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# Lampard-AMD INT

CPU : AMD ZACATE

Chip Set : FCH(Hudson-M3L)

Remarks : Brazos2.0 Platform

Model Name : Lampard-AMD

PBA Name : MAIN

PCB Code : BA41-XXXXXX (PTC)

BA41-XXXXXX (HST)

BA41-XXXXXX (GCE)

Dev. Step : PR

Revision : 1.0

T.R. Date : 2013.01.23

Design	CHECK	APPROVAL
Zhou Pei	XIE BIN	BL LEE

■ Owner : SESC R & D

Signature :

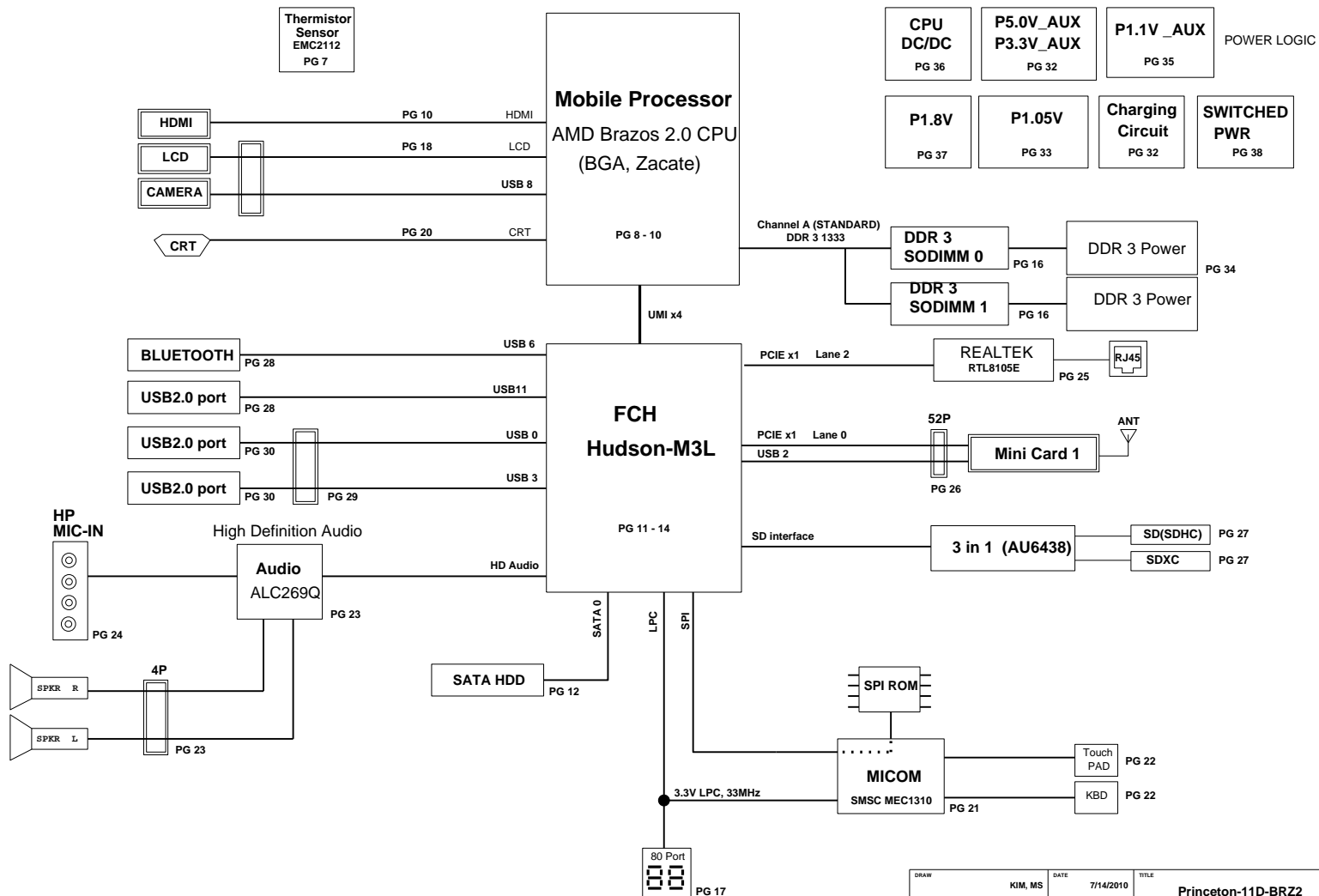
X

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DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG
CHECK	XIAO SUN	DEV. STEP	PV	MAIN		ELECTRONICS
APPROVAL	LEI GUO	REV	REV 1.0	COVER		PART NO. BA41-*****A
MODULE CODE		LAST EDIT	September 25, 2012 07:52:37 AM	PAGE	1	OF 42

# BLOCK DIAGRAM



DRAW	KIM, MS	DATE	7/14/2010	TITLE	Princeton-11D-BRZ2	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	PARK, CH	DEV. STEP	ADV1	MAIN		
APPROVAL	CHO, KS	REV	REV 0.23	BLOCK DIAGRAM		
MODULE CODE	undefined	LAST EDIT				
February 28, 2012 13:33:37 PM						PAGE 2 OF 40

## BOARD INFORMATION

### SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails	Active in
VDC P3.3V_MICOM P5.0V_LDO	Primary DC system power supply (7 to 21V) 3.3V always power rail (for Micom) 5.0V always power rail
P5.0V_ALW P3.3V_AUX P1.1V_AUX	5.0V switched on power rail (off in S4-S5) 3.3V switched on power rail (off in S4-S5) 1.5V power rail for DDR3 (off in S4-S5)
P5.0V P3.3V P1.8V P0.75V P1.1V	5.0V switched power rail (off in S3-S5) 3.3V switched power rail (off in S3-S5) 1.8V switched power rail (off in S3-S5) 0.75V power rail for DDR3 (off in S3-S5) 1.1V switched power rail (off in S3-S5)
VCC_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for GPU VCC for FCH

USB PORT Assign		PCI Express Assign	
PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	SYSTEM PORT 0	1	Mini Card 1 (WLAN)
1	SYSTEM PORT 1	2	NC
2	Mini PCI Express (WLAN)	3	NC
3	SYSTEM PORT 2	4	LAN CONTROLLER
4	Multi Memory Card Controller	5	NC
5	Camera 1	6	NC
6	NC (N/A WITH FCH)	7	NC
7	NC (N/A WITH FCH)	8	NC
8	NC		
9	NC		
10	NC		
11	Camera 2		
12	NC		
13	NC		

SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD/SSD
1	ISSD
2	ODD (14" ONLY)
3	
4	
5	

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	FCH	Real Time Clock
Crystal	25MHz	LAN	REALTEK
Crystal	25MHz	FCH	
Crystal	27MHz	MARS	
Crystal	48MHz	SD	

LCD Pannel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

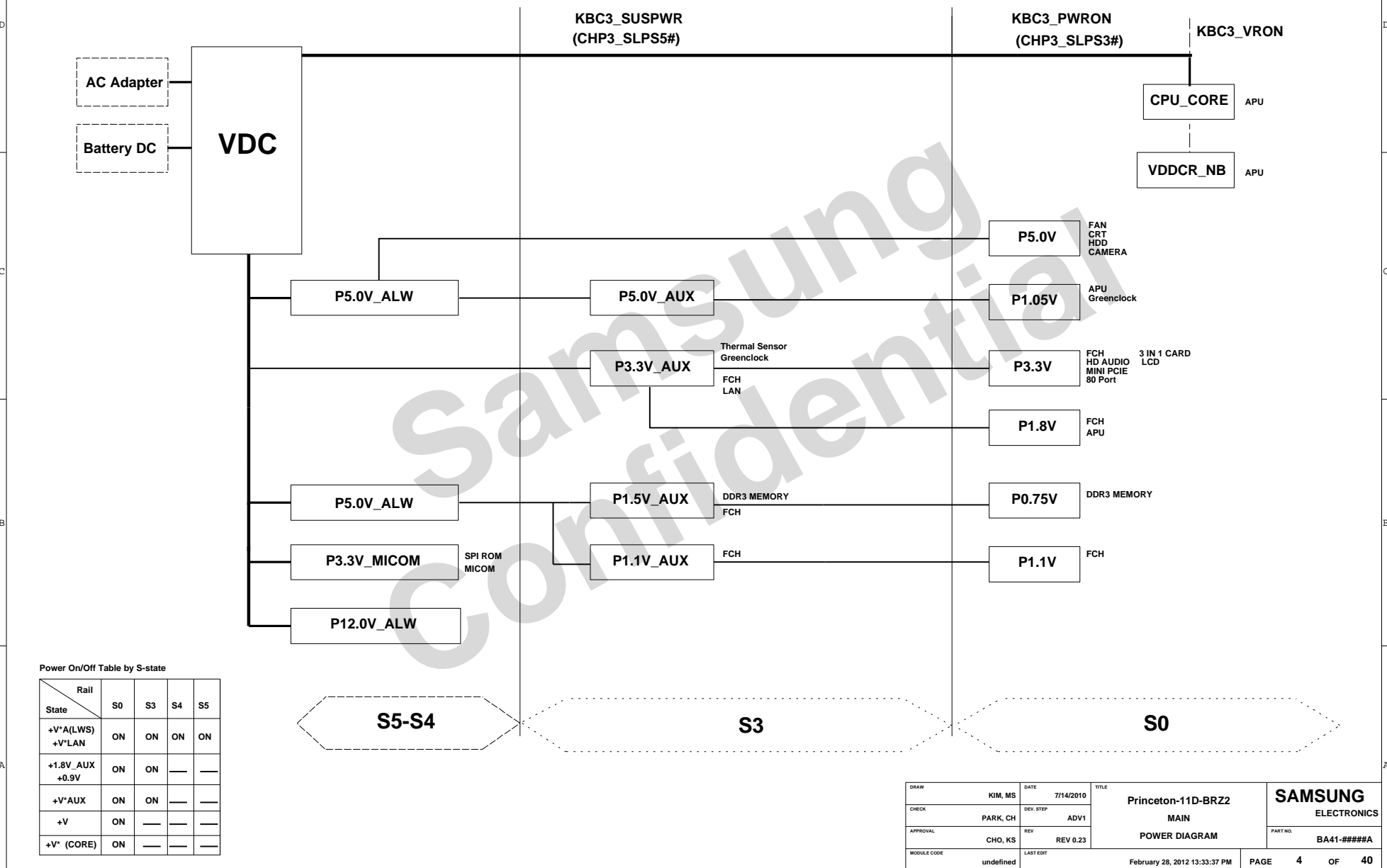
I <sup>2</sup> C / SMB Address			
Devices	Address	Hex	Bus
PANTHERPOINT	Master	-	SMBUS Master
CPU Thermal Sensor	0011 000X	30h	
SODIMM0	1010 000x	A0h	Thermal Sensor
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
on board DDR3 thermal Sensor	1001 100x	98h	
Platform thermal management TS	1001 011x	96h	

DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		MAIN	
APPROVAL	LEI GUO	REV	REV 1.0		BOARD INFO	
MODULE CODE	undefined	LAST EDIT	September 25, 2012 07:52:37 AM	PAGE	3	OF 42

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# POWER DIAGRAM

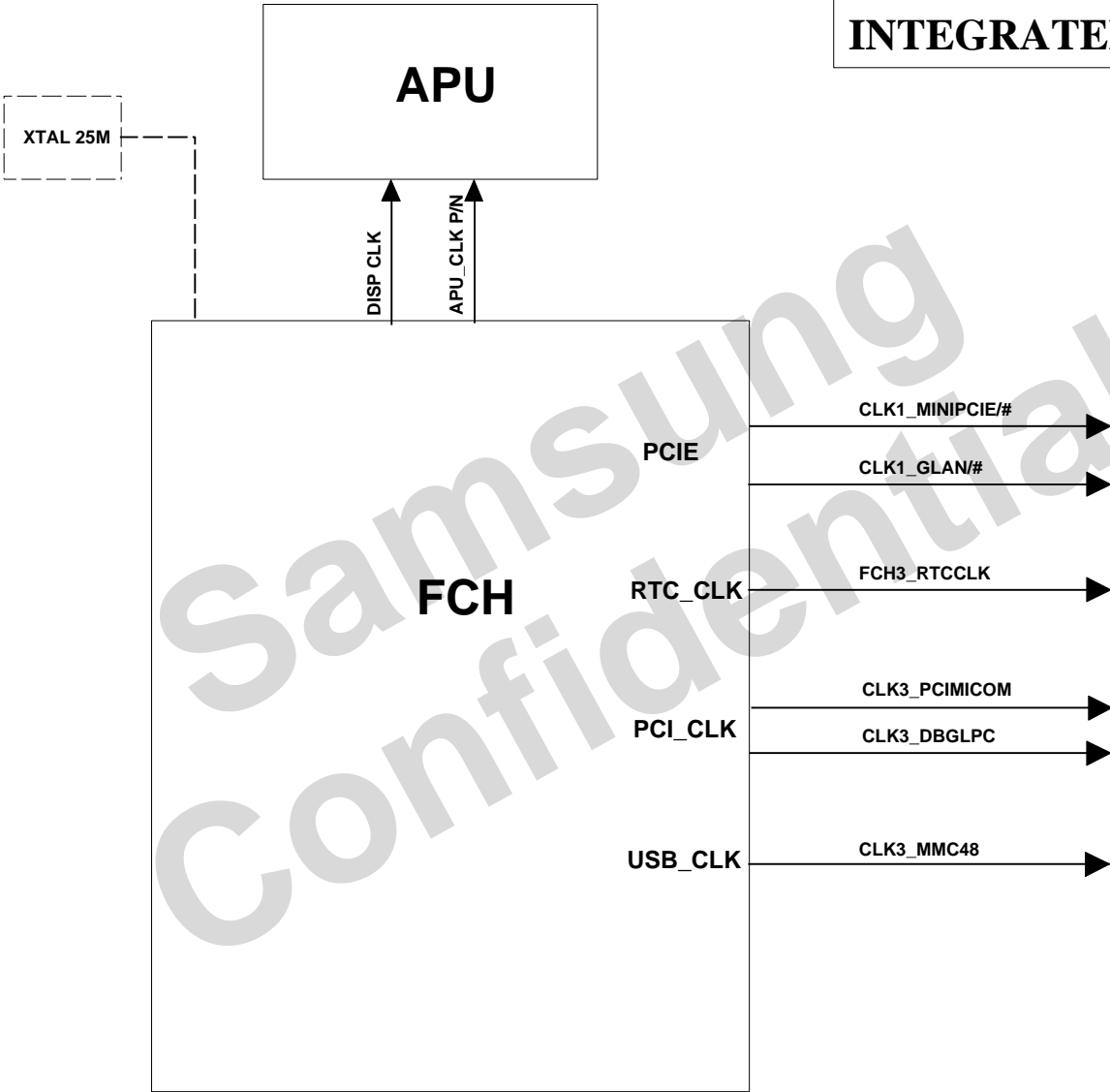
Rev 0.1



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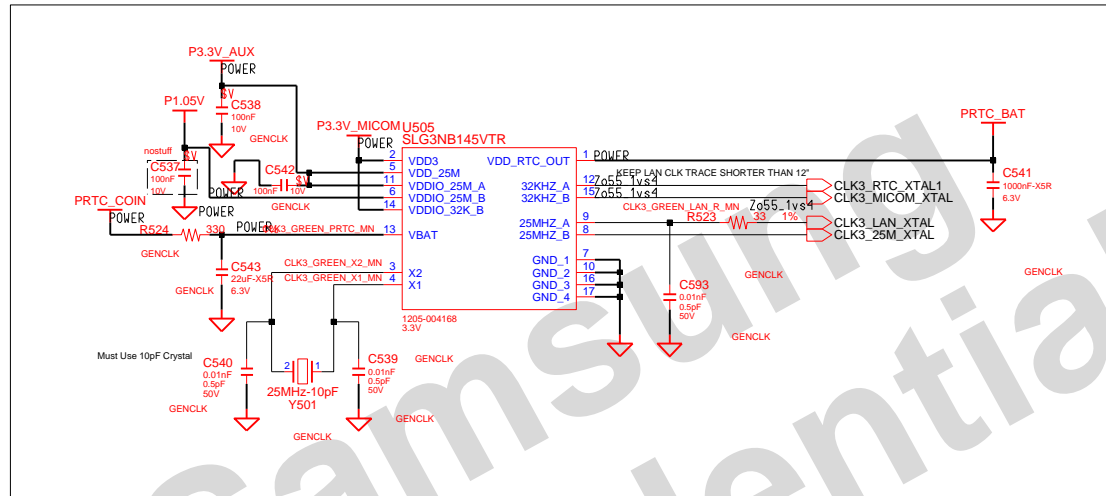
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**CLOCK DISTRIBUTION** Rev. 1.0  
**INTEGRATED CLOCK MODE**



