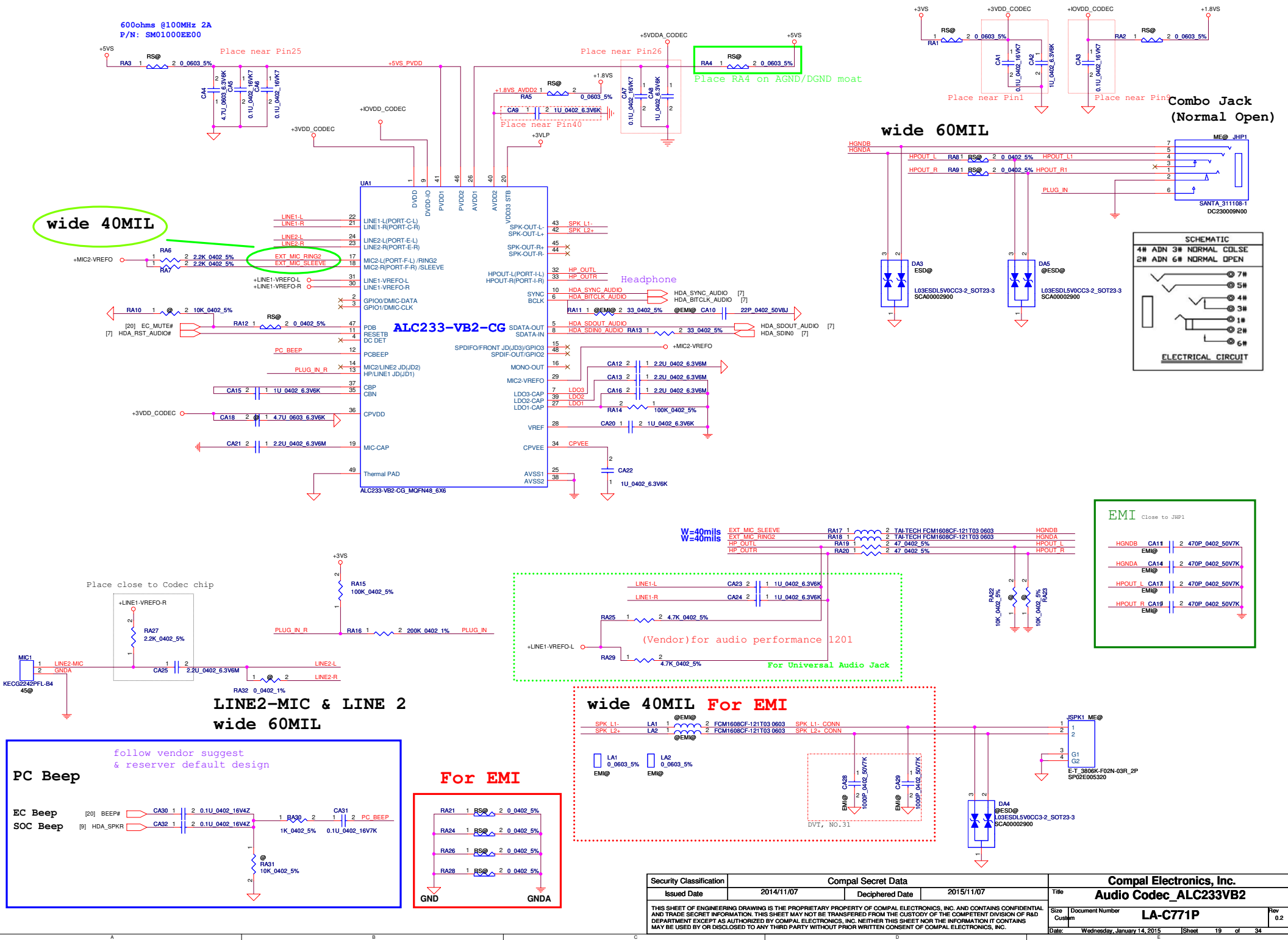
SD/SDXC



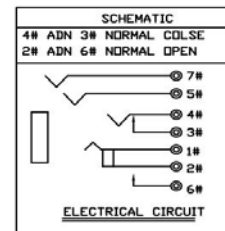
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				LA-C771P	0.2
				Date: Wednesday, January 14, 2015	Sheet 17 of 34



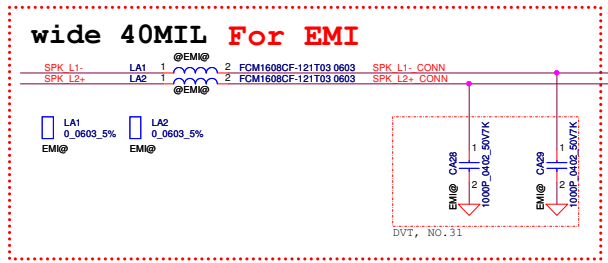
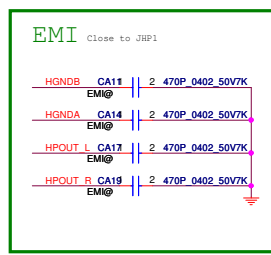
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				Document Number	LA-C771P
				Date	Wednesday, January 14, 2015
				Sheet	18 of 34



Combo Jack
(Normal Open)

