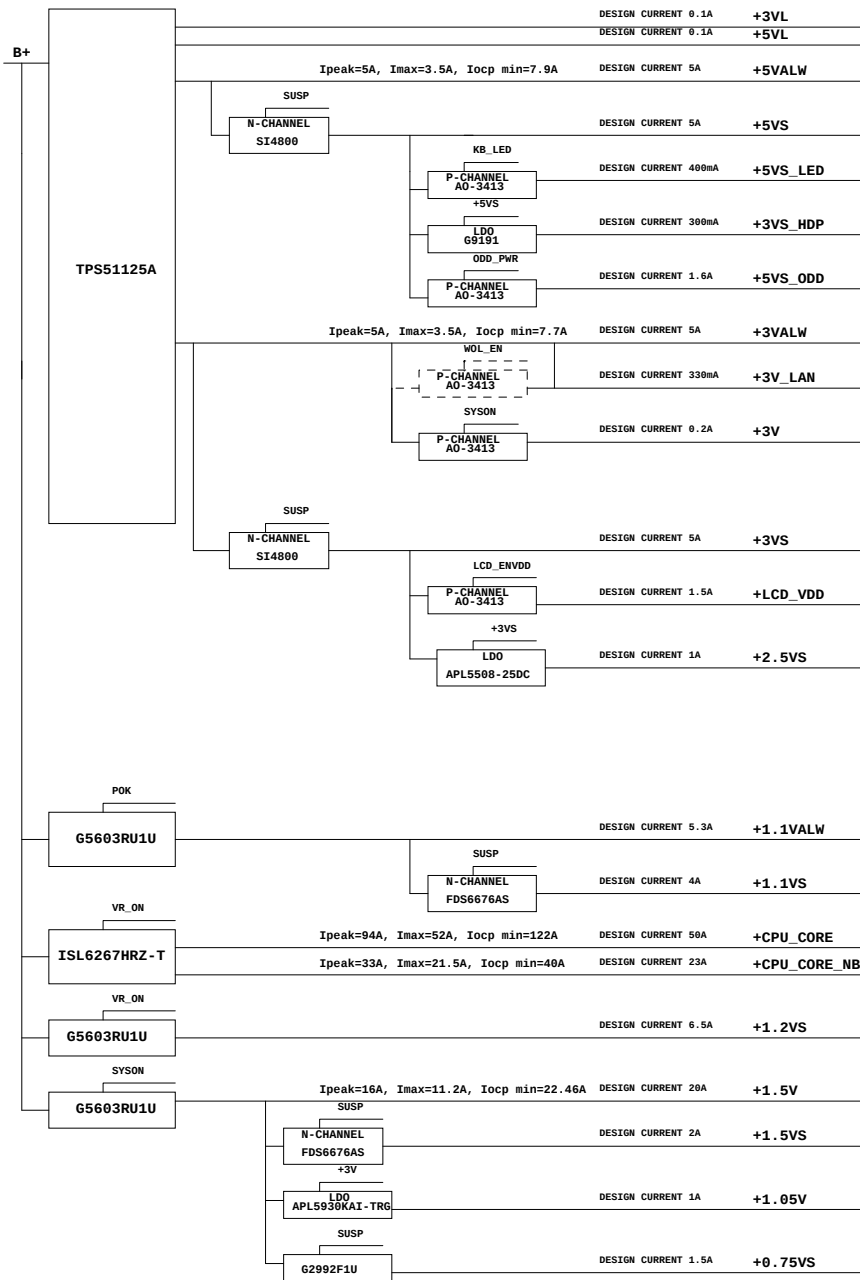


QOQAE
Ontario 10AS

LA-7571P REV 1.0 Schematic

AMD Llano FS1 Processor / Hudson M2/M3
2011-05-04 Rev 1.0

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Voltage Rails (0 MEANS ON X MEANS OFF)

power plane State	+RTCVCC	B+	+5VL +3VL	+5VALW +3VALW +1.1VALW +VSB	+1.5V +3V +1.05V	+5VS +3VS +2.5VS +1.5VS +1.2VS +1.1VS +0.75VS +CPU_CORE +CPU_CORE_NB
S0	0	0	0	0	0	0
S1	0	0	0	0	0	0
S3	0	0	0	0	0	X
S5 S4/AC	0	0	0	0	X	X
S5 S4/ Battery only	0	0	0	X	X	X
S5 S4/AC & Battery don't exist	0	X	X	X	X	X

BTO Option Table

Function	HDMI-CEC		LAN		CAM+MIC	KB LED	Renesas USB3.0
description		Y	U	V	X	K	Reserved
explain	HDMI	HDMI+CEC	10/100	10/100/1000	CAM	KB LED	Renesas USB3.0
BTO		CEC@	8105E@	8111E@	CAM@	KBL@	RENE@

Function	ODD		Mini Card		Chipset		EC	
description		T	G	J	FCH	N/A		Reserved
explain	Normal	Slot	3G	JET		Hudson-M3		KB-930 KB-9012
BTO	ODD0@	ODD1@	3G@	JET@	3GJET@	HUDM3R1@ HUDM3R3@	KB930@	KB9012@

Function	FCH		UMA	
description	HM2	HM3	UM	
explain	Hudson-M2	Hudson-M3		
BTO	M2@	M3@		

STATE	SIGNAL	SLP_S3#	SLP_S5#
Full ON		HIGH	HIGH
S1(Power On Suspend)		HIGH	HIGH
S3 (Suspend to RAM)		LOW	HIGH
S4 (Suspend to Disk)		LOW	HIGH
S5 (Soft OFF)		LOW	LOW
G3		LOW	LOW

FCH SM Bus Address (SCL0/SDA0)

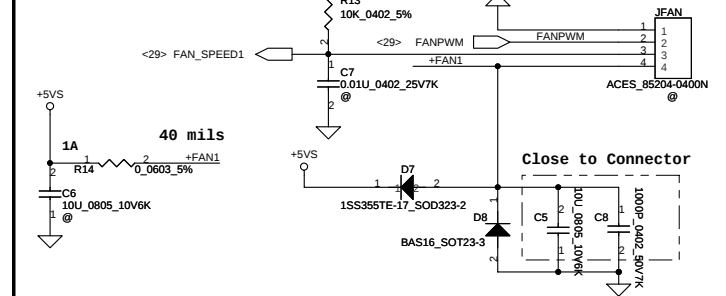
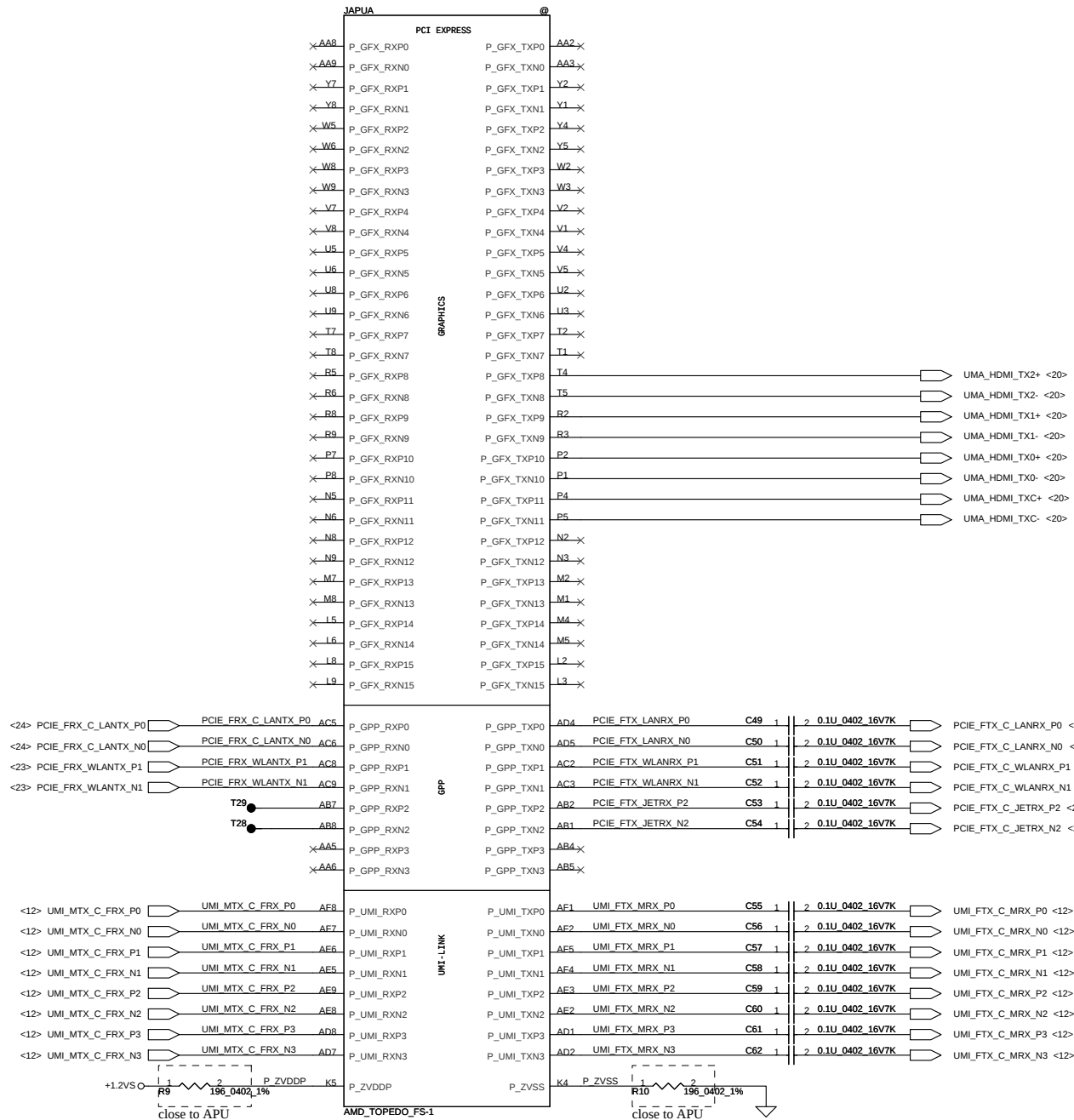
Power	Device	HEX	Address
+3VS	DDR SO-DIMM 0	A0 H	1010 0000 b
+3VS	DDR SO-DIMM 1	A4 H	1010 0100 b
+3VS	WLAN		
+3VS	3G		

EC SM Bus1 Address

Power	Device	HEX	Address
+3VL	Smart Battery	16 H	0001 0110 b
+3VL	HDMI-CEC	34 H	0011 0100 b
Power	Device	HEX	Address
+3VL	Cap. Sensor		Virtual I2C

EC SM Bus2 Address

Power	Device	HEX	Address
+3VS	G-Sensor	40 H	0100 0000 b



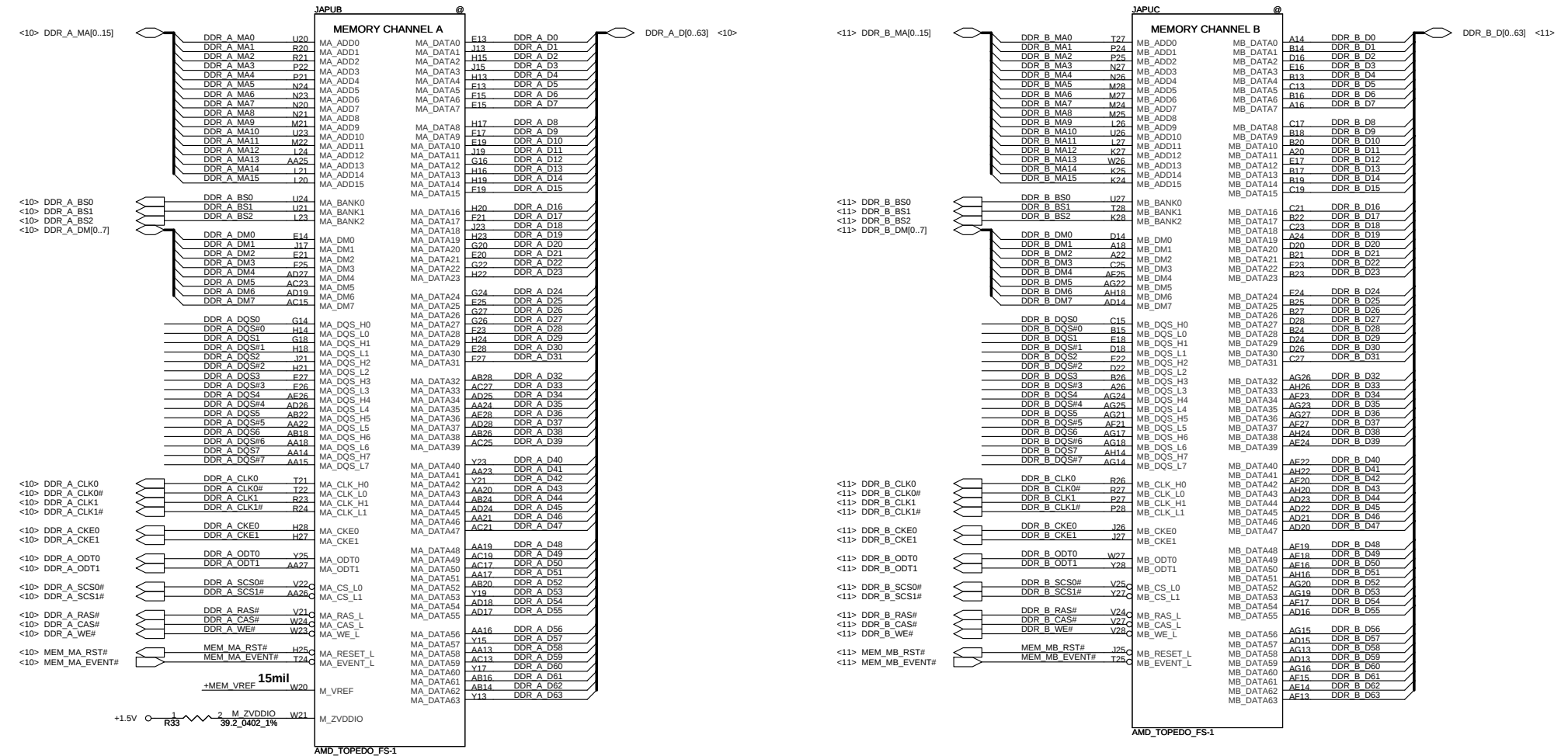
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<10> DDR_A_DQS[0..7]

<10> DDR_A_DQS# [0..7]

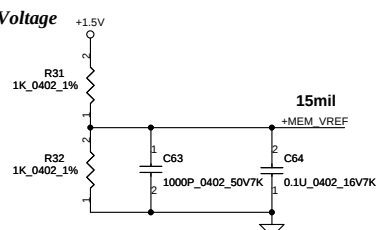
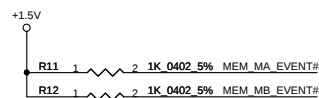
<11> DDR_B_DQS[0..7]

<11> DDR_B_DQS# [0..7]



EVENT# pull high

0.75V Reference Voltage



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To LVDS Translator

Close to APU

To FCH

Close to APU

100MHz (SS)

100MHz (NSS)

route on high speed layer

SB-TSI

Close to R38 and R39

Avoid leakage issue

Close to JHDT

JAPU0

JAPU0

Close to APU

To FCH

AUX 2-5 are for GFX interface use,
they could be selected to DDC or
AUX logic

VDDIO level
Need level shifter

Change TEST35 PH to
avoid HDMI issue

design guide 2K PH P.97

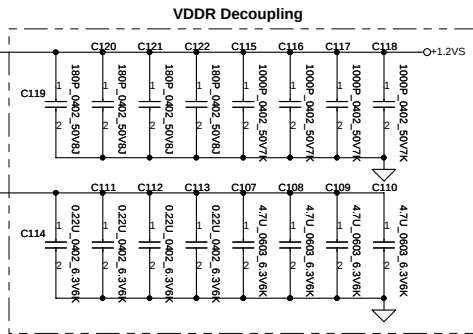
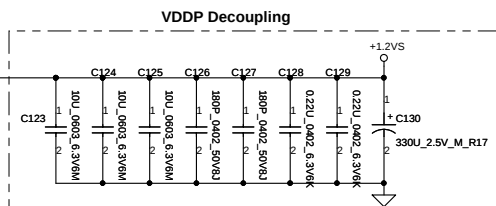
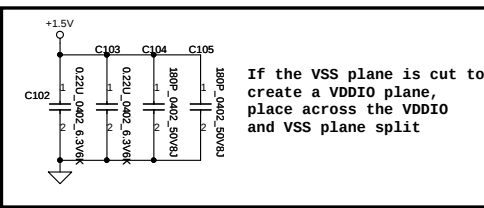
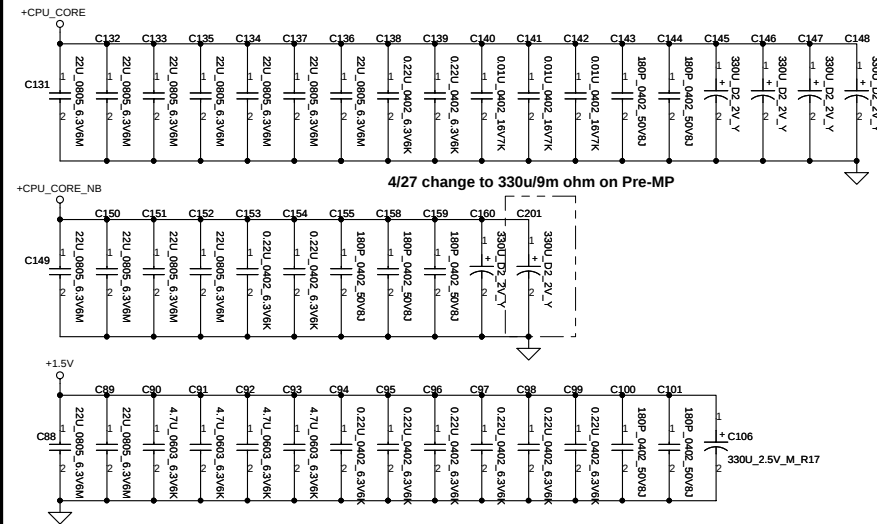
Avoid leakage issue

Thermal Shutdown Temperature:
125 degree

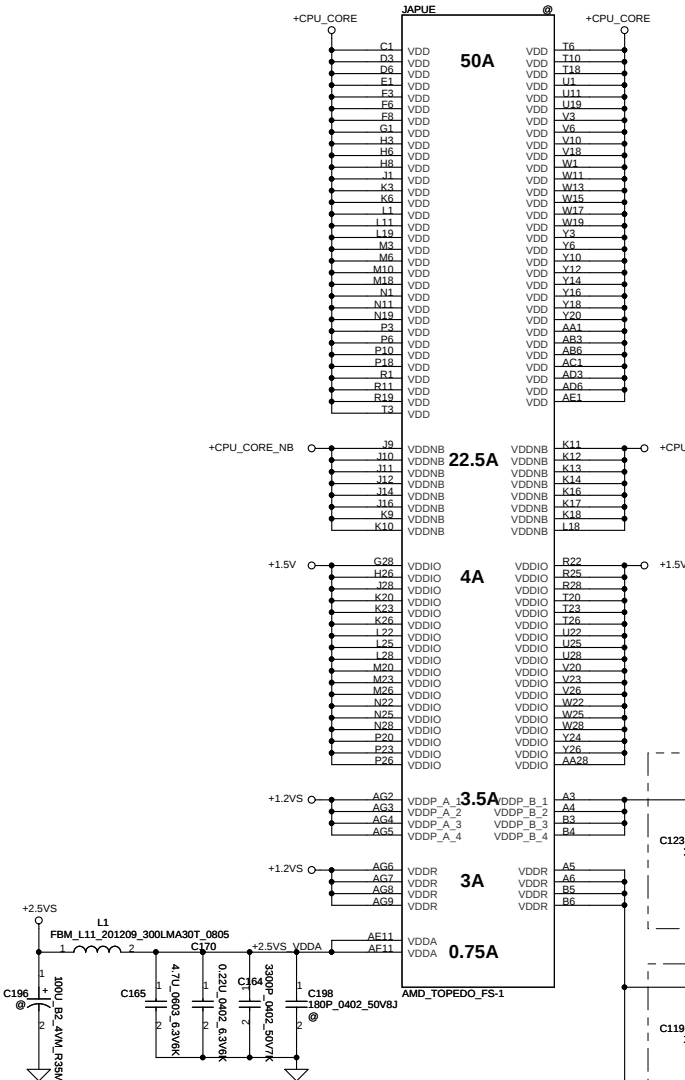
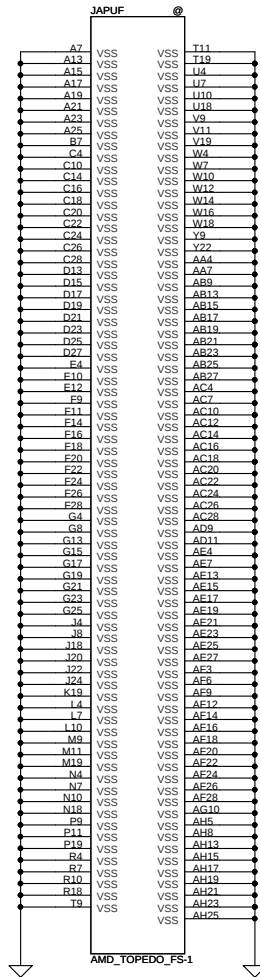
HDT Debug conn

