

Compal Confidential

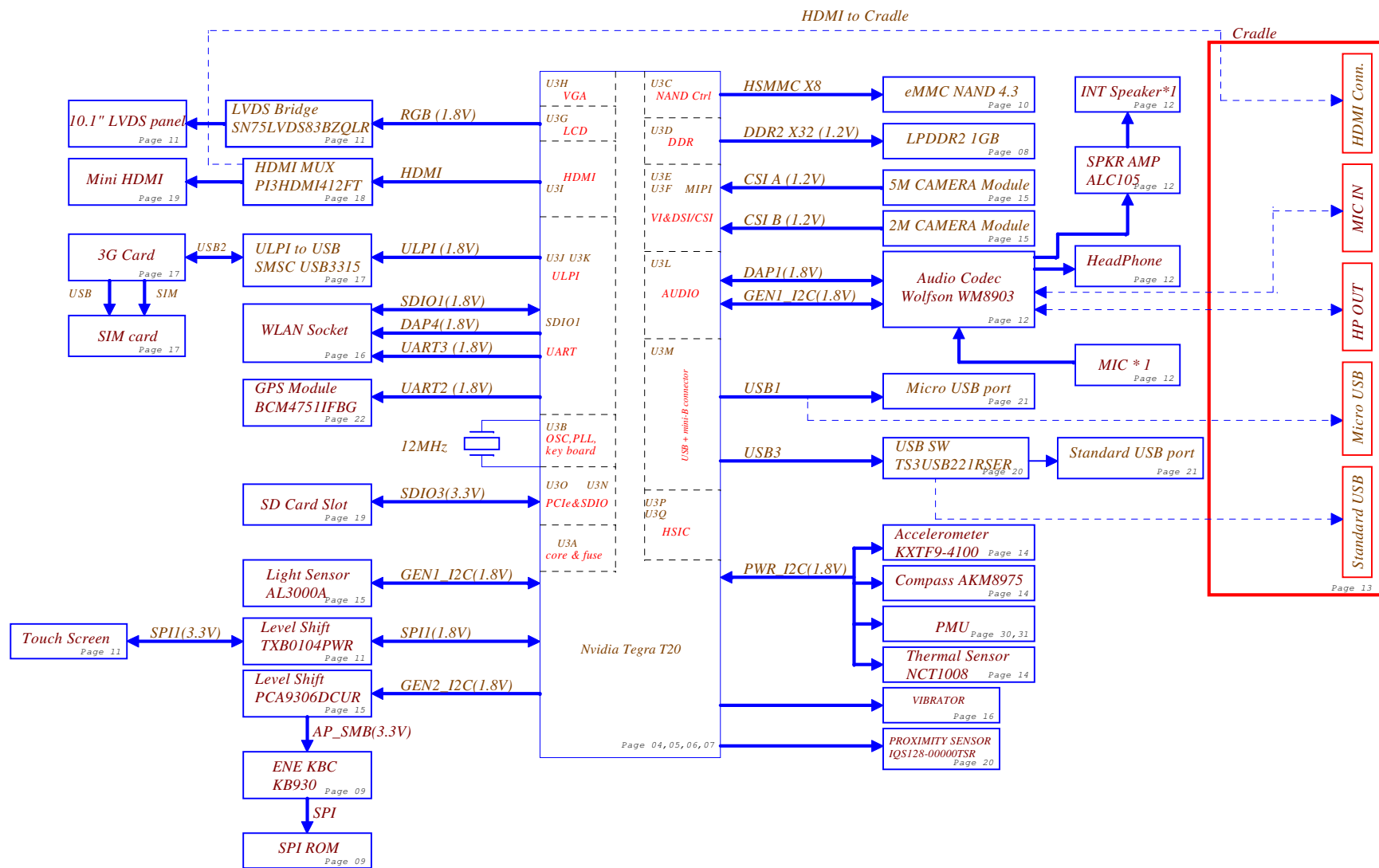
LA-7461 Schematics Document

Nvdia(T20) + LPDDRII

2011-04-22

REV: 0.3

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date		Deciphered Date		Title	
2011/4/1		2010/12/01		Cover Page	
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Voltage Rails

Power Plane	Description
VIN	Power supply (19V)
B+	AC or battery power rail for power circuit.
+1.2VS_SM0	Core voltage for CPU
+1.0VS_SM1	CPU voltage for CPU
+1.1VS_LDO1	AVDD_PLL power rail
+1.2VS_LDO2	T20 RTC power rail
+1.8VS_LDO4	T20 system power rail
+3.3VS_LDO3	T20 USB power rail
+2.85VS_LDO5	Core voltage for EMMC
+2.85VS_LDO6	Core voltage for CAMERA
+3.3VS_LDO7	T20 HDMI power rail
+1.8VS_LDO8	T20 HDMI PLL power rail
+2.85VS_LDO9	T20 DDR RX power rail
+3VALW	3.3V always on power rail
+3VS	3.3V switched power rail for standby mode
+5VALW	5V always on power rail
+1.8VS	1.8V always on power rail
+1.8VS_S3	1.8V switched power rail for standby mode
+3.3VS_RTC	RTC power

LPDDR2

NAND_D5	NAND_D4	SMT		LPDDR2		Part Number
L	L	R38	R39	ELPIDA	1G	SA000048Q30
L	H	R23	R39	Hynix	1G	SA00004MJ10
H	L	R38	R24	Samsung	1G	NA
H	H	R23	R24	NA		NA

PWR_I2C address

Device	Address	Device	Address
<input type="radio"/> FMU	0110 100x b	CAMERA 5M	
<input type="radio"/> E-Compass	0000 110x b	CAMERA 2M	
<input type="radio"/> Temperature sensor	0100 110x b		

CAM_I2C address

GEN1_I2C

Device	Address	Device	Address
<input type="radio"/> Audio Codec	0011 010x b		
<input type="radio"/> Light sensor	0001 110x b		

TS_I2C

GEN2_I2C

Device	Address	Device	Address
		LCD	
		3G CARD	

AP_SMB

EC_SMB

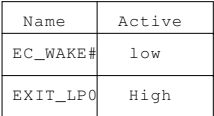
Device	Address	Device	Address
<input type="radio"/> BATT	0001 001x b	<input type="radio"/> G-sensor	0001 1111 b

IME_I2C

DDC_I2C

Device	Address
HDM EDID	

HDMI_DDC_I2C

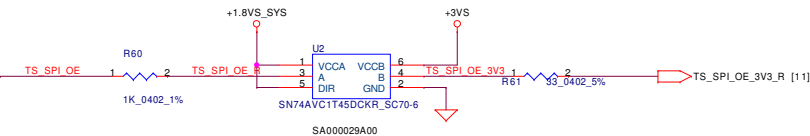


NAND_D5	NAND_D4	SMT	LPDDR2
L	L	R38,R39	ELPIDA 1G
L	H	R23,R39	Hynix 1G
H	L	R38,R24	NA
H	H	R23,R24	NA

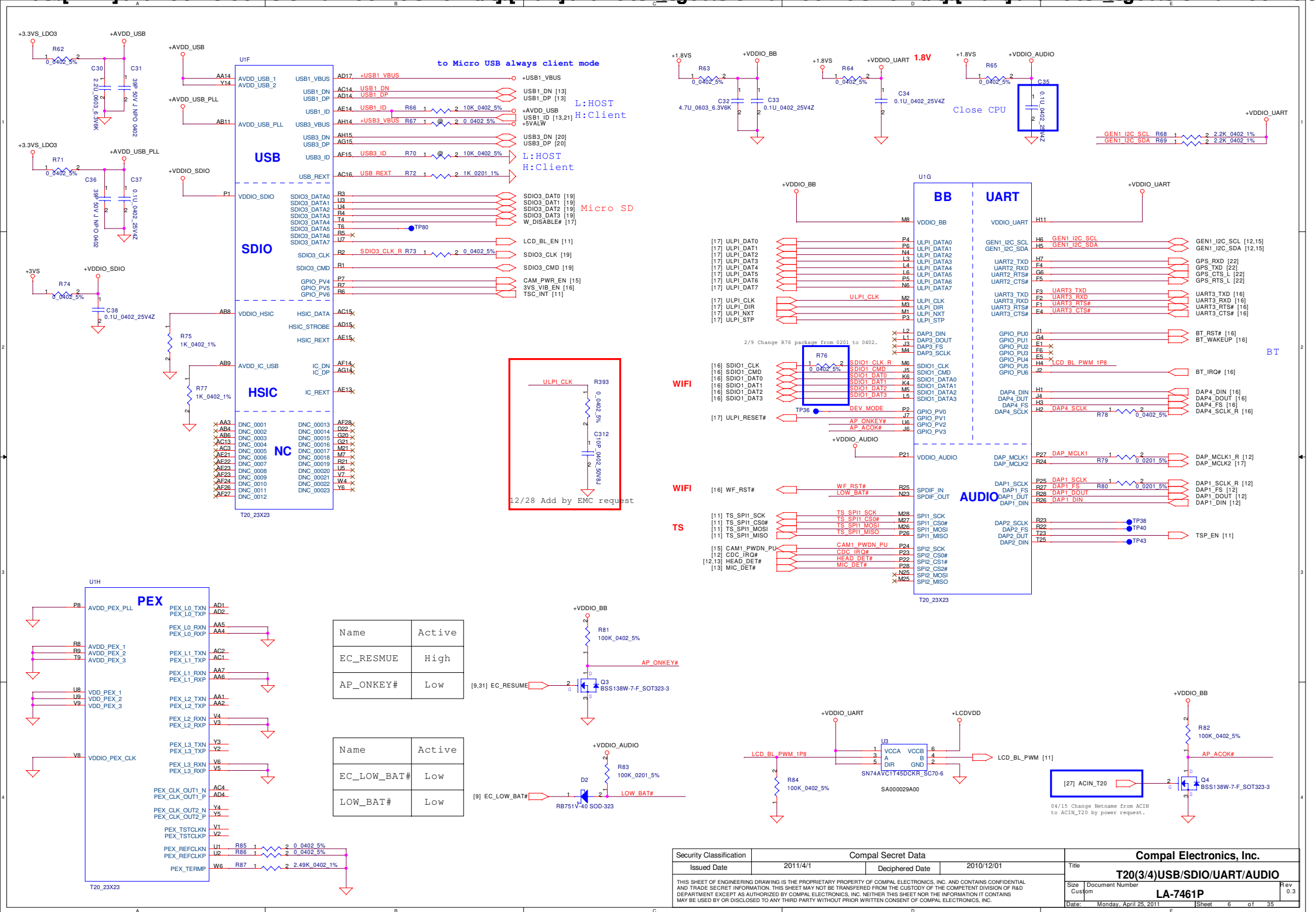
eMMC boot	
GMI_AD12	1
GMI_AD13	0
GMI_AD14	0
GMI_AD15	0

