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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 :

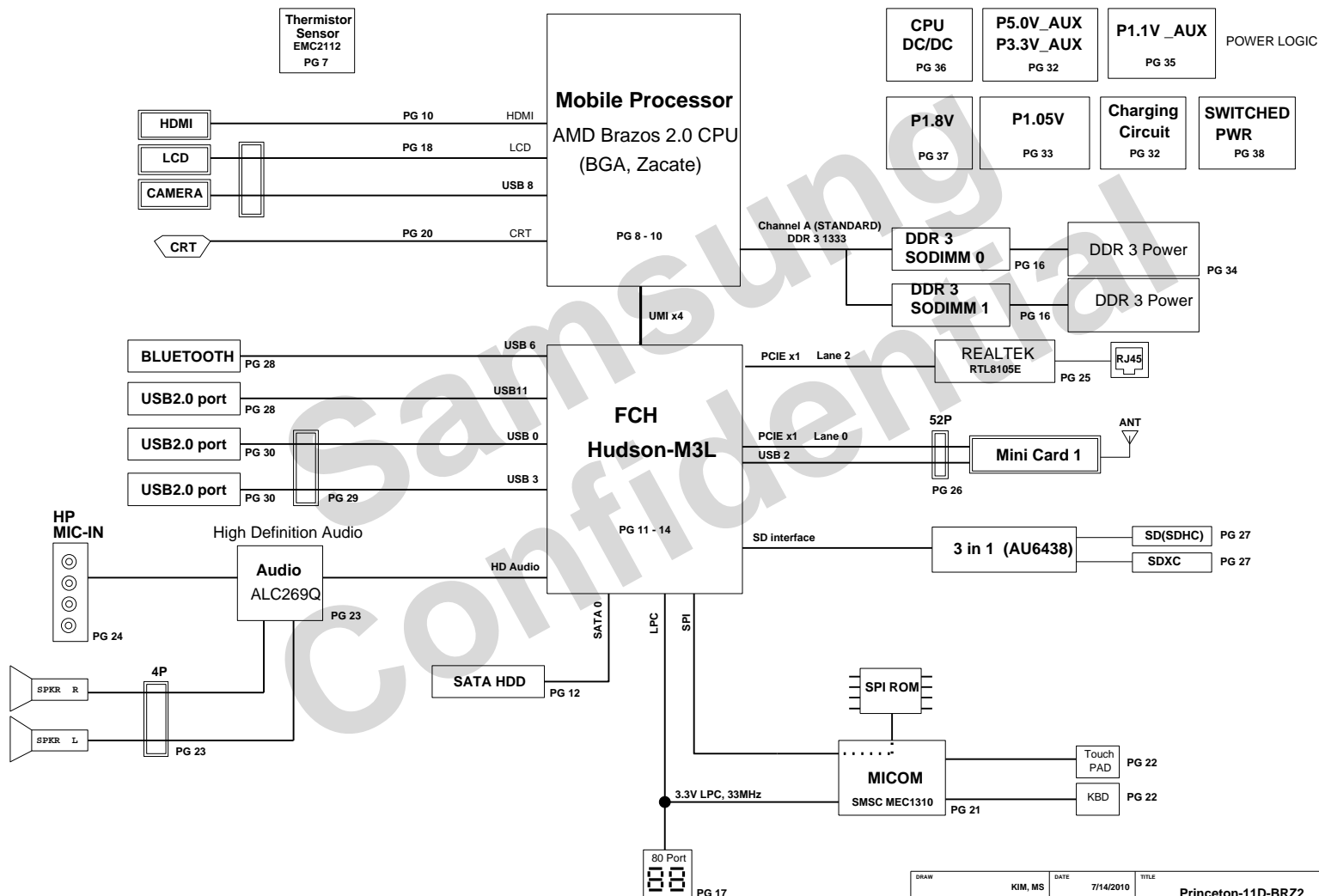
X


sheet01 : Cover
sheet02 : BLOCK DIAGRAM
sheet03 : BOARD INFORMATION
sheet04 : POWER DIAGRAM
sheet05 : CLOCK DISTRIBUTION
sheet06 : Green Clock
sheet07 : Thermal Sensor
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sheet09 : CPU-ZACATE (2/3)
sheet10 : CPU-ZACATE (3/3)
sheet11 : DDR3 SODIMM1
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sheet24 : LAN (Realtek RTL8105E)
sheet25 : WLAN