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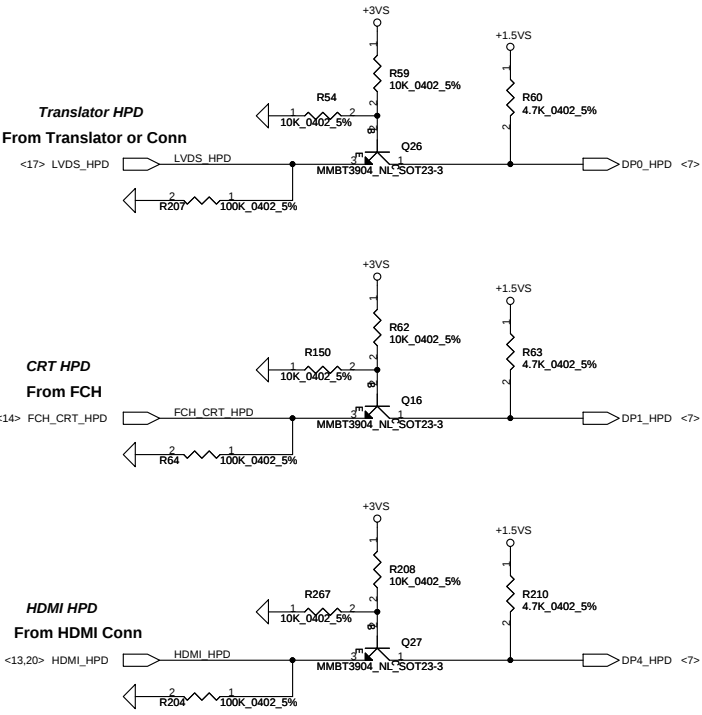
CPU BOTTOM SIDE DECOUPLING



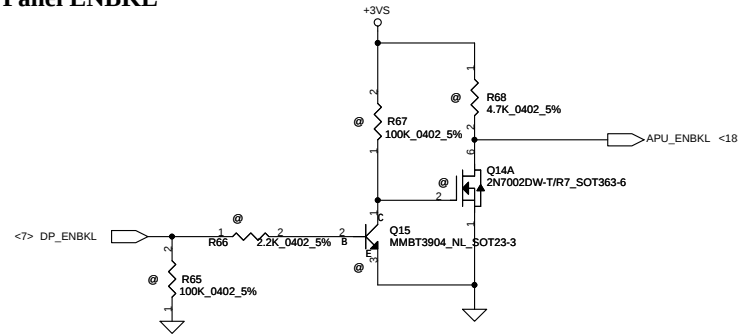
CRB Decoupling Capacitor (include PWM side) :						
VDD: 470uF x 6 22uF x 9 0.22uF x 2 0.01uF x 3 180pF x 2	VDDNB: 470uF x 4 22uF x 6 0.22uF x 2 180pF x 3	VDDIO: 680uF x 1 330uF x 1 22uF x 2 4.7uF x 4 0.22uF x 8 180pF x 4	VDDP/R_PWM: 470uF x 2 10uF x 1	VDDP: 10uF x 3 0.22uF x 2 180pF x 2	VDDR: 4.7uF x 4 0.22uF x 4 1nF x 4 180pF x 4	VDDA: 100uF x 1 4.7uF x 1 0.22uF x 1 3.3nF x 1



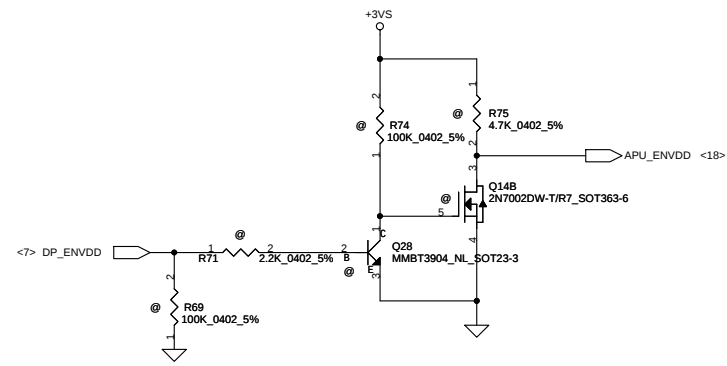
HPD



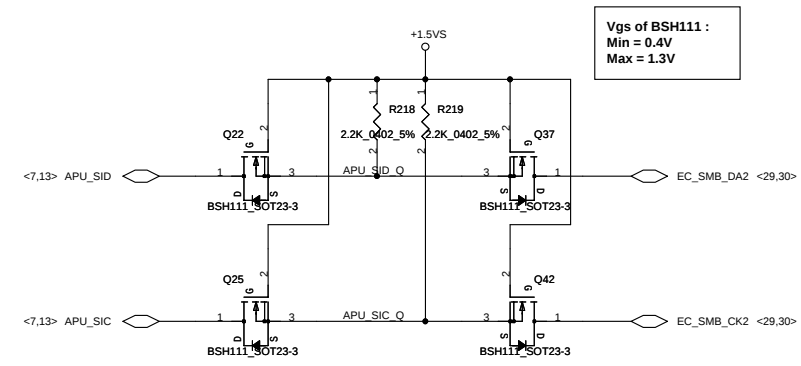
Panel ENBKL



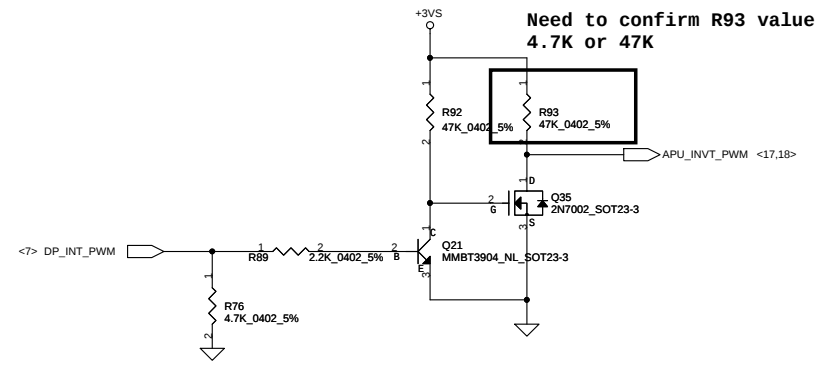
Panel ENVDD



SB-TSI

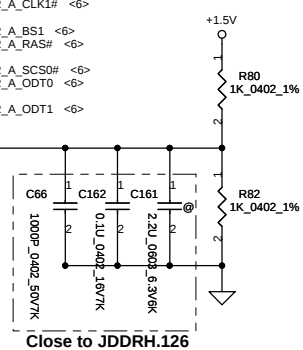
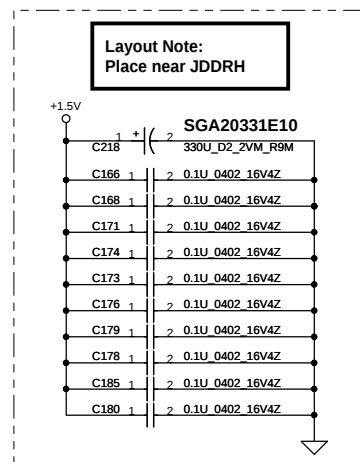
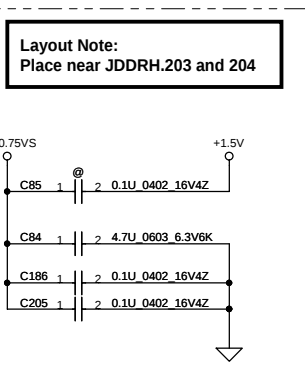
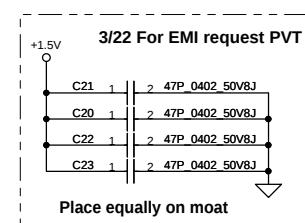
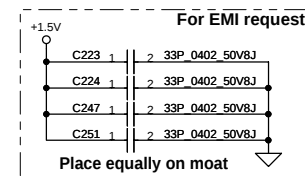
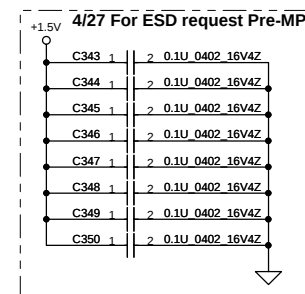
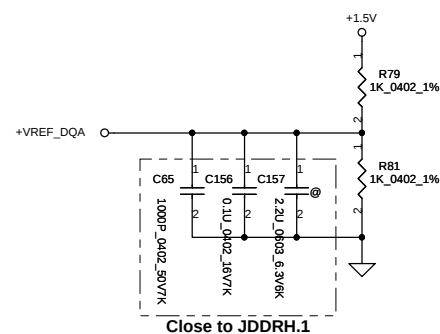
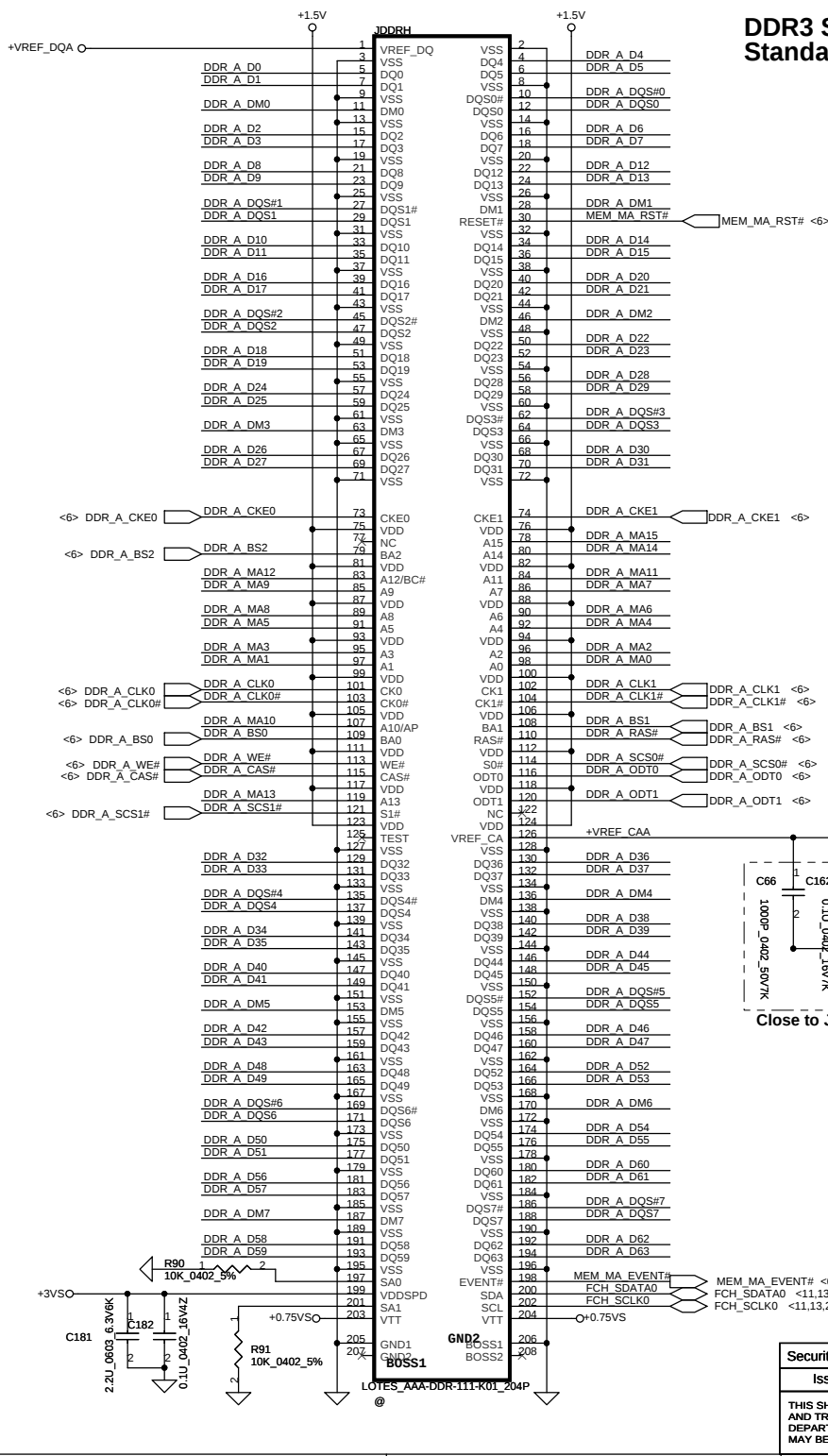


Panel PWM

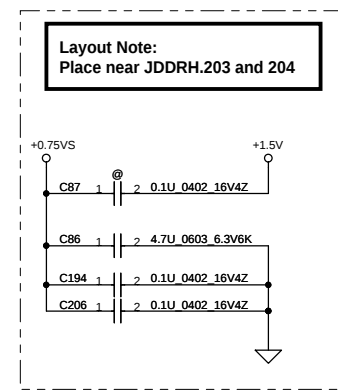
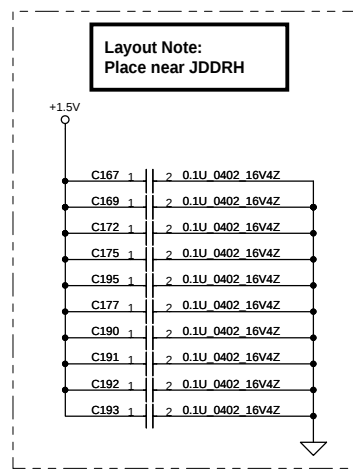
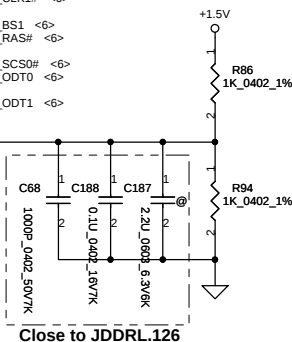
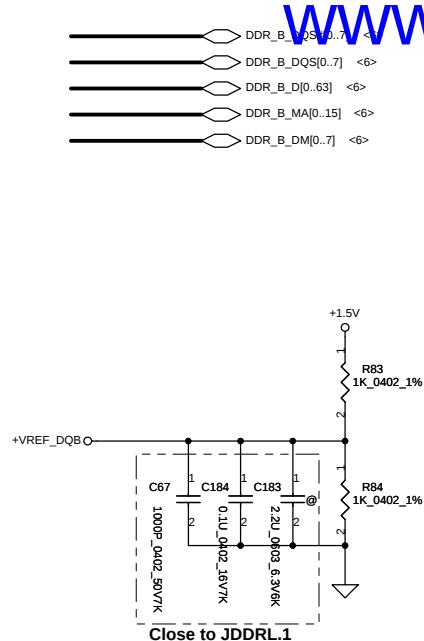
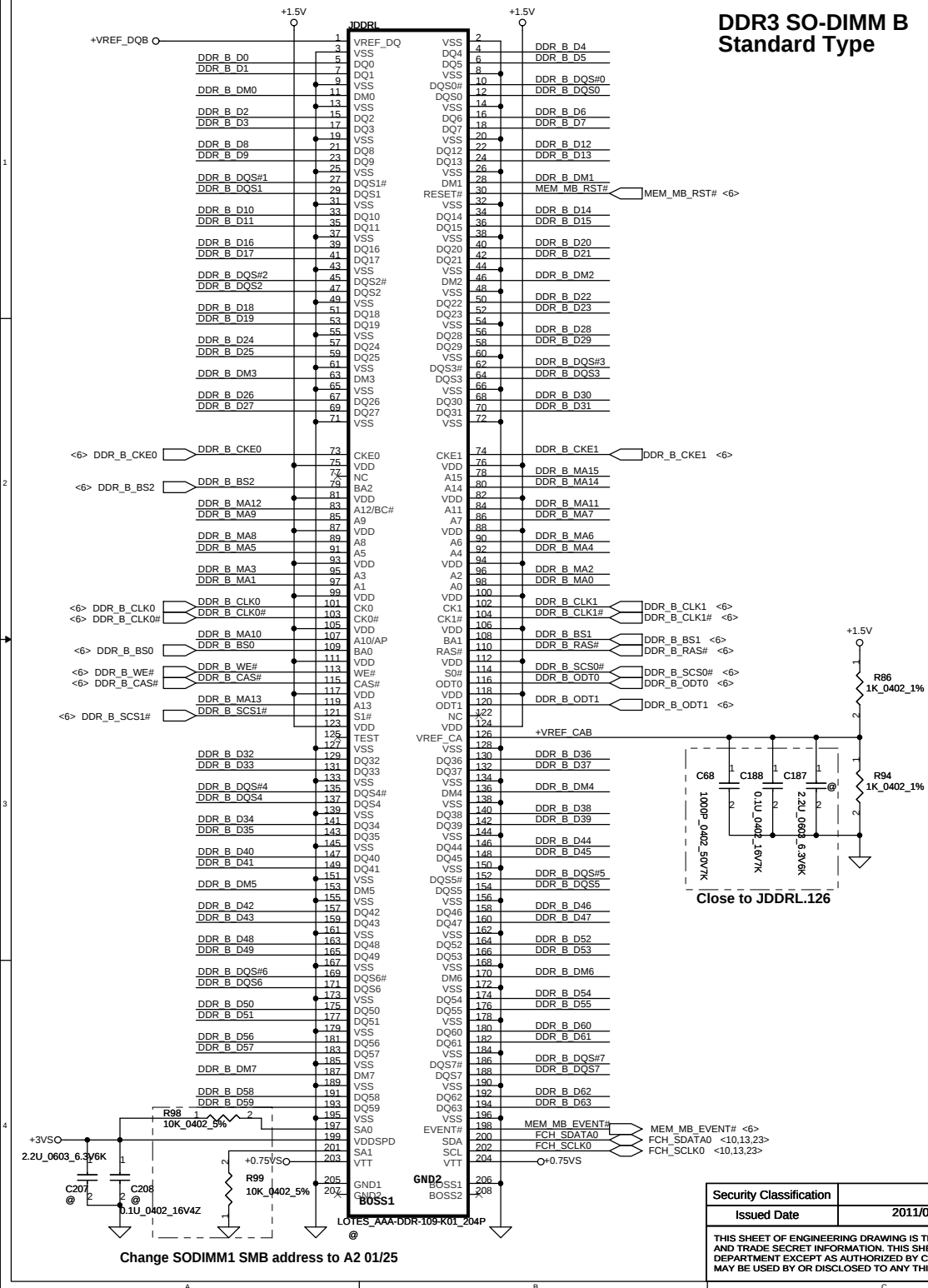