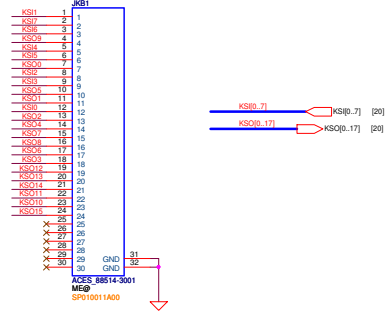


ELECTRICAL CIRCUIT

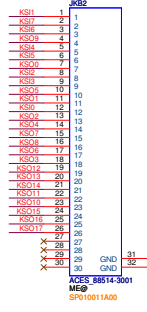


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				Date	Wednesday, January 14, 2015
				Sheet	19 of 34

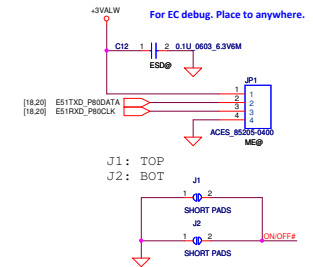
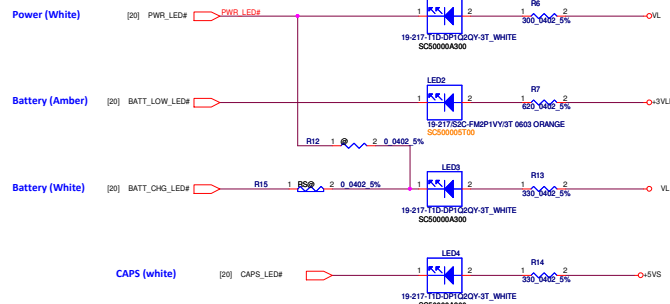
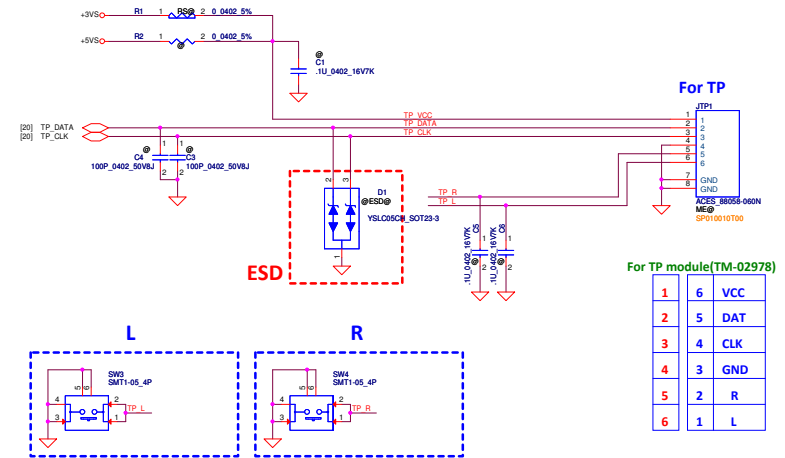
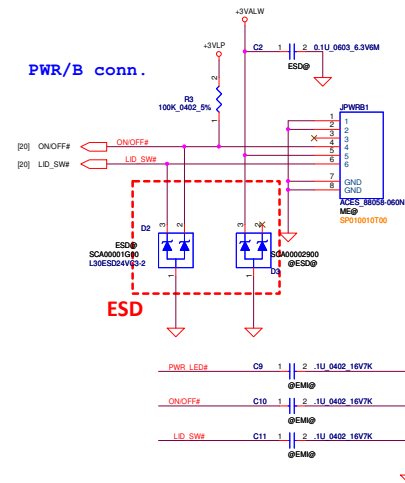
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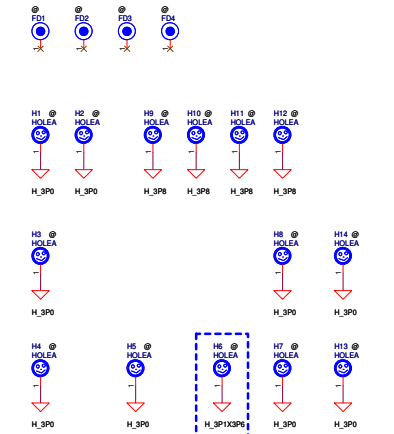