DRAW	KIM, MS	DATE	7/14/2010	TITLE	Princeton-11D-BRZ2	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-####A
CHECK	PARK, CH	DEV. STEP	ADV1	MAIN		
APPROVAL	CHO, KS	REV	REV 0.23	CLOCK DIAGRAM		
MODULE CODE	undefined	LAST EDIT	February 28, 2012 13:33:37 PM	PAGE	5 OF 40	

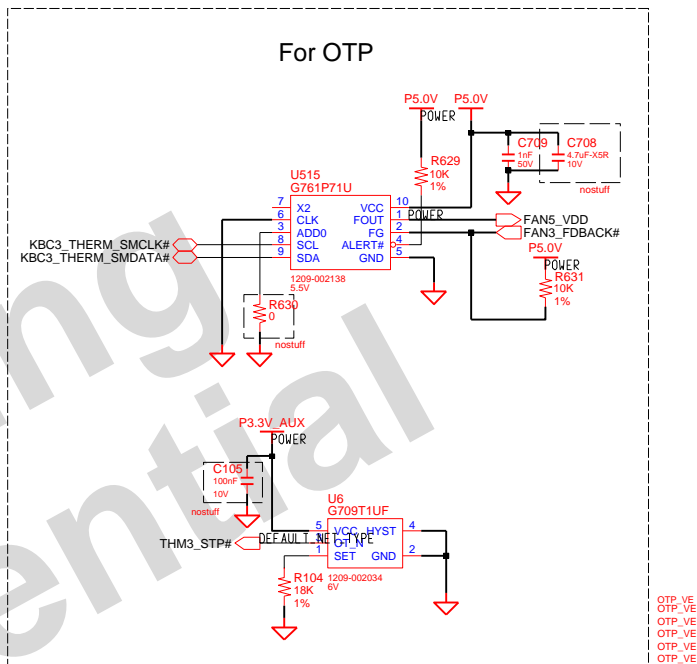
## CLOCK DISTRIBUTOR



Multi Assy	Function Description	SCHEMATIC MARK
ADT_40W	40W ADAPTER SELECT	ADT_40W
ADT_60W	60W ADAPTER SELECT	ADT_60W
EMC2112	SUPPORT EMC2112	EMC2112
ATHEROS	ATHEROS SELECT	ATHEROS
BROADCOM	BROADCOM SELECT	BROADCOM
OTP_VE	THERMAL VE	OTP_VE
INT_SD	SUPPORT FCH SD	INT_SD
EXT-SD	SUPPORT EXT SD FUNCTION	EXT-SD
GENCLK	SUPPORT GREENCLK FUNCTION	GENCLK
TPM	SUPPORT TPM FUNCTION	TPM
CRYSTAL	SUPPORT EXT CRYSTAL FUNCTION	CRYSTAL
USB30	USB30 SELECT	USB30

DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT CLOCK CLOCK DISTRIBUTION	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV			PART NO. BA41-*****A
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 6 OF 42	

# THERMAL SENSOR & FAN CONTROL

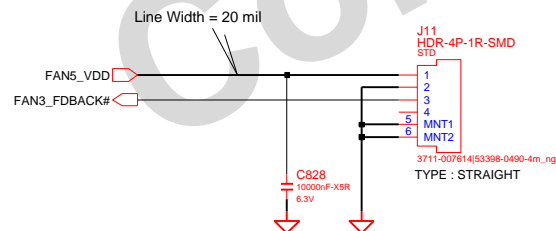


TEMPERATURE	103c	99c	95c
TRIP_SET resistor value	2.49K	2.0K	1.5K

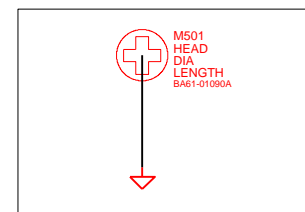
Temperature : 95.78c  
confirmed by thermal charger  
(2011.05.02)  
 $R \text{ (kohm)} = 0.0012T - 0.9308T + 96.147$


ADDRESSSEL MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

SHDN_SEL MODE	
0 HIGH Z	INTEL TR MODE AMD CPU/DIODE MODE
✓ 1	EXT.DIODE 2 MODE

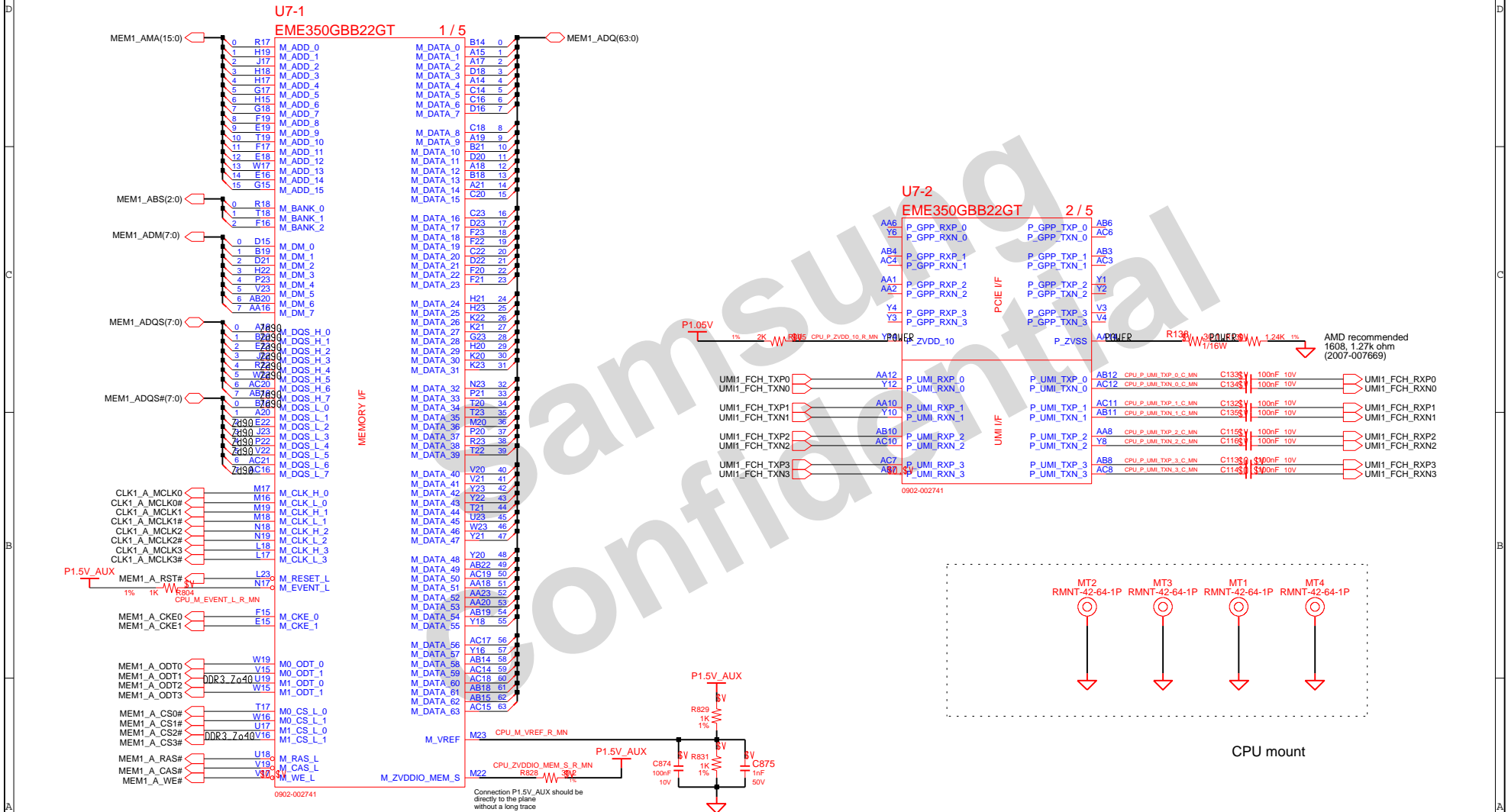


## FAN PEM



DESIGN	LI CHEN	DATE	08/03/2012	Lampard-14/15-INT THERMAL SENSOR THERMAL SENSOR EMC2112			
CHECK	XIAO SUN	DEV. STEP	PV				
APPROVAL	LEI GUO	REV	REV 1.0				
MODULE CODE	LAST EDIT		September 25, 2012 07:52:37 AM				PAGE

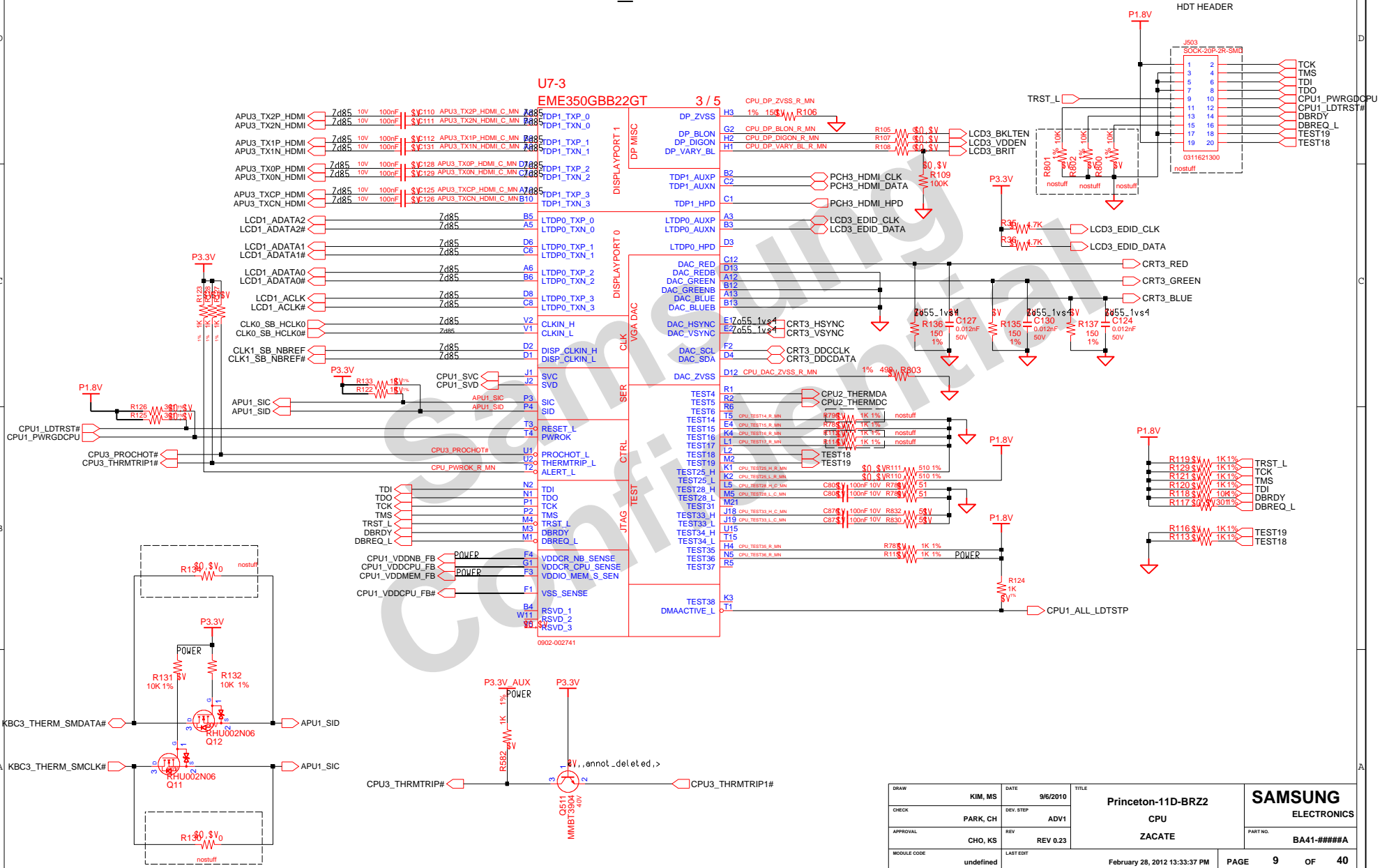
# CPU\_ZACATE



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CHECK	PARK, CH	DEV. STEP	ADV1		CPU	
APPROVAL	CHO, KS	REV	REV 0.23		ZACATE	
MODULE CODE	undefined	LAST EDIT	February 28, 2012 13:33:37 PM	PAGE	8	OF 40