sheet26 : SATA interface (HDD/ODD I/F)
sheet27 : MICOM / BIOS(MEC1310)
sheet28 : MICOM Glue Logic
sheet29 : USB3.0 connector
sheet30 : MAIN TO SUB CONNECTOR
sheet31 : Power - charger
sheet32 : Power - P3.3V_AUX / P5.0V_ALW
sheet33 : Power - P1.05V (Chipset Power)
sheet34 : Power - P1.1V_AUX/P1.8V
sheet35 : Power - DDR3
sheet36 : Power - CPU VRM
sheet37 : Power - Switched Power 1
sheet38 : Power - Power Discharge
sheet39 : Mount Hole
sheet40 : SUB (TOUCHPAD)

DRAW	LI CHEN	DATE	08/03/2012	TITLE		SAMSUNG ELECTRONICS	
CHECK	XIAO SUN	DEV. STEP	PV	Lampard-14/15-INT MAIN			
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

Mobile Processor
AMD Brazos 2.0 CPU
(BGA, Zacate)



DRAW	KIM, MS	DATE	7/14/2010	TITLE	Princeton-11D-BRZ2		
CHECK	PARK, K	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 S4 - S5
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) S3
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) S0
VCC_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for GPU VCC for FCH S0

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	

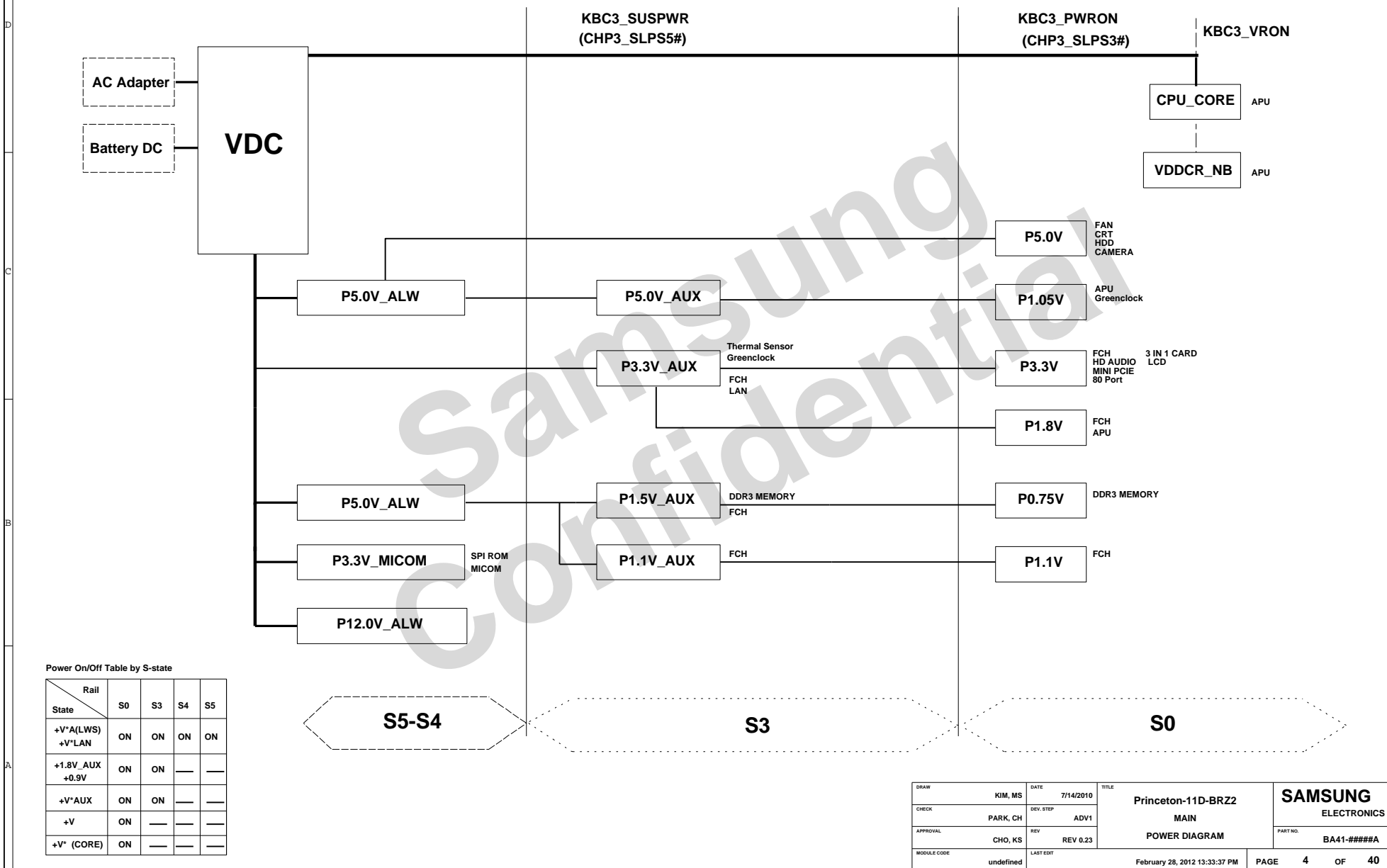
Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	FCH	Real Time Clock
Crystal	25MHz	LAN	REALTEK
Crystal	25MHz	FCH	
Crystal	27MHz	MARS	
Crystal	48MHz	SD	