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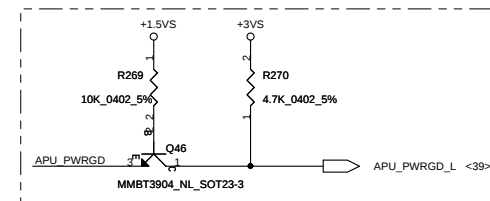
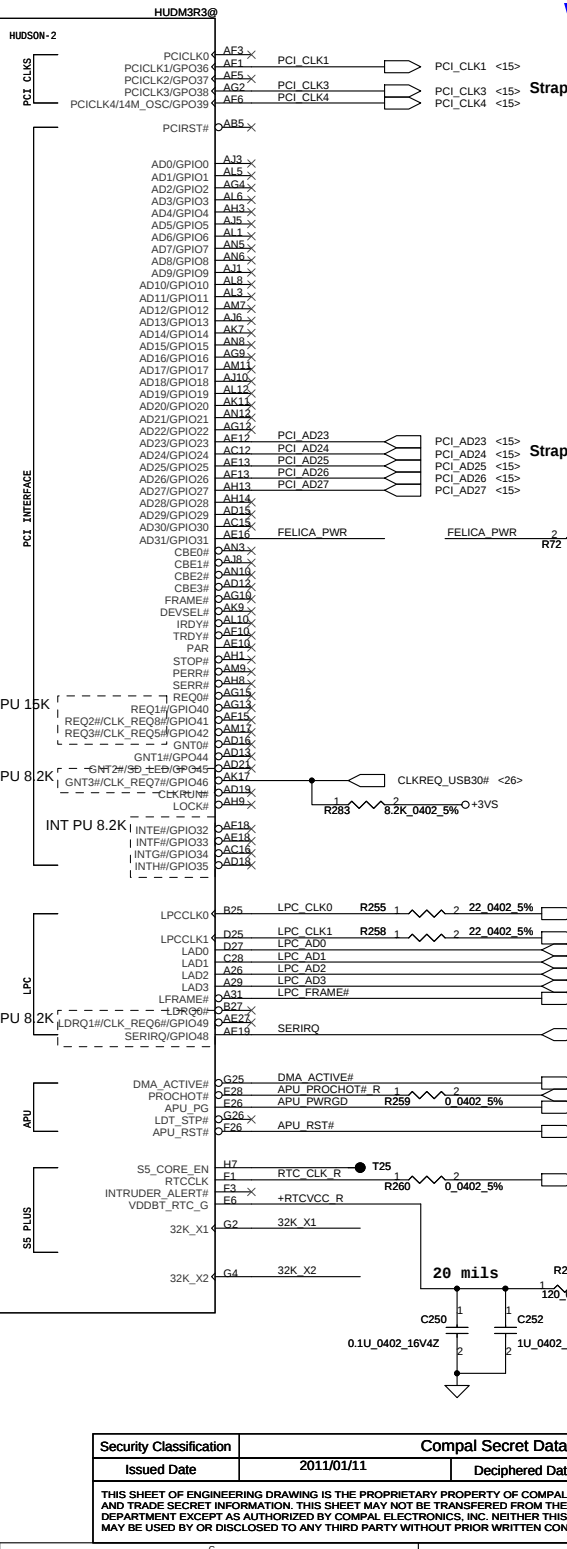
DDR3 SO-DIMM A Standard Type



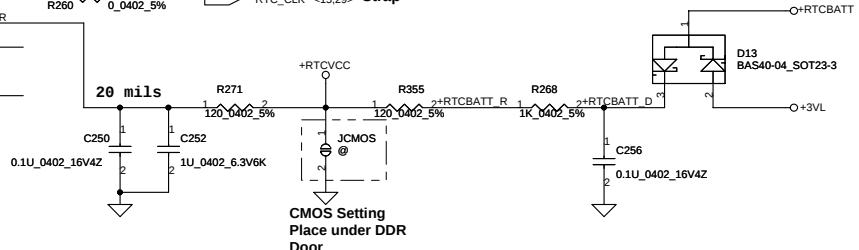
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DDR3 SO-DIMM B
Standard Type

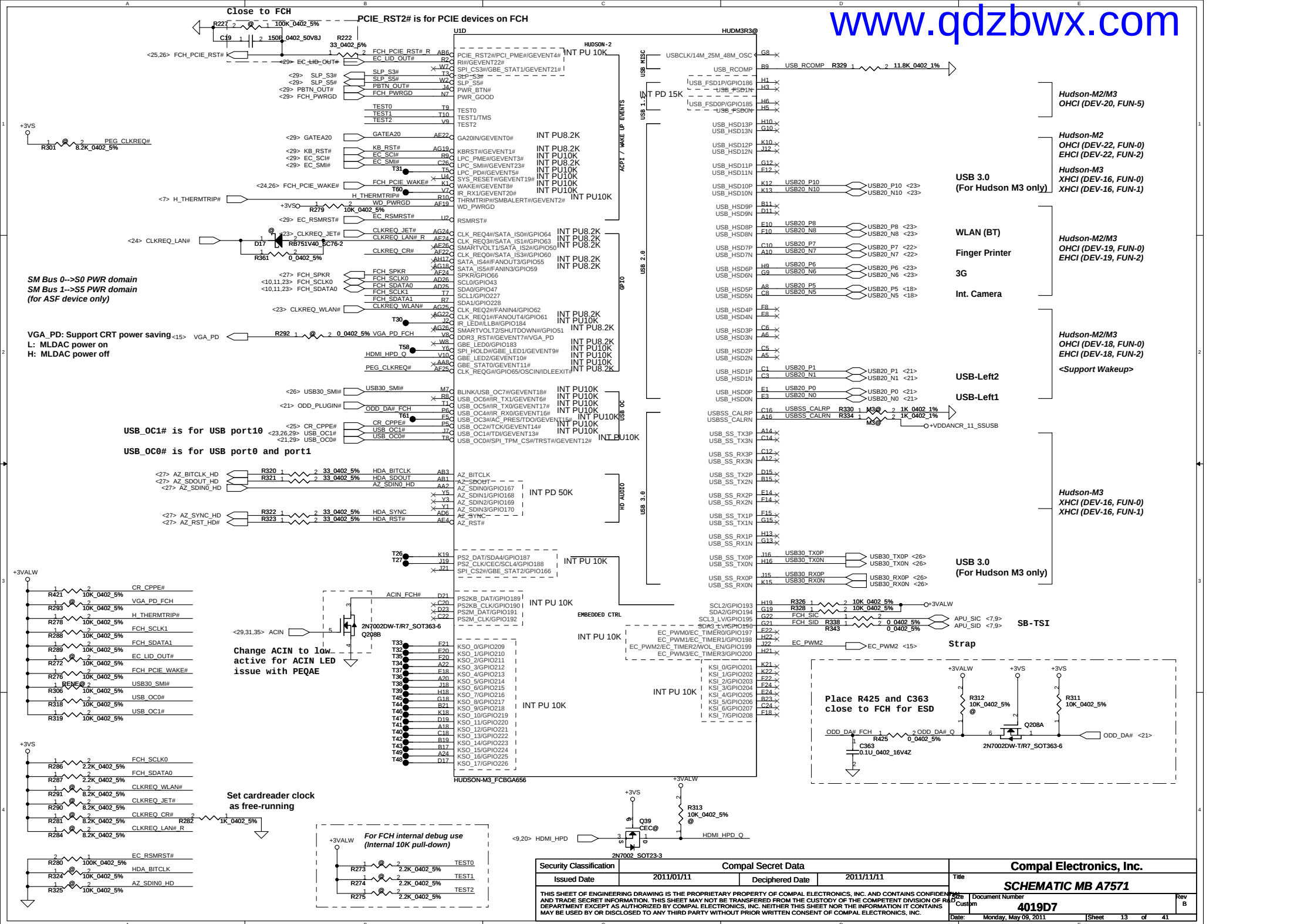
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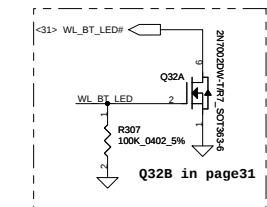
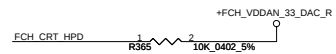
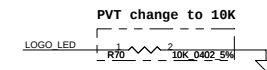
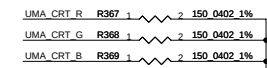
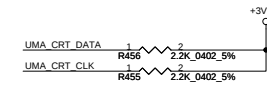
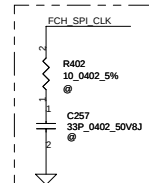
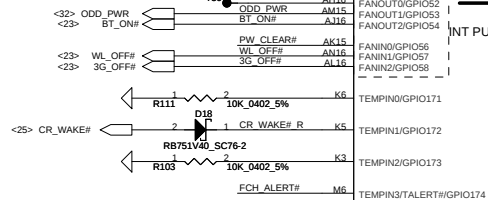
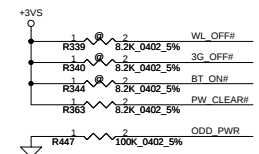
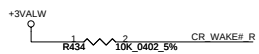
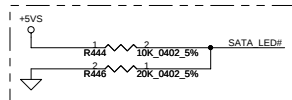
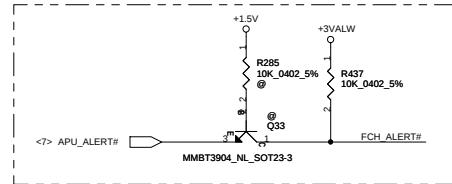


S5_CORE_EN is for S5+ mode
used to turn off +1.1VALW and
+3VALW of FCH on S5+ mode



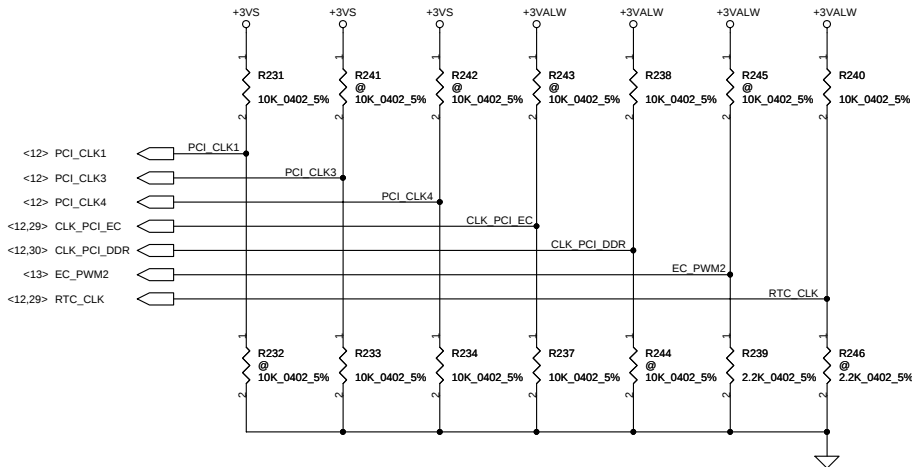
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STRAP PINS

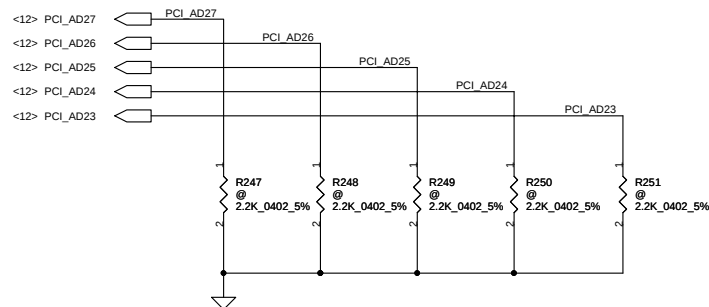
	PCI_CLK1	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	EC_PWM2	RTC_CLK
PULL HIGH	ALLOW PCIE GEN2 DEFAULT	ENABLE DEBUG STRAP	NON_FUSION CLOCK MODE	EC ENABLED	CLKGEN ENABLED DEFAULT	LPC ROM (INTERNAL 10K PULL-UP)	S5 PLUS MODE DISABLED DEFAULT
PULL LOW	FORCE PCIE GEN1	DISABLE DEBUG STRAP DEFAULT	FUSION CLOCK MODE DEFAULT	EC DISABLED DEFAULT	CLKGEN DISABLE	SPI ROM DEFAULT	S5 PLUS MODE ENABLED



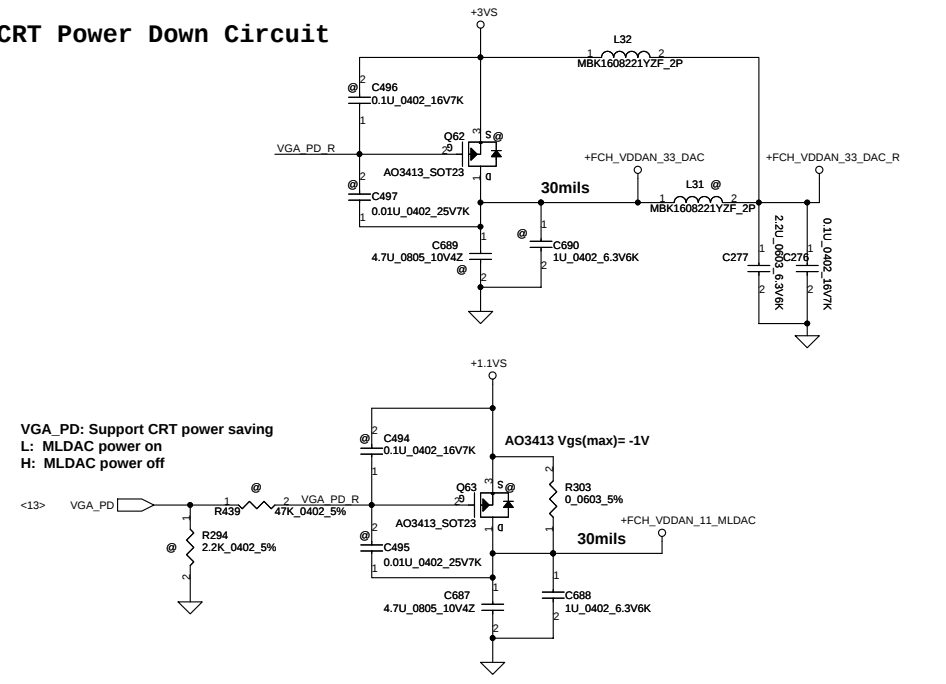
DEBUG STRAPS

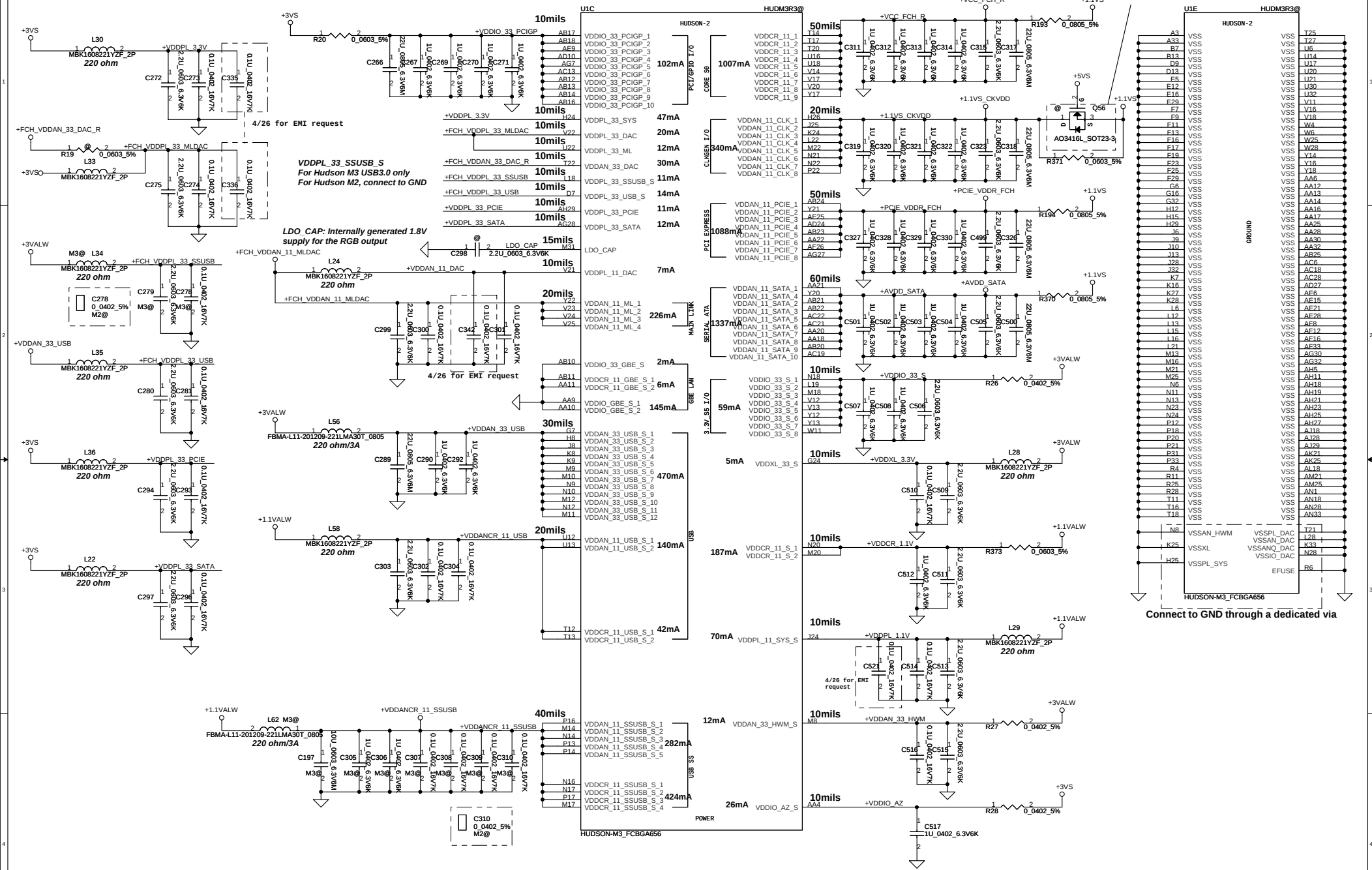
FCH HAS 15K INTERNAL PU-UP FOR PCI_AD[27:23]

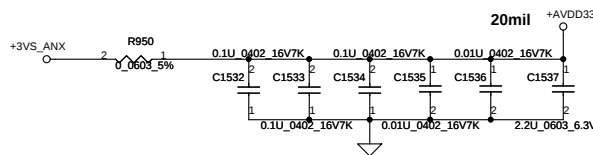
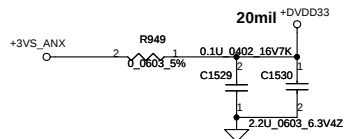
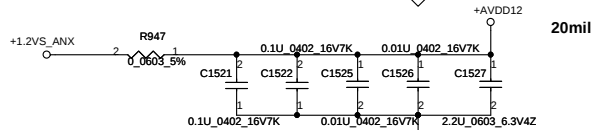
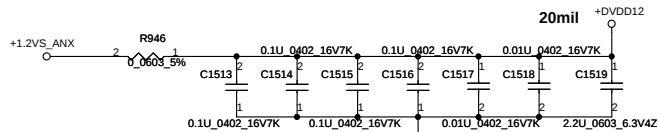
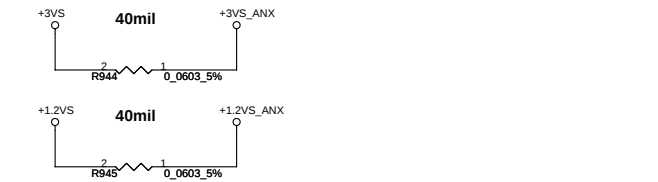
	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE PCI PLL DEFAULT	DISABLE ILA AUTORUN DEFAULT	USE FC PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	DISABLE PCI MEM BOOT DEFAULT
PULL LOW	BYPASS PCI PLL	ENABLE ILA AUTORUN	BYPASS FC PLL	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT