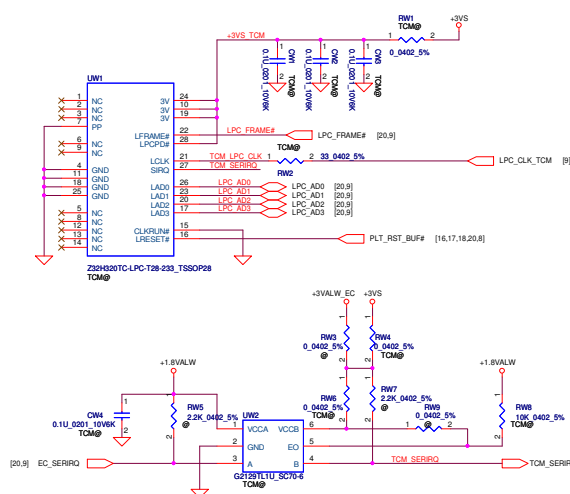
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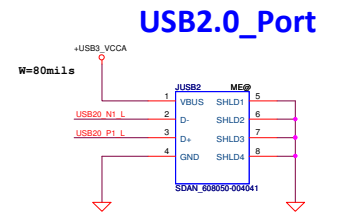
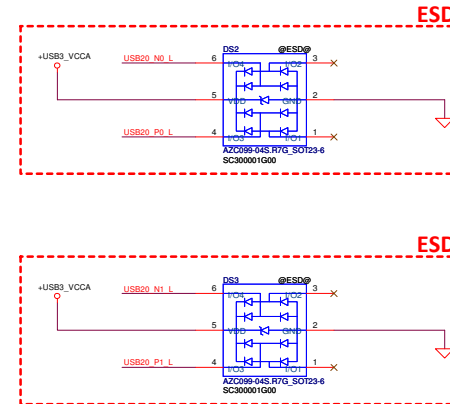
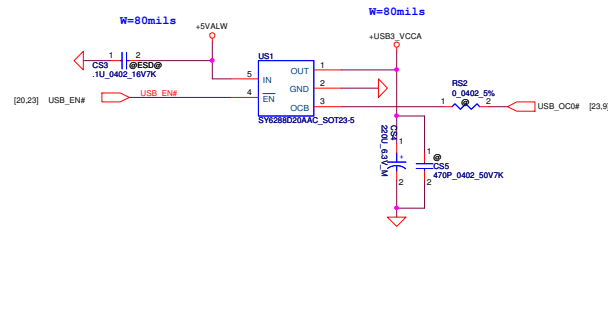
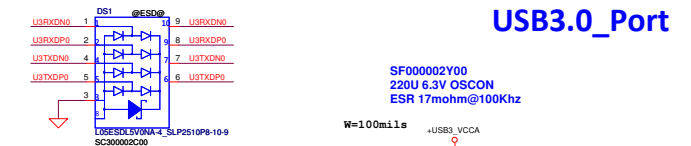
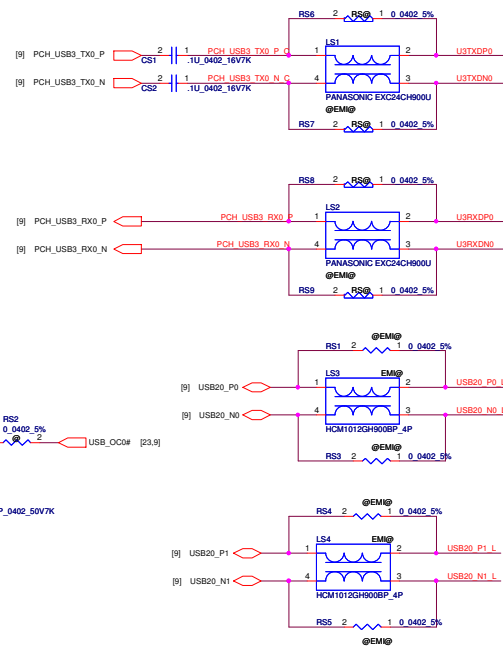
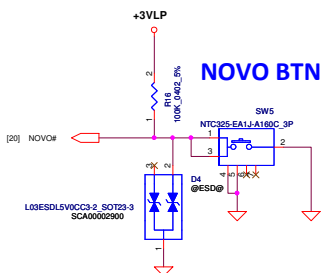
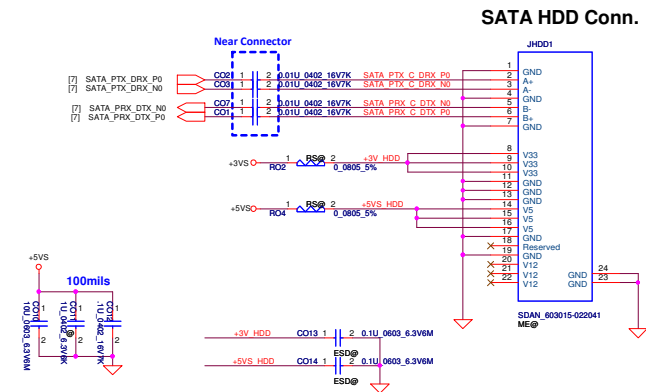
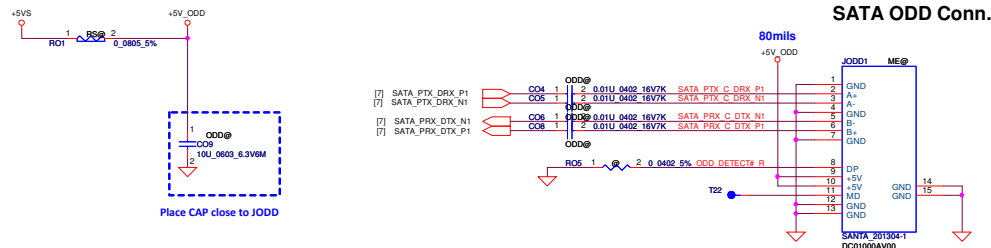