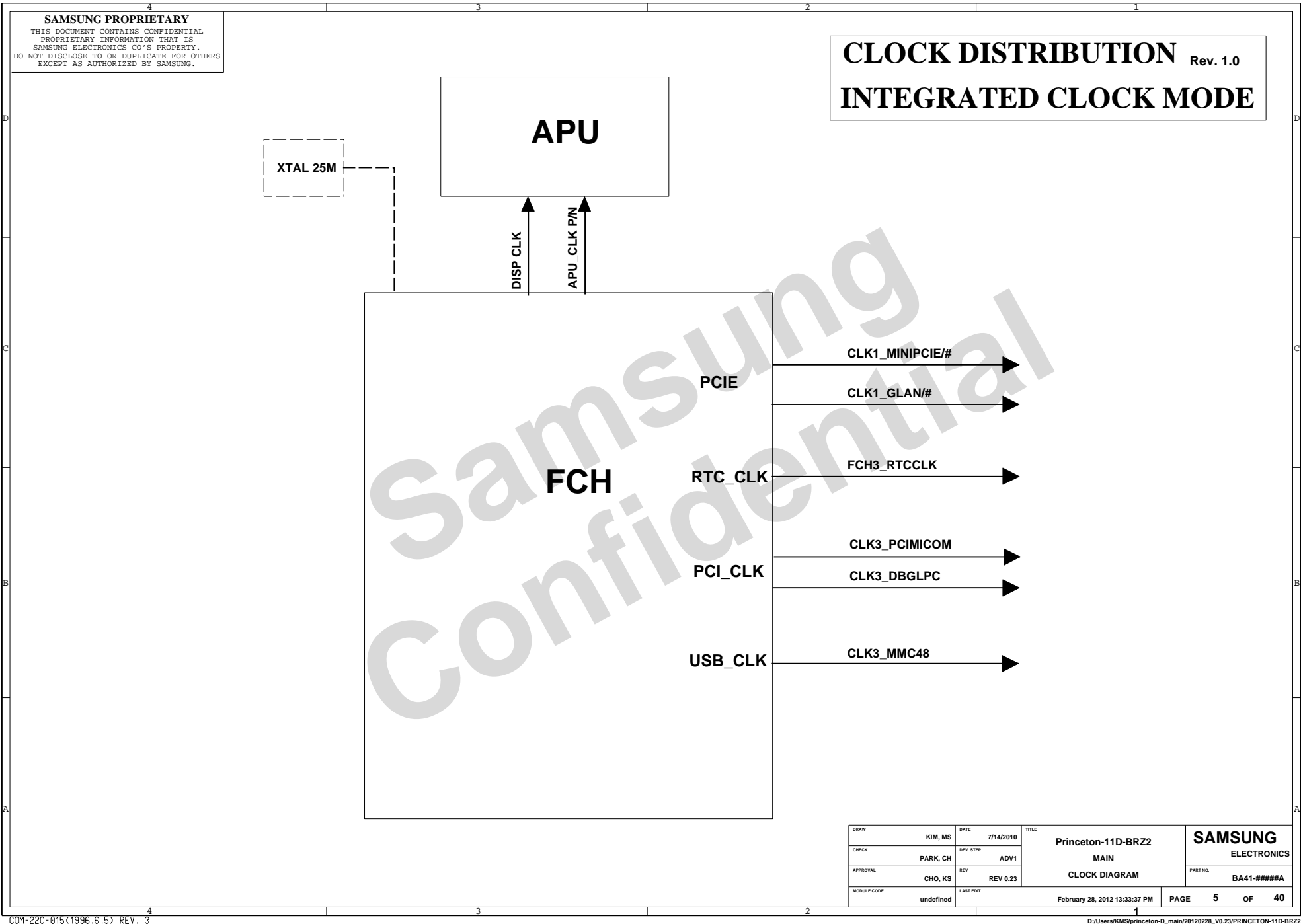
LCD Pannel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