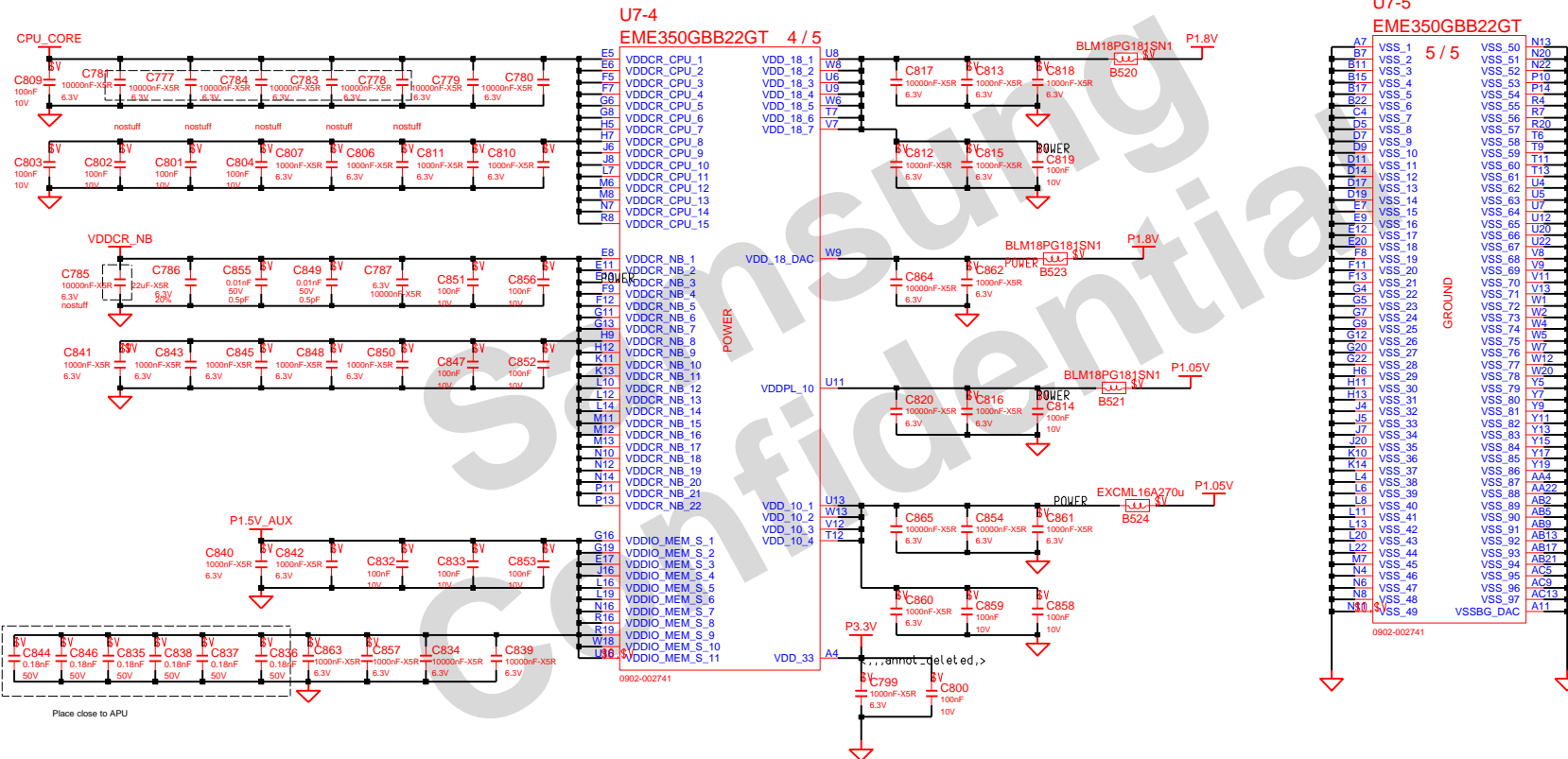


# CPU\_ZACATE



DRAW	KIM, MS	DATE	9/6/2010	TITLE	Princeton-11D-BRZ2	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-####A
CHECK	PARK, CH	DEV. STEP	ADV1		CPU	
APPROVAL	CHO, KS	REV	REV 0.23		ZACATE	
MODULE CODE	undefined	LAST EDIT	February 28, 2012 13:33:37 PM	PAGE	9 OF 40	

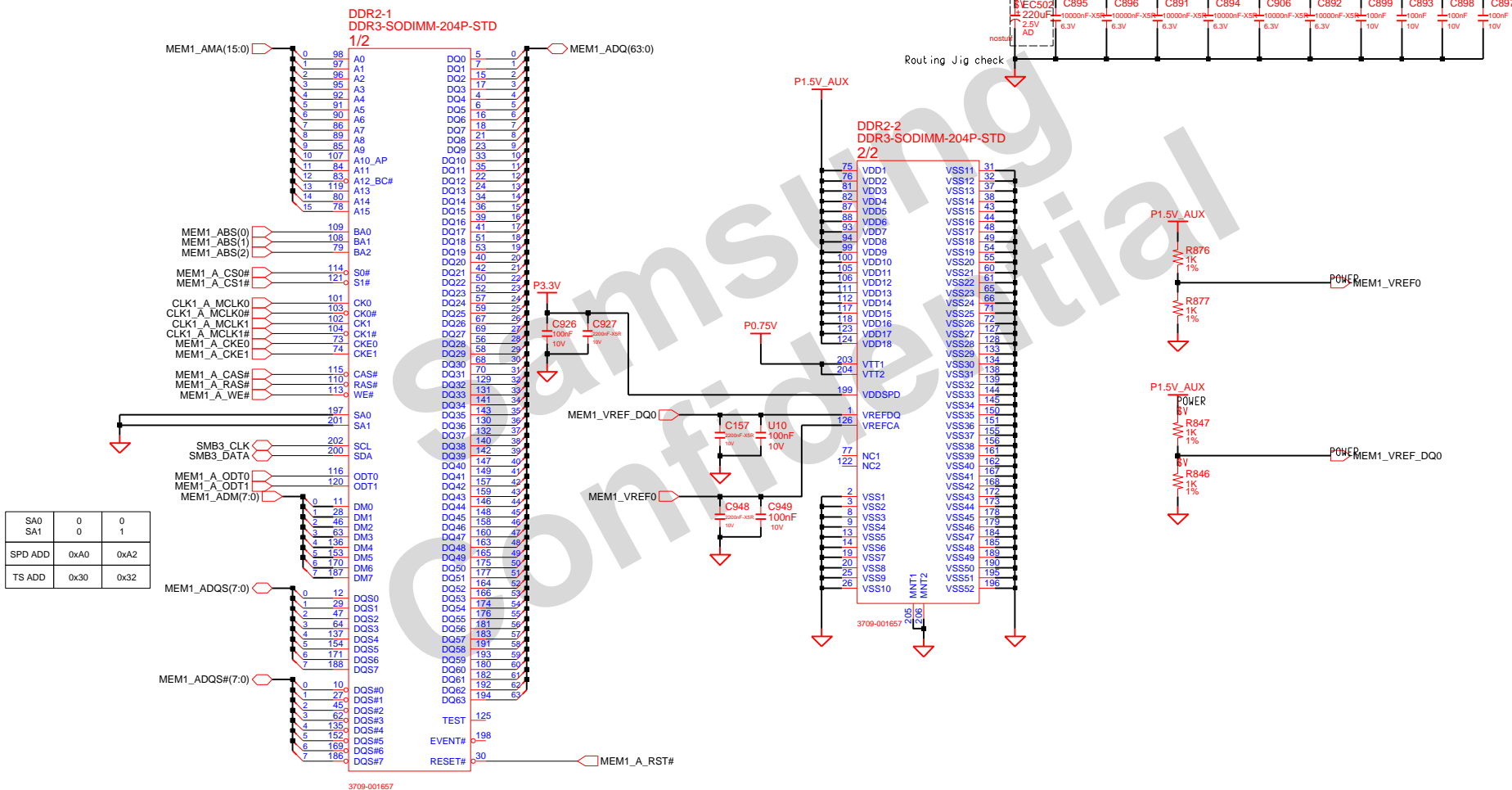
# CPU\_ZACATE



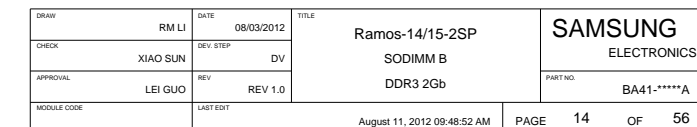
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CHECK	PARK, CH	DEV. STEP	ADV1	CPU		
APPROVAL	CHO, KS	REV	REV 0.23	ZACATE		
MODULE CODE		LAST EDIT	February 28, 2012 13:33:37 PM	PAGE	10 OF	

## SO-DIMM#0 : 2nd SO-DIMM

### DDR SO-DIMM #0



SA0	0	0
SA1	0	1
SPD ADD	0xA0	0xA2
TS ADD	0x30	0x32



U4-1  
BRAZOS2.0 FCH

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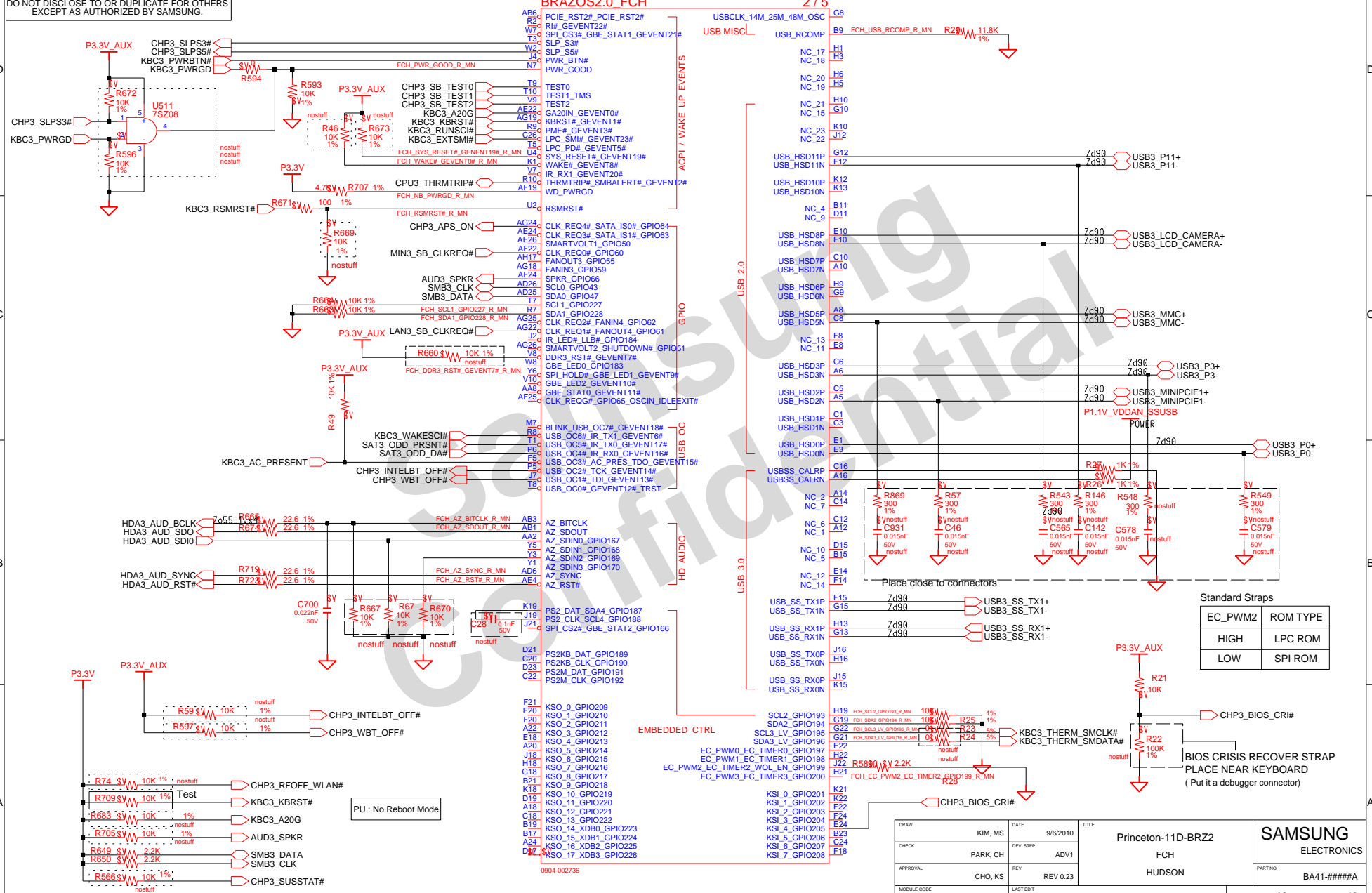
DESIGN	KIM, MS	DATE	9/6/2010	TITLE Princeton-11D-BRZ2 FCH HUDSON	<b>SAMSUNG</b> ELECTRONICS
CHECK	PARK, CH	DEV. STEP	ADV1		
APPROVAL	CHO, KS	REV	REV 0.23		
MODULE CODE		LAST EDIT			
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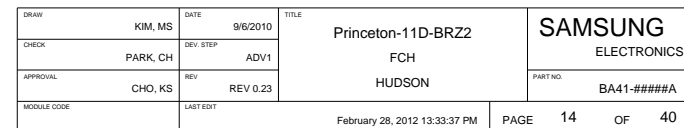
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114-2 FCH HUDSON

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**FCH HUDSON**

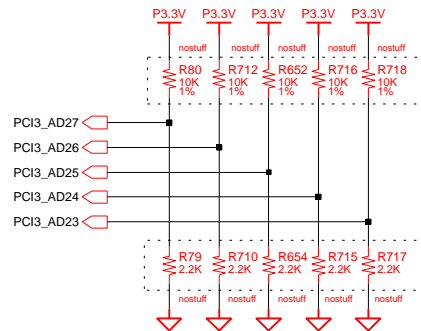




# Strap

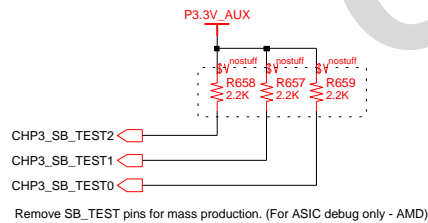
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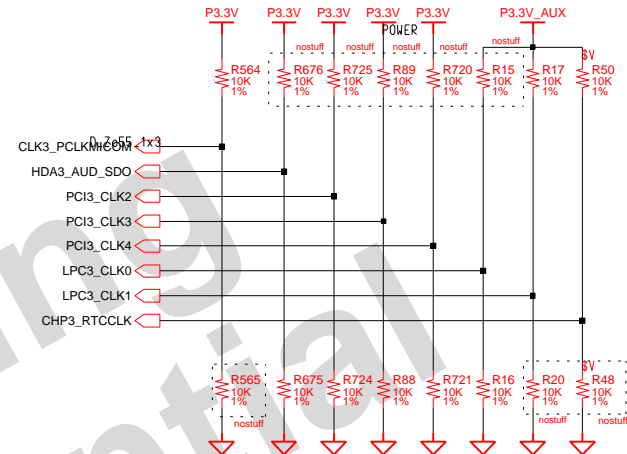


### DEBUG STRAPS

	PCI3_AD(27)	PCI3_AD(25)	PCI3_AD(24)	PCI3_AD(23)
	PCI PLL	REFCLK	PCIe EEPROM	Booting from PCI memory
STRAP HIGH	USE PCI PLL	Normal REFCLK Termination	USE DEFAULT PCIE STRAPS	DISABLE PCI MEM BOOT
STRAP LOW	BYPASS PCI PLL	Inverted REFCLK Termination	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT



Remove SB\_TEST pins for mass production. (For ASIC debug only - AMD)



### STANDARD STRAPS

	CLK3_PCLKMICOM	CHP3_RTCCCLK	PCI3_CLK3	PCI_CLK4	LPC3_CLK0	LPC3_CLK1
PULL HIGH	ALLOW PCIE GEN2 DEFAULT	S5 PLUS MODE DISABLE DEFAULT	DEBUG STRAP MODE ENABLE	non_Fusion CLOCK MODE	IMC ENABLE	CLKGEN ENABLE DEFAULT
PULL LOW	FORCE PCIE GEN1	S5 PLUS MODE ENABLE	DEBUG STRAP MODE DISABLE DEFAULT	FUSION CLOCK MODE DEFAULT	IMC DISABLED DEFAULT	CLKGEN DISABLED