RAM	LPDDR2
NAND_D4	0
NAND_D5	0
NAND_D6	0
NAND_D7	0

RAM	LPDDR2
NAND_D4	0
NAND_D5	0
NAND_D6	0
NAND_D7	0



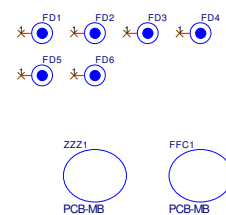
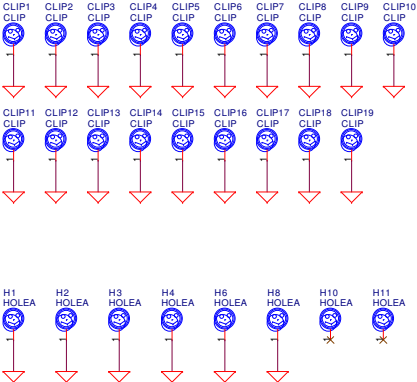
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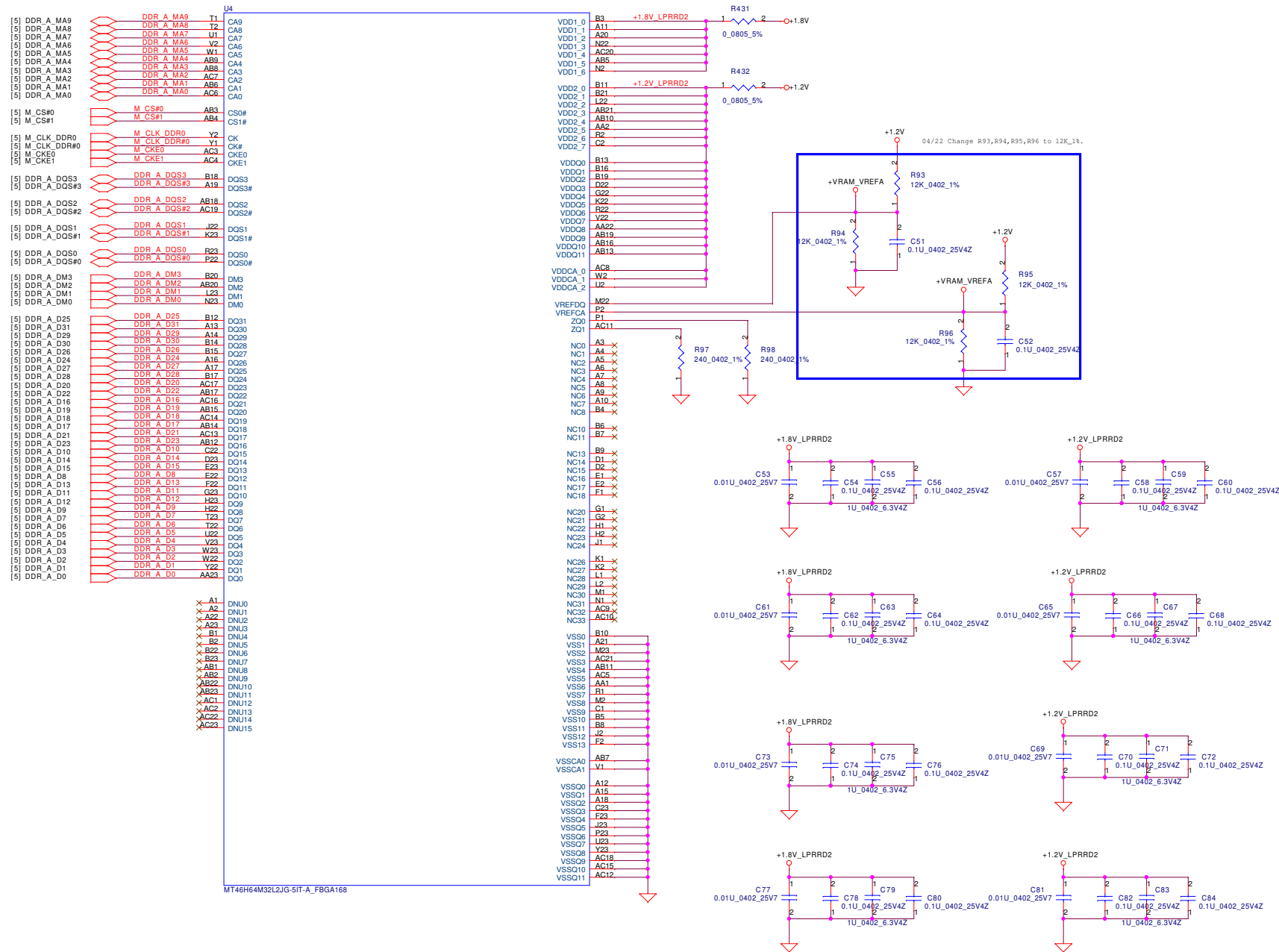
Name	Active
EC_RESUME	High
AP_ONKEY#	Low

Name	Active
EC_LOW_BAT#	Low
LOW_BAT#	Low

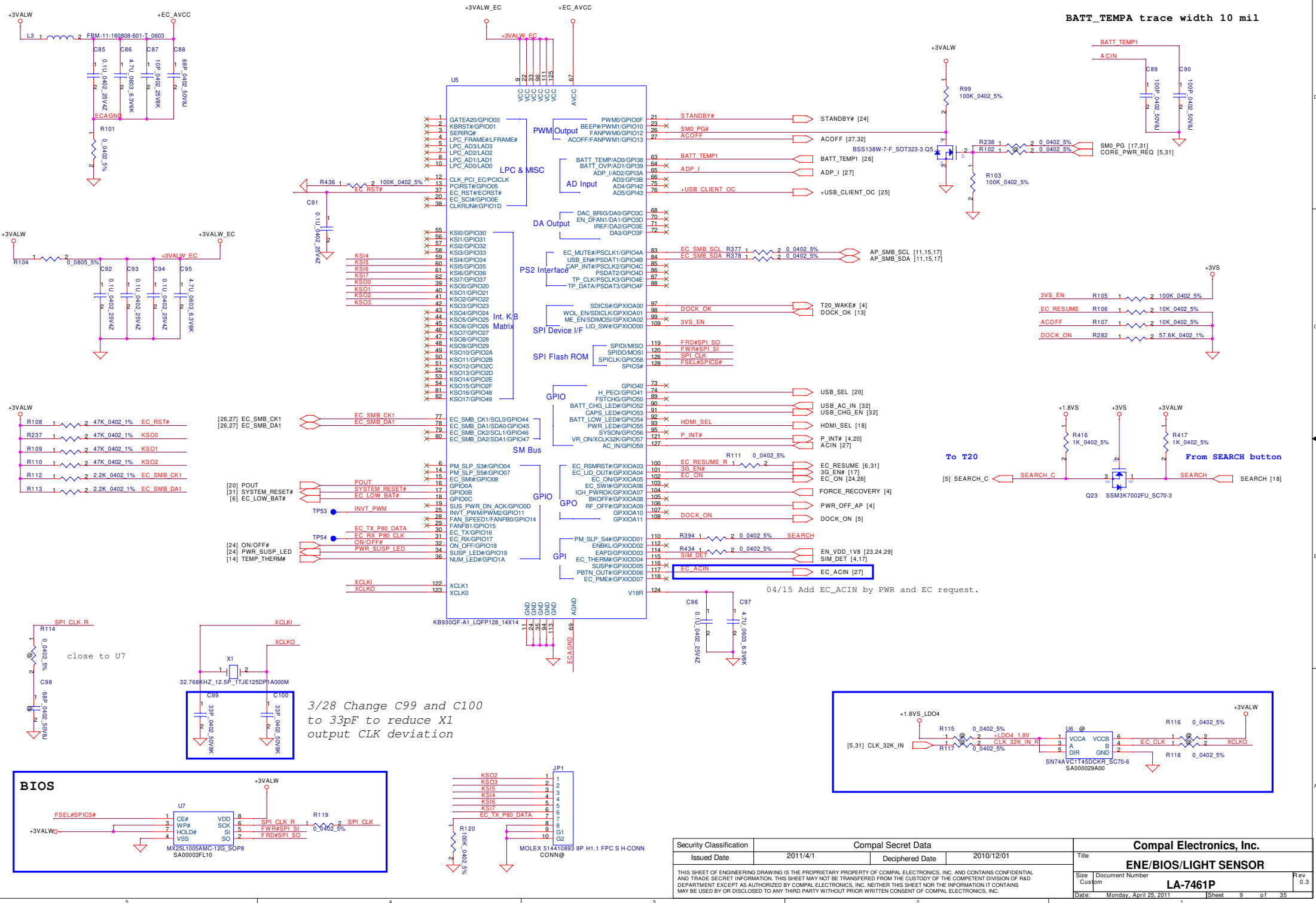
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Issued Date	2011/4/1	Deciphered Date	2010/12/01	Title	T20(3/4)USB/SDIO/UART/AUDIO
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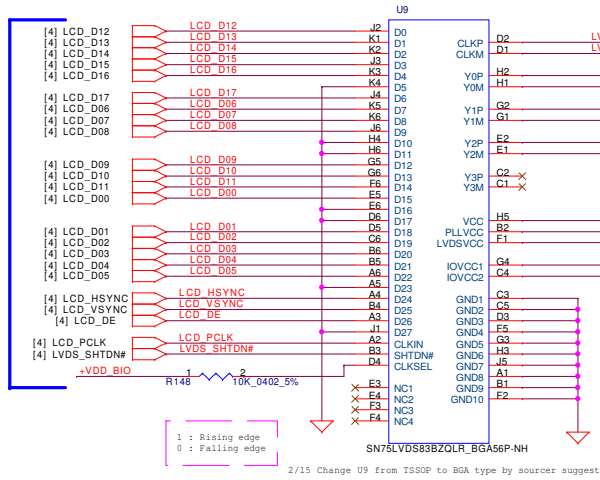


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				ENE/BIOS/LIGHT SENSOR	
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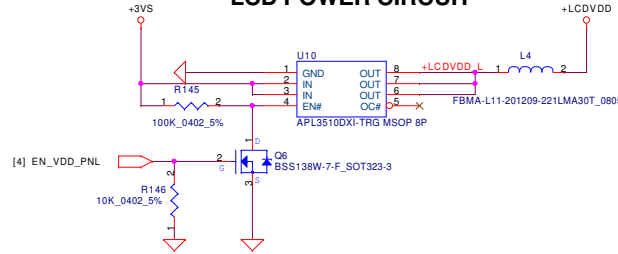
LVDS Bridge