CRT Power Down Circuit







PD 100K at Page10

<7> DP0_AUXN_C
<7> DP0_AUXP_C
<9> LVDS_HPD
<7> DP0_TXN0_C
<7> DP0_TXP0_C

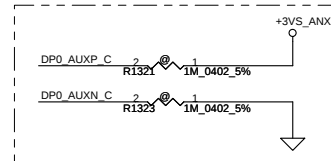
<12,23,24> APU_PCIE_RST#
<18> TL_ENVDD

+3VS_ANX
R30 10K_0402_5%
C1509 0.1U_0402_16V7K

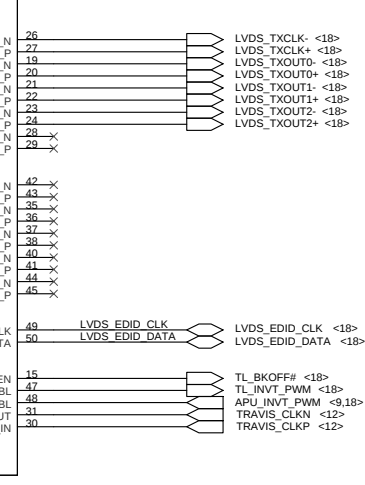
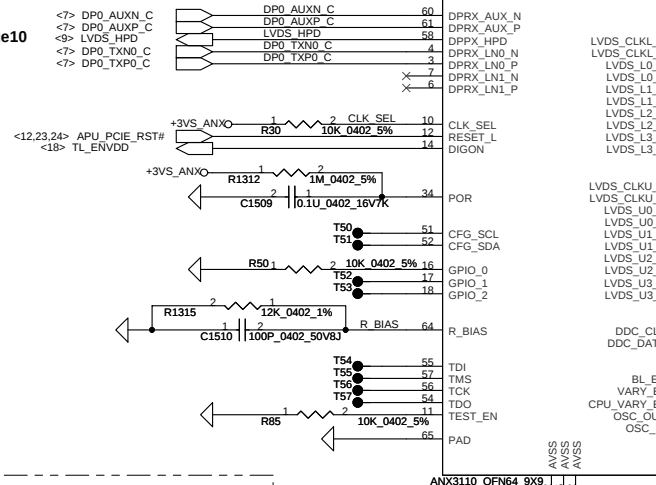
+3VS_ANX
R1312 1M_0402_5%
C1509 0.1U_0402_16V7K

+3VS_ANX
R1315 12K_0402_1%
C1510 100P_0402_50V8J

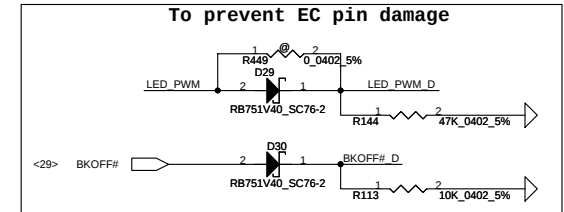
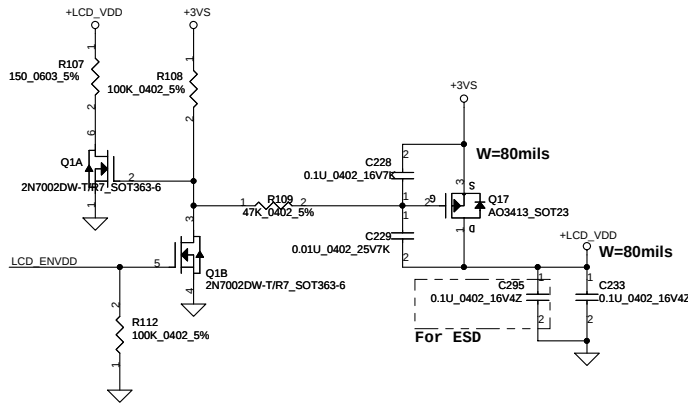
+3VS_ANX
R85 10K_0402_5%



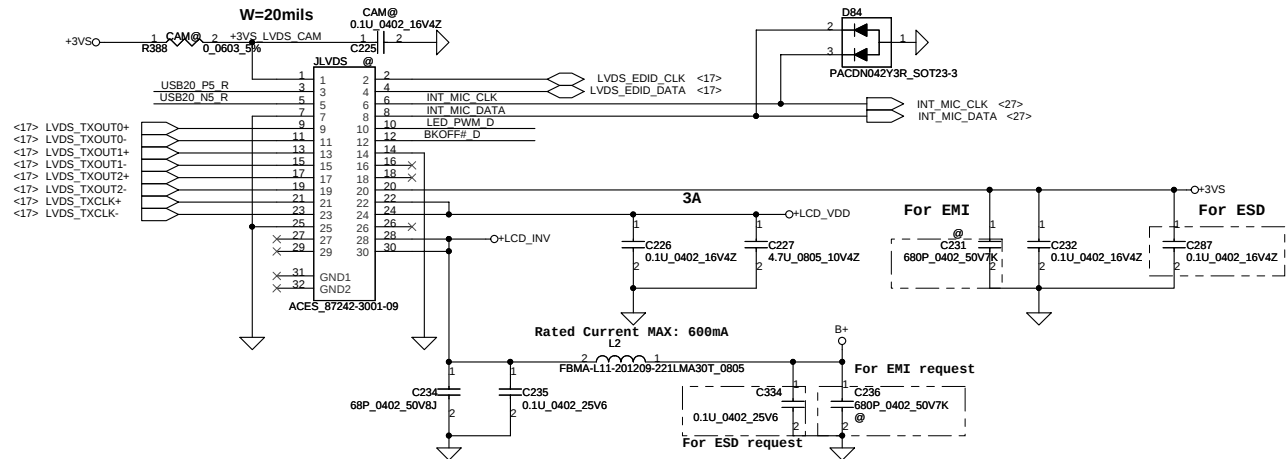
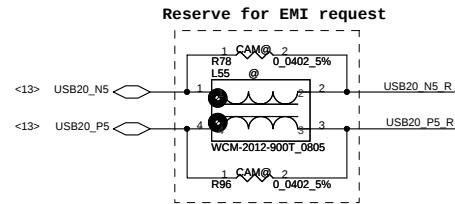
Place via on each trace bus and let resistor very close the via.



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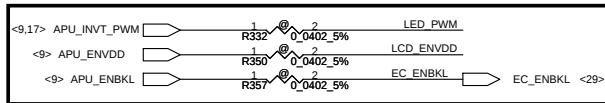
LCD/PANEL BD. Conn.



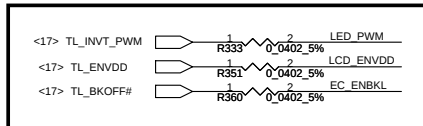
From EC



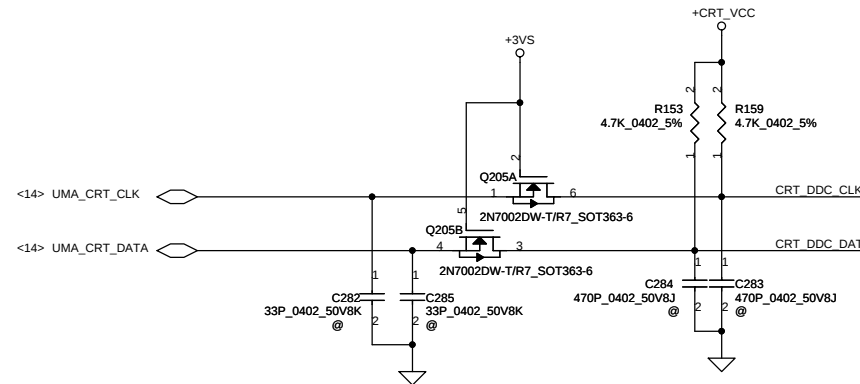
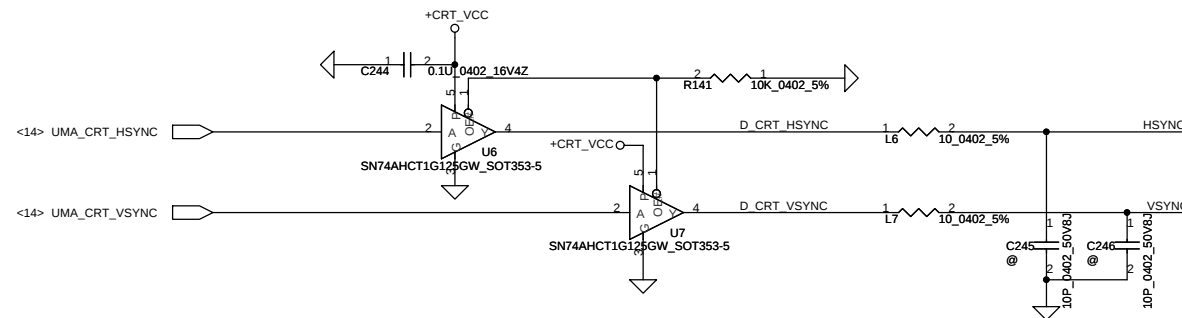
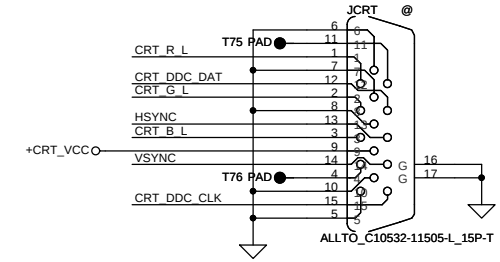
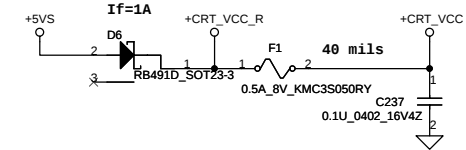
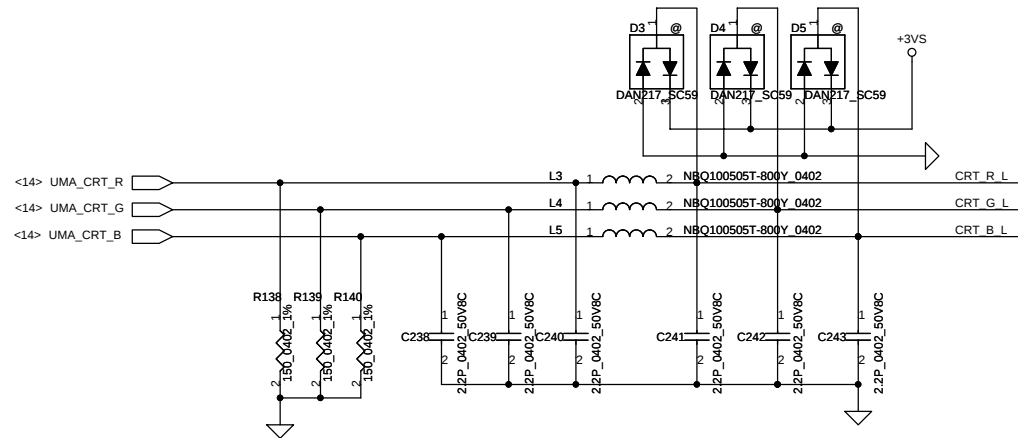
From APU Close to LVDS Connector



For LVDS Translator

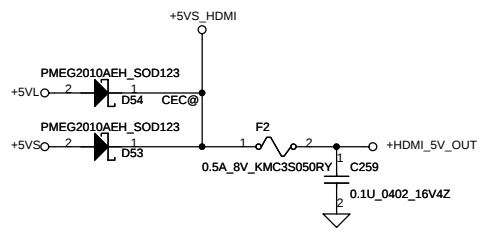
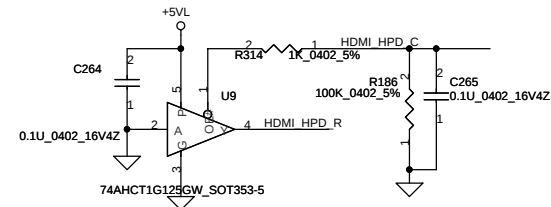
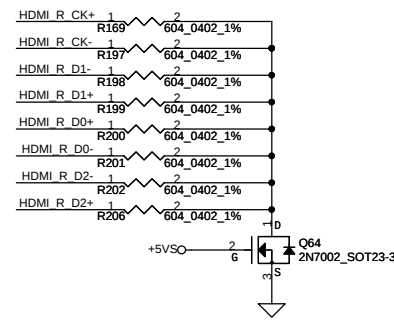
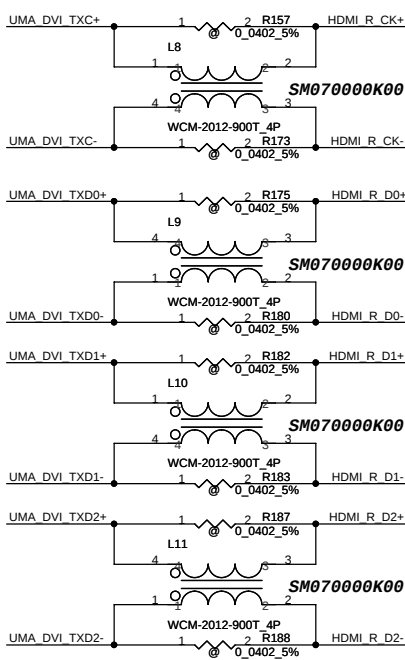
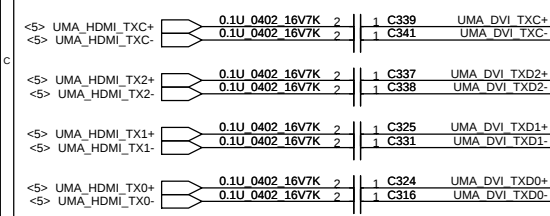
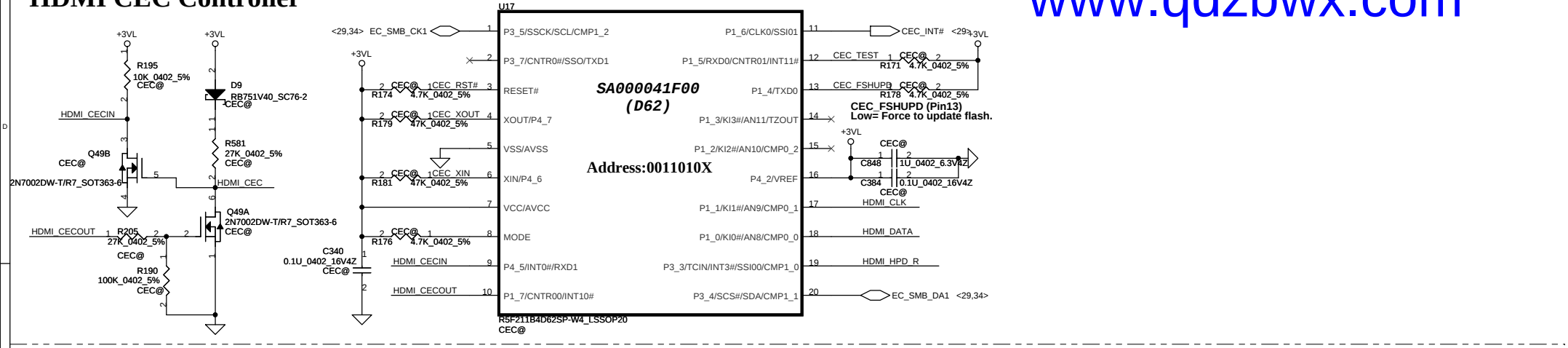


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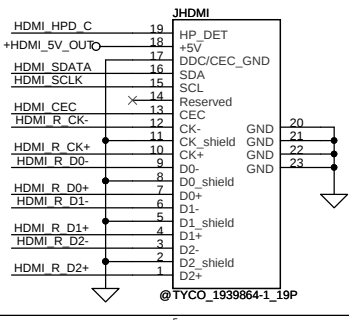


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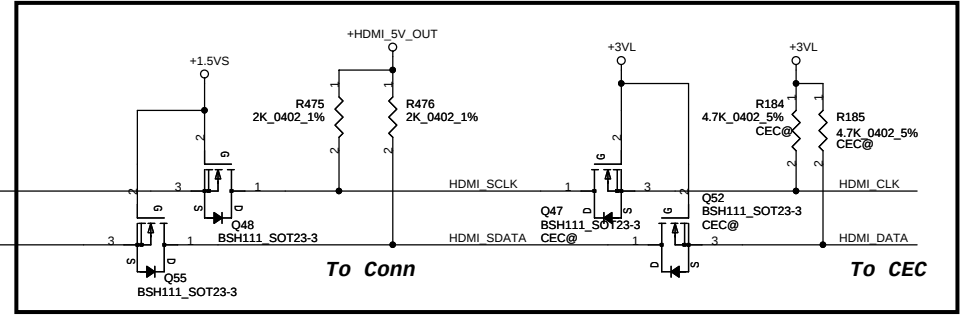
HDMI CEC Controller



HDMI Connector



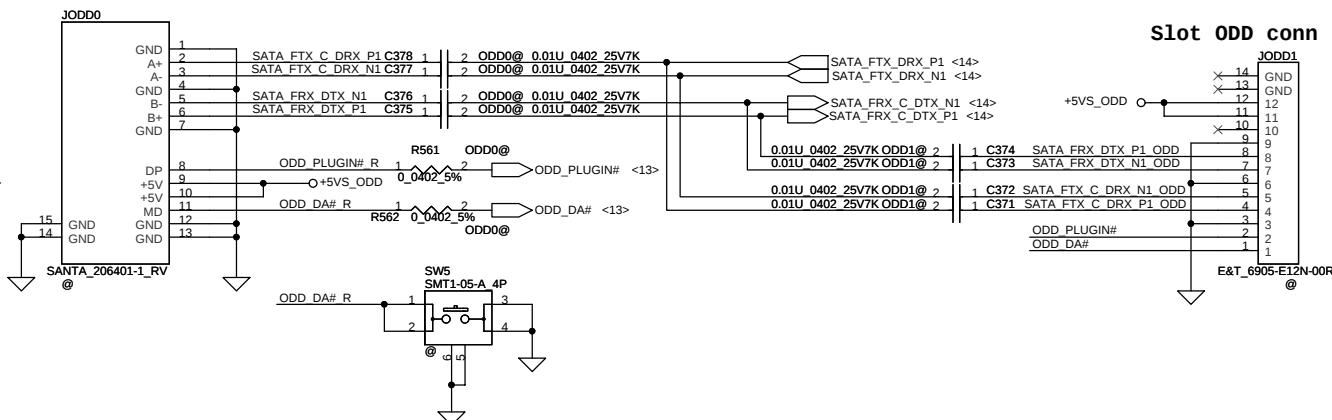
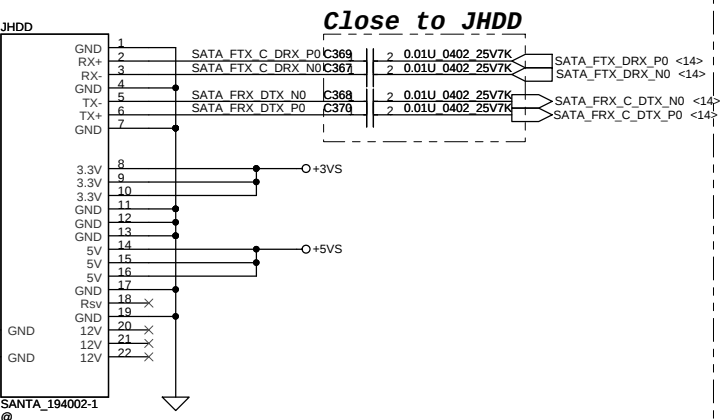
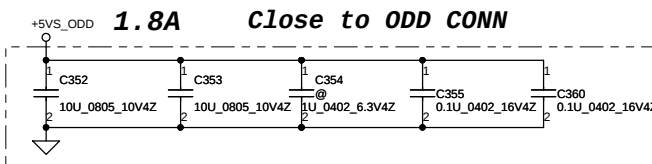
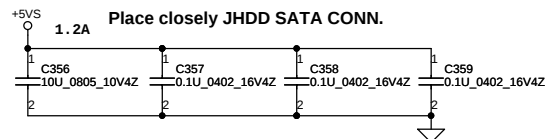
To APU
To Conn
To CEC



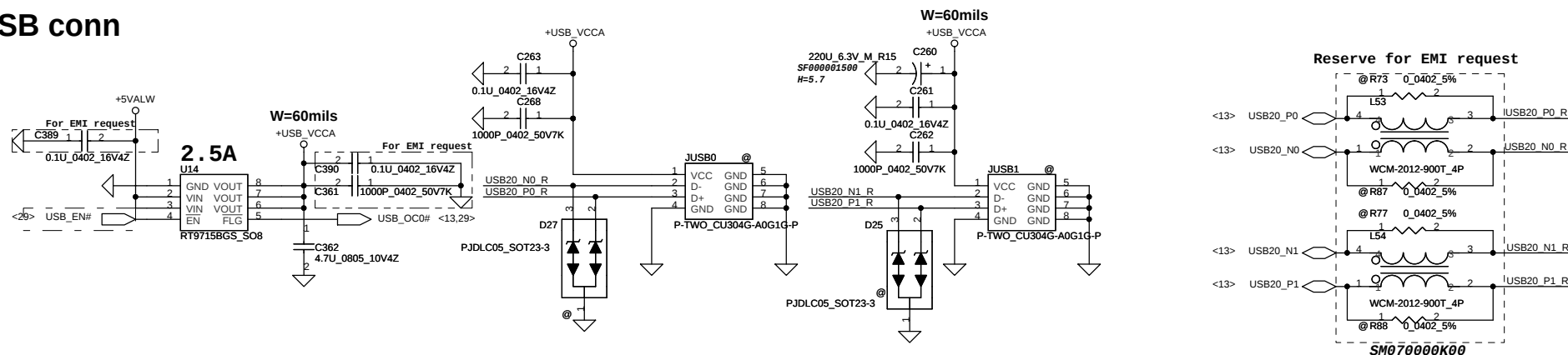
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SATA HDD Conn.