PWR/B conn.



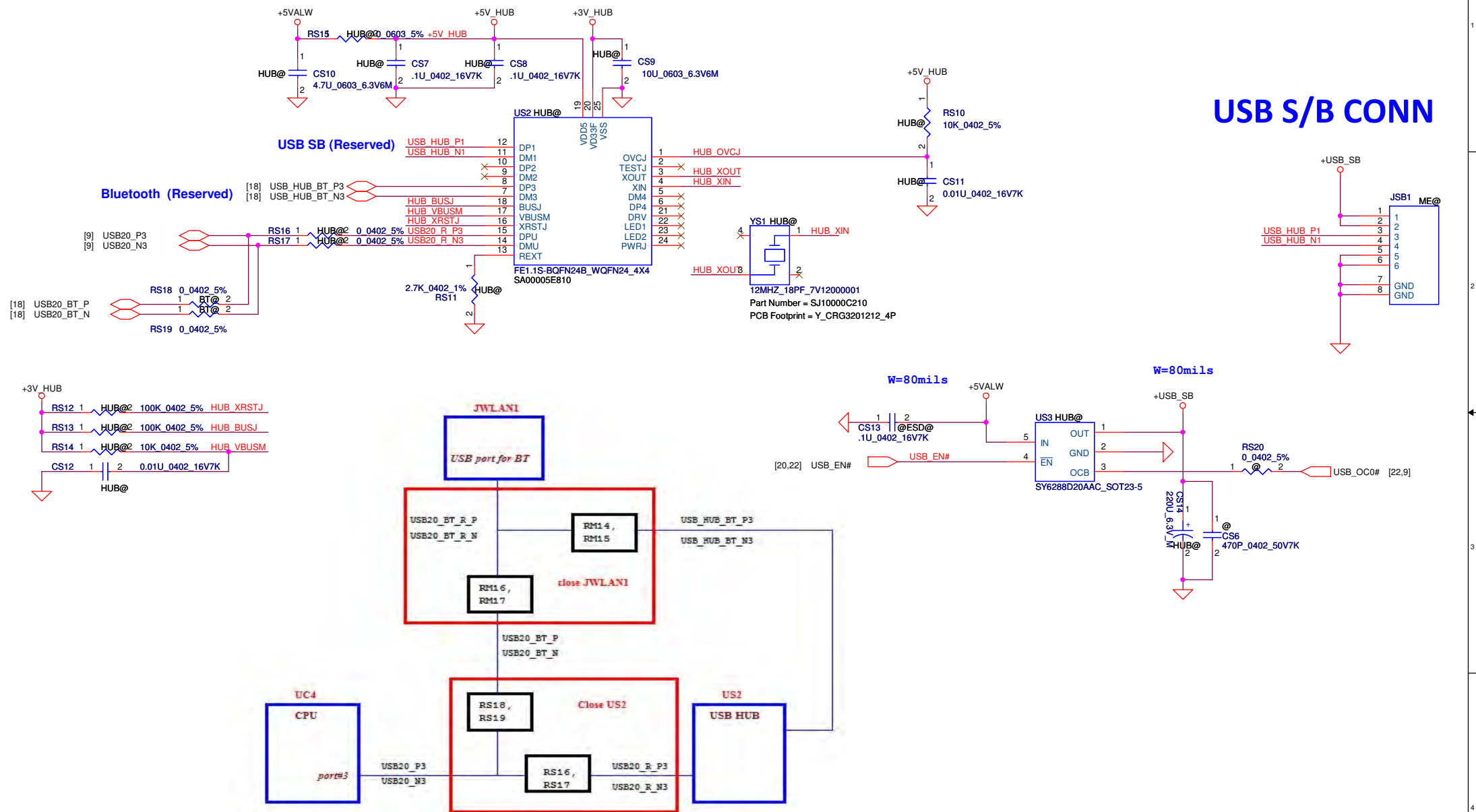
TCM (TPM)





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Issued Date	2014/11/07	Deciphered Date	2015/11/07	HDD/ODD/USB	
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				2x10mm	LA-C771P
				Date:	Wednesday, January 14, 2015
				Sheet	22 of 34
				Rev	0.2

USB2.0 HUB



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Issued Date	2014/11/07	Deciphered Date	2015/11/07	Title USB 2.0 HUB		
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				Custom	LA-C771P	0.2
				Date:	Wednesday, January 14, 2015	Sheet 23 of 34

Version Change List (P. I. R. List)