1.8V level

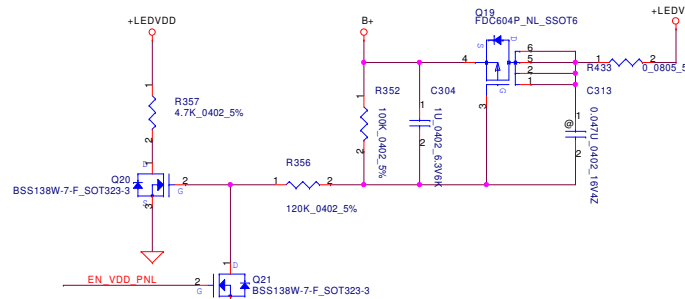


LVDS

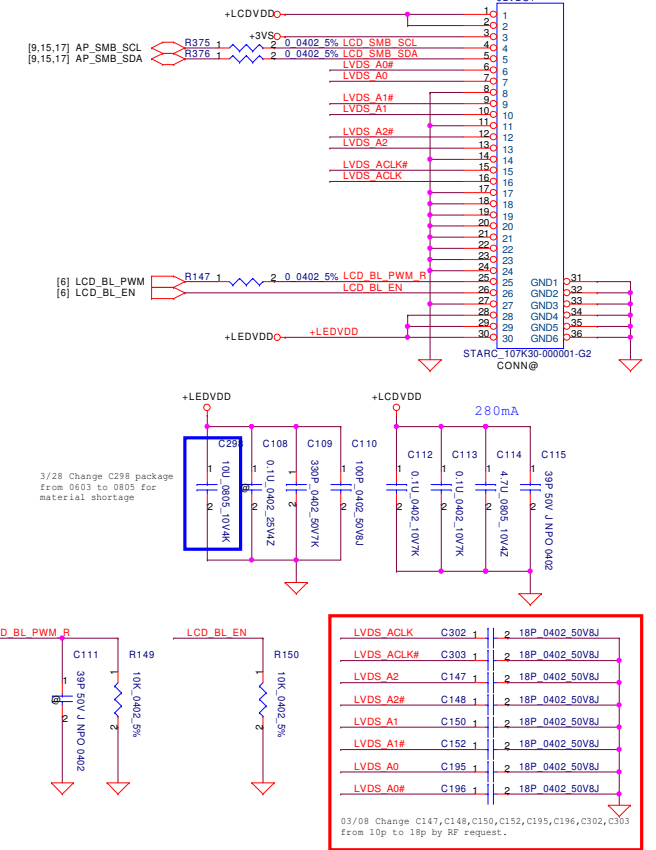
LCD POWER CIRCUIT



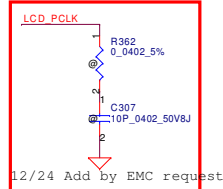
LED POWER CIRCUIT



LVDS CONN



Close U9

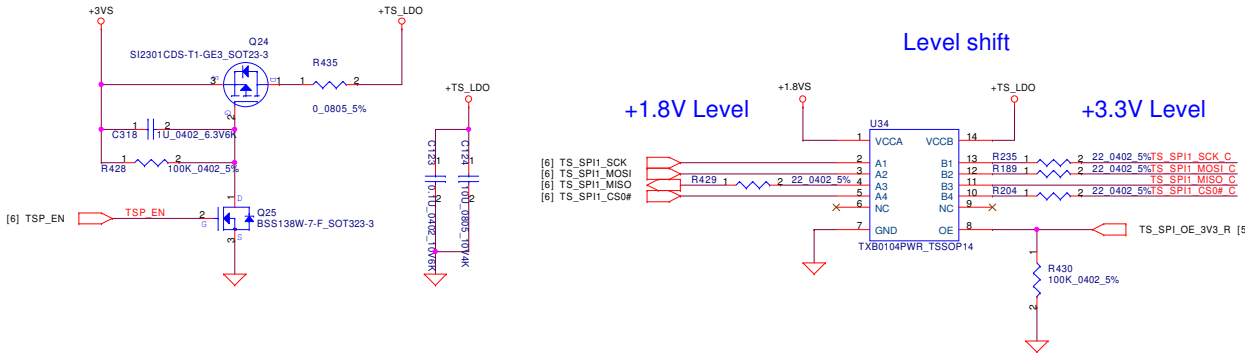


TOUCH SCREEN

Level shift

+1.8V Level

+3.3V Level



3/22 Swap JTS1 pin2 and pin3 to follow module pin define.

Pin #	SPI interface (Compal XPAD) Host side 10 pins-Proposed
1	CGND
2	MISO
3	MOSI
4	INT#
5	SCK
6	GND
7	N.C
8	LDO (Low Dropout Regulator) +3.3 Vcc
9	CS0#
10	SS_L, Slave Select (active low)

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Audio Codec

12/08 R193, R203, R168, R169, C275, C276, C131, C132 need close CODEC by vendor request
02/10 Change from RC to CR by vendor request.

03/04 Change HP_AGND connect to AGND

03/04 Change LINE_AGND connect to AGND

04/21 Add C323 and connect HP_AGND to D4 by EMC request.

03/04 Follow vendor request.

HP Jack

Plug in = LOW
PIN4 = Normal Open

INT. Speaker Conn.

SPKR LEFT# L7 1 2 S SUPPRE MURATA BLM18HE601SN1D 0603

SPKR LEFT L8 1 2 S SUPPRE MURATA BLM18HE601SN1D 0603

JSPK1

1 2

3 4

GND GND

CONN@

ACES_88251-02001

12/23 Add for EMC request

SPK AMP

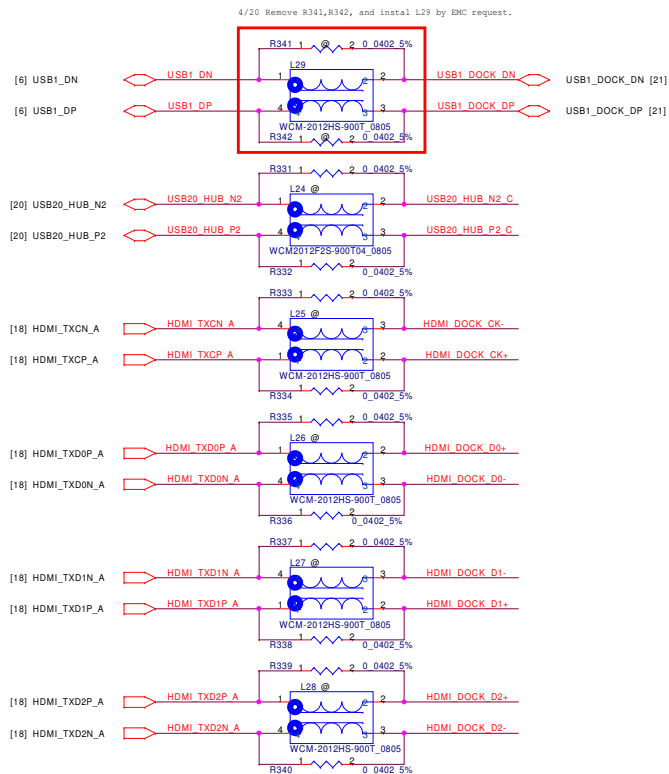
03/02 Change R179 package to 0805 for power consumption measurement.

04/15 Change C149 to 3900pF by Audio team request.

Gain1	Gain2	
0	0	11DB
1	0	14DB
0	1	19DB
1	1	25DB

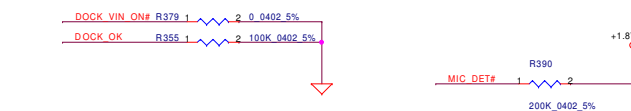
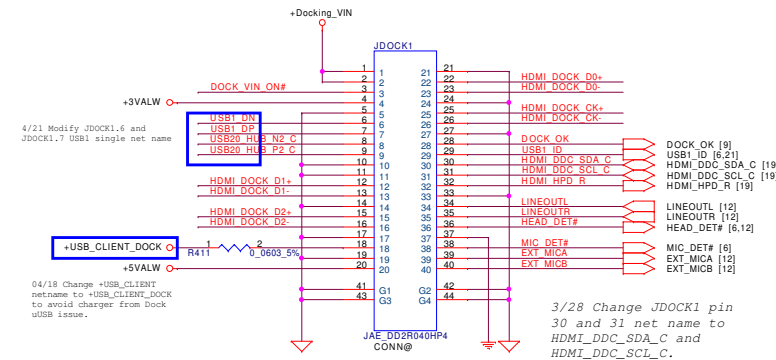
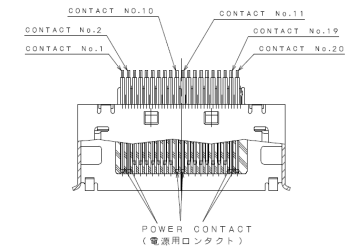
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Gain1	Gain2	
0	0	11DB
1	0	14DB
0	1	19DB
1	1	25DB



Docking Function

1. HDMI
2. Standard USB
3. Micro USB
4. HP out
5. MIC IN
6. AC IN



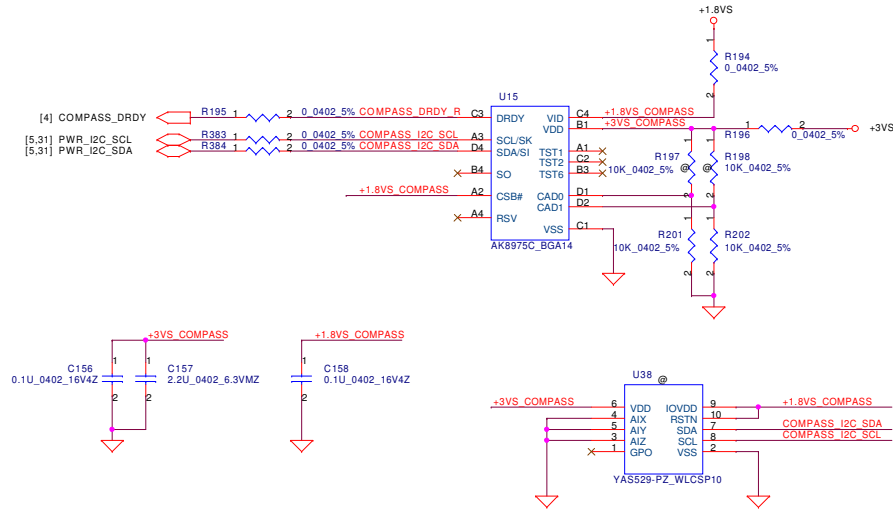
12/23 Add for EMC request

12/29 Change ESD diode package

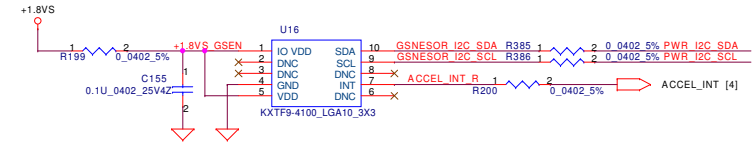
04/21 Remove ESD diode D6, D19, D20, D21, D22, D25, D31 by EMC request.