I ² 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	

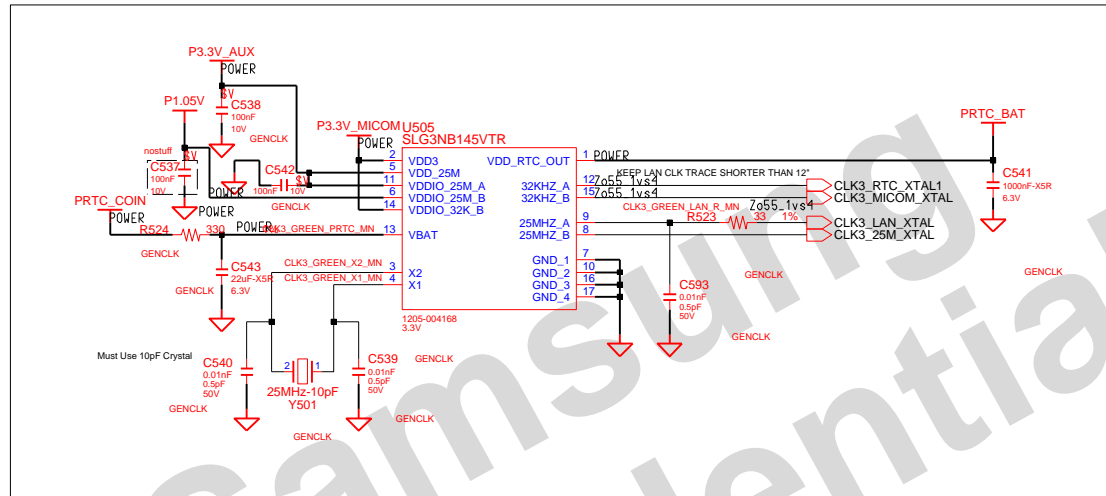
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CHECK	XIAO SUN	DEV. STEP	PV			
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	September 25, 2012 07:52:37 AM	PAGE	3	OF 42