Item	Page#	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
1	22	HW	2014/11/18	COMPAL	added NOVO BTN function	SW5, R16 connected to EC for NOVO function	0.1
2	18	HW	2014/11/19	COMPAL	reserver level shift for BT	Reserver QM1, RM18, Rm19and RM20 for BT level shift	0.1
3	9	HW	2014/11/19	COMPAL	added TCM, NTCM BOM option	added RC82 reserve for LPC_CLKRUN# PU 1.8VS	0.1
4	21	HW	2014/11/19	COMPAL	Move the hall sensor to power S/B	remove hall sensor circiut	0.1
5	8, 20	HW	2014/11/21	COMPAL	reserver EC clean CMOS	reserver QB1, RB31, RC83, and RC84	0.1
6	14	EMI	2014/11/24	COMPAL	for EMI request	reserver CX14 and CX15	0.1
7	20	HW	2014/11/25	COMPAL	EC vendor implement	Added NUVOTON_VTT RB32 PD	0.1
8	23	HW	2014/11/25	COMPAL	Reserve USB 2.0 HUB for external USB CONN	Added page 23 for USB 2.0 HUB	0.1
9	20	EC	2014/11/25	COMPAL	Change and remove EC pin define	<div> <div> PWC_SLP_S3# 97 pin -> 106 pin PCIE_LAN_MAKE# 123 pin -> 19 pin EC_SLP_S4# 85 pin -> 123 pin VR_ON 121 pin -> 108 pin SOC_ENVDD? 1 pin -> 121 pin EC_ENVDD? 74 pin -> 74 pin VQATE 16 pin -> 21 pin SOC_ENNRL 18 pin -> 97 pin </div> <div> Remove RSD1D EC_BT_OFF# RSD_DETECT# EC_L1D_OUT# </div> </div>	0.1
10	23	HW	2014/11/27	COMPAL	Change USB S/B from 2 port to lport	Change JSB1	0.1
11	22	EMC	2014/11/28	COMPAL	Reserve ESD diode	Reserve D4 and DA5	0.1
12	19	HW	2014/12/01	COMPAL	for Audio vendor review change	change RA27 form 4.7K to 2.2K	0.1
13	20	HW	2014/12/01	COMPAL	Reserver SMbus resistor from CPU to EC	Reserve RB16 and RB17	0.1
14	21	HW	2014/12/02	COMPAL	Change LED form green to white	Change LED1, LED2, and LED3 form SC590KGK020 to SC50000A300, and change R6 from 100 to 300 ohm	0.1
15	23	HW	2014/12/02	COMPAL	Reserve USB power switch for S/B on M/B side	Reserve US3, CS13, CS14, CS6 and RS20	0.1
16	18	HW	2014/12/03	COMPAL	For support BT fuctionion WLAN card	Add RM21 for support BT WLAN CARD, reserve RM11, RM12, RM13 for debug	0.1
17	21	HW	2014/12/22	COMPAL	JTP1 pin swap for Tp module imformation error	Swap JTP1 pin define	0.2
18	16, 22	EMI	2014/12/22	COMPAL	For EMI requested	Change DL1, LS1 and LS2 Bom structure from EMI@ to @EMI@ and chage RS6, RS7, RS8, and RS9 from @EMI@ to EMI@	0.2
19	23	HW	2014/12/22	COMPAL	BT function fail, pin connected error	Swap USB20_BT_P & USB20_BT_N	0.2
20	15	HW	2014/12/22	COMPAL	HDMI function fail, pin connected error	Swap HDMI_R_CK- & HDMI_R_CK+, HDMI_R_D1+ & HDMI_R_D1-	0.2
21	22, 23	HW	2014/12/24	COMPAL	ME Z-high interfere	Change CS4, CS14 from SF000006900 to SF000006R00	0.2
22		HW	2014/12/24	COMPAL	change o ohm to short pad	change RX9, RX10, RL1, RML, RA3, RA4, RA1, RA3, RA5, RB7, RB4, R01, R04, RX7, RC76, RC77, RC48, RC70, RC74, RC80 to short pad	0.2
23		EMI	2015/01/05	COMPAL	change o ohm to short pad for EMI requested	change RX12, RX13, RL5, RL7, RA1, RA24, RA26, RA28, RS6, RS7, RS8, RS9 to short pad	0.2
24	15	EMI	2015/01/05	COMPAL	change BOM structure	Change LY1, LY2, LY3 and LY4 BOM structure from EMI@ to @EMI@ Change RY12, RY15, RY18, and RY21 form @EMI@ to EMI@ Change RY11, RY13, RY14, RY16, RY17, RY19, RY20, RY22 form 0 ohm @EMI@ to 8.2 ohm EMI@	0.2
25	5, 7	ESD	2015/01/05	COMPAL	add ESD cap for ESD requested	Add CC20, CC94, CC95 and change CD2 form 0.1U to 100P for ESD	0.2
26	8	HW	2015/01/07	COMPAL	prevent the power leakage issue.	Chaneg RC29 and RC33 bom structure form 14@ to @	0.2
27	20	HW	2015/01/09	COMPAL	prevent the antenna effect	Add CB13, CB14 0.1u 0402	0.2
28	22	DFB	2015/01/10	COMPAL	add test point for DFB requested	Add T22 (JODDD1.11)	0.2
29	21	HW	2015/01/14	COMPAL	add screw hole conneted to GND	add H13, H14 conneted to GND	0.2

Security Classification

Issued Date

Compal Secret Data

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2014/11/07

2015/11/07

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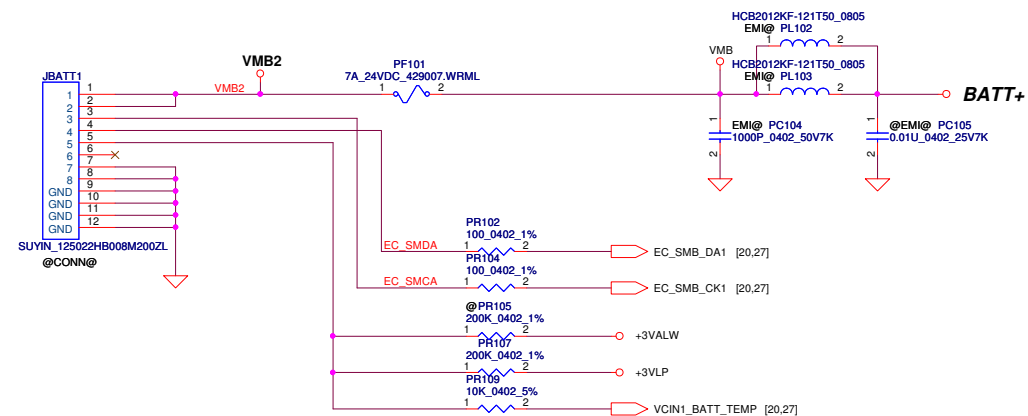
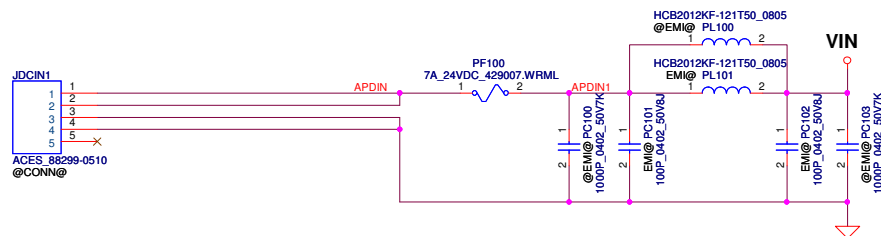
Doc Number