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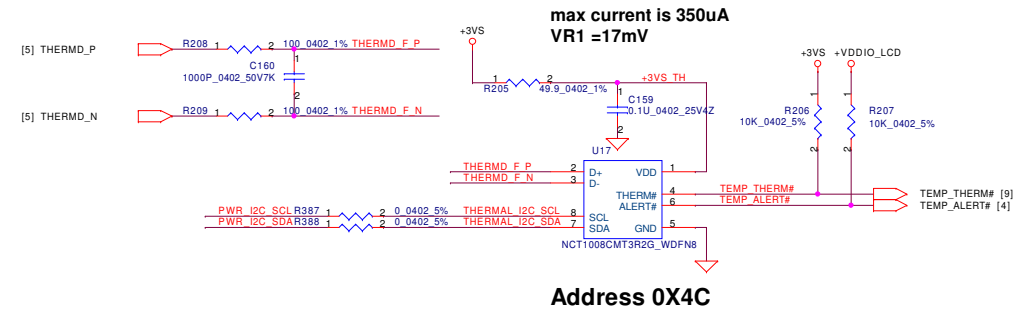
ECompass



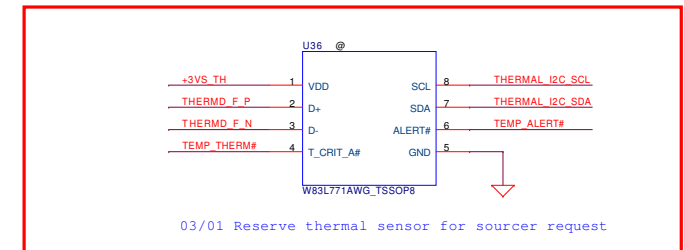
G-SENSOR



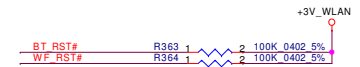
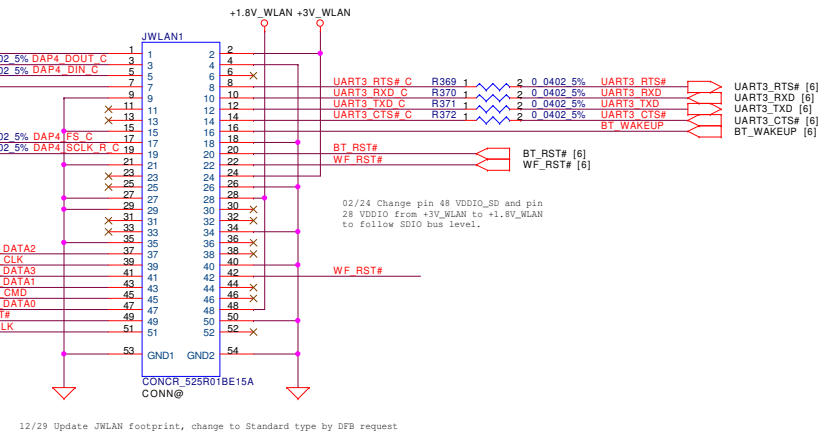
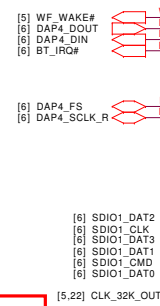
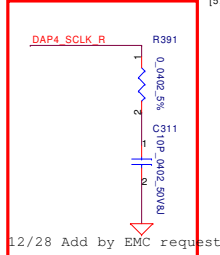
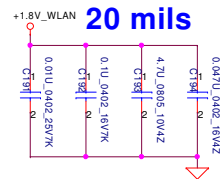
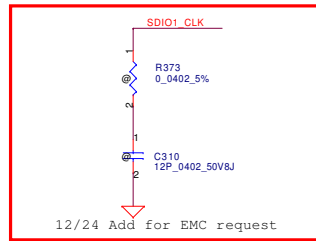
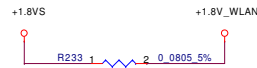
THERMAL



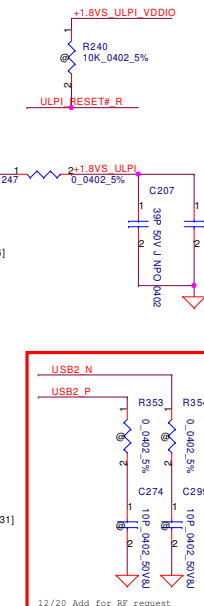
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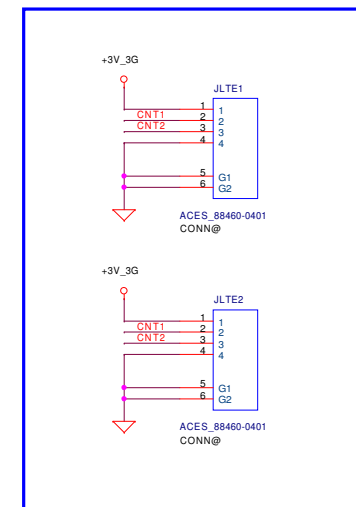
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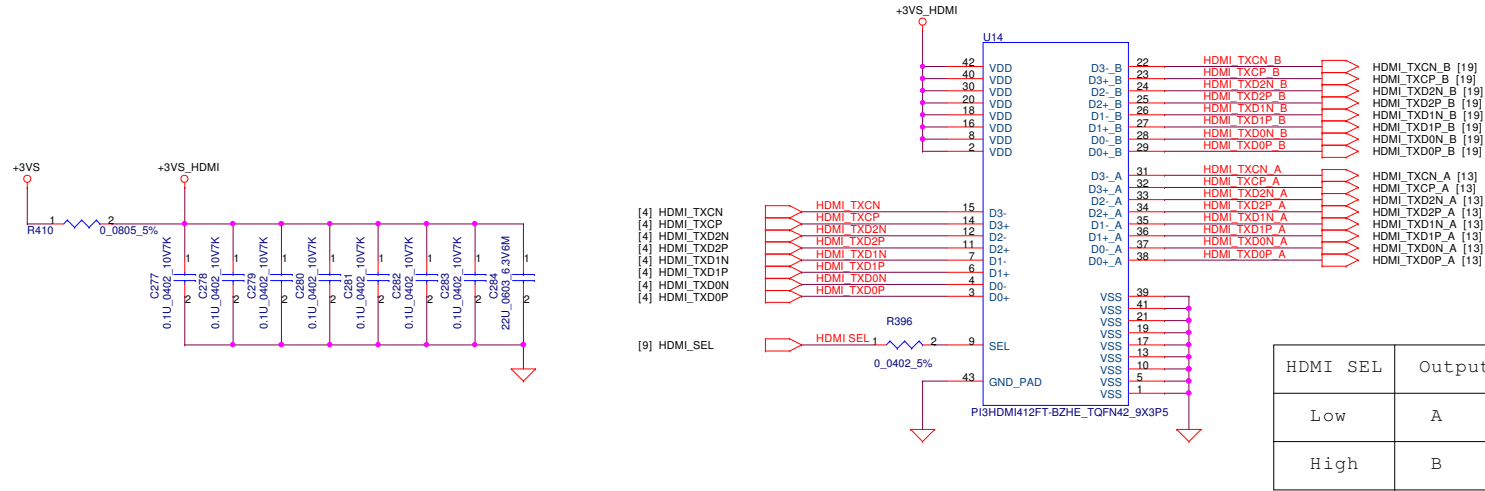
The schematic diagram of the UIM module shows the following components and connections:

- Power Supply:** +UIM_PWR_C is connected to VCC (pin 1), RST (pin 2), and CLK (pin 3) of the J5IM1 connector. It also provides power to the internal circuitry.
- Grounding:** GND (pin 4) is connected to the common ground. DET (pin 7) is also connected to ground.
- Resistors:**
 - R30 (100K_0402_5%) is connected between the power supply and the VCC pin.
 - R239 (0_0402_5%) is connected between the power supply and the RST pin.
 - R329 (100K_0402_5%) is connected between the power supply and the CLK pin.
- Capacitors:**
 - C201 (39pF_0402_50V8A) is connected between the power supply and the VCC pin.
 - C197 (39pF_0402_50V8A) is connected between the power supply and the RST pin.
 - C198 (39pF_0402_50V8A) is connected between the power supply and the CLK pin.
 - C199 (1uF_0402_6.3V4Z) is connected between the power supply and the VCC pin.
 - C200 (0.1uF_0402_25V4Z) is connected between the power supply and the RST pin.
- Transistors:**
 - Q17 (SI2301CDS-T1-GE3_SOT23-3) is a MOSFET used for switching the power supply.
 - Q16 (SSM3K7002FU_SC70-3) is a MOSFET used for switching the power supply.
- Other Components:**
 - D10 (CM1293-0450_SOT23-6) is a diode used for signal conditioning.
 - Q15 (SI2301CDS-T1-GE3_SOT23-3) is another MOSFET used for switching the power supply.
- Connectors:**
 - J5IM1 is the main connector for the UIM module, with pins 1 through 7.
 - TAITW_PMPAT6-06GLBS7N14H0 is the module identifier.

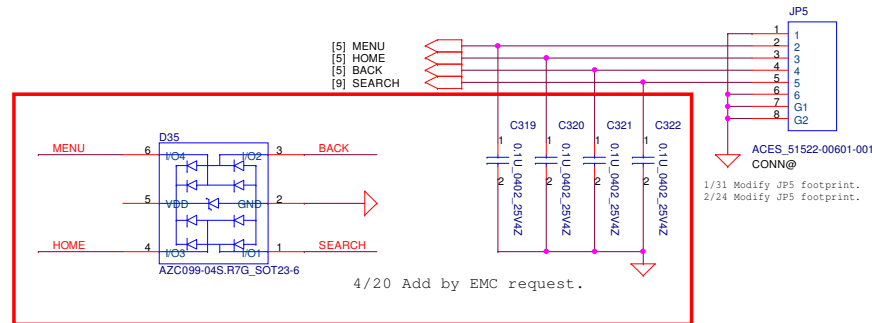


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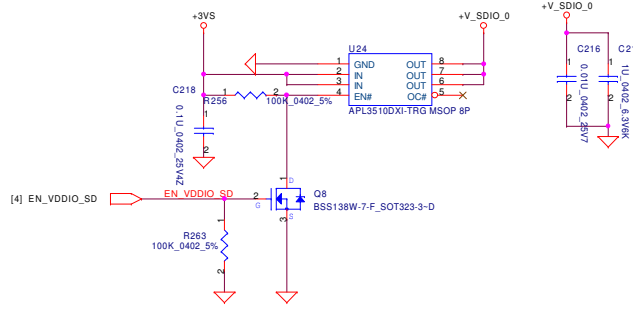
HDMI MUX