SATA ODD Conn

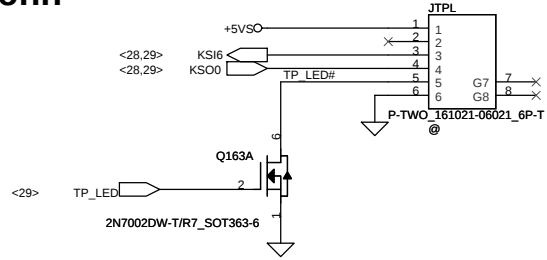


Left USB conn

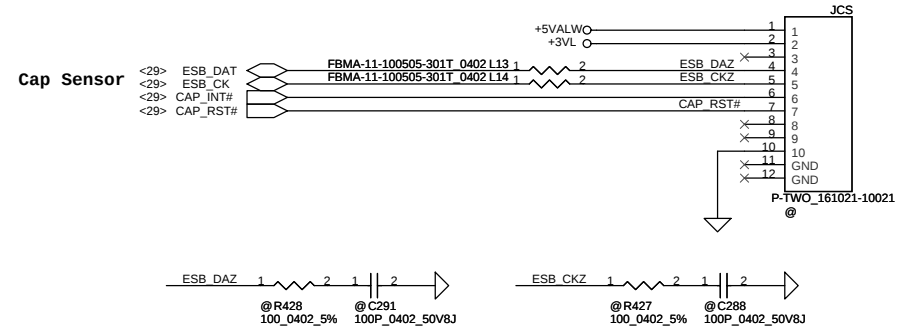


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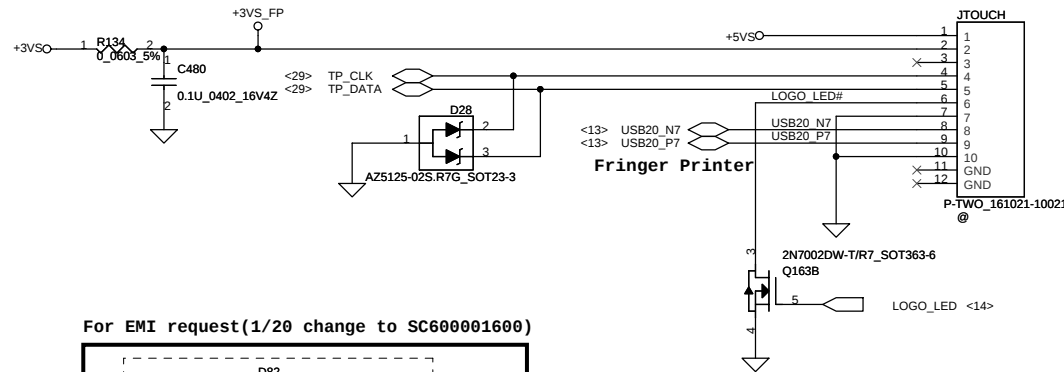
TP LED Conn



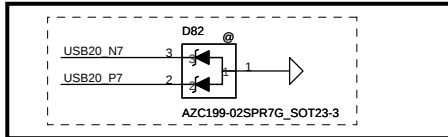
Cap Sensor Conn



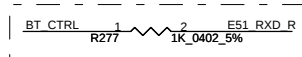
TP/B LED/B FP/B Conn



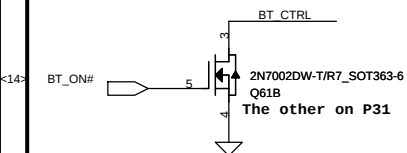
For EMI request(1/20 change to SC600001600)



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BT on Combo module		
	Enable	Disable
BT_CTRL	H	L
BT_ON#	L	H



2.5A W=60mils

RT9715BGS_S08

Pin 1: GND

Pin 2: VOUT

Pin 3: VIN

Pin 4: EN

Pin 5: FLG

Pin 6: VOUT

Pin 7: VIN

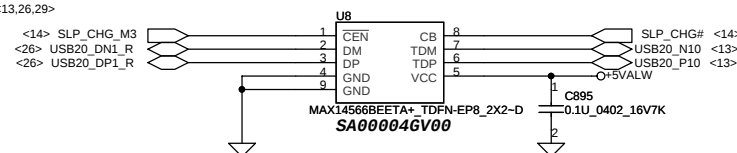
Pin 8: VOUT

Connections:

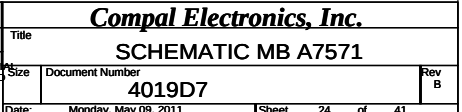
- Pin 1: GND
- Pin 2: +5VALW
- Pin 3: +USB_VCCB
- Pin 4: USB_CHG_EN#
- Pin 5: USB_OC#
- Pin 6: +USB_VCCB
- Pin 7: +USB_VCCB
- Pin 8: +USB_VCCB

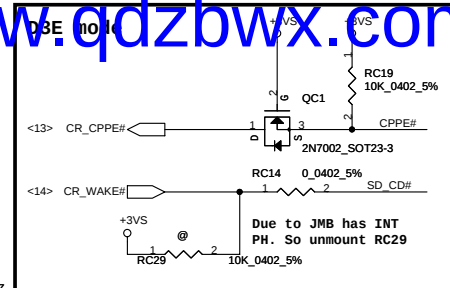
Capacitor C385: 4.7U_0805_10V4Z

MAX14566B		
CB SLP_CHG_M4	CB1 (CEN#) SLP_CHG_M3	STATUS
0	0	AUTO MODE (Including Mode 4)
0	1	Force Dedicated charger mode (MODE3)
1	X	Pass-Through (USB) Mode: Connect DP/DM to TDP/TDM



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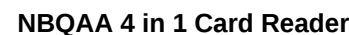
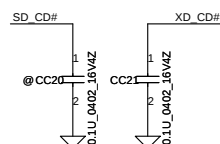
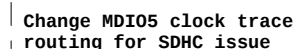
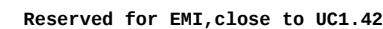
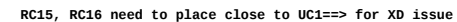


JMB review to @

MDIO7 XD CLE 1 RC28 2 10K_0402 5% +3VS

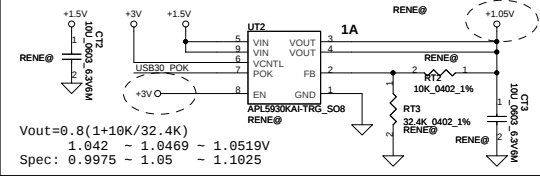
MDIO14 XD ALE 1 RC26 2 10K_0402 5%

RC25 1 2 200K_0402 5%

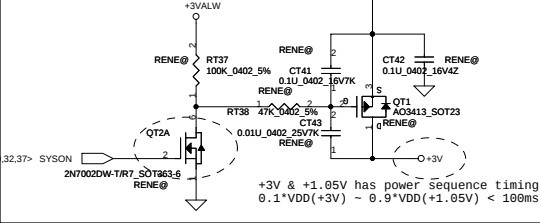


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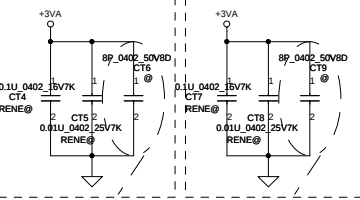
+1.5V to +1.05V Transfer



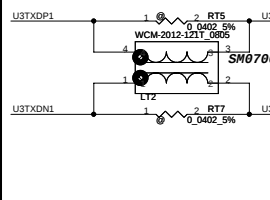
+3VALW to +3V Transfer



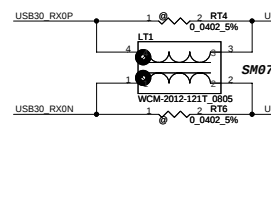
Close to U102.D7 Close to U102.P13



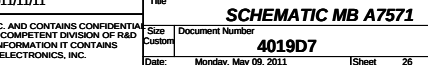
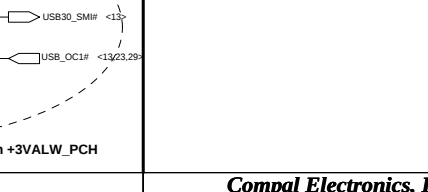
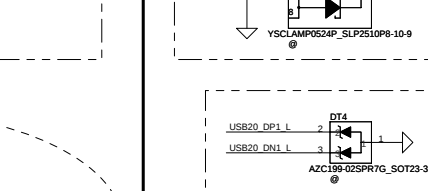
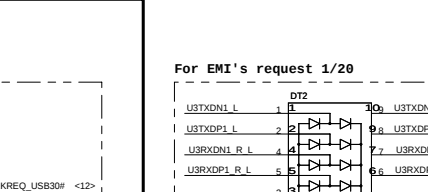
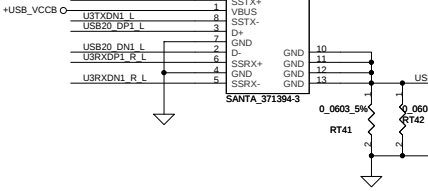
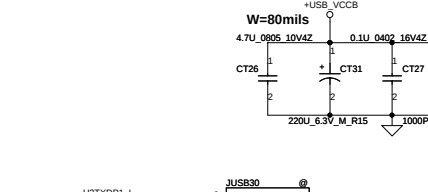
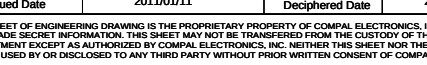
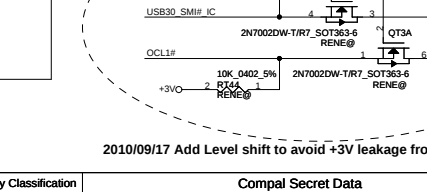
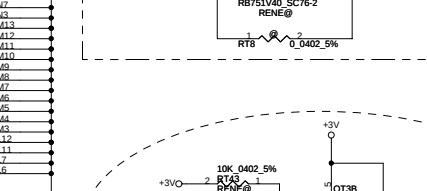
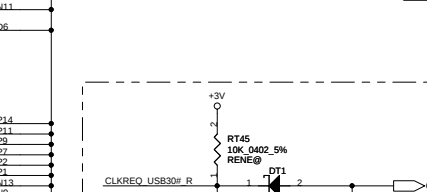
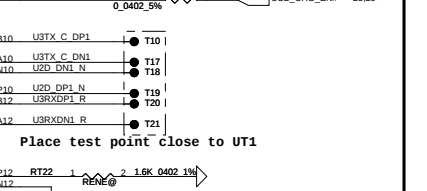
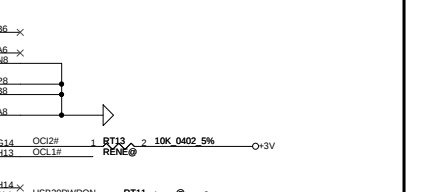
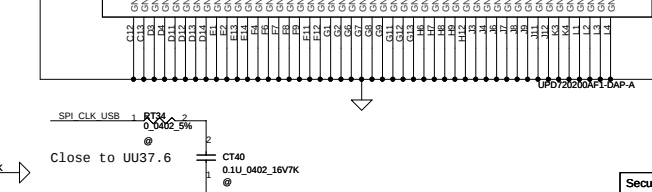
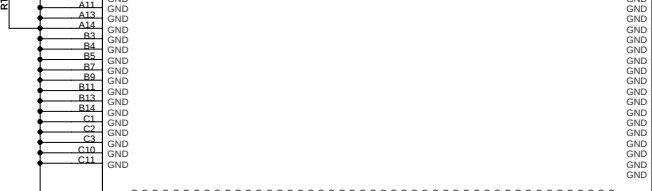
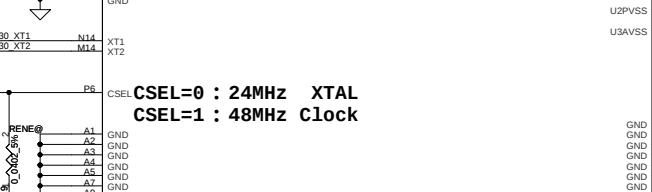
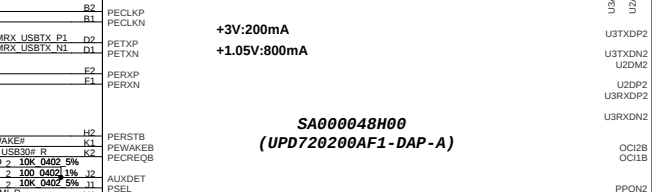
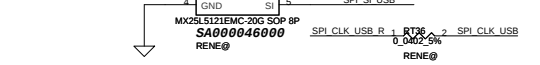
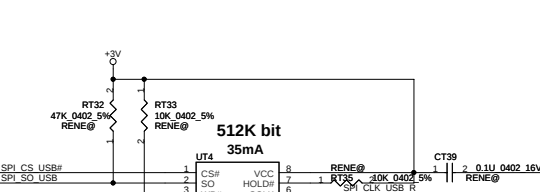
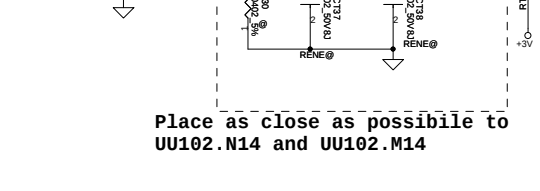
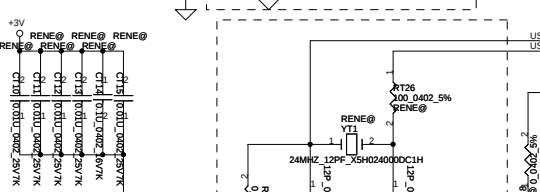
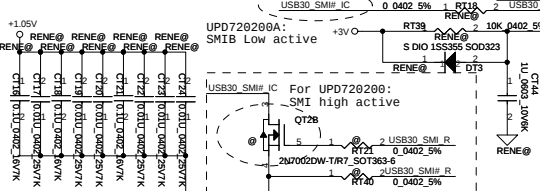
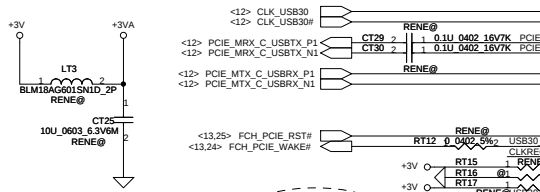
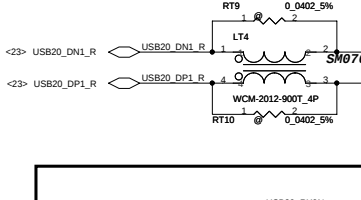
for EMI's request



for EMI's request



for EMI's request



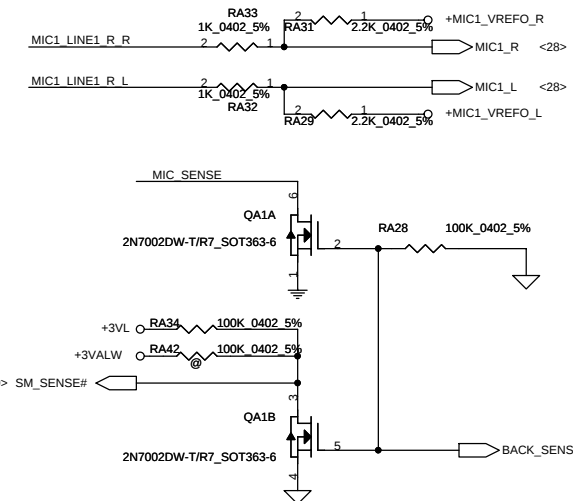
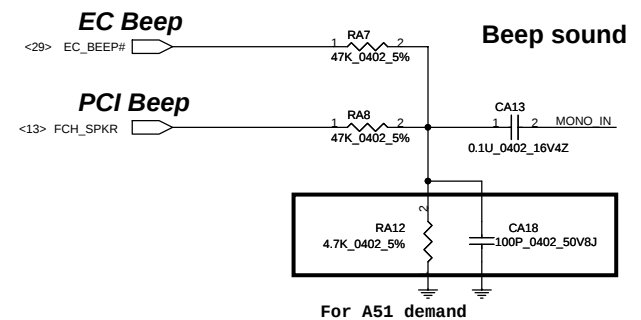
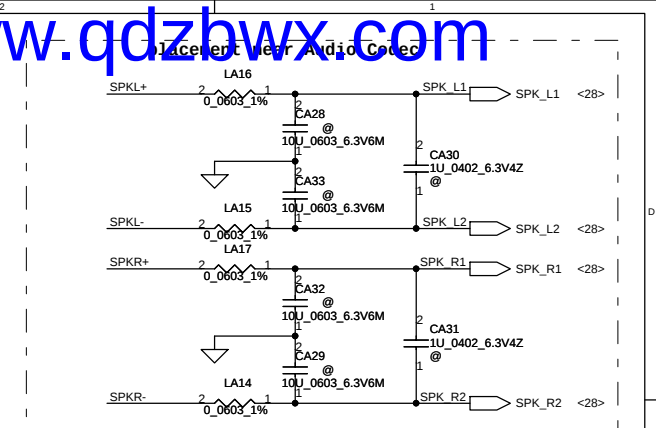
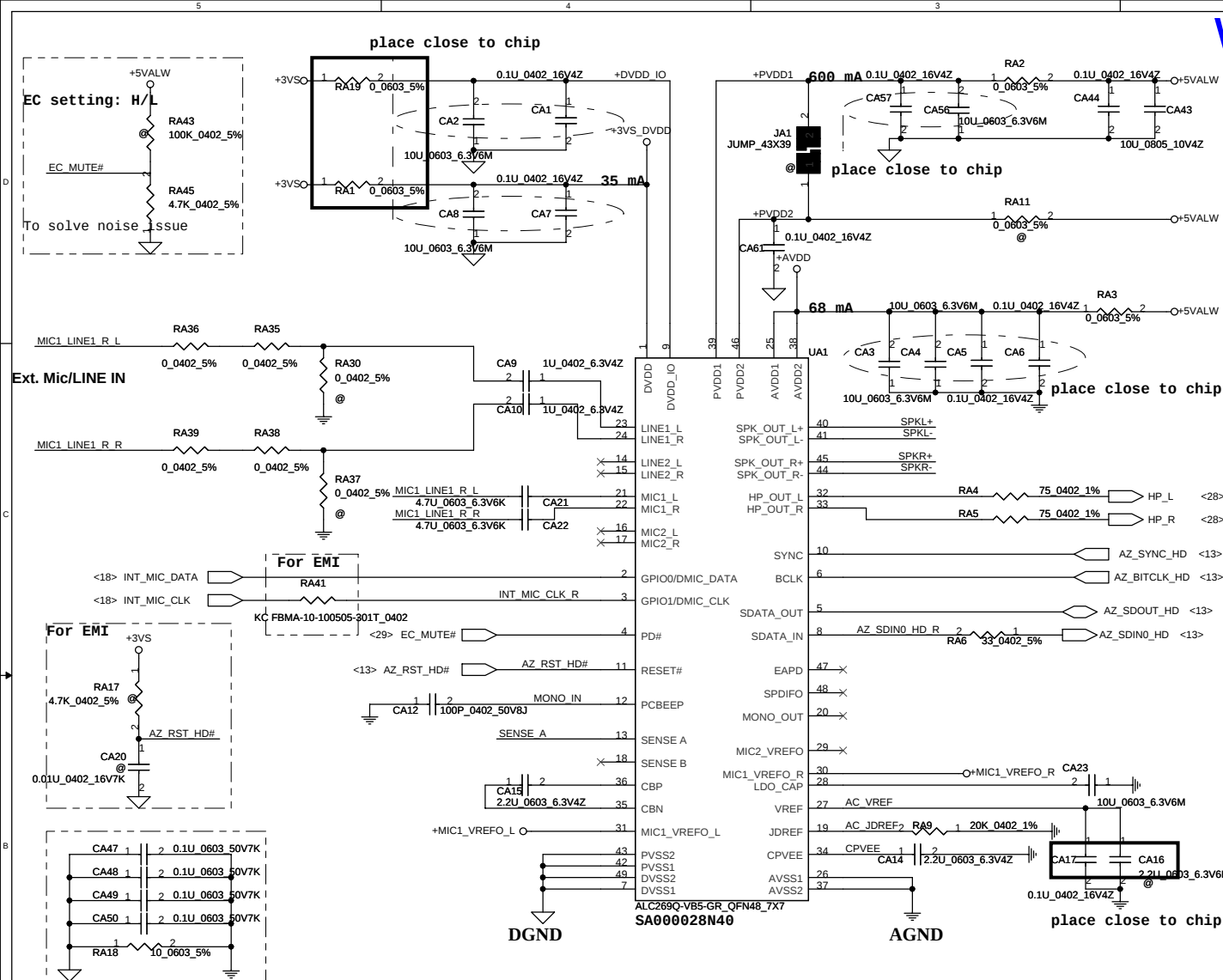
Place as close as possible to U102.N14 and U102.M14