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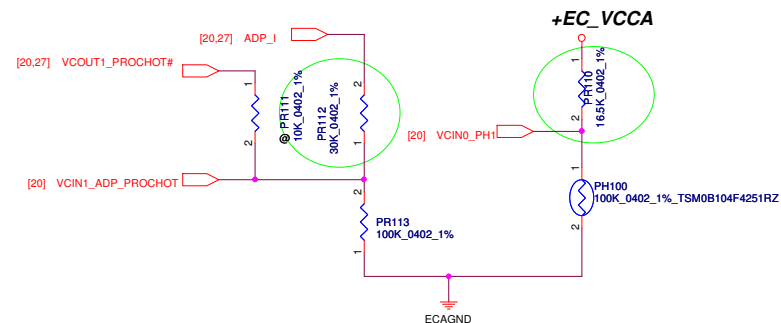
Date: Wednesday, January 14, 2015 Sheet 25 of 32

Rev

0.2

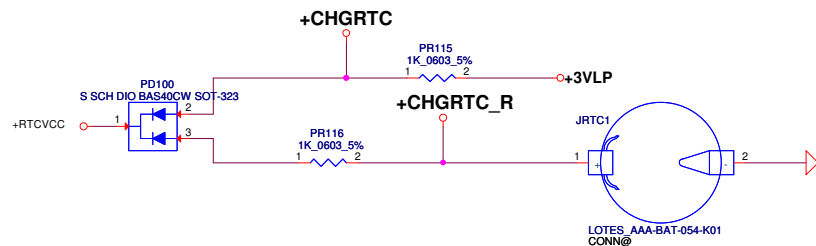


PH7 under CPU bottom side :
CPU thermal protection at 93 \pm 3 degree C
Recovery at 56 \pm 3 degree C