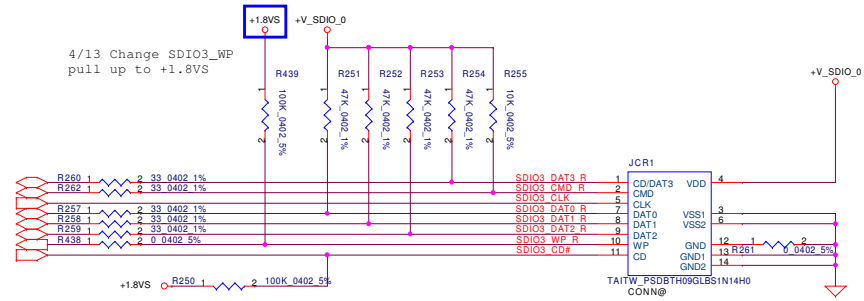
Button Board



SD CARD



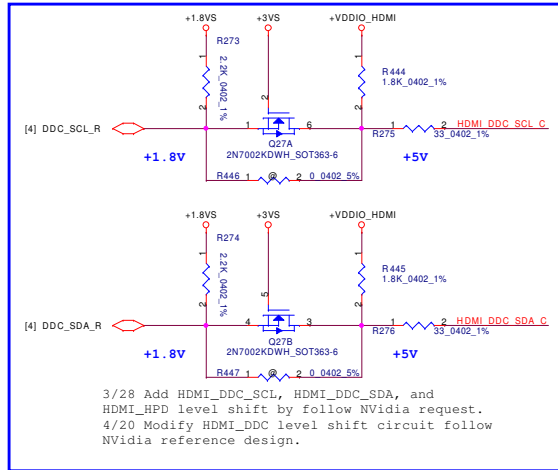
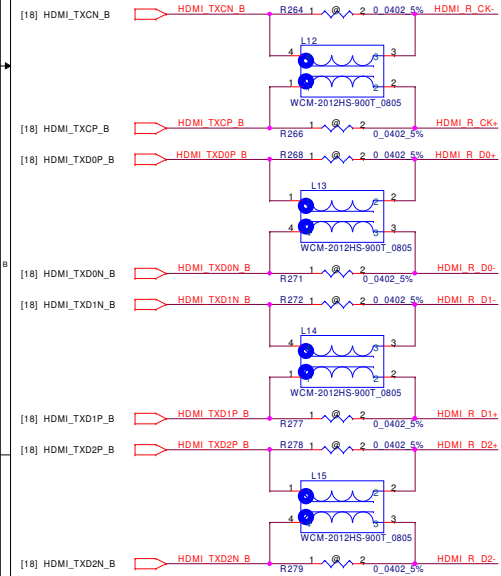
4/13 Change SDIO3_WP
pull up to +1.8VS



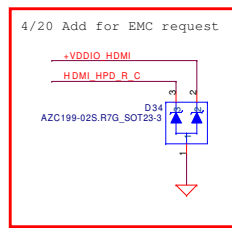
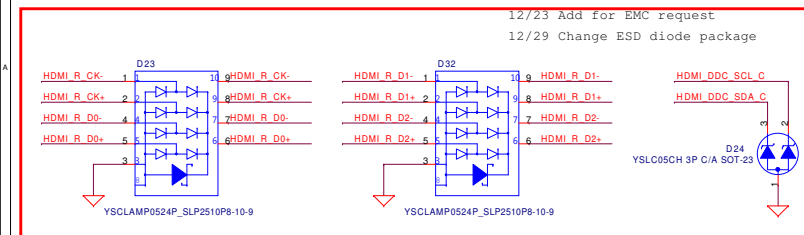
Close JCR1

12/24 Add by EMC request
3/28 Mount and change R374 to 33ohms,
C219 to 22pF by EMI request

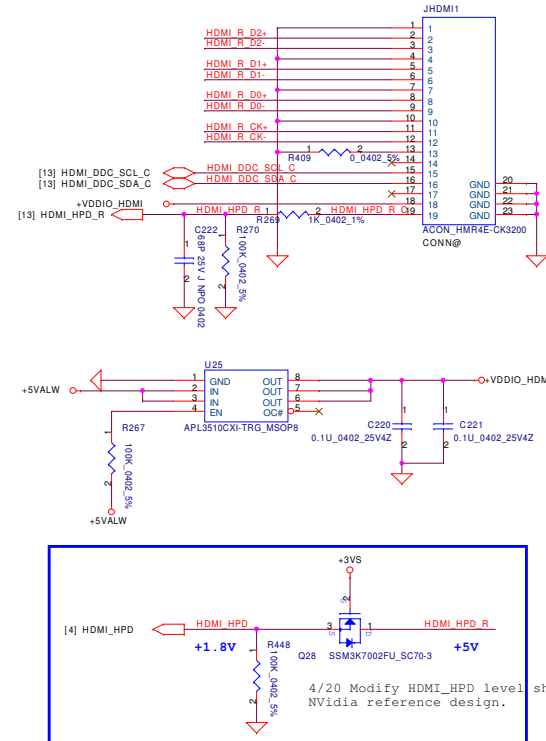
HDMI



3/28 Add HDMI_DDC_SCL, HDMI_DDC_SDA, and HDMI_HPD level shift by follow NVidia request.
4/20 Modify HDMI_DDC level shift circuit follow NVidia reference design.



HDMI Type C Connector

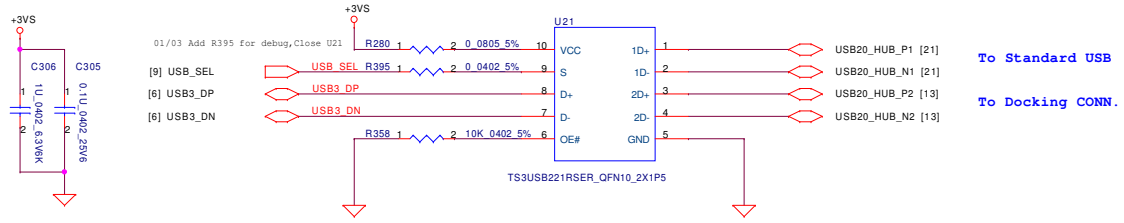


- HDMI C Type

Pin	Pin定義
1	TMDS Data2 Shield
2	TMDS Data2+
3	TMDS Data2-
4	TMDS Data1 Shield
5	TMDS Data1+
6	TMDS Data1-
7	TMDS Data0 Shield
8	TMDS Data0+
9	TMDS Data0-
10	TMDS Clock Shield
11	TMDS Clock+
12	TMDS Clock-
13	DDC/CEC Ground
14	CEC
15	SCL
16	SDA
17	Reserved (N.C. on device)
18	+5V Power
19	Hot Plug Detect

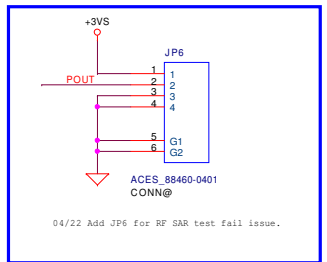
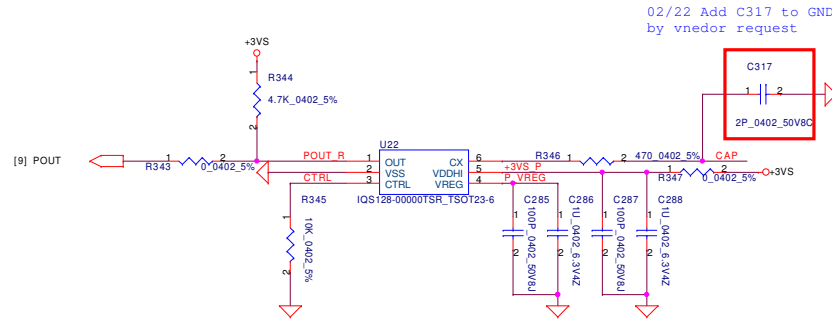
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Issued Date	2011/4/1	Deciphered Date	2010/12/01	Title	HDMI/SD CARD	
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USB SW