CSEL=0 : 24MHz XTAL
CSEL=1 : 48MHz Clock

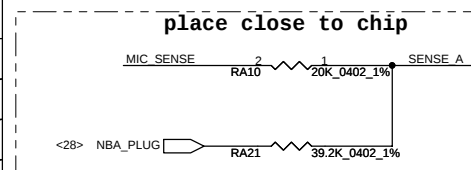
Place test point close to UT1

2010/09/17 Add Level shift to avoid +3V leakage from +3VALW_PCH

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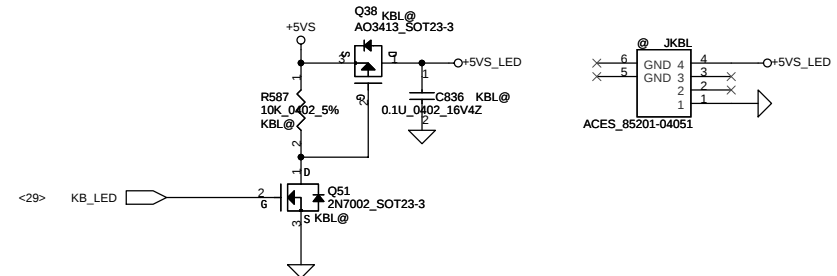


Sense Pin	Impedance	Codec Signals	Function
SENSE A	39.2K	PORT-I (PIN 32, 33)	Headphone out
	20K	PORT-B (PIN 21, 22)	Ext. MIC
	10K	PORT-C (PIN 23, 24)	
	5.1K	(PIN 48)	
SENSE B	39.2K	PORT-E (PIN 14, 15)	
	20K	PORT-F (PIN 16, 17)	
	10K	PORT-H (PIN 20)	



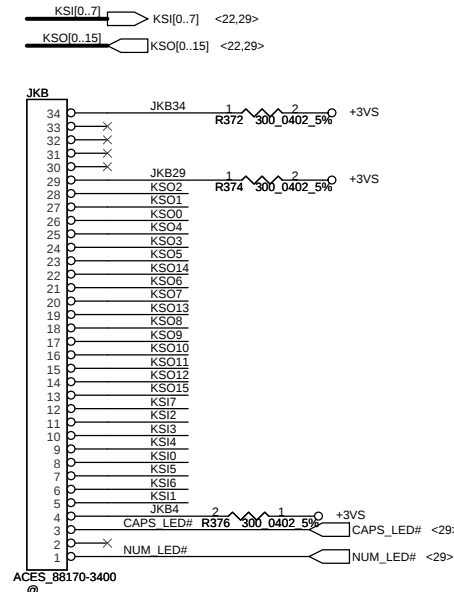
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Issued Date	2011/01/11	Deciphered Date	2011/11/11	Title	SCHEMATIC MB A7571	
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Keyboard LED



KEYBOARD CONN.

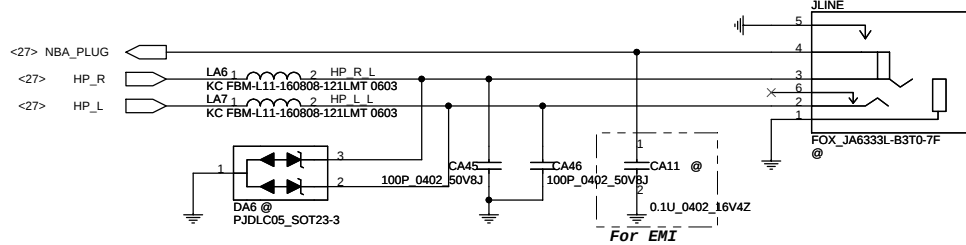
Notice: KB Connector Pin Definition Reversed with KB Membrane Pin Definition



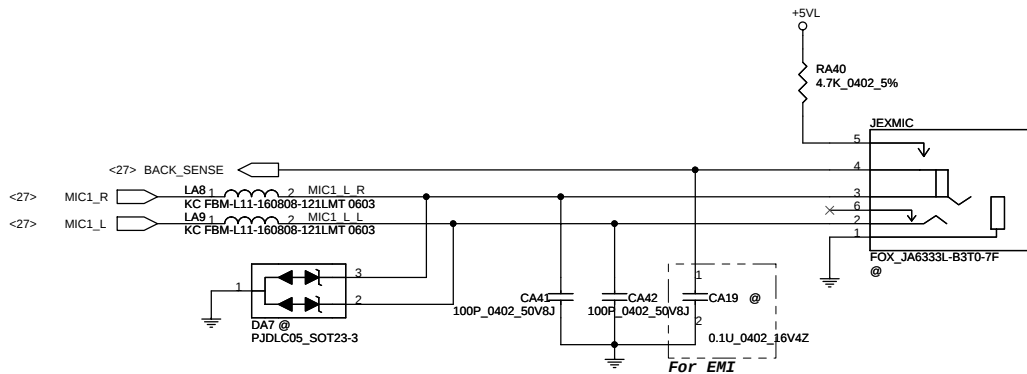
please close to JKB

KSO2	C404	100P_0402_50V8J
KSO1	C405	100P_0402_50V8J
KSO0	C406	100P_0402_50V8J
KSO4	C407	100P_0402_50V8J
KSO3	C408	100P_0402_50V8J
KSO5	C409	100P_0402_50V8J
KSO14	C410	100P_0402_50V8J
KSO6	C411	100P_0402_50V8J
KSO7	C412	100P_0402_50V8J
KSO13	C413	100P_0402_50V8J
KSO8	C415	100P_0402_50V8J
KSO9	C416	100P_0402_50V8J
KSO10	C417	100P_0402_50V8J
KSO11	C418	100P_0402_50V8J
KSO12	C419	100P_0402_50V8J
KSO15	C420	100P_0402_50V8J
KS17	C421	100P_0402_50V8J
KS12	C422	100P_0402_50V8J
KS13	C423	100P_0402_50V8J
KS14	C424	100P_0402_50V8J
KS10	C425	100P_0402_50V8J
KS15	C427	100P_0402_50V8J
KS16	C429	100P_0402_50V8J
KS11	C431	100P_0402_50V8J
CAPS_LED#	C433	100P_0402_50V8J
NUM_LED#	C435	100P_0402_50V8J

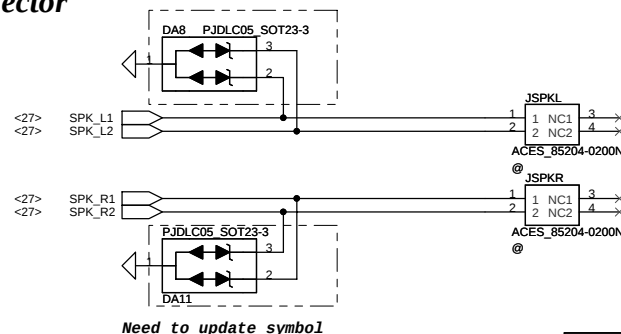
HeadPhone/LINE Out JACK



Ext.MIC/LINE IN JACK



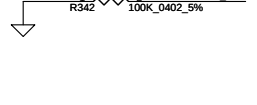
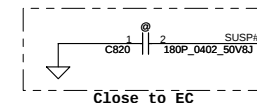
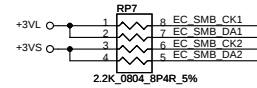
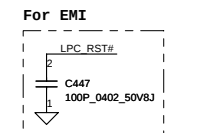
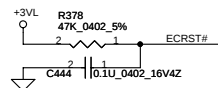
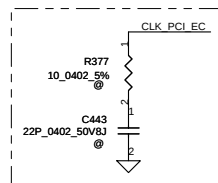
Speaker Connector



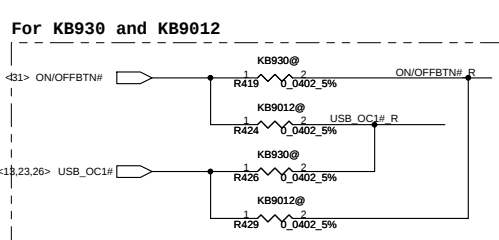
Need to update symbol

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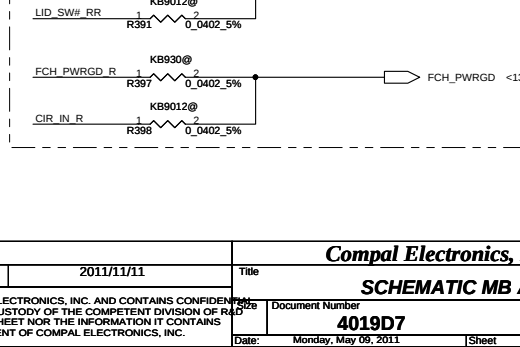
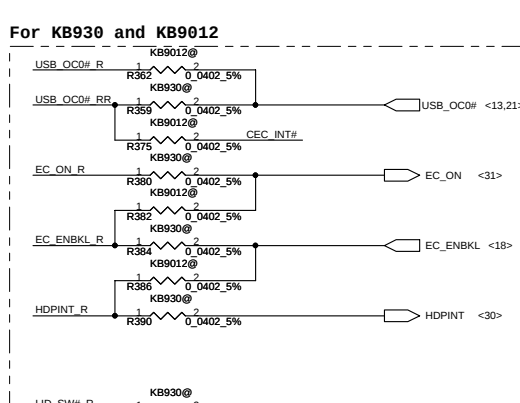
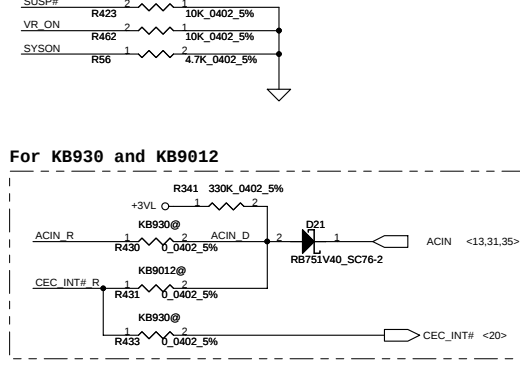
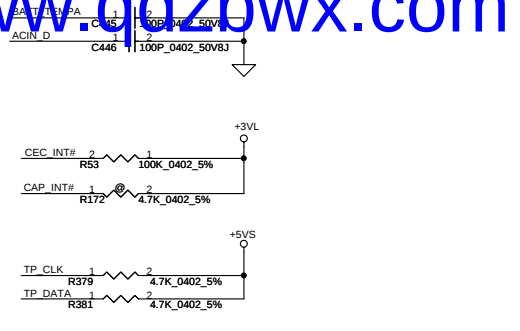
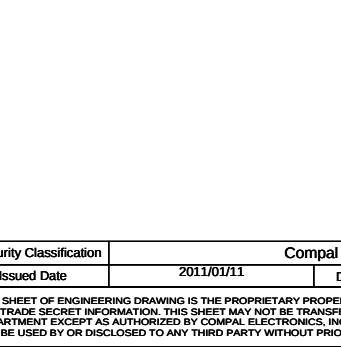
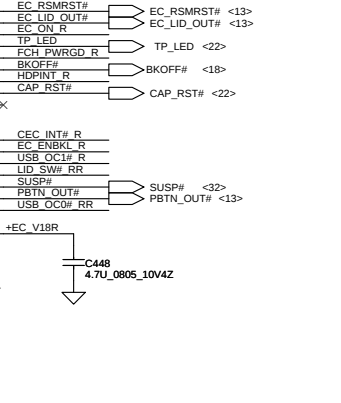
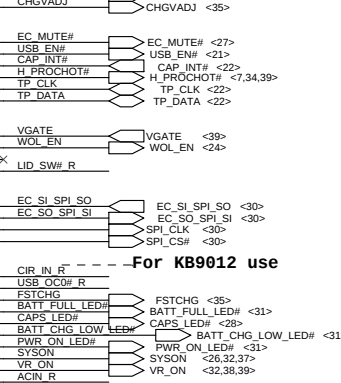
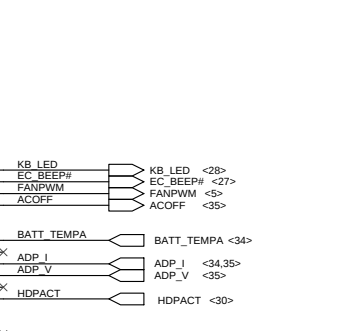
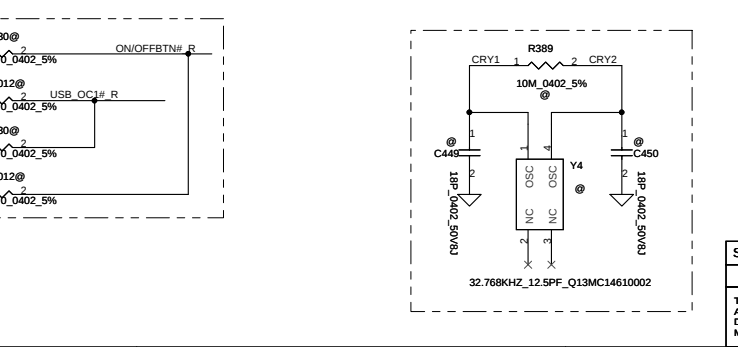
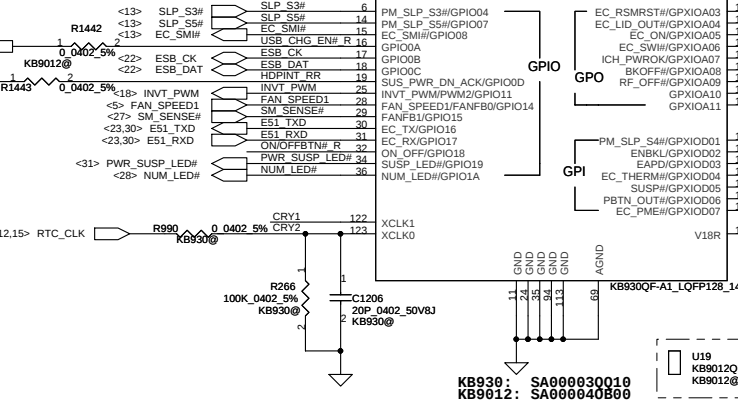
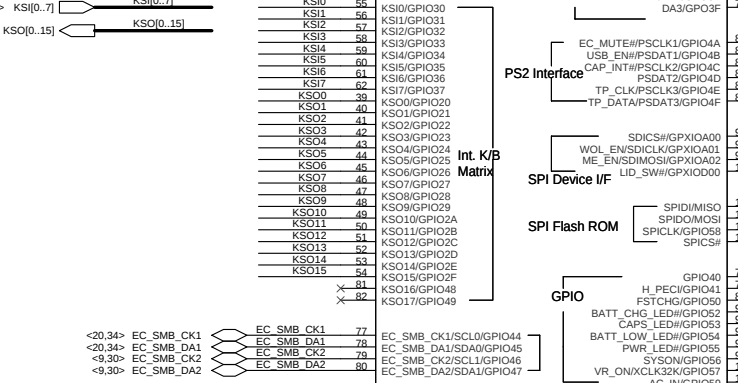
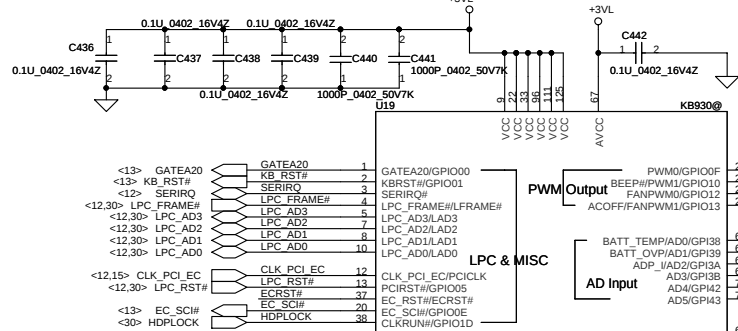
For EMI



For KB930 and KB9012

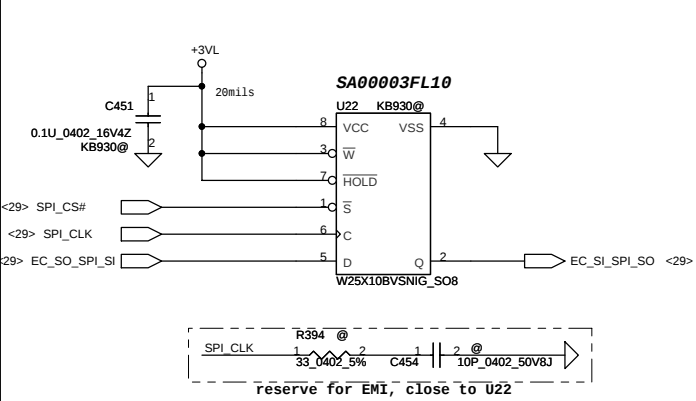


For KB930 and KB9012

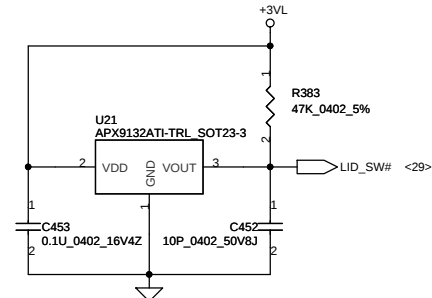


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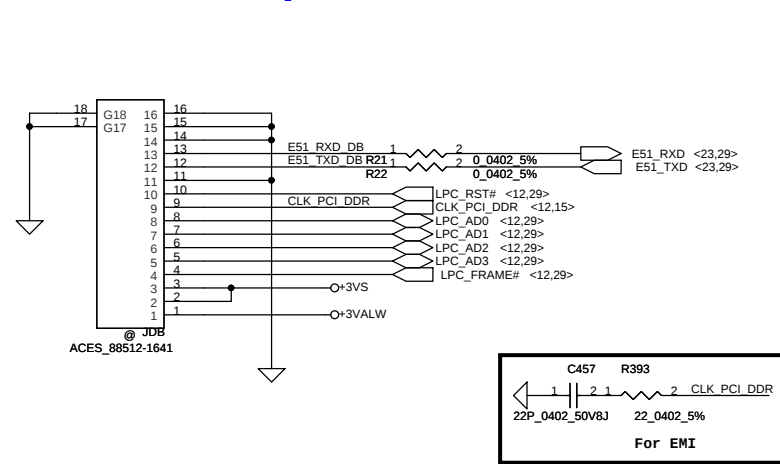
SPI Flash (128KB)