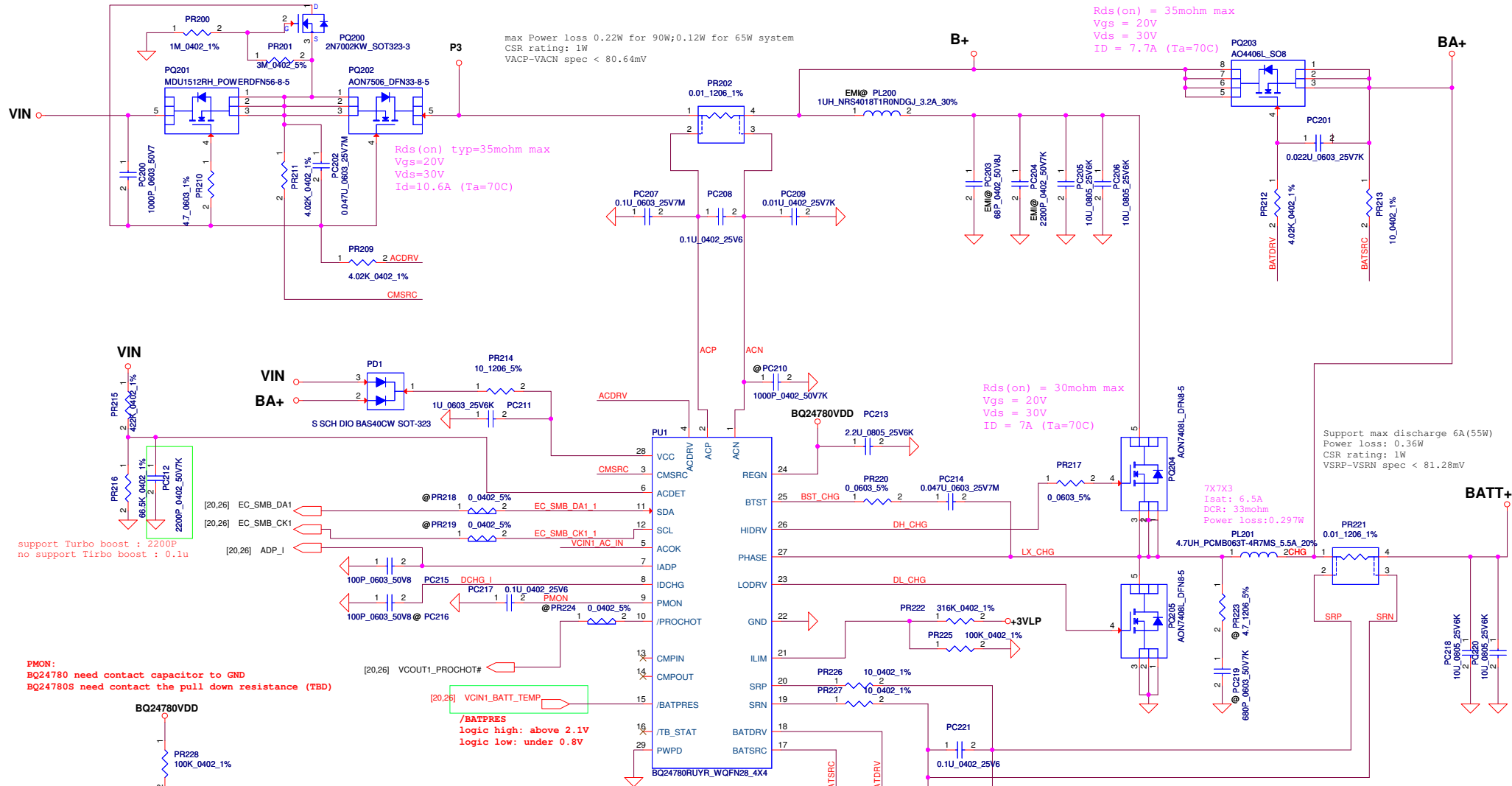


VCIN1 setting
Trigger point is 1.0V at 65W
Recovery point is 0.692V at 45W

RTC



	ADP_SET1	ADP_SET2
45W adapter	0	0
60W adapter	1	0
90W adapter	0	1
135W adapter	1	1



support Turbo boost : 2200P
no support Tirbo boost : 0.1u

PMON:
BQ24780 need contact capacitor to GND
BQ24780S need contact the pull down resistance (TBD)

****Design Notes****
For 65 /90W system, 3S1P/3S2P battery
Maximum Charging current 3A
Maximum Battery discharge power 55W
#Register Setting
1. 0X12 bit2 set 1 (default 0) to enable turbo boost function
2. Disable turbo when AC only
#Circuit Design
1. ILIM pull high voltage need base on 3/5V enable control
2. Use 7X7 choke and 3X3 H/L side MOSFET
Charge current 3A
Power loss : 1.79W (H/S=0.227W, L/S=1.2738W, Choke=0.297W)
Power density : 0.61 (23X16)
#Protect function
1. ACOVP : VCC voltage > 24V
2. Charger timeout : No communication within 175s(default)
3. ACOC : 3.33 X Input current DAC setting (default:Disable)
4. CHGOCP : based on charge current setting
5. BATOVF : 103-106%
6. BATLOWV : 2.6V
7. TSHUT : 155C
8. IFAULT HI : 750mV (default:Disable)
9. IFAULT LOW : 230mV (default)

Vin Dectector			
	Min.	Typ	Max.
L-->H	17.16V	17.63V	18.12V
H-->L	16.76V	17.22V	17.70V

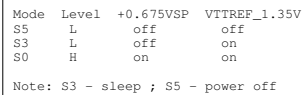
VILIM = 20*ILIM*Rsr
ILIM = 3.3*100/(316+100)/20/0.01
= 3.966 A

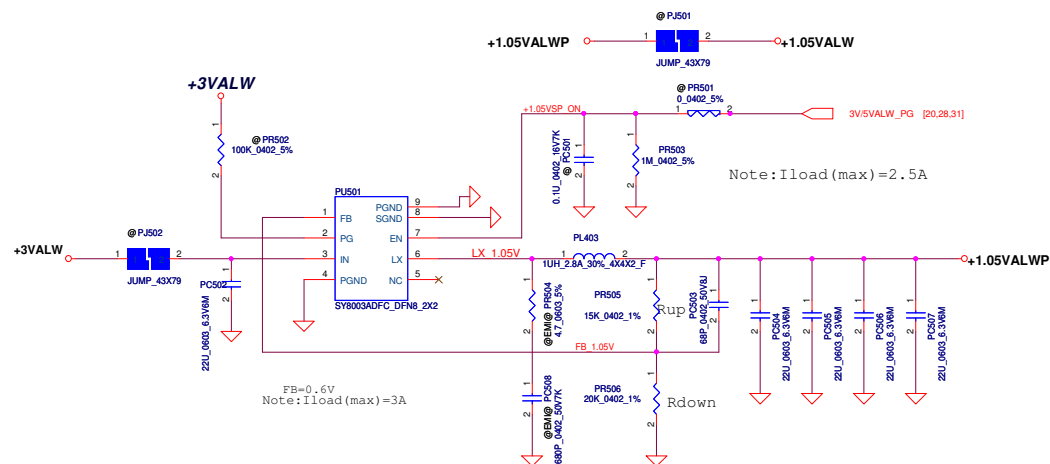
Module model information
BQ24780_V1.mdd for dual layer