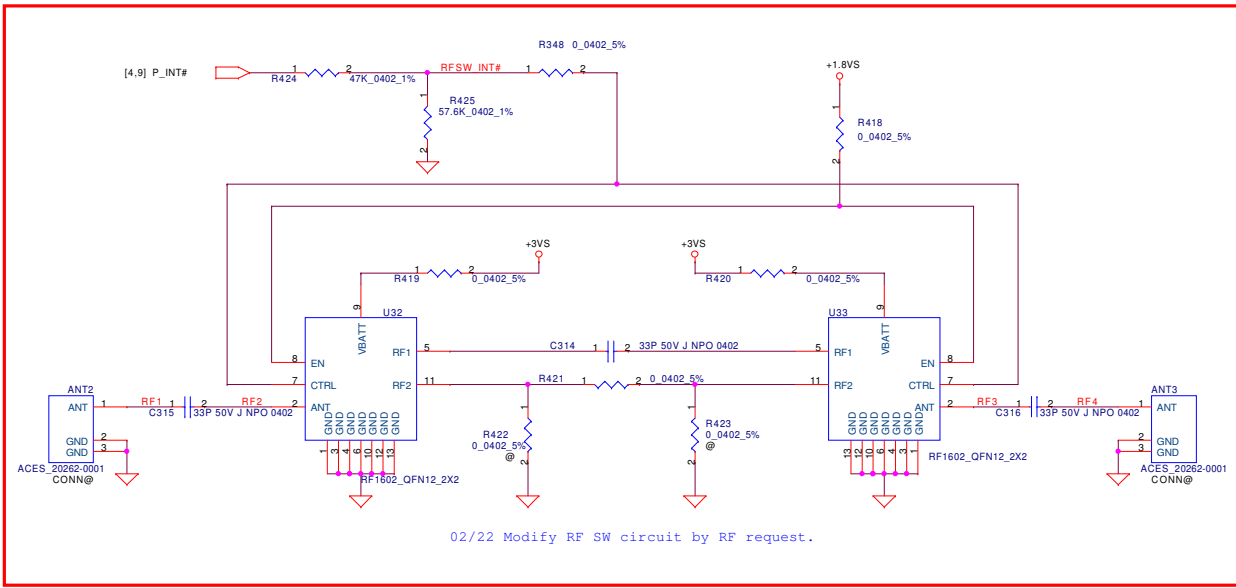


S	Output
L	D = 1D
H	D = 2D

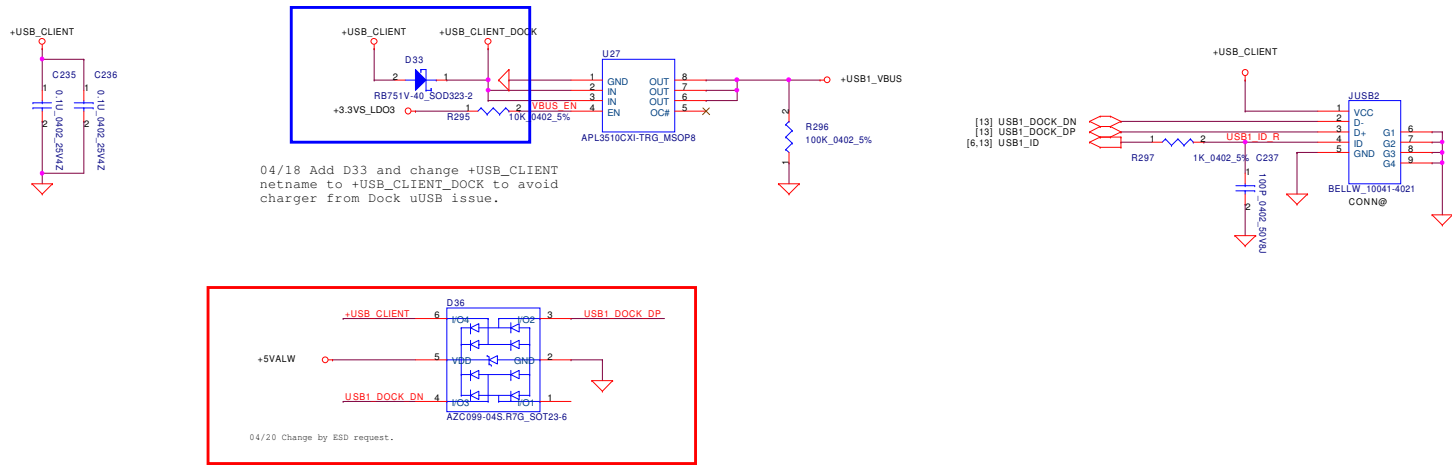
PROXIMITY SENSOR



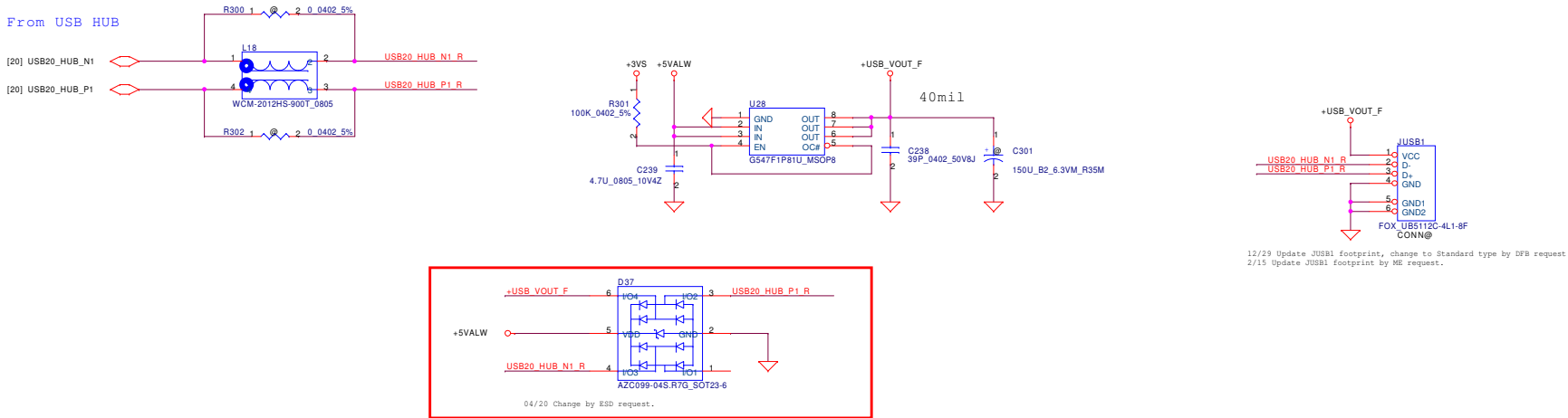
RF SW



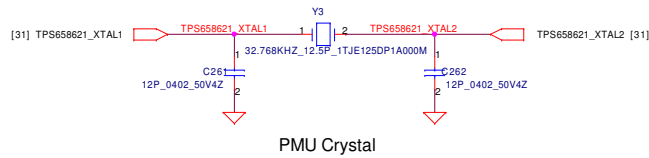
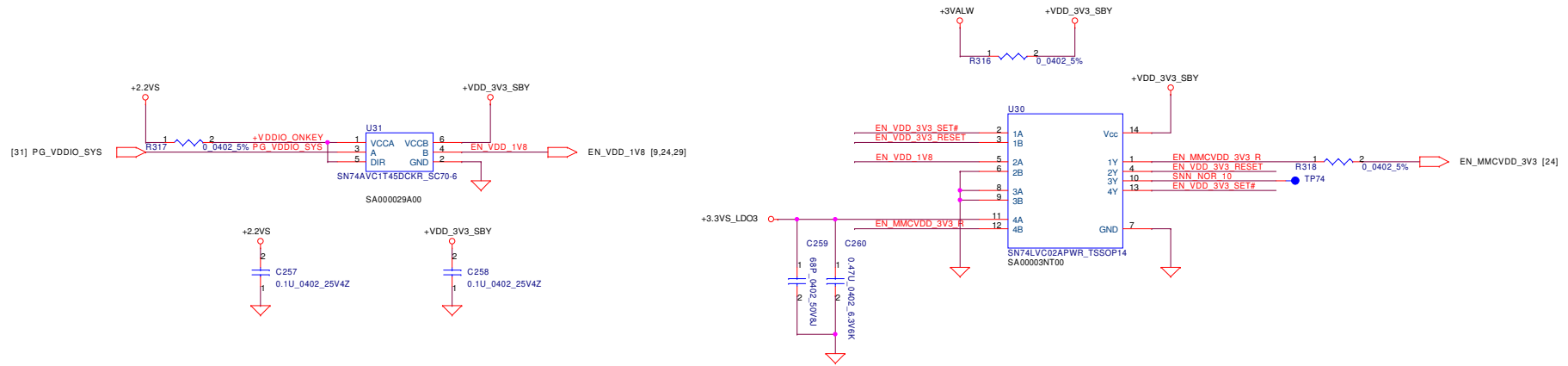
MICRO USB



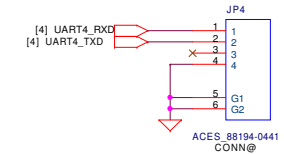
STANDARD USB



Power Sequence Logic



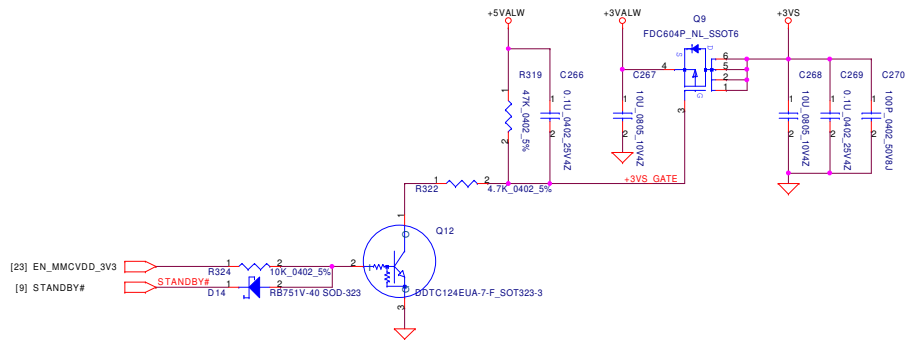
Debug connector



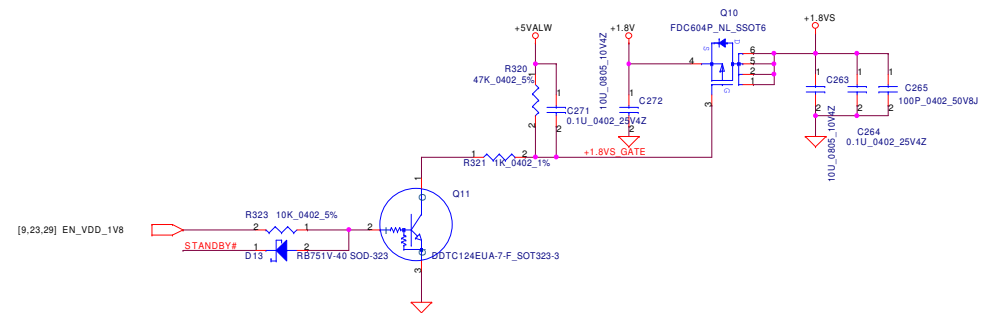
12/16 Add Debug Connector

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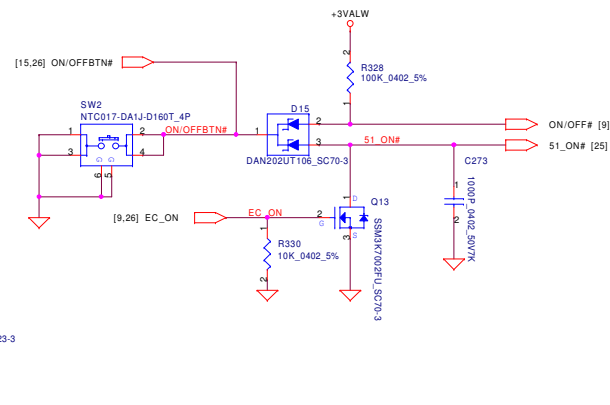
+3VALW to +3VS Transfer



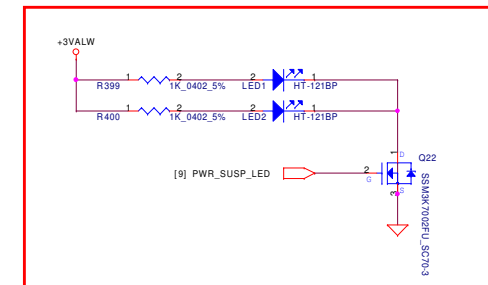
+1.8V to +1.8VS Transfer



Power Button

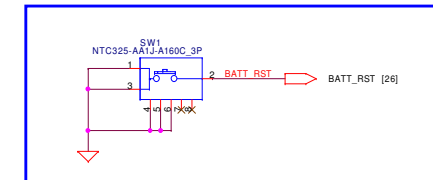


LED

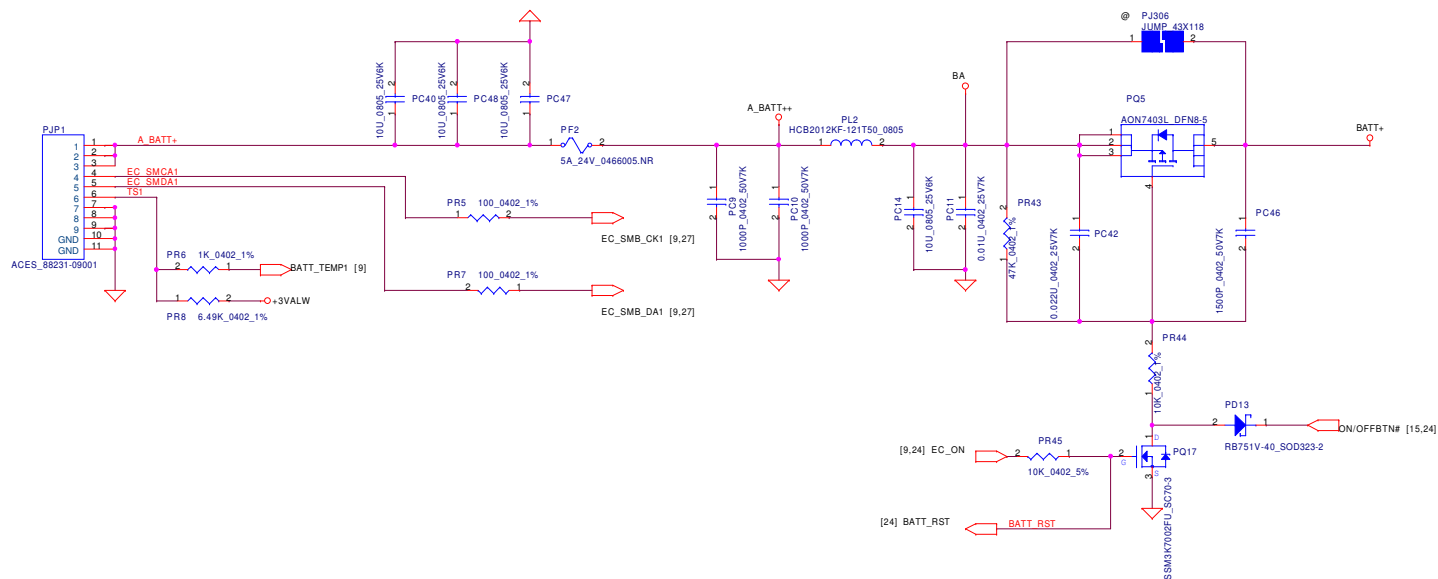


2/9 Add LED for customer request.
4/20 Change LED1 and LED2 from Red light to White light.