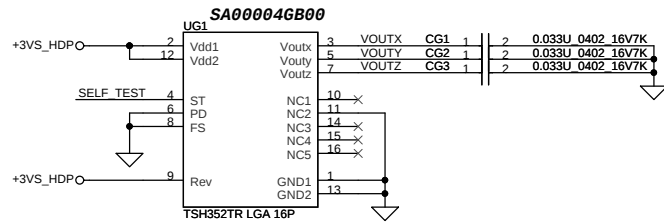
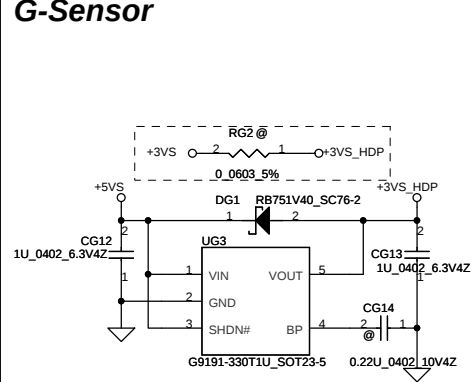
Lid SW



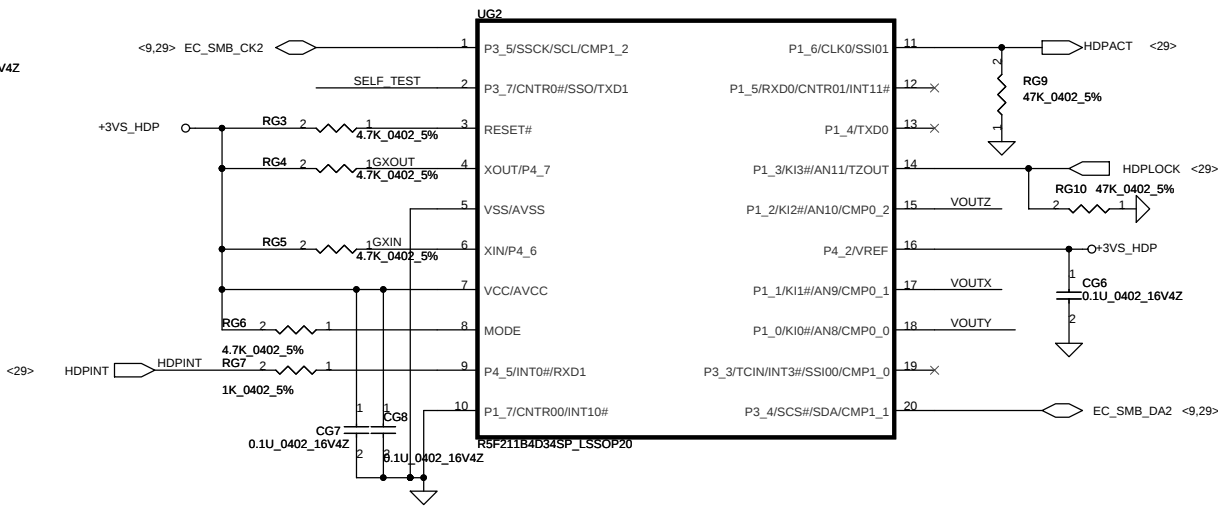
LPC UART Debug Port



G-Sensor

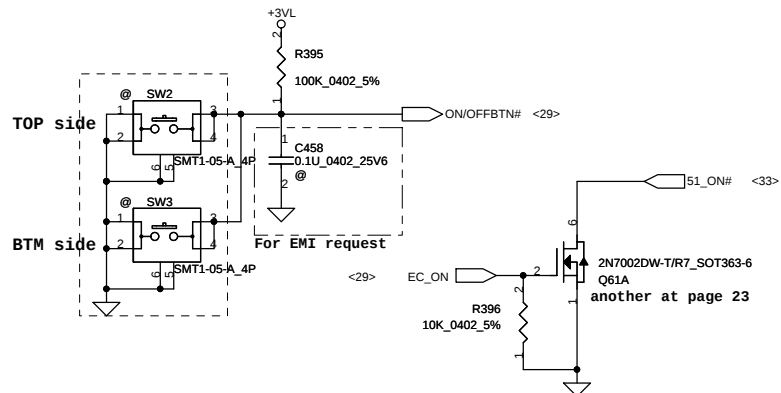


SA00003A600 Supports ODD unexpected tray eject prevention

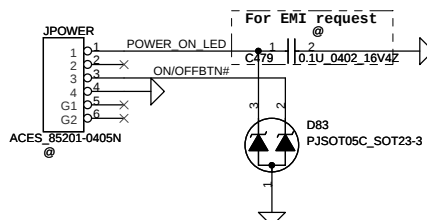


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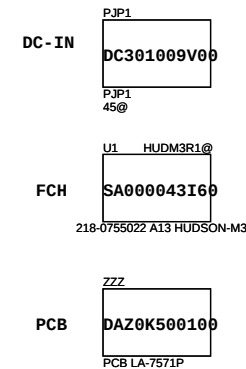
Power Button



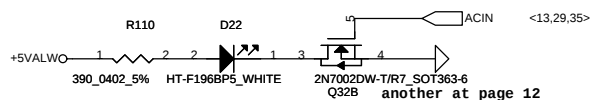
PWR/B Conn



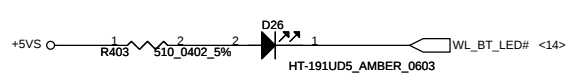
www.qdzbxw.com



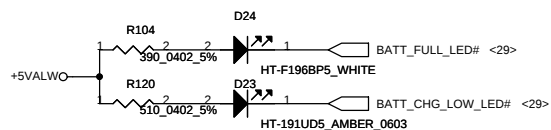
DC-IN LED



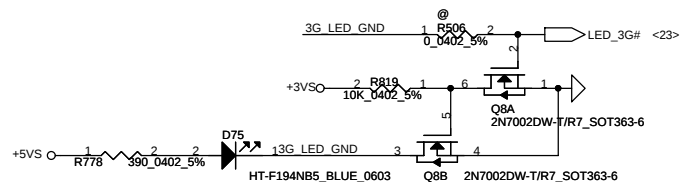
WL/BT LED



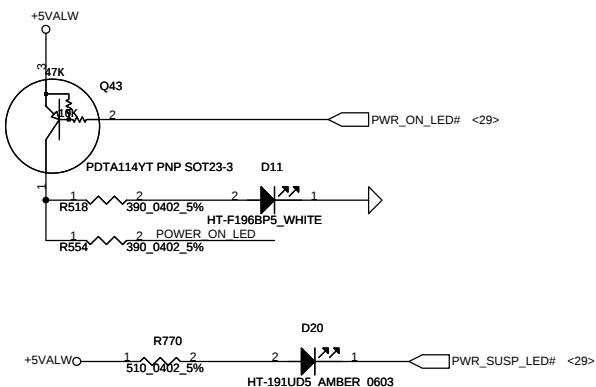
BATT CHARGE/FULL LED



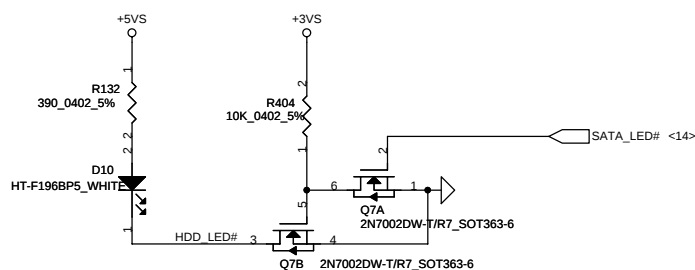
WiMAX/3G LED



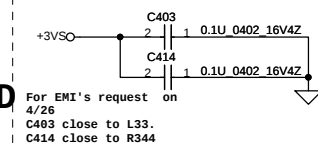
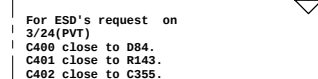
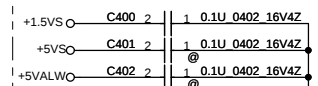
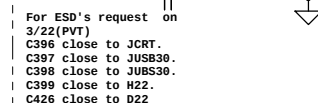
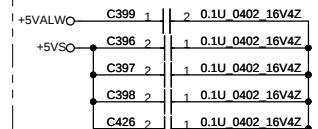
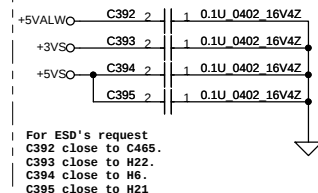
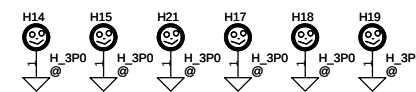
POWER/SUSPEND LED



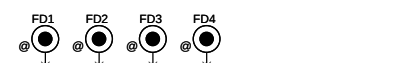
HDD LED



Screw Hole

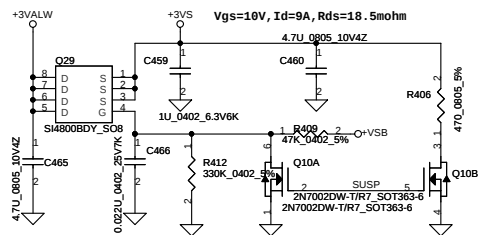


PCB Federal Mark PAD

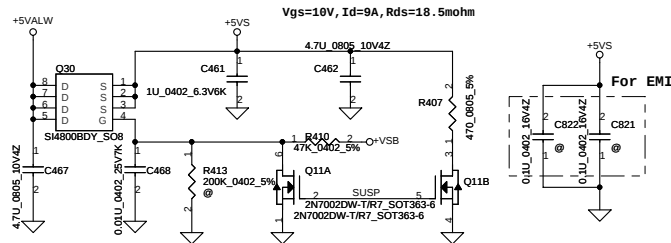


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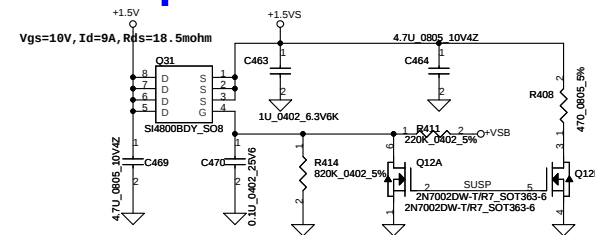
+3VALW TO +3VS



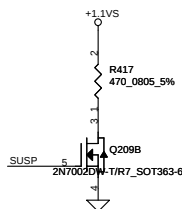
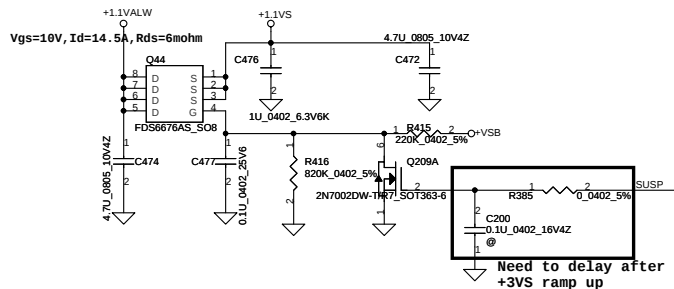
+5VALW TO +5VS



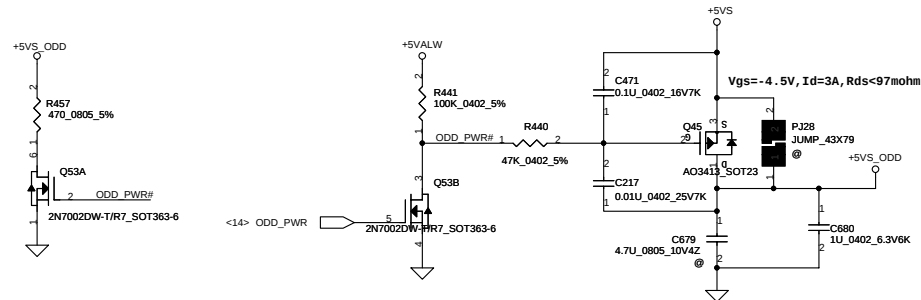
+1.5VALW TO +1.5VS



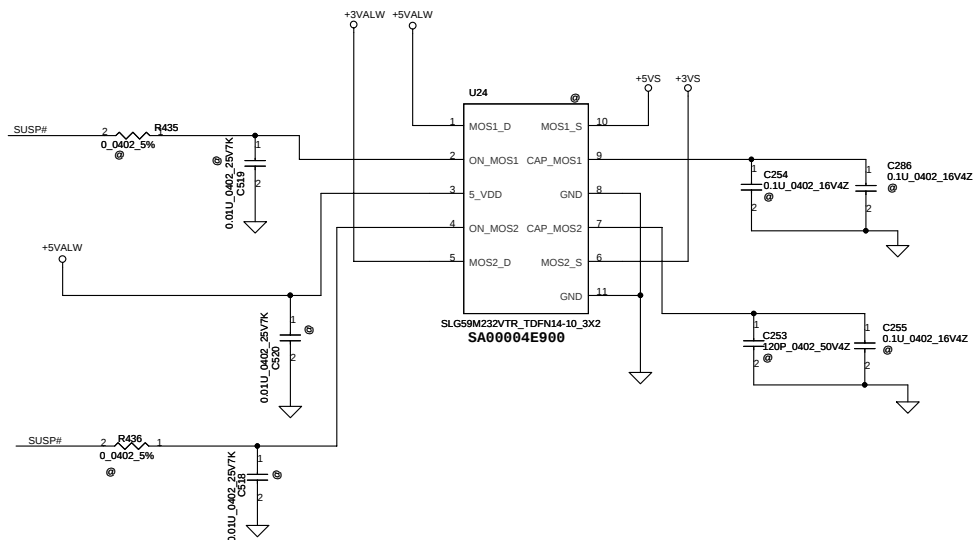
+1.1VALW to +1.1VS



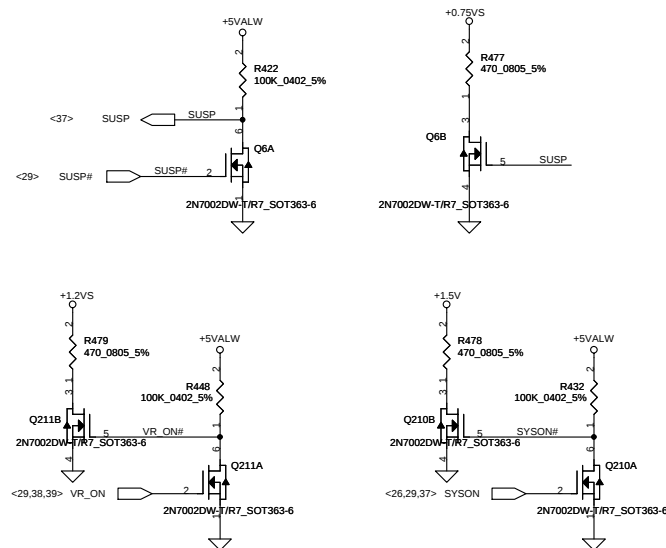
+5VS TO +5VS_ODD



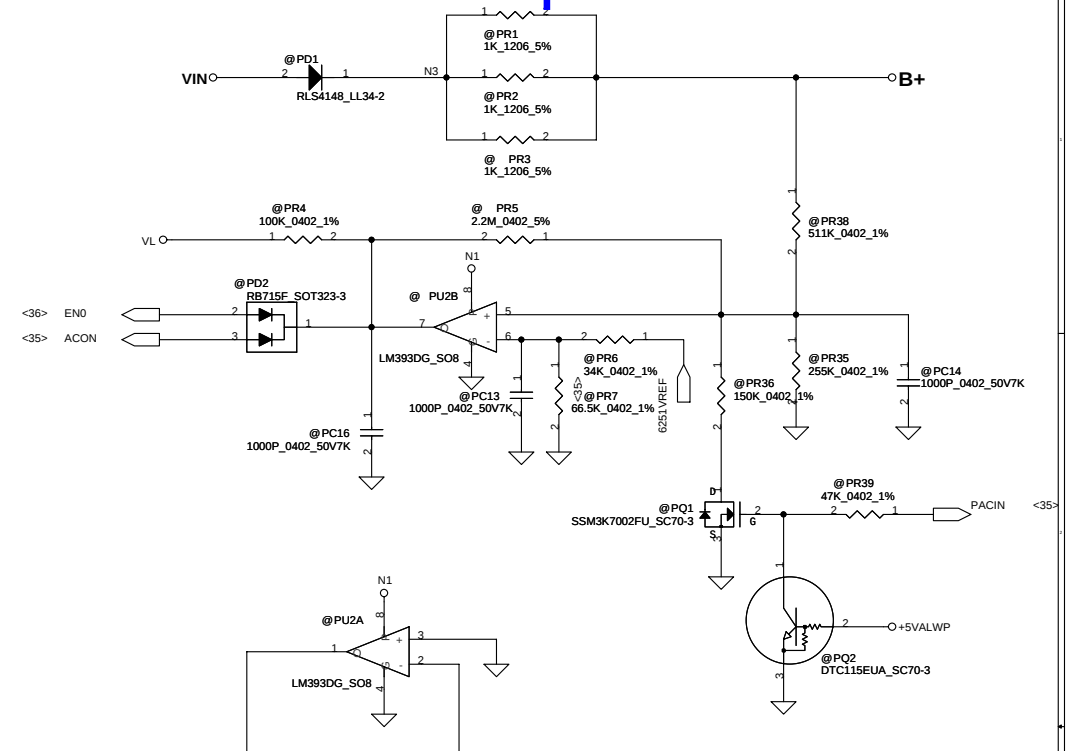
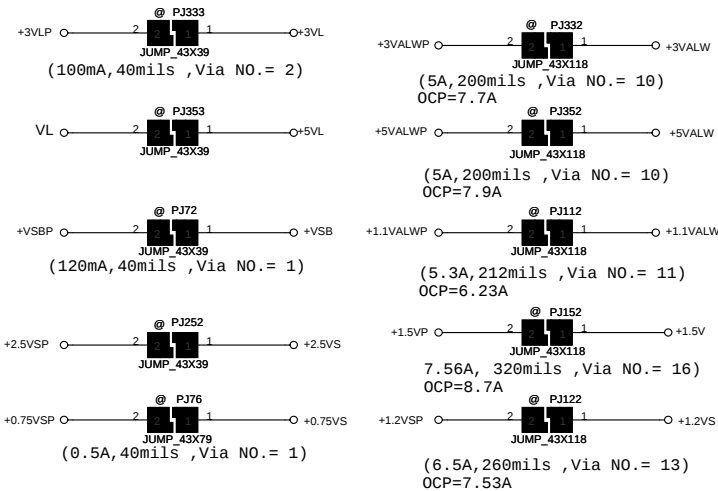
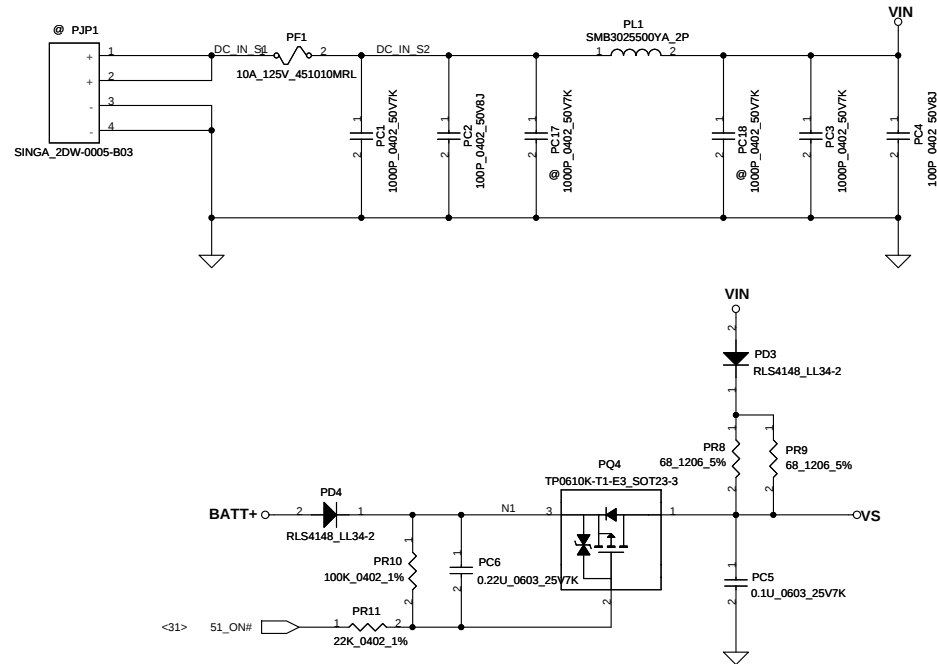
Each 250pF on CAP_MOS1 (2) will make Slew Rate(uS/V) increase of 100uS/V