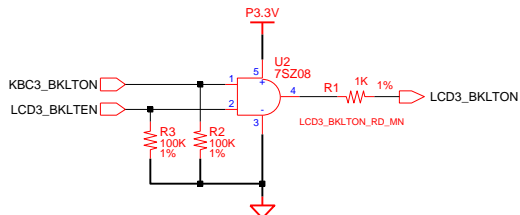
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CHECK	PARK, CH	DEV. STEP	ADV1	STRAP	STRAP	
APPROVAL	CHO, KS	REV	REV 0.23	STRAP	STRAP	
MODULE CODE	undefined	LAST EDIT	February 28, 2012 13:33:37 PM	PAGE	15 OF 40	

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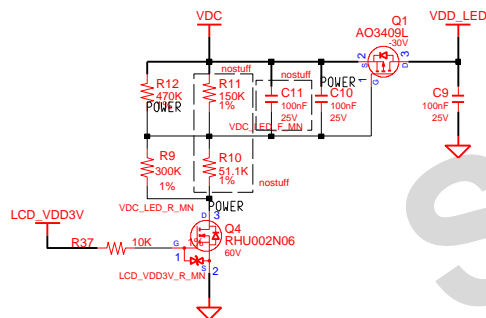
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# LVDS LOGIC

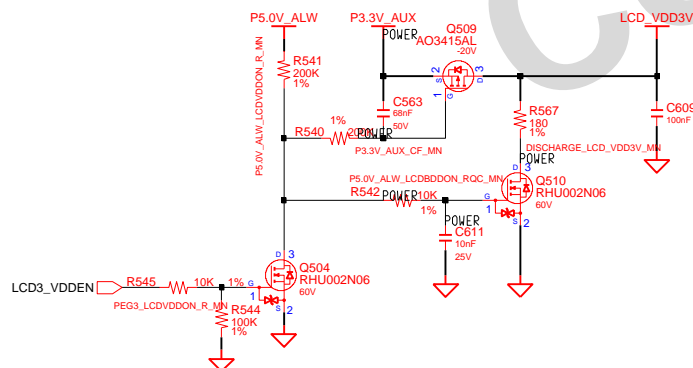
## Backlight On



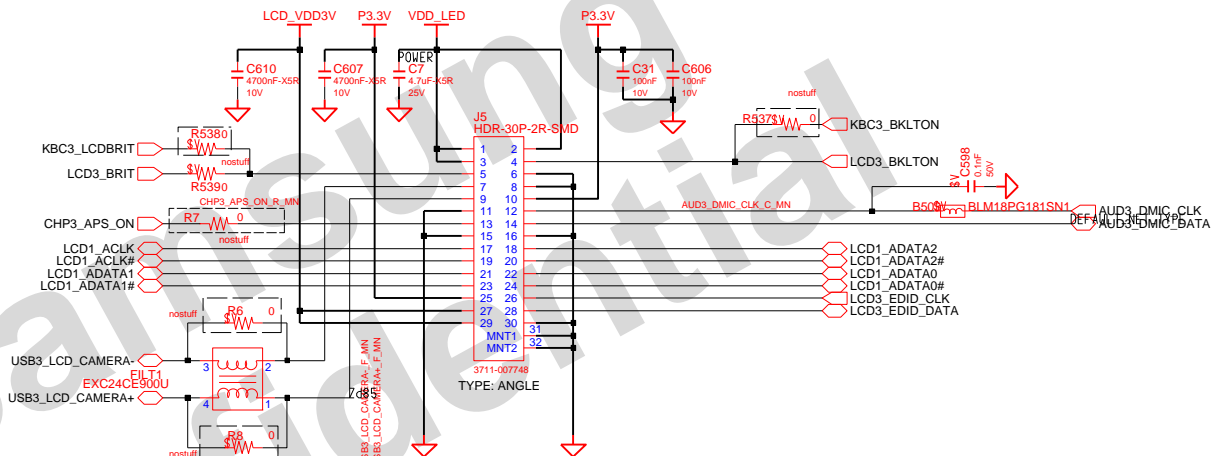
## LED Power



## LCD Power



## 1Ch. LCD Connector + CAMERA + INT MIC



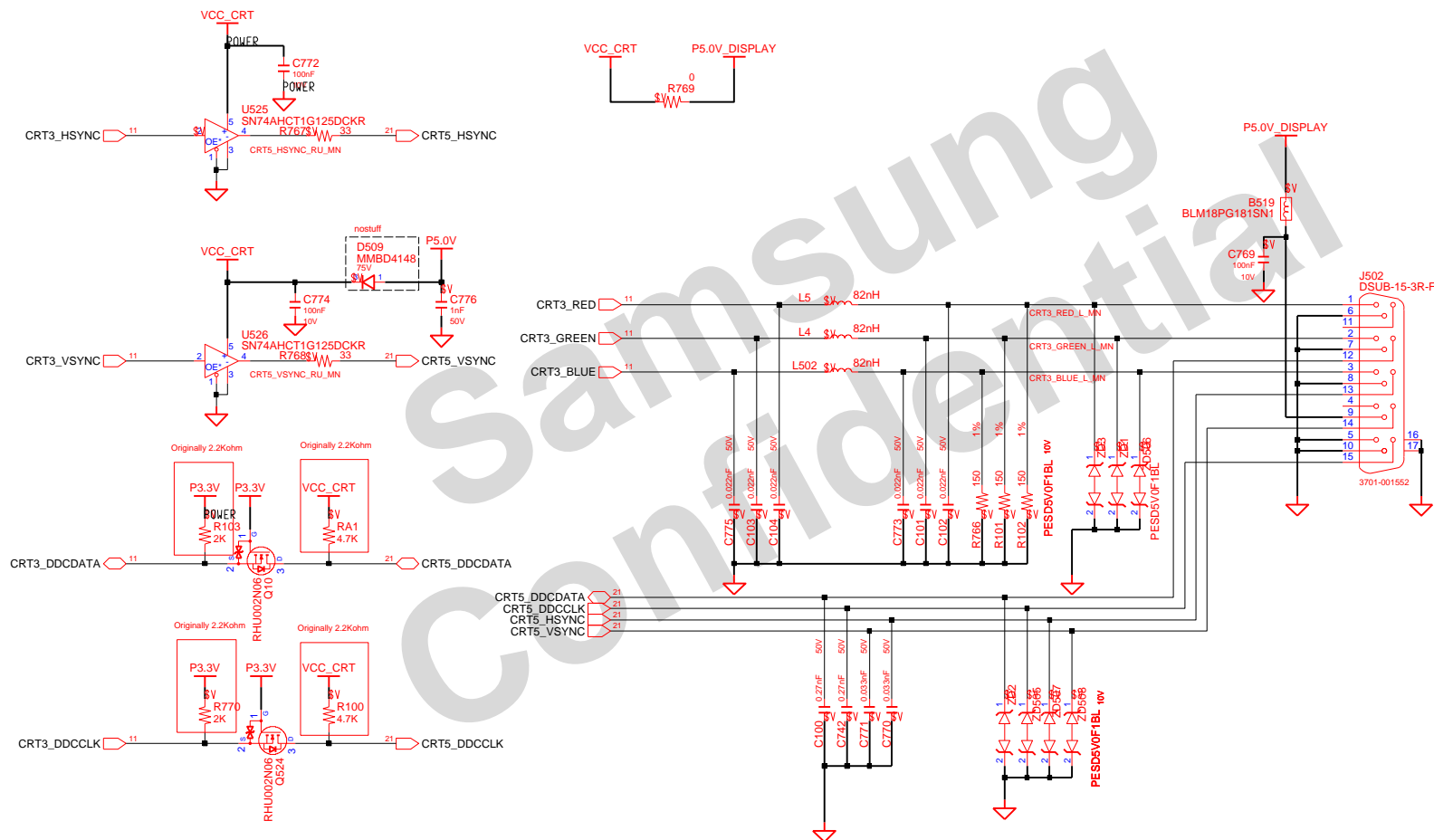
USB signal stub should be less than 100mil

DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV	GRAPHICS_IF		
APPROVAL	LEI GUO	REV	REV 1.0	LVDS		
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 20 OF 42	BA41-*****A

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# VGA

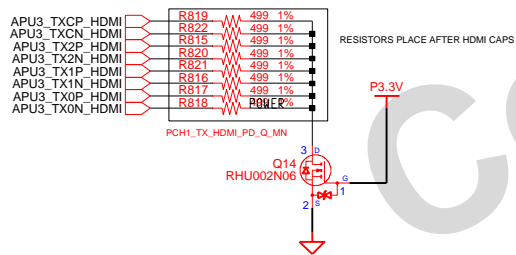
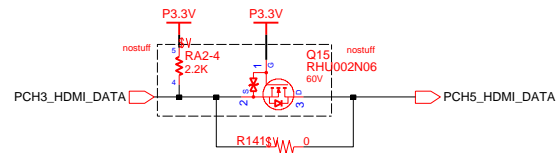
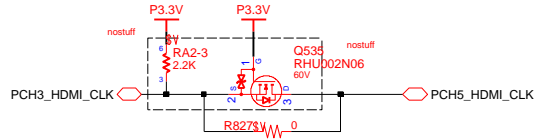


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-****A
CHECK	XIAO SUN	DEV. STEP	PV		GRAPHIC_IF	
APPROVAL	LEI GUO	REV	REV 1.0		CRT	
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 21 OF 42	

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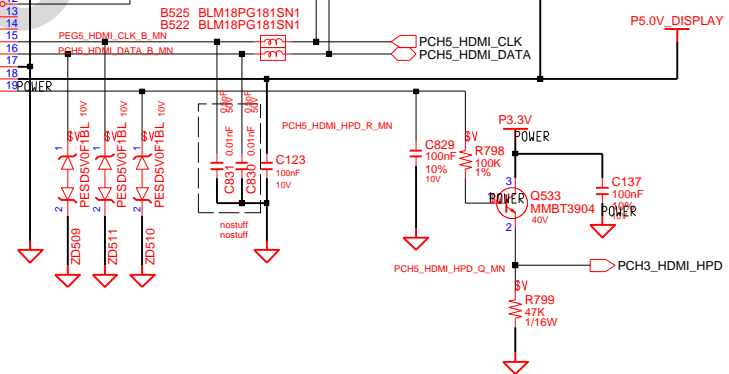
# HDMI

FOR HDMI VERIFICATION TEST



J504  
HDMI-19P-FEMALE

- 1 TMDS\_DATA2
- 2 TMDS\_DATA2#
- 3 TMDS\_DATA1
- 4 TMDS\_DATA1#
- 5 TMDS\_DATA0
- 6 TMDS\_DATA0#
- 7 TMDS\_CLOCK
- 8 TMDS\_CLOCK#
- 9 CEC
- 10 RESERVED
- 11 SCL
- 12 SDA
- 13 DDC\_GROUND
- 14 5V\_POWER
- 15 HOT\_PLUG\_DETECT



After checking, Houston need to use CMC for each signal.

N10x/N11x\_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance

DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		GRAPHICS_IF	
APPROVAL	LEI GUO	REV	REV 1.0		HDMI	
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 22 OF 42	PART NO. BA41-*****A

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**Design and Approval Information:**

DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT
CHECK	XIAO SUN	DEV. STEP	PV		
APPROVAL	LEI GUO	REV	REV 1.0		
MODULE CODE		LAST EDP			

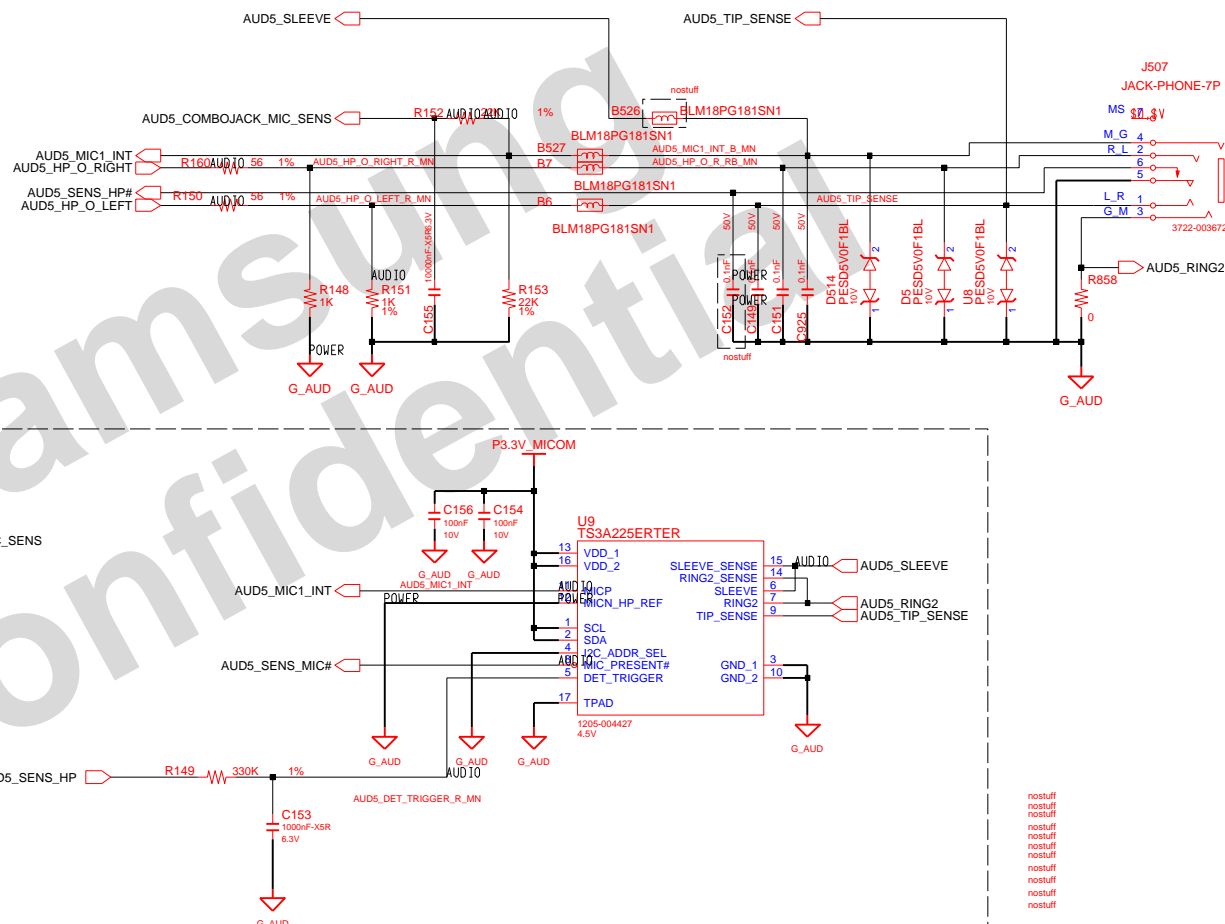
**Part Information:**

PART NO.	BA41-*****A

DESIGN	LI CHEN	DATE	08/03/2012	Lampard-14/15-INT  AUDIO  ALC269	SAMSUNG  ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		
APPROVAL	LEI GUO	REV	REV 1.0		
MODULE CODE	LAST EDIT		September 25, 2012 07:52:37 AM		
				PART NO.	BA41-*****A