4/15 Move SW1 from PWR side to HW side, since it's HW parts.

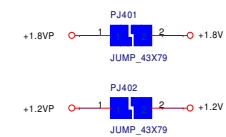
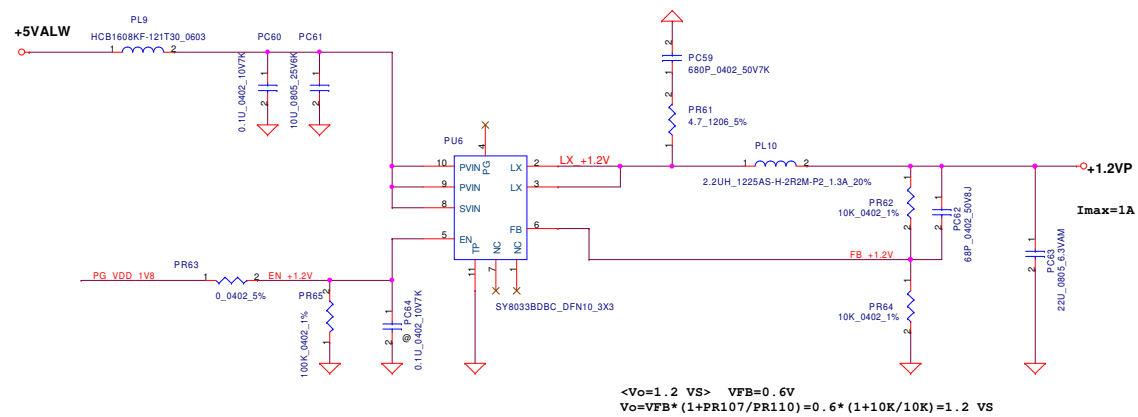
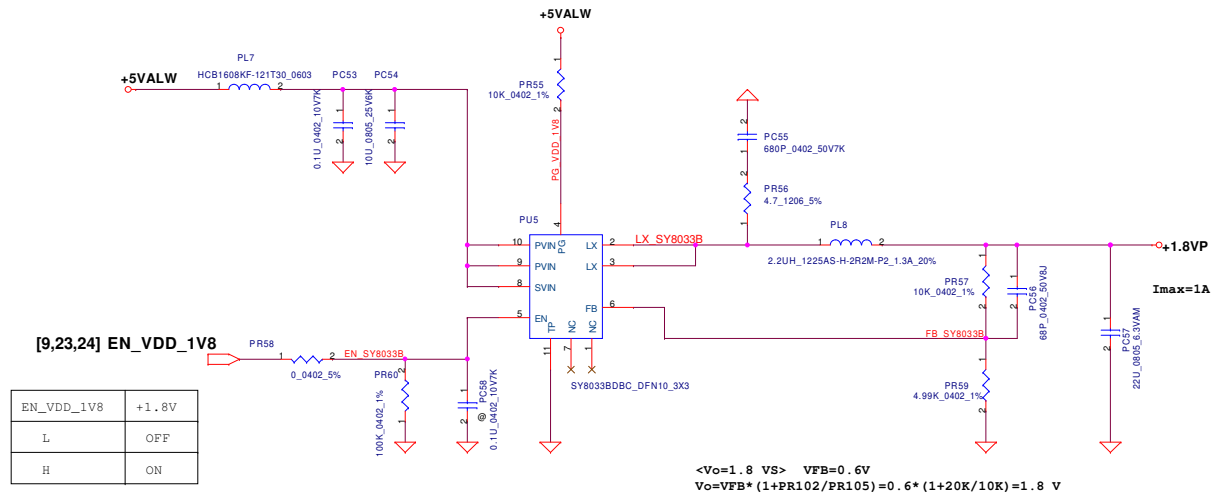


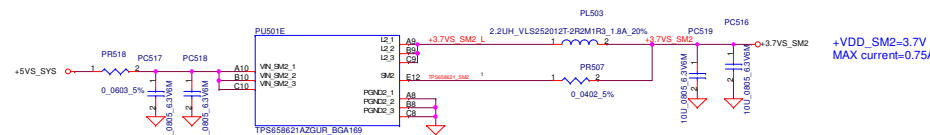
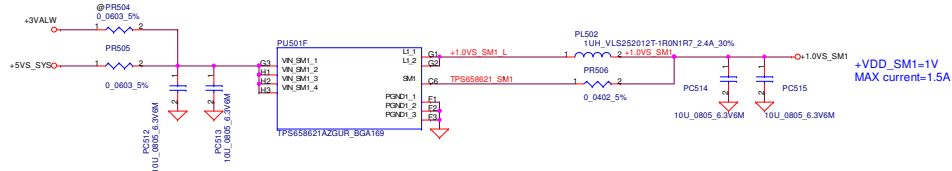
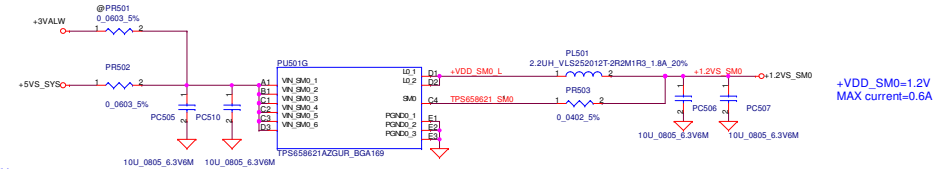
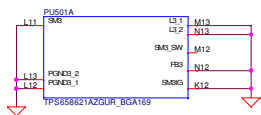
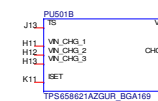
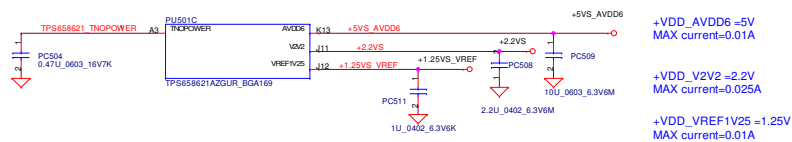
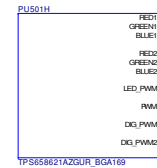
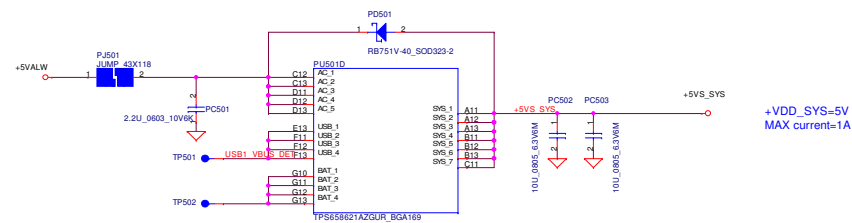
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Size	C	Document Number	LA-7461P	
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Rev.	0.3			



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				BATTERY CONN.	
				LA-7461P	
				Rev. 0.2	
				Date: Monday, April 25, 2011	
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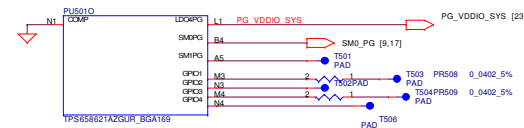
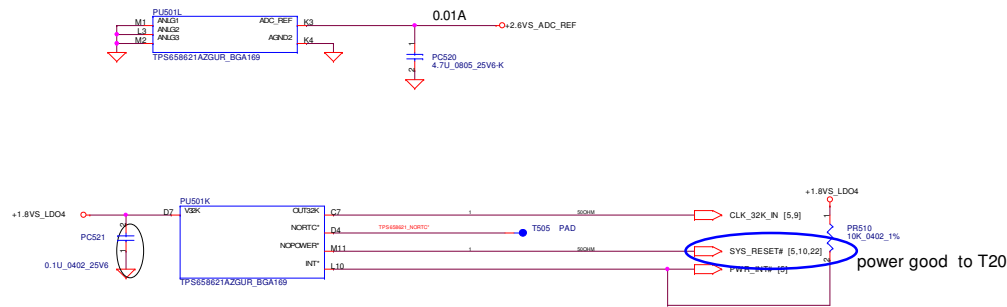
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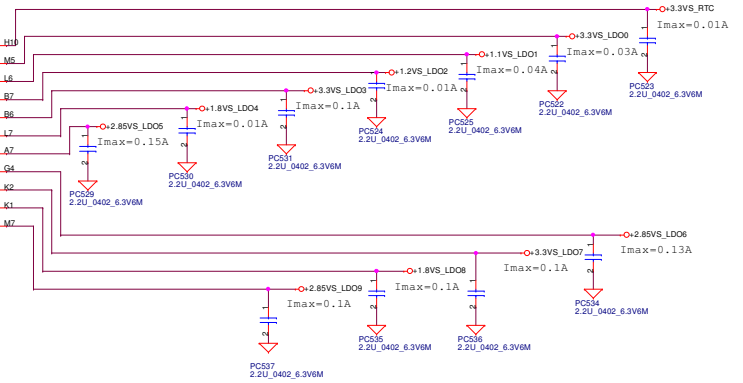
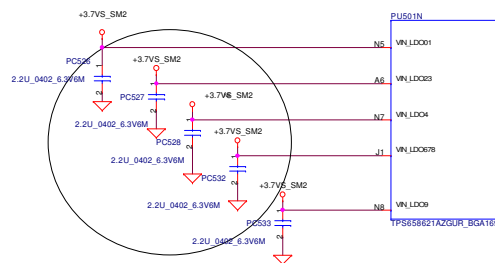


PMU #1

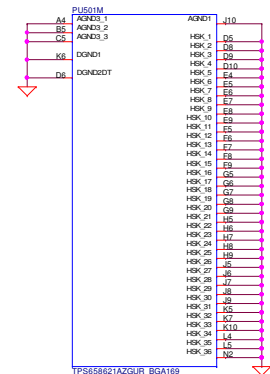
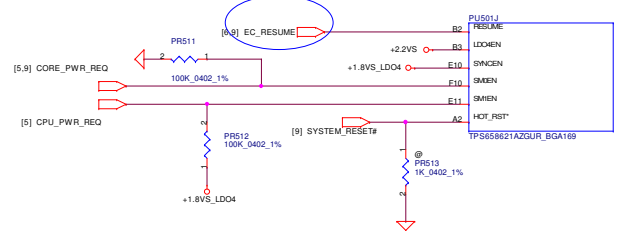
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Issued Date	2006/08/18	Deciphered Date	2008/09/20	Title	PMU#1
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LAYOUT元件擺出PIN