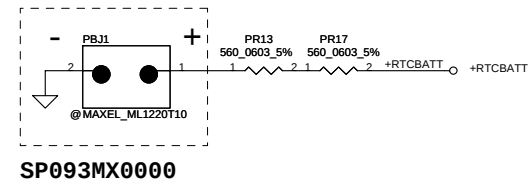
Discharge



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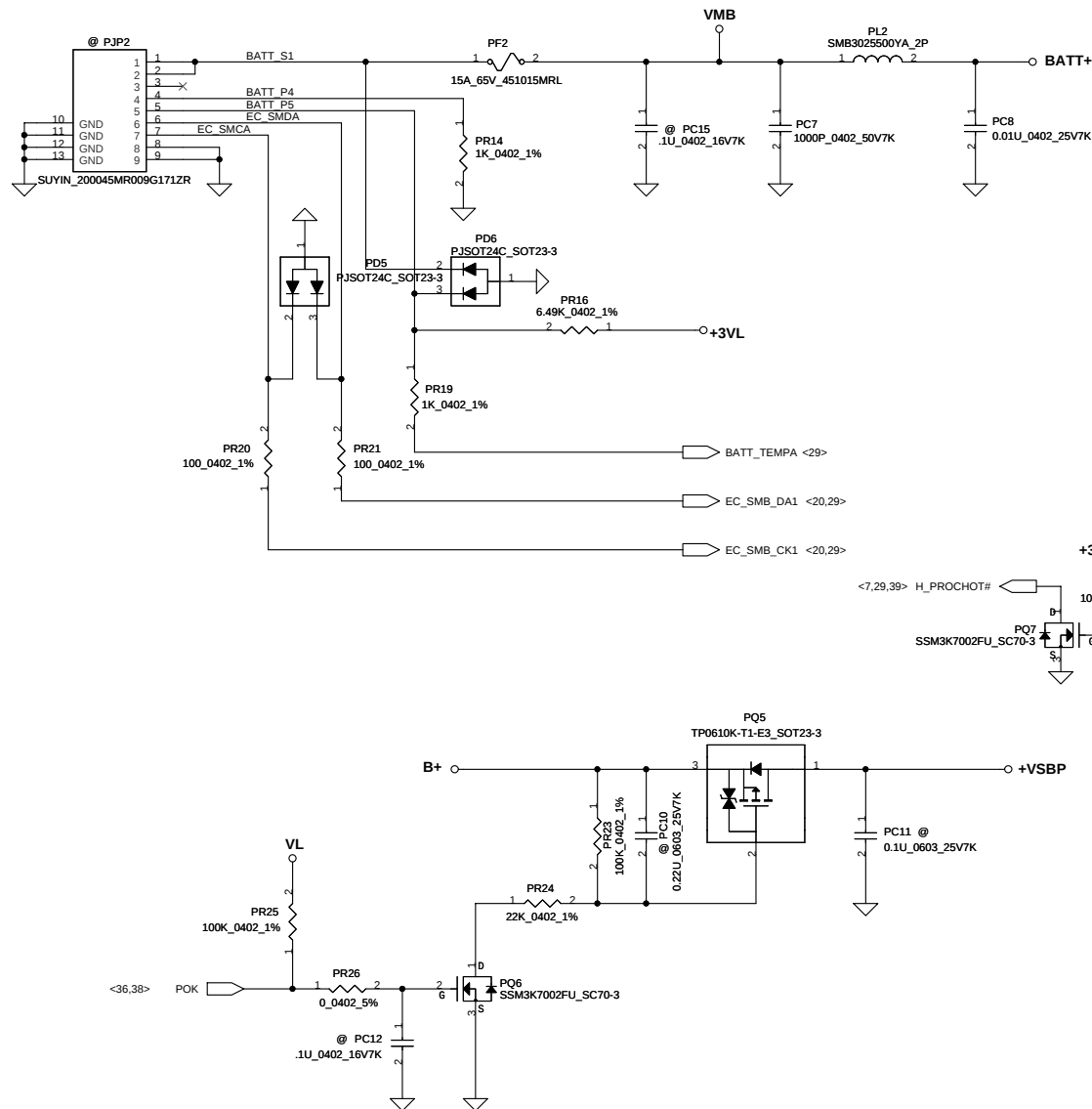


RTC Battery



ACIN

	Precharge detector		
	Min.	typ.	Max
H-->L	14.42V	14.74V	15.23V
L-->H	15.39V	15.88V	16.39V

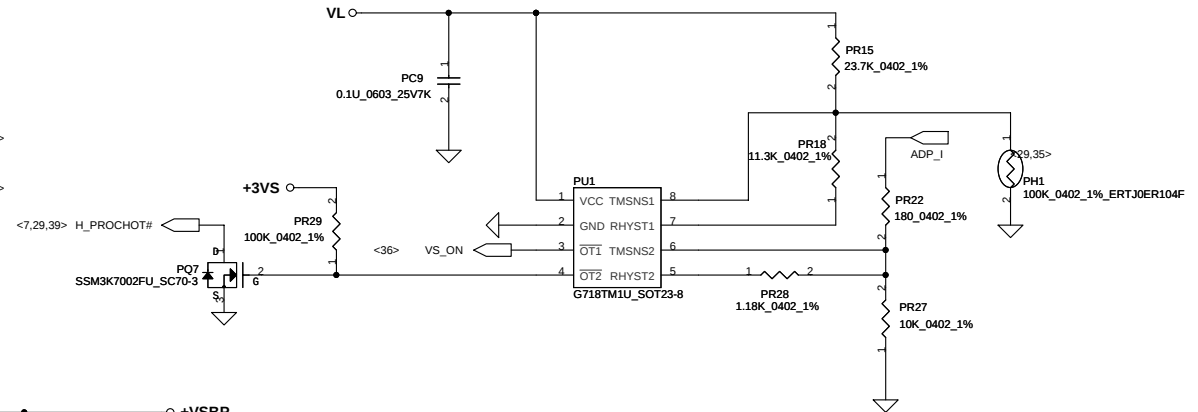


PH1 under CPU bottom side :
CPU thermal protection at 90 degree C
Recovery at 56 degree C

$$R_{set} = 3 * R_{tmh}$$

$$R_{hyst} = (R_{set} * R_{tml}) / (3 * R_{tml} - R_{set})$$

R_{tmh} at 90C = 7.87K, R_{tml} at 56C = 26.1K
 $R_{set} = 3 * 7.87K = 23.61K \Rightarrow 23.7K$
 $R_{hyst} = (23.7K * 26.1K) / (3 * 26.1K - 23.7K) = 11.33K \Rightarrow 11.3K$

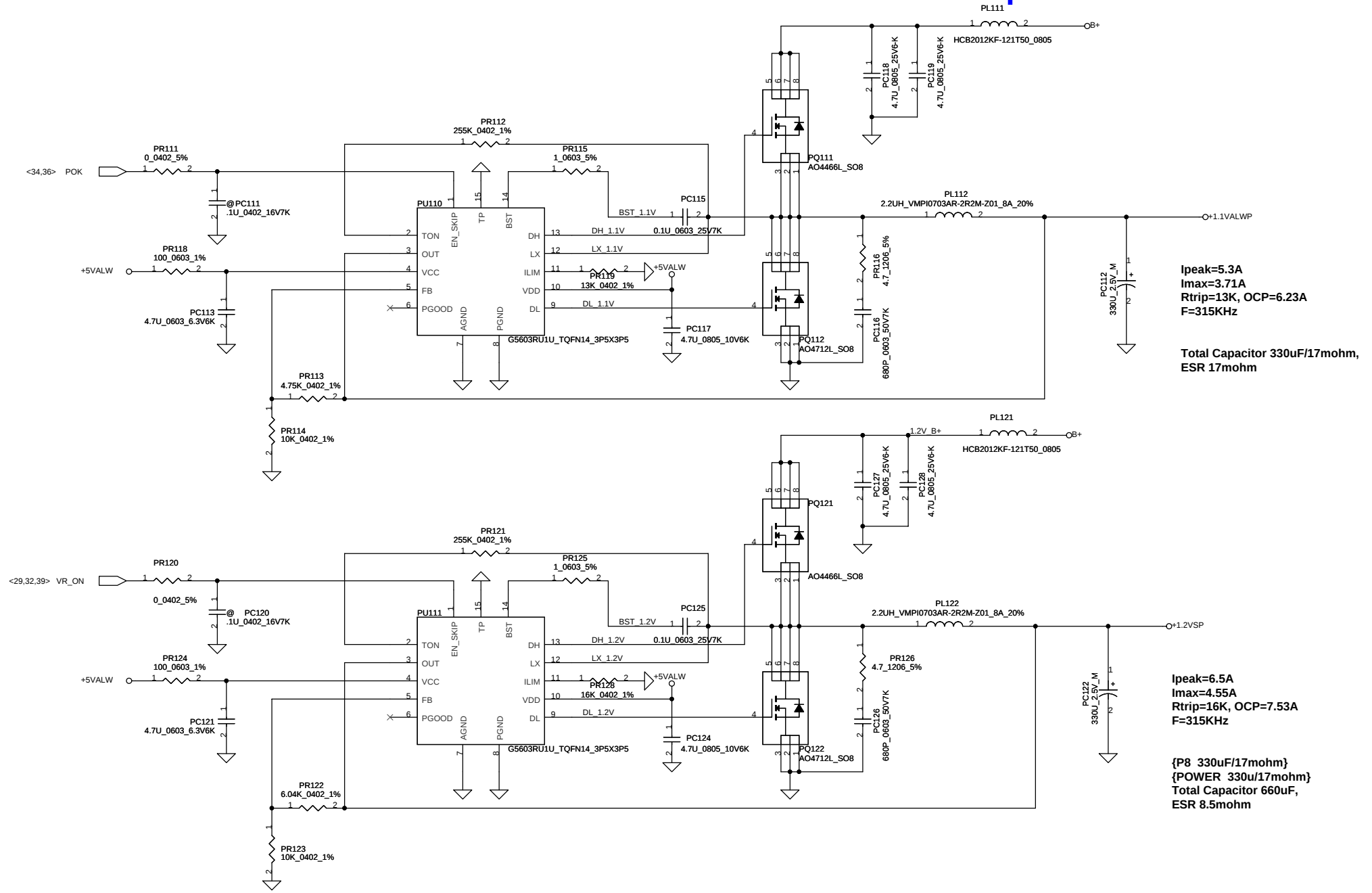


Adapter	CPSETIN	Throttle Watt	Recovery Watt	Throttle Point	Recovery Point
65W_UMA	no use	71.8W	62.45W	1.504V	1.308V

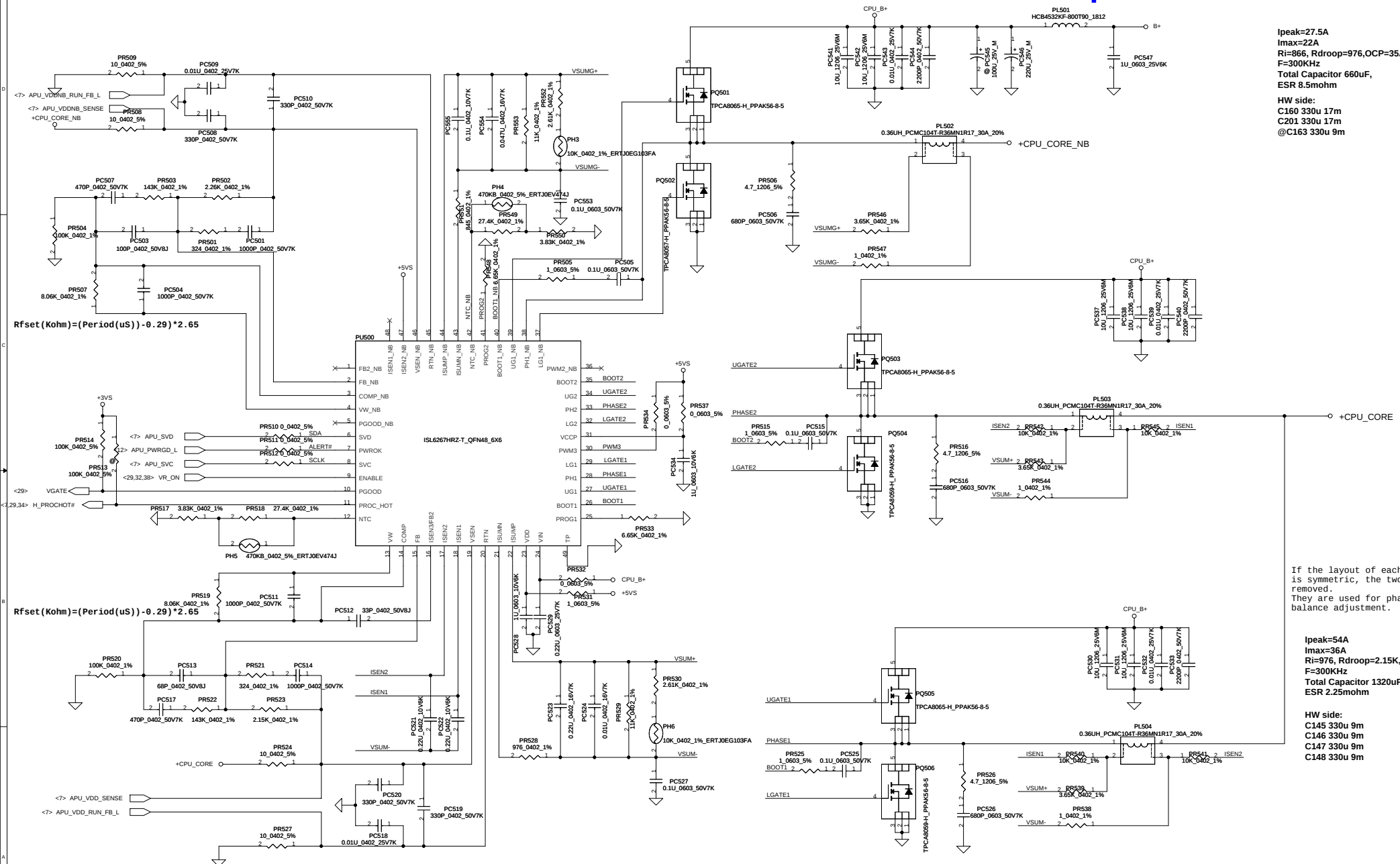
CHGVADJ=(Vcell-4)*9.445	
Vcell	CHGVADJ
4V	0V
4.2V	1.889V
4.35V	3.30575V

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Ipeak=27.5A
Imax=22A
Ri=866, Rdroop=976, OCP=35A
F=300KHz
Total Capacitor 660uF,
ESR 8.5mohm

HW side:
C160 330u 17m
C201 330u 17m
@C163 330u 9m

If the layout of each phase to CPU is symmetric, the two res. can be removed.
They are used for phase current balance adjustment.

I_{peak}=54A
I_{max}=36A
R_i=976, R_{droop}=2.15K, OCP=65A
F=300KHz
Total Capacitor 1320uF,
ESR 2.25mohm

HW side:
C145 330u 9m
C146 330u 9m
C147 330u 9m
C148 330u 9m

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NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
DVT to PVT				
2011/03/16		Page38	Change PR119/PR128 to 13K/16Kohm	For 1.1VALW/1.2VS OCP design point
2011/03/17		Page39	Change PR523 from 2.26K to 2.15Kohm	For match loadline SPEC
2011/03/21		Page37	Change PR152 from 10K to 10.2Kohm	For HW request to increase 1.5V voltage level
2011/03/21		Page35	Change PR236 & PR237 to 200K & 47Kohm	For increase BAT P-MOS divide voltage level
2011/03/21		Page34	Change PR22 & PR28 to 180 & 1.18Kohm	For 65W adapter protection point(H_PROCHOT#)
2011/03/21		Page35	Change PR222 to 75Kohm	For 65W CP protection design point
2011/03/21		Page35&36	Add PC224 & PC368 two 0.1uF/25V_0402 to GND	For EMI solution
2011/03/21		Page35-39	Add all power snuber and change boostrape R to 1ohm	For EMI solution
2011/03/21		Page35	Change PQ208 from AO4407 to AO4435	For 65W system
2011/03/21		Page35	Change PL202 to moding package	For short risk by QAD 8KG test

HW PIR (Product Improve Record)

QOQAE LA-7571P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.2 TO 0.3

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1.	03/15	26	Add DT4	For ESD's request
2.	03/15	13	Delete ODD_PLUGIN#_FCH level shift since ODD has INT 1k PD	ODD has internal 1K PD
3.	03/15	25	Add level shift for CR_CPPE# leakage issue	For leakage issue
4.	03/15	13	Change HDMI_HPD to GEVENT10#	GEVENT9# has issue
5.	03/15	24	Change LOGO_LED to GPIO176 and WL_BT_LED to GPIO177	For LED flash issue
6.	03/17	25	Change RC16 from 22 ohm to 0 ohm for SDXC performance issue	For SDXC performance issue
7.	03/17	12	Change JCOMS to JCMOS	For naming rule
8.	03/17	07	Delete HDT signals	For ESD's request
9.	03/22	10	Add C21/C22/C23	For EMI's request
10.	03/22	31	Add C396/C397/C398/C399	For ESD's request
11.	03/22	21	Add C390 on +USB_VCCA	For ESD's request
12.	03/24	29	Delete net KS016 and KS017	W/O support 10 key
13.	03/24	07	Delete R127/R118/R119	For ESD's request
14.	03/24	31	Add C400/C40/C402	For ESD's request
15.	03/24	12	Add C332/C333	For ESD's request
16.	03/24	18	Add C287/C295	For ESD's request
17.	03/25	30	Change LPC debug port	For SW request
18.	03/28	18	Add C334	For ESD request
19.	03/28	12	Change C248 and C249 to 15PF	For RTC issue

REVISION CHANGE: 0.3 TO 1.0

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1.	04/26	16	Add C521,C342,C335 and C336	For EMI request
2.	04/26	16	Delete Q56 and add R371	No need for AMD A13
3.	04/26	31	Add C403 and C414	For EMI request
4.	04/26	31	Change SW2 and SW3 to @	For Debug use
5.	04/27	08	Change C201 to 330/9mohm))))))))	For Dynamic CPU_CORE_NB fail
6.	04/27	14	Delete 450 of U13	For Debug use
7.	04/27	10	Add C343/C344/C345/C346/C347/C348/C349/C350	For ESD request
8.	04/27	31	Add C426	For ESD request
9.	04/29	10	Change C343/C344/C345/C346/C347/C348/C349/C350 from 1u to 0.1u	For ESD request
10.	05/03	12)	Add C333 and C332	For ESD request
11.	05/03	13	Add C363	For ESD request