## COMBO JACK

	B523	B522	R1002	R990	R159
MIC Switch stuff	nostuff	stuff	nostuff	nostuff	nostuff
MIC Switch nostuff	stuff	nostuff	stuff	stuff	stuff

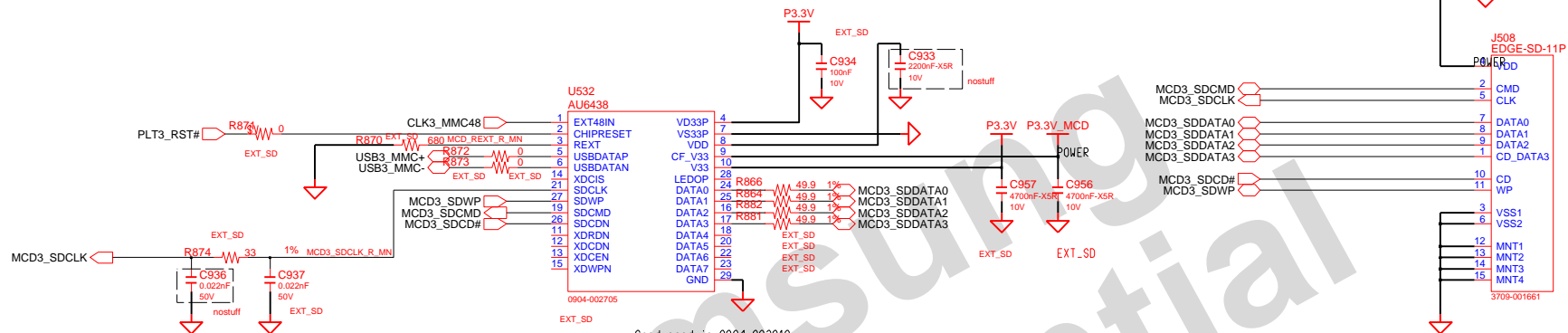


DESIGN	LI CHEN	DATE	08/03/2012	<b>Lampard-14/15-INT</b> <b>AUDIO</b> <b>AUDIO COMBO JACK</b>	<b>SAMSUNG</b> <b>ELECTRONICS</b>
CHECK	XIAO SUN	DEV. STEP	PV		
APPROVAL	LEI GUO	REV	REV 1.0		
MODULE CODE	LAST EDIT				
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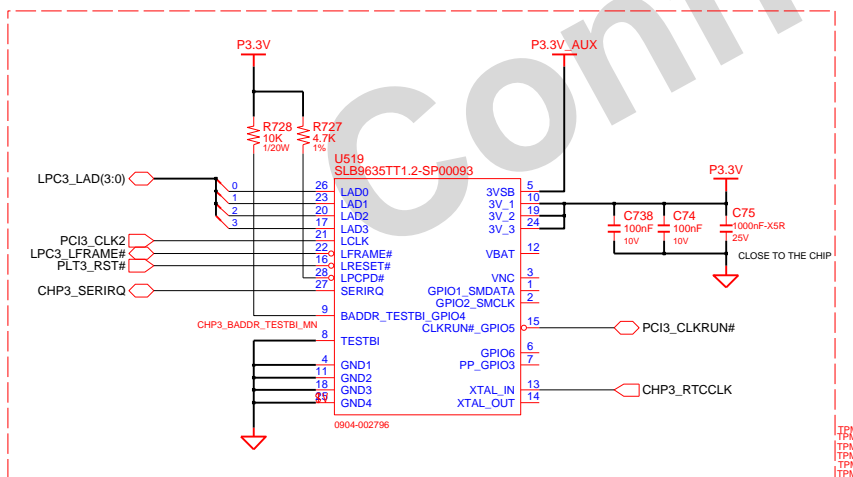
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## 3IN1(AU6438)



## TPM1.2

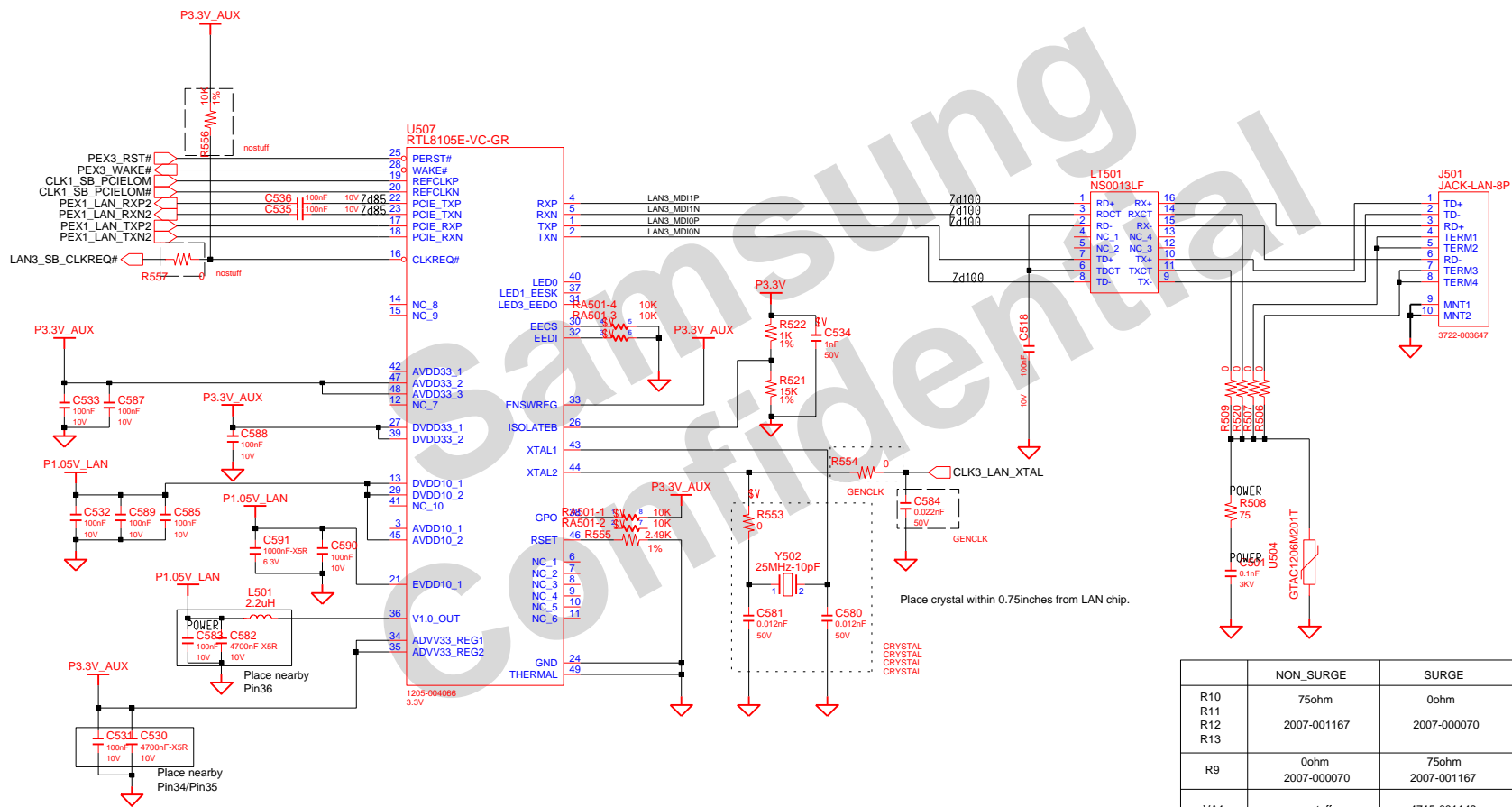


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG
CHECK	XIAO SUN	DEV. STEP	PV			ELECTRONICS
APPROVAL	LEI GUO	REV	REV 1.0			PART NO. BA41-*****A
MODULE CODE		LAST EDIT	September 25, 2012 07:52:37 AM	PAGE	25	OF 42

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## Realtek RTL8105E



	NON_SURGE	SURGE
R10	75ohm	0ohm
R11	2007-001167	2007-000070
R13		
R9	0ohm	75ohm
	2007-000070	2007-001167
VA1	notstuff	4715-001142

DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		LAN	
APPROVAL	LEI GUO	REV	REV 1.0		LAN_Realtek_RTL8111E)	
MODULE CODE		LAST EDIT				
				September 25, 2012 07:52:37 AM	PAGE 26 OF 42	BA41-*****A

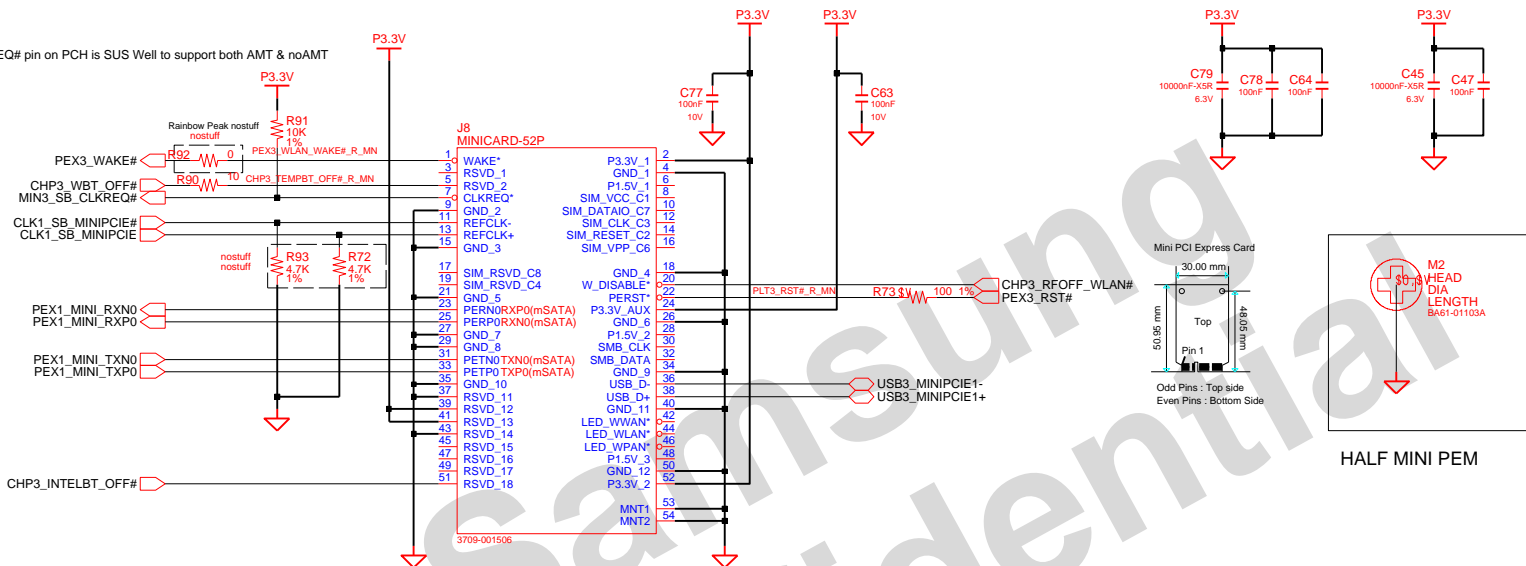


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## WLAN

CLKREQ# pin on PCH is SUS Well to support both AMT & noAMT

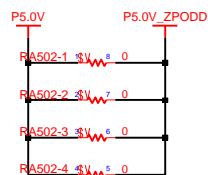
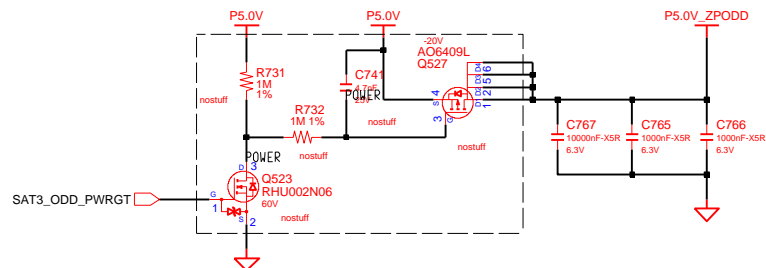


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		WLAN	
APPROVAL	LEI GUO	REV	REV 1.0		WLAN	
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 27 OF 42	PART NO. BA41-*****A

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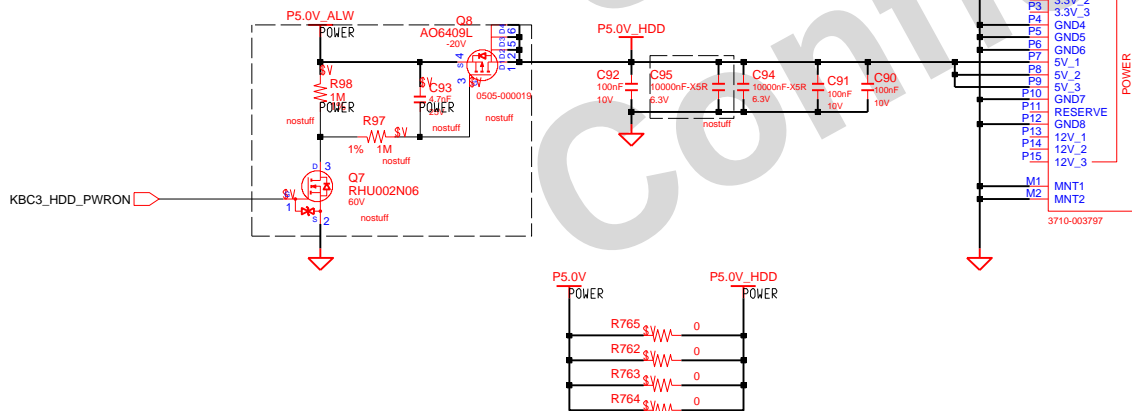
## SATA I/F CONN