Rev 0.1





CLOCK DISTRIBUTOR



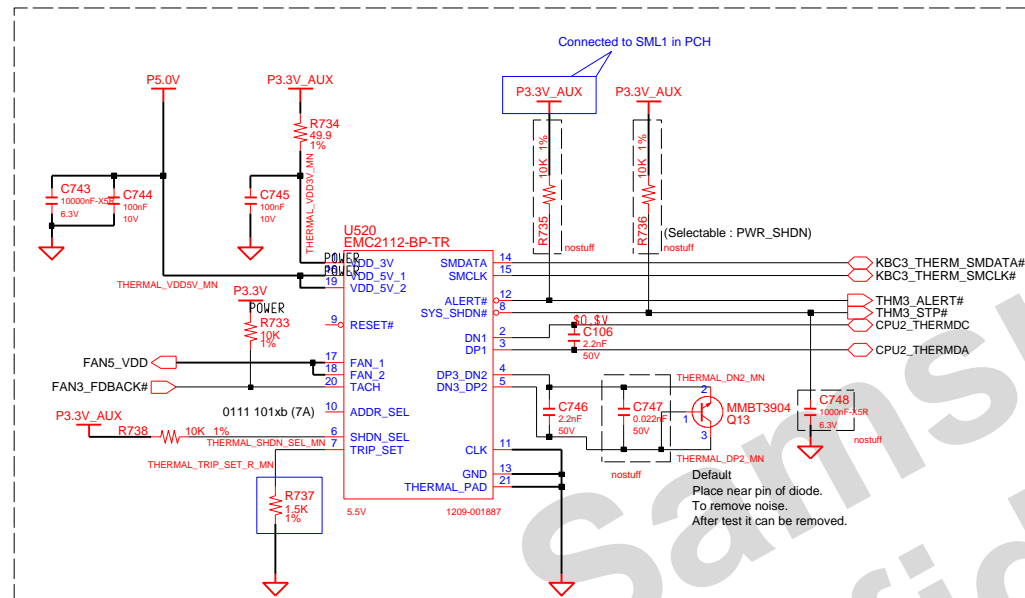
Multi Assy	Function Description	SCHEMATIC MARK
ADT_40W	40W ADAPTER SELECT	ADT_40W
ADT_60W	60W ADAPTER SELECT	ADT_60W
EMC2112	SUPPORT EMC2112	EMC2112
ATHEROS	ATHEROS SELECT	ATHEROS
BROADCOM	BROADCOM SELECT	BROADCOM
OTP_VE	THERMAL VE	OTP_VE
INT_SD	SUPPORT FCH SD	INT_SD
EXT-SD	SUPPORT EXT SD FUNCTION	EXT-SD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

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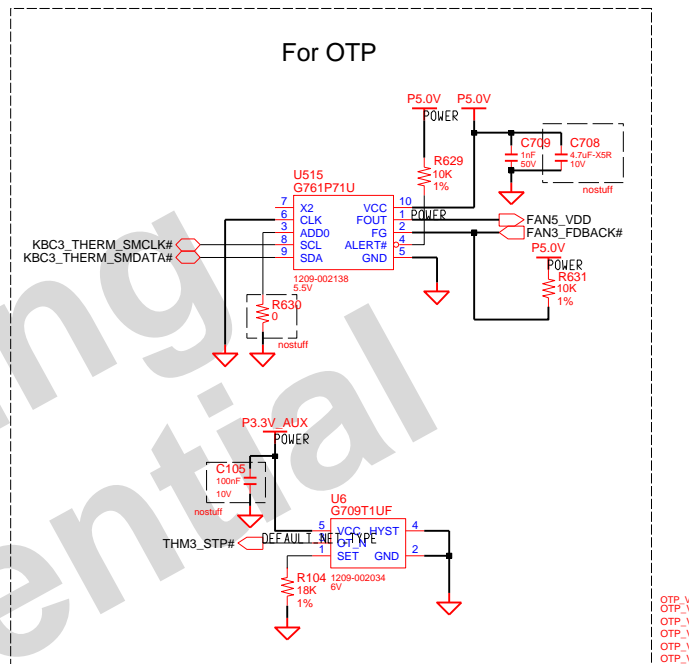