RT8207P_V1.mdd	For Single layer
RT8207P_V2.mdd	For Dual layer

RT8207P_V1.mdd	For Single layer
RT8207P_V2.mdd	For Dual layer

0.675Volt +/- 5%
TDC 0.7A
Peak Current 1A

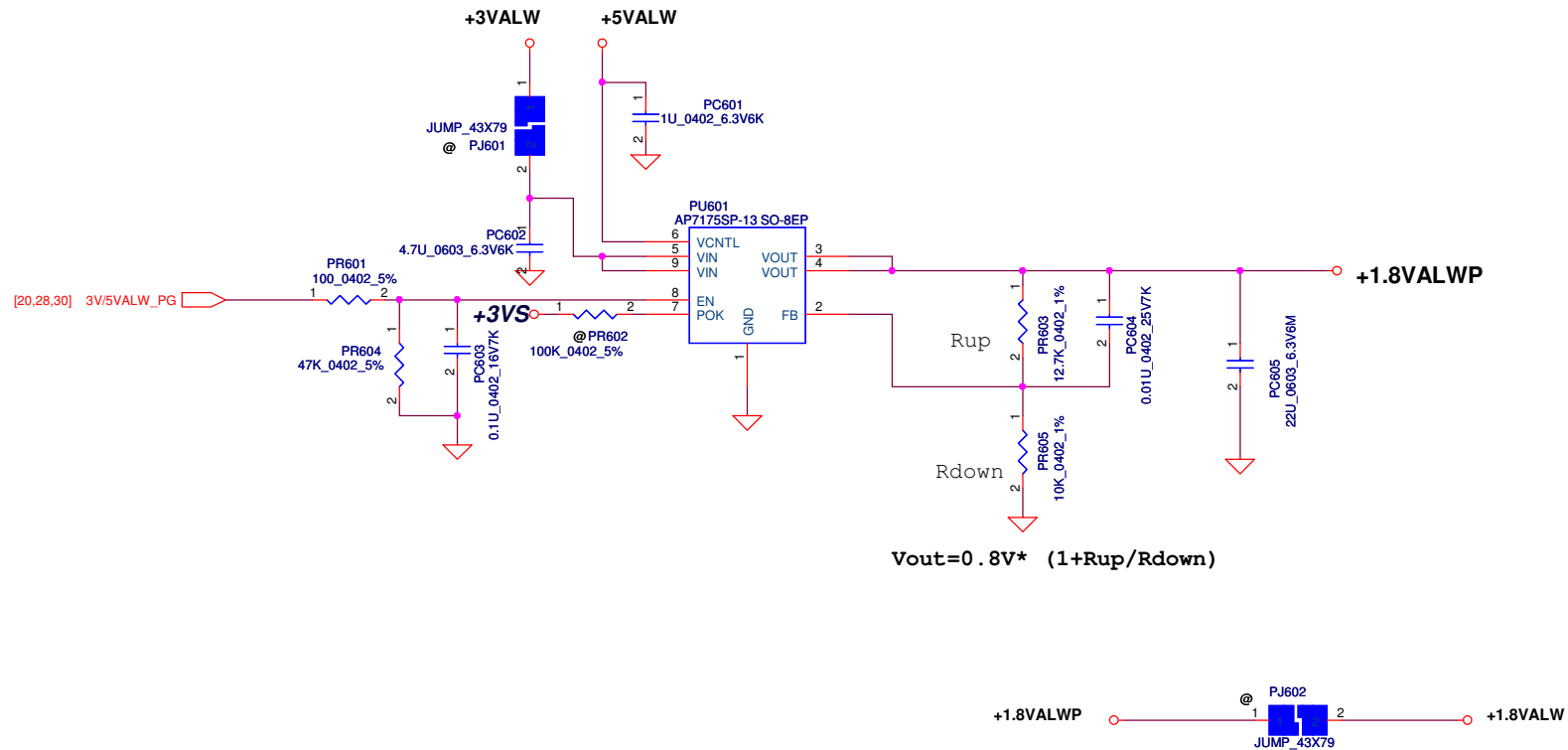




Note:
When design Vin=5V, please stuff snubber
to prevent Vin damage

$$V_{out} = 0.6V * (1 + R_{up}/R_{down})$$

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				Document Number	Bay Trail M LA-C771P
				Date	Thursday, January 15, 2015
				Sheet	30 of 30



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				Date:	Thursday, January 15, 2015	Sheet 31 of 31

Module model information
ISL95833-BTM_V1A.mdd for IC portion
ISL95833-BTM_V1B.mdd for SW portion

Design for BT-M 4.5W CPU

PR15 and PR27
27.4K ohm for 100 degree
61.9K ohm for 110 degree

Alert assert
threshold: 100C

Close GFX L/S MOS

Close CPU L/S MOS

VR_Hot# assert
threshold: 100C

+5VALW

+3VALW

Close CPU choke

0.36uH DCR= 1.4±5% m ohm

0.36uH DCR= 1.4±5% m ohm

Compal Electronics, Inc.

PWR-CPU_CORE

Bay Trail M LA-C771P

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				Sheet	32 of 32

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

Item	Reason for change	PG#	Modify List	Date	Phase
1	PR601_0_0402 change PR601_100_0402	31	HW 需求		SIT
2	修正PC207 fromluF to 0.1uF・修正PC209 from 0.1u to 0.01uF	27	線路修正		SIT
3	pc203改EMI@上件	27	EMI 需求		SIT
4	unpop cap from PC785 to PC786	32	ME 需求		SIT
5	change PR410,PR411,PR501,PR218,PR219,PR224 to short pad	27,29,30	HW 需求		SIT
6	change PC715・PC718・PC723・PC770・PC774・PC777・PC779 From 0402 to 0603	32	線路修正		SIT
7					
8					
9					
10					
11					
12					
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14		33			
15		38			
16		38			
17		31			
18		31			
19		35			
20		35			
21		38			
22		35			
23		32		2014/4/4	SVT
		33			
		34			
24		38		2014/4/14	SVT
25		38		2014/4/14	SVT