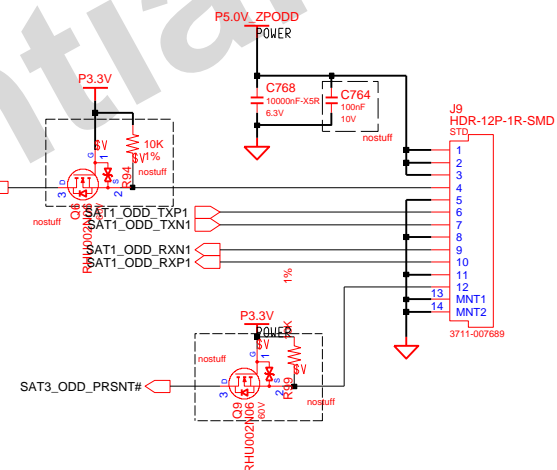
## SATA HDD CONN

Cable Connector Type

SAT1\_HDD\_TXP0  
 SAT1\_HDD\_TXN0  
 SAT1\_HDD\_RXN0  
 SAT1\_HDD\_RXP0



## SATA ODD CONN

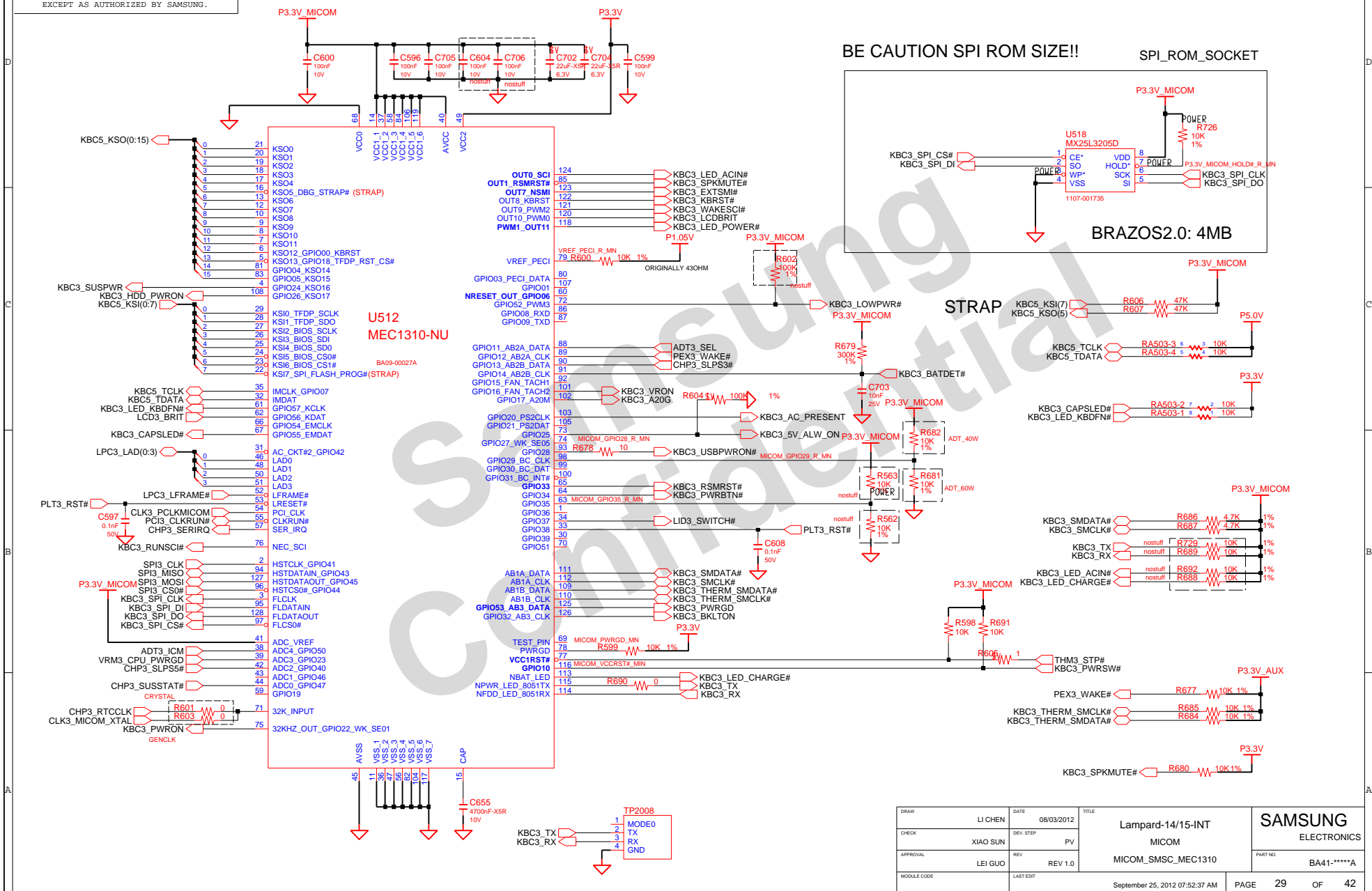


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG
CHECK	XIAO SUN	DEV. STEP	PV		SATA I/F	ELECTRONICS
APPROVAL	LEI GUO	REV	REV 1.0		SATA I/F	PART NO. BA41-*****A
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 28	OF 42

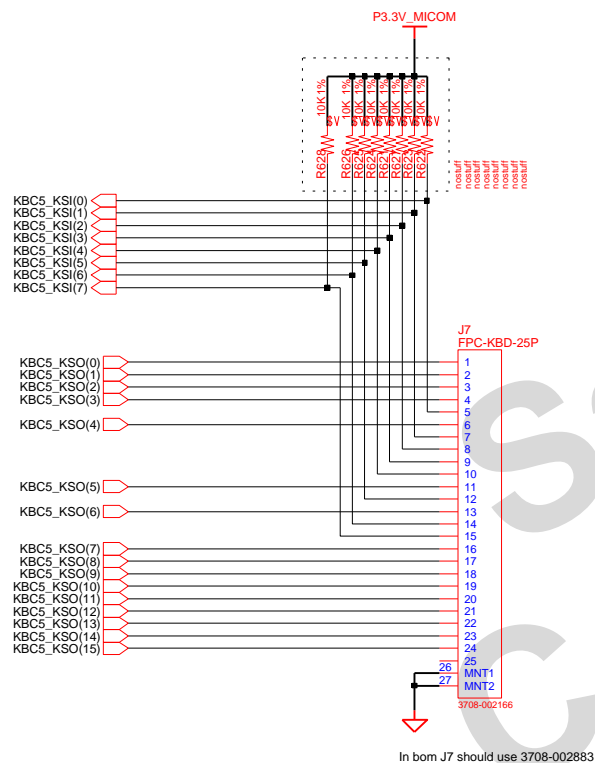
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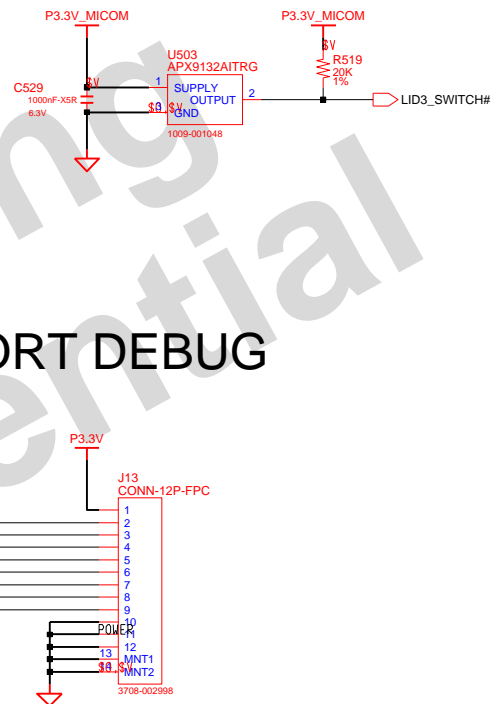
## MAIN BOARD (MICOM)



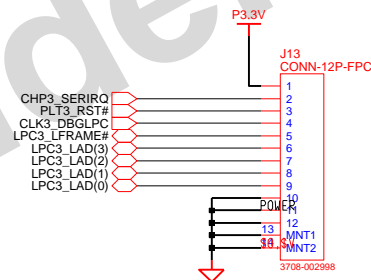
# KEYBOARD



## LID3\_SWITCH



# 80H PORT DEBUG



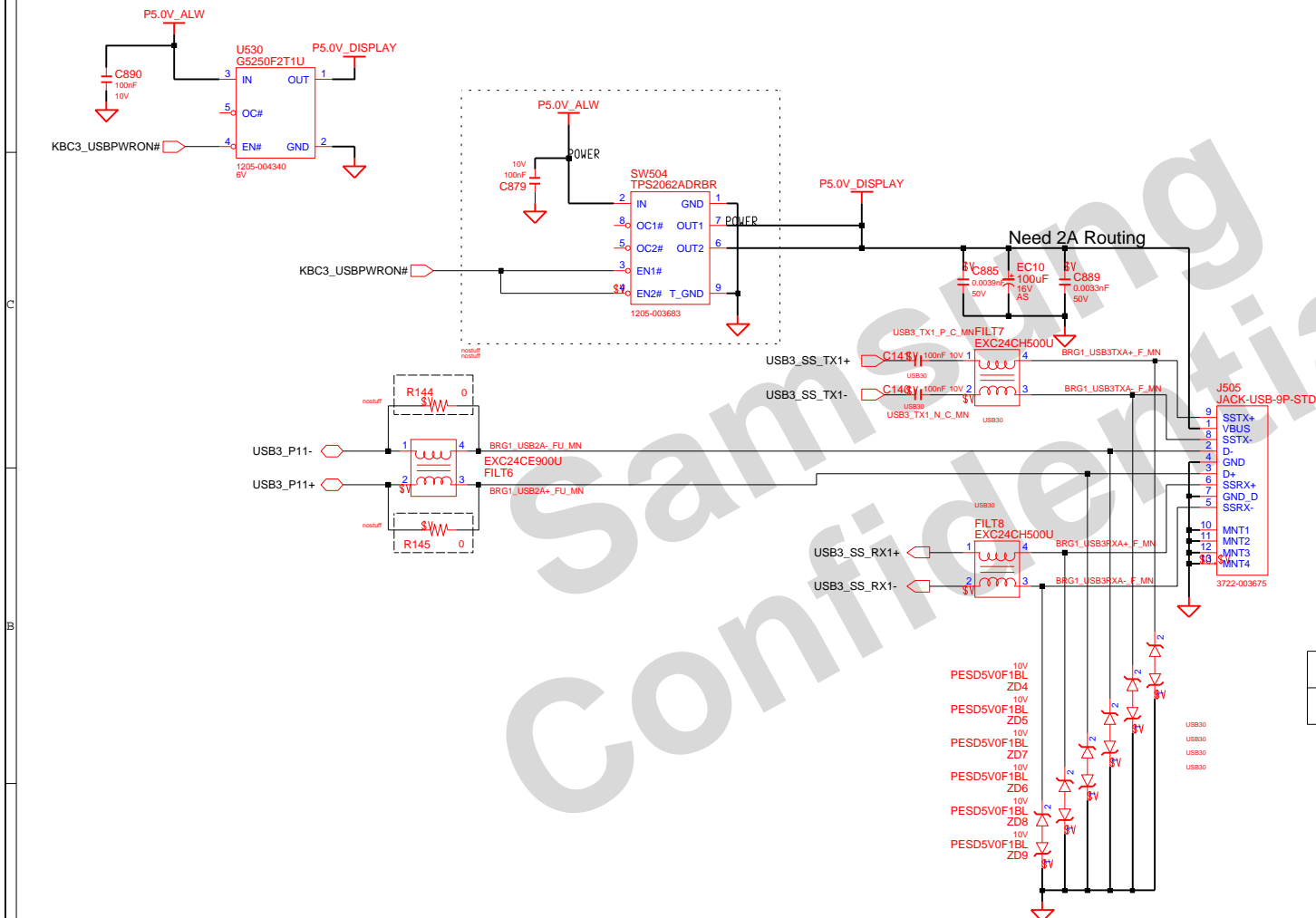
In bom J7 should use 3708-002883

DRAW	LI CHEN	DATE	08/03/2012	<b>Lampard-14/15-INT</b> <b>MICOM</b> <b>MICOM GLUE LOGIC</b>	<b>SAMSUNG</b> <b>ELECTRONICS</b>	
CHECK	XIAO SUN	DEV. STEP	PV			
APPROVAL	LEI GUO	REV	REV 1.0		PART NO.	BA41-*****A
MODULE CODE	LAST EDIT				September 25, 2012 07:52:37 AM	PAGE 30 OF 42

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## USB 3.0 CONNECTOR

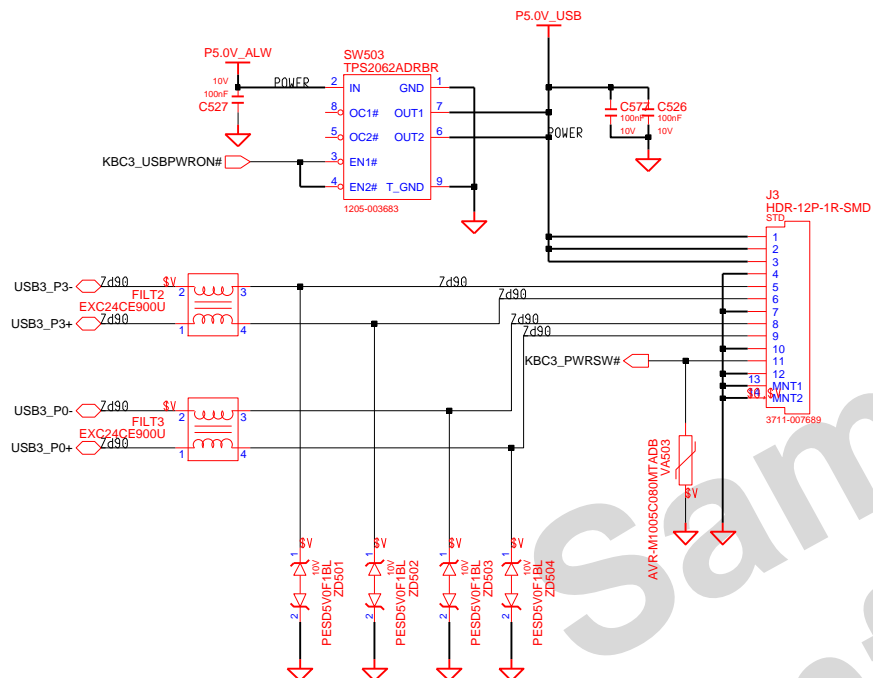


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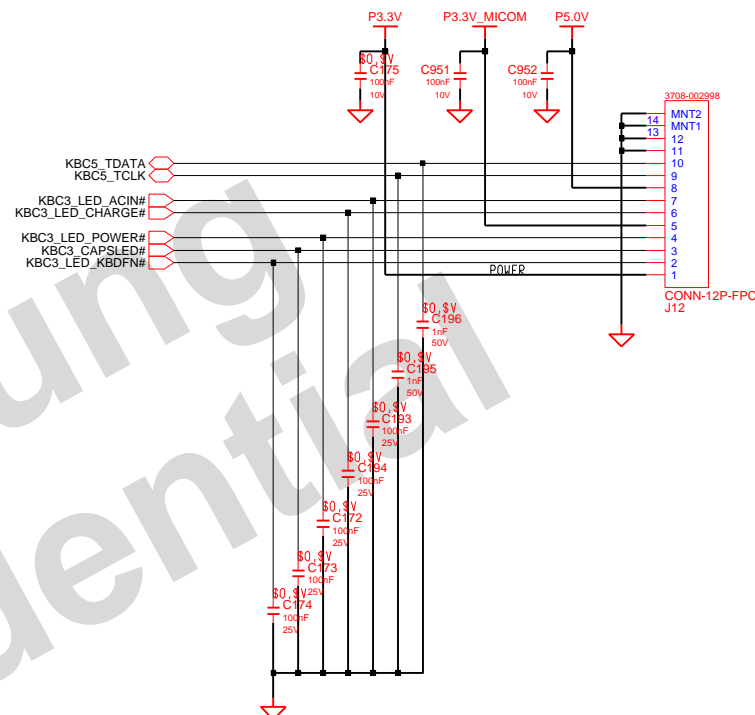
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## MAIN TO SUB

### MAIN to 3-in-1 / USB SUB



### TOUCHPAD & LED MAIN TO SUB



DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		SUB BOARD CONNECTOR	
APPROVAL	LEI GUO	REV	REV 1.0		MAIN TO SUB	
MODULE CODE		LAST EDIT				
				September 25, 2012 07:52:37 AM	PAGE 32 OF 42	PART NO. BA41-*****A