接到EC (POWER BUTTON)



PMU #2

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Issued Date	2006/08/18	Deciphered Date	2008/09/20	Title	
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				Custom	LA-7461P
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Version Change List (P. I. R. List) for Power Circuit

Page# Title Date Request Owner Issue Description Solution Description

PHJ00 from SDV to FVT LA-7461P REV:0.1 -> 0.2 Modify <2011.01.30.~2011.03.08. >

Rev.	Item	Date	Impact	Page	Change Cause	Modify Description
0.2	1	1/31	CKT,Layout	7	-DFx suggest modify fiducial mark from two to three for M/B PCB bend test.	-Add FD5 and FD6
0.2	2	1/31	CKT,Layout	9	-Force recovery function always high issue when boot.	-Move SEARCH pin from EC pin 64 to pin 110, and add external pull high R398 to +3VALW.
0.2	3	1/31	CKT,Layout	11	-To solve EN_VDD_PNL turn on issue.	-Add C313 at Q19 G/D side.
0.2	4	1/31	CKT,Layout	12	-Internal SPK noise issue.	-Disconnect CDC_LEFT and CDC_LEFT#, and CDC_LEFT# connect to TP82.
0.2	5	1/31	CKT,Layout	18	-C284 interfere with shielding can.	-Change C284 package from 1206 to 0603.
0.2	6	1/31	CKT,Layout	11,18	-Update connector list from ME request.	-Modify JTS1 and JP5 footprint
0.2	7	1/31	CKT,Layout	7	-ME release newest drawing	-Add H13 and H14
0.2	8	2/9	CKT,Layout	12	-INT MIC can not record	-Delete C153 and C154, and change R191 and R192 to 0 ohms. MIC_LEFT_OUT pull high to +1.8VS, MIC_LEFT_OUT# pull down to AGND.
0.2	9	2/9	CKT,Layout	19	-Update connector list from ME request.	-Modify JCR1 footprint
0.2	10	2/9	CKT,Layout	9,24	-Add RED LED by customer request	-Add R399, R400, LED1, LED2, and Q22.Add SUSP_LED control signal from EC pin 34.
0.2	11	2/10	CKT,Layout	12	-Change HP and LINEOUT CR to GND by vendor request.	-Swap C275 and R193. Swap C276 and R203. Swap C131 and R168. Swap C132 and R169 by vendor request.
0.2	12	2/11	CKT,Layout	16	-BT can not work normally.	-Swap UART3_RXD and UART3_TXD, and swap UART3_RTS# and UART3_CTS# to solver BT cat not work normally.
0.2	13	2/14	CKT,Layout	18	-Power consumption measurement	-Add R410 for power consumption measurement.
0.2	14	2/15	CKT,Layout	13	-Cradle micro USB no function.	-Change JDOCK pin18 to +USB1_VBUS and serial R411 for solver Cradle micro USB no function issue.
0.2	15	2/15	CKT,Layout	16	-Vibrator can not work normally.	-Add 3V level GPIO 3VS_VIB_EN to control it, and reserve VIB_EN_T20.
0.2	16	2/15	CKT,Layout	11	-Follow sourcer's request to common design.	-Change U9 package from TSOP to BGA type.
0.2	17	2/15	CKT,Layout	11	-TSP pin define modify.	-Modify TSP JTS1 pin define by vendor request.
0.2	18	2/15	CKT,Layout	20	-Power consumption measurement	-Add R414 and R415 for power consumption measurement.
0.2	19	2/22	CKT,Layout	5,9	-Force recovery function abnormal issue	-Add level shift circuit (Q23, R416, and R417)between SEARCH pin and T20
0.2	20	2/22	CKT,Layout	20	-Follow RF's request	-Modify RF SW circuit by RF team request.
0.2	21	2/22	CKT,Layout	20	-Follow vendor's request	-Add 2P capacitance from CAP signal to GND for vnedor request.
0.2	22	2/23	CKT,Layout	11	-TSP SPI bus is 3V level	-Add level shift circuit (U34,U35,R235,R189,R204,C318,R427)
0.2	23	2/24	CKT,Layout	16	-+1.8VS leakage issue when WIFI enable	-Change pin 48 (VDDIO_SD) and pin 28 (VDDIO) from +3V_WLAN to +1.8V_WLAN.
0.2	24	2/24	CKT,Layout	16	-Follow vendor's request	-Swap DAP4_DOUT and DAP4_DIN signal
0.2	25	3/01	CKT,Layout	10	-Follow DFx's request.	-Add U37 for eMMC 14*18mm footprint by DFx request.
0.2	26	3/01	CKT,Layout	14	-Follow sourcer's request.	-Reserve U36 Thermal sensor.
0.2	27	3/01	CKT,Layout	24	-SW2 interfere with ME.	-Change debug power button SW2 to Top view type.
0.2	28	3/02	CKT,Layout	6,11	-Follow TSP vendor request.	-Modify TSP level shift circuit and add power switch.
0.2	29	3/02	CKT,Layout		-Power consumption measurement.	-Add R431,R432,R433. Change R104,R122,R121,R143,R144,R158,R159,R160,R161,R179,R220,R221,R223,R230,R231,R232,R233,R246,R410,R280 package to 0805.
0.2	30	3/02	CKT,Layout	17	-Follow customer request.	-Add JLTE1 and JLTE2 circuit by customer request.
0.2	31	3/03	CKT,Layout	9	-Double pull up.	-Delete R319 since SEARCH has double pull resistance.
0.2	32	3/03	CKT,Layout	8	-Modify Net name	-Modify LPDDR2 power net name.
0.2	33	3/03	CKT,Layout	9	-Prevent system hang up issue as PB/J30.	-KBC pin 13 add R436 100K ohms to GND.
0.2	34	3/04	CKT,Layout	12	-Follow vendor request.	-Change HP_AGND and LINE_AGND serial resistance to AGND. Connect HP_AGND to JHP1 pin5.
0.2	35	3/04	CKT,Layout	4,19	-SD Card no write protect function.	-Connect SDIO3_WP from U1_AE12 to JCR1 pin10. Delete R4. Add pull up resistance R439.
0.2	36	3/04	CKT,Layout	11	-Delete TSP debug connector JTS3.	-Delete JTS3 connector since the vendor can provide FFC cable.
0.2	37	3/06	CKT,Layout	13	-Cradle micro USB abnormally.	-Chage JDOCK1 pin 18 net name from +USB1_VBUS to +USB_CLIENT to solve Cradle micro USB can not work issue.
0.2	38	3/07	CKT,Layout	17	-Follow customer request.	-Add CNT1 to JWWAN1.3 and CNT2 to JWWAN1.5 for LTE function.
0.2	39	3/07	CKT,Layout	15	-Camera I2C bus level is 3.3V.	-Add CAM_I2C bus level shift circuit (Q26 ~ R440 ~ R441) to 3V level.
0.2	40	3/08	CKT,Layout	11	-Follow RF request	-Change C147,C148,C150,C152,C195,C196,C302,C303 from 10pF to 18pF by RF request.

PHJ00 from FVT to SIT LA-7461P REV:0.2 -> 0.3 Modify <2011.03.22.~2011.04.22. >

Rev.	Item	Date	Impact	Page	Change Cause	Modify Description
0.3	1	3/23	CKT,Layout	11	-Modify JTS1 pin define by follow vendor request.	-Swap JTS1 pin2 and pin3 to follow module pin define.
0.3	2	3/28	CKT,Layout	11	-C298 Material shortage	-Change C298 package from 0603 to 0805
0.3	3	3/28	CKT,Layout	13,19	-Follow NVidia request	-Add HDMI_DDC and HDMI_HPD level shift circuit (Q27 ~ Q28 ~ R444 ~ R445 ~ R446 ~ R447). Modify JDOCK1 pin 30 and 31 net name.
0.3	4	3/28	CKT	19	-Follow EMI request	-Change and instal R374 to 33ohms and C219 to 22pF by EMI request.
0.3	5	3/28	CKT	9	-X1 output CLK not accurate enough.	-Change C99 and C100 to 33pF by vendor suggestion.
0.3	6	4/13	CKT	12	-Follow SMSC USB3315 reference design	-Change R245 to 8.06K 1%
0.3	7	4/15	CKT	17	-SPK voice too small	-Change C149 to 3900pF by Audio team request.
0.3	8	4/13	CKT,Layout	19	-Avoid leakage issue.	-Change SDIO3_WP pull up level to +1.8VS
0.3	9	4/15	CKT	24	-BOM issue	-Move SW1 from PWR side to HW side.
0.3	10	4/15	CKT,Layout	9	-Power charger unstable issue.	-Add EC_ACIN by power and EC request.
0.3	11	4/15	CKT,Layout	6	-Power charger unstable issue.	-Change ACIN netname to ACIN_T20 by power request.
0.3	12	4/18	CKT,Layout	13,21	-Charger from Cradle micro USB issue.	-Add D33 and change +USB_CLIENT netname to +USB_CLIENT_DOCK to avoid charger from Cradle micro USB issue.
0.3	13	4/20	CKT,Layout	19	-Follow EMC request.	-Add ESD diode D34 for EMC request.
0.3	14	4/20	CKT,Layout	18	-Follow EMC request.	-Add C319,C320,C321,C322, and D35 by EMC request.
0.3	15	4/20	CKT,Layout	21	-Follow EMC request.	-Change D11,D12 to D36,D37 by EMC request.
0.3	16	4/20	CKT,Layout	14	-AKM eCompass shortage issue.	-Reserve Yamaha eCompass U38 by AKM eCompass shortage issue.
0.3	17	4/20	CKT,Layout	13	-Follow EMC request.	-Remove R341,R342, and install L29 by EMC request.
0.3	18	4/20	CKT	17	-Follow RF request.	-Change R242 and R244 to L30,L31 by RF request.
0.3	19	4/20	CKT	24	-Change LED to white light	-Change LED1 and LED2 from Red light to White light
0.3	20	4/21	CKT,Layout	12	-Follow EMC request.	-Add C323 and connector HP_AGND to D4
0.3	21	4/21	CKT,Layout	13	-Follow EMC request.	-Del ESD diode D6,D19,D20,D21,D22,D25,D31
0.3	22	4/20	CKT,Layout	17	-For ULPI PHY high speed test fail issue.	-Reserver X4,R449,R450,R451
0.3	23	4/20	CKT,Layout	13	-Follow EMC request.	-Modify JDOCK1.6 and JDOCK1.7 netname
0.3	24	4/20	CKT,Layout	19	-Follow NVidia reference design.	-Modify HDMI_DDC and HDMI_HPD level shift circuit. Change R444 and R445 to 1.8K. Change R273 and R274 to 2.2K. Add R448 HDMI_HPD pull down resistance.
0.3	25	4/20	CKT,Layout	21	-Follow EMC request.	-Change D36 and D37 to AZC099 by EMC request.

PHJ00 from FVT to SIT LA-7461P REV:0.2 -> 0.3 Modify <2011.03.22.~2011.04.25.>

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