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60W Setting : V1 : 0.75V, 71W  
V2 : 0.63V, 61W

DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT
CHECK	XIAO SUN <td>DEV. STEP</td> <td>PV</td> <td></td> <td>CHARGER PWR</td>	DEV. STEP	PV		CHARGER PWR
APPROVAL	LEI GUO	REV	REV 1.0		TI BQ24735GRR
MODULE CODE		LAST EDIT			

September 25, 2012 07:52:37 AM

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## P3.3V\_AUX & P5.0V\_ALW

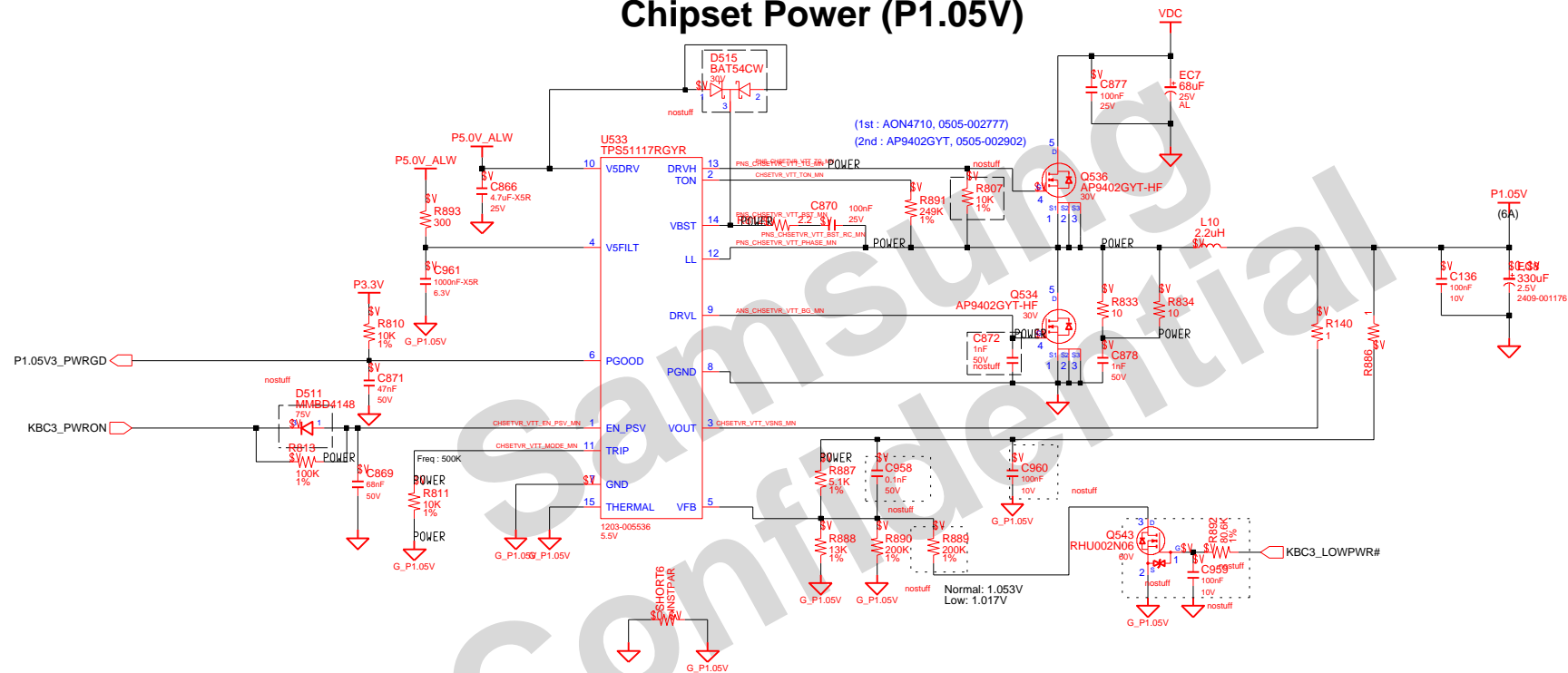




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## Chipset Power (P1.05V)

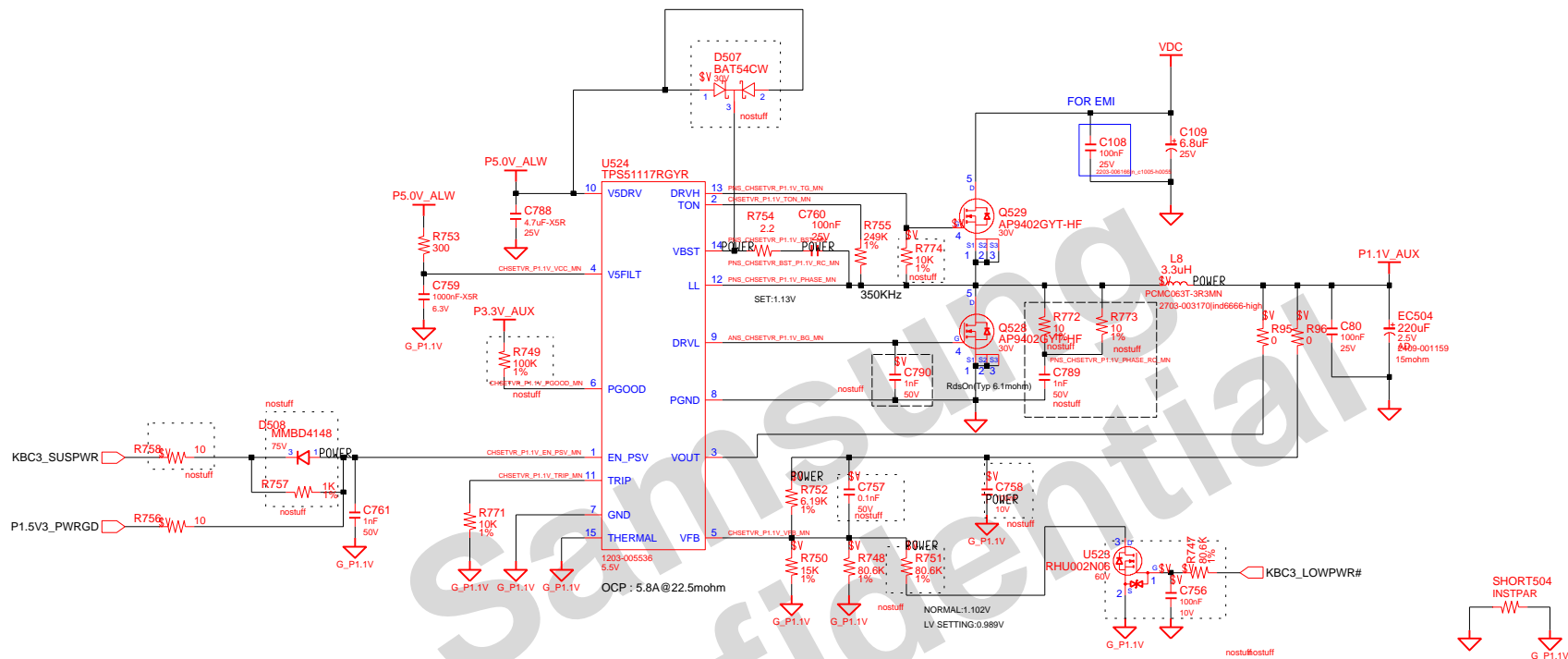


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT CHIPSET PWR	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV			
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE		LAST EDIT				
				September 25, 2012 07:52:37 AM	PAGE 35	OF 42

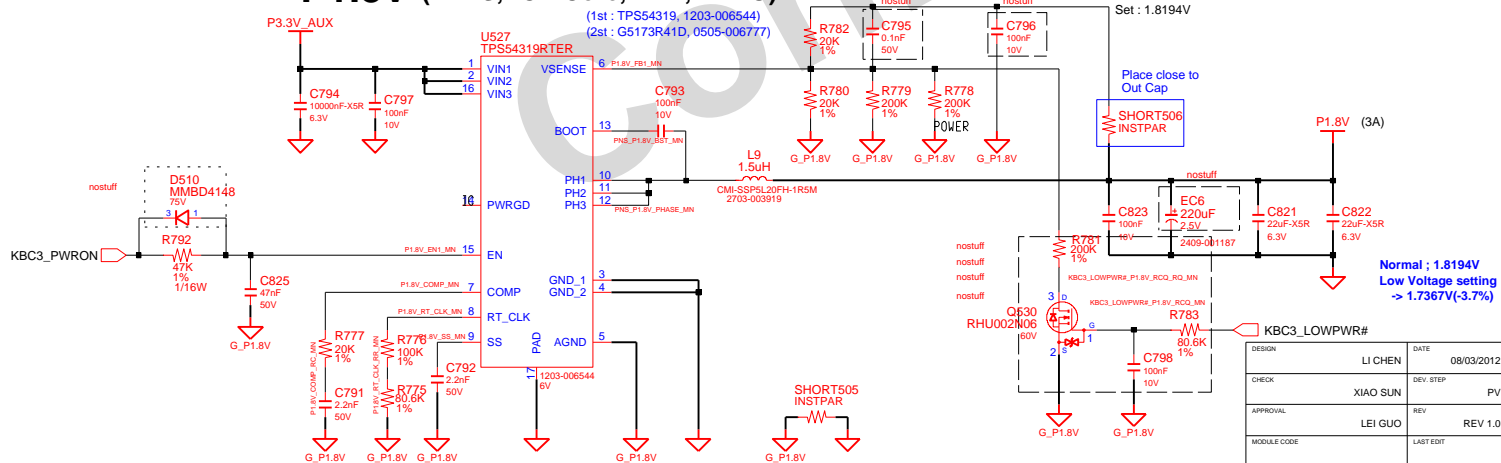
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## CHIPSET POWER(P1.1V\_AUX)



## P1.8V (LVDS,PCH Core,LAN , ME IO)

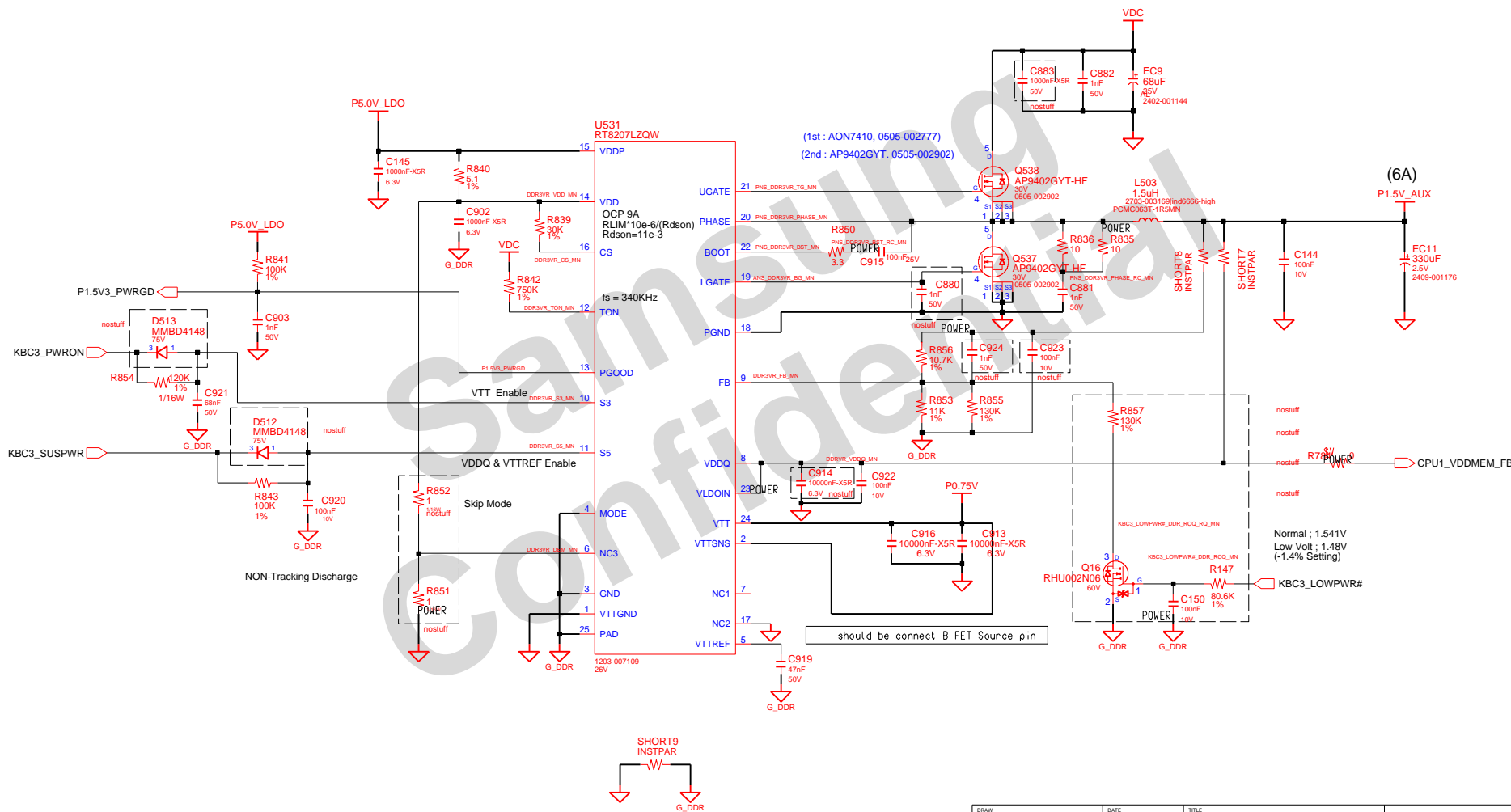


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT
CHECK	XIAO SUN	DEV. STEP	PV		VCCSA
APPROVAL	LEI GUO	REV	REV 1.0		VCCSA
MODULE CODE		LAST EDIT			
September 25, 2012 07:52:37 AM				PAGE	36 OF
					SAMSUNG ELECTRONICS
					BA41-*****A

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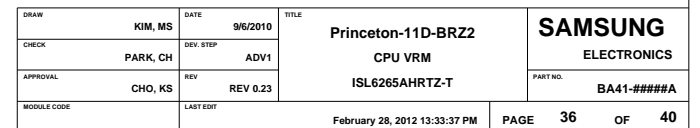
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## DDR3 Power



DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS	
CHECK	XIAO SUN	DEV. STEP	PV				P1.05V
APPROVAL	LEI GUO	REV	REV 1.0				VT386FCX
MODULE CODE		undefined		LAST EDIT	September 25, 2012 07:52:37 AM	PART NO.	BA41-*****A
					PAGE	37	OF 42

CPU VRM [INTERSIL]

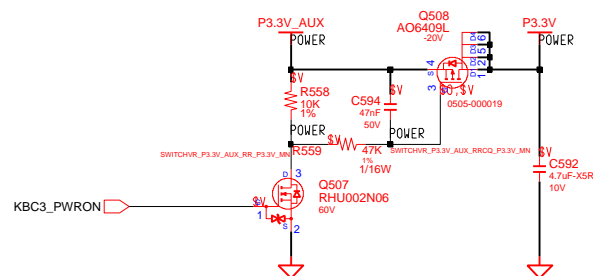


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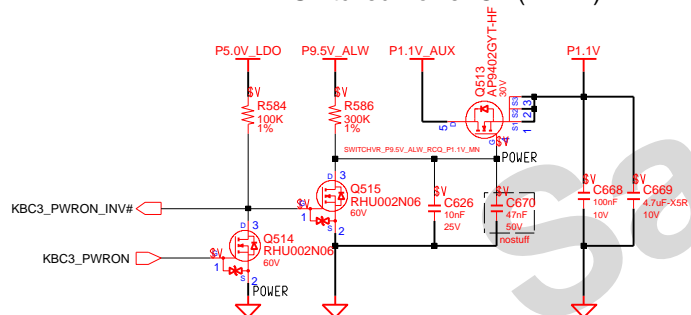
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## Switched Power

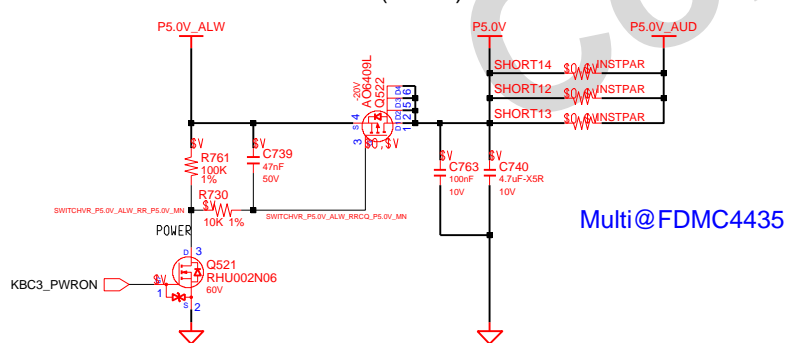
### Switched Power On (P3.3V) Multi@AP2607GY



### Switched Power On (P1.1V)



### Switched Power On (P5.0V)

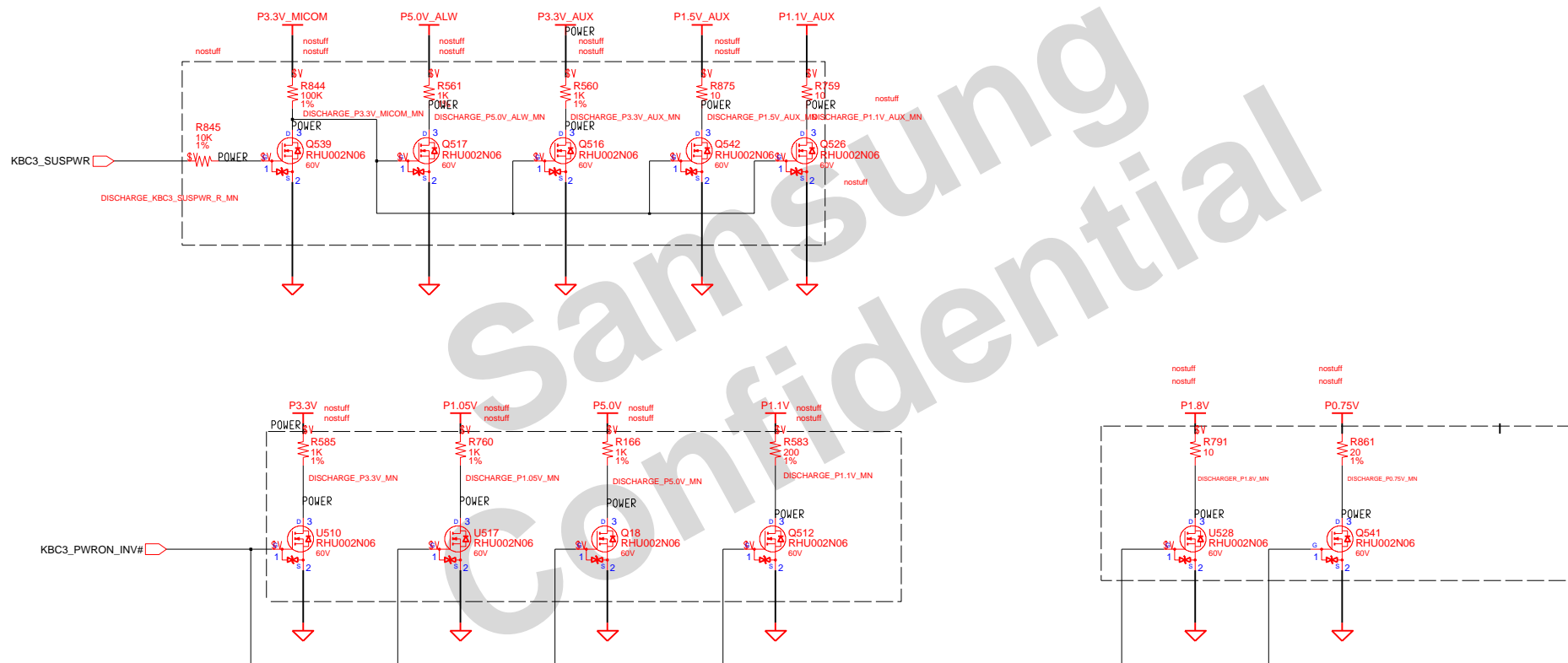


Multi@FDMC4435

DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV	PWR_MV_SWITCHED	PART NO.	
APPROVAL	LEI GUO	REV	REV 1.0	SWITCHED POWER	BA41-*****A	
MODULE CODE	September 25, 2012 07:52:37 AM				PAGE	39 OF 42

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## POWER DISCHARGER

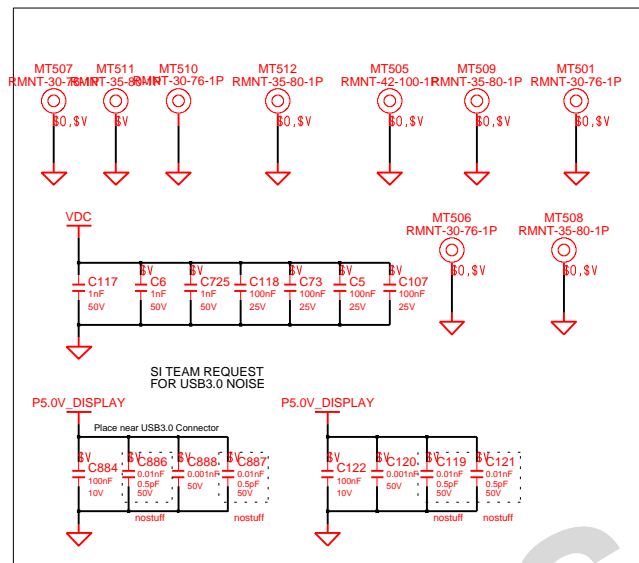


DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	XIAO SUN	DEV. STEP	PV		PWR_MV_DISCHARGER	
APPROVAL	LEI GUO	REV	REV 1.0		DISCHARGING LOGIC	
MODULE CODE	undefined	LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 40 OF 42	

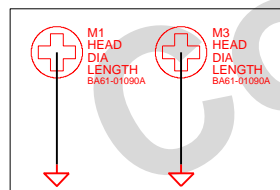
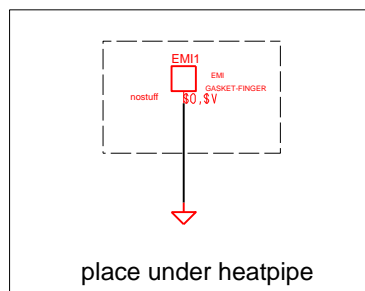
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## Mainboard Mount ((40-80)X2EA, (30-76)X5EA))

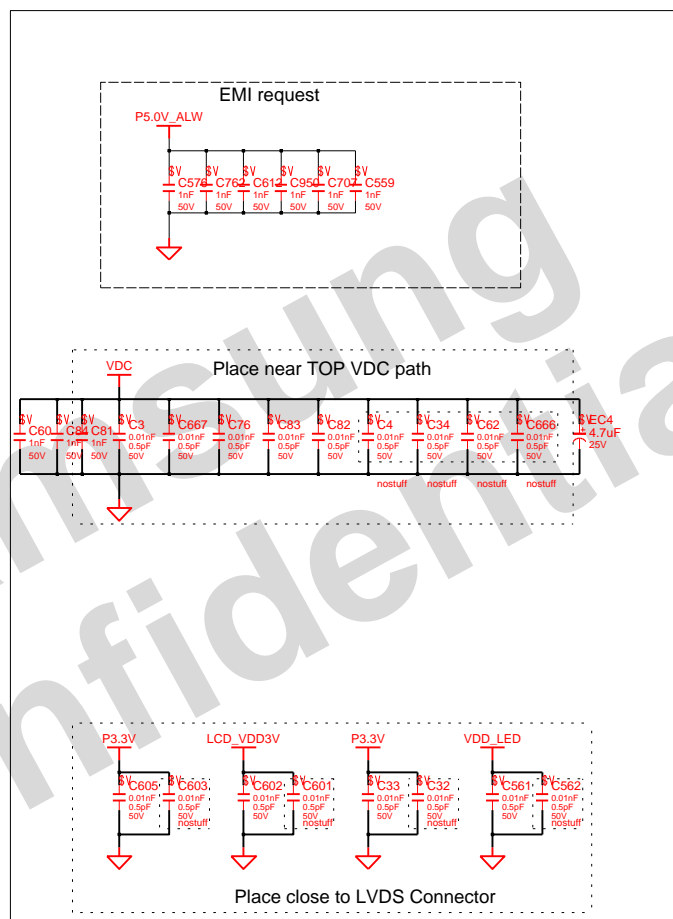


## WLAN Performance issue

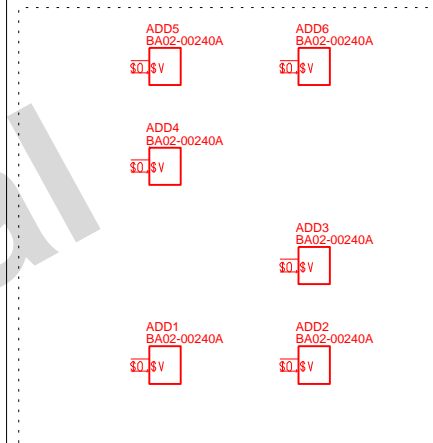


PCH mount

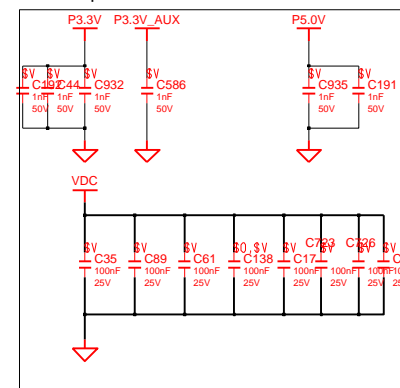
## WLAN Performance issue



## Corner Fill for CPU, PCH



## EMI request



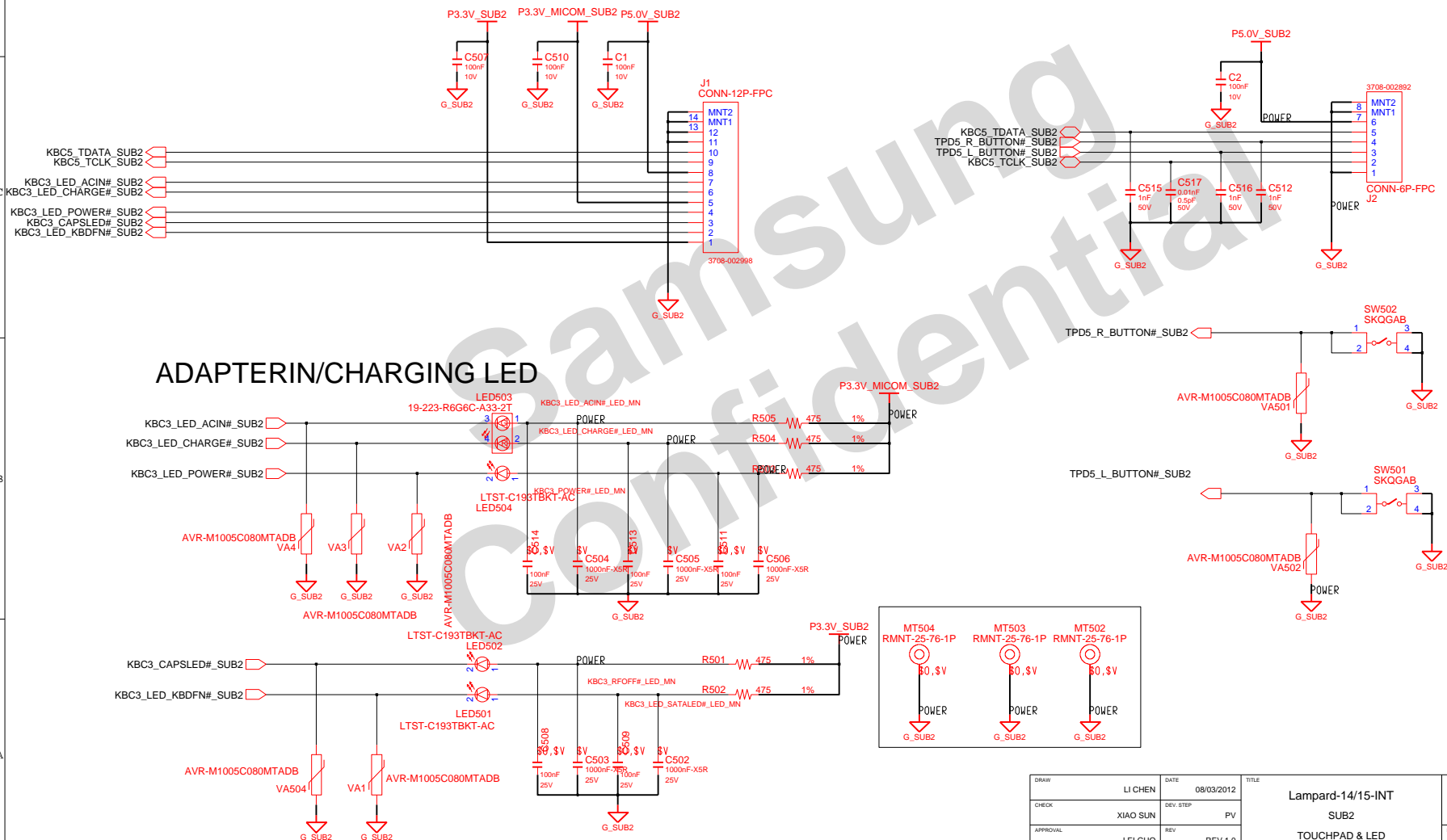
DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		MOUNT HOLE	
APPROVAL	LEI GUO	REV	REV 1.0		MOUNT HOLE	
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 41 OF 42	PART NO. BA41-*****A

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## TP SUB BOARD

## TOUCHPAD



DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG
CHECK	XIAO SUN	DEV. STEP	PV		SUB2	ELECTRONICS
APPROVAL	LEI GUO	REV	REV 1.0		TOUCHPAD & LED	PART NO.
MODULE CODE		LAST EDIT				BA41-*****A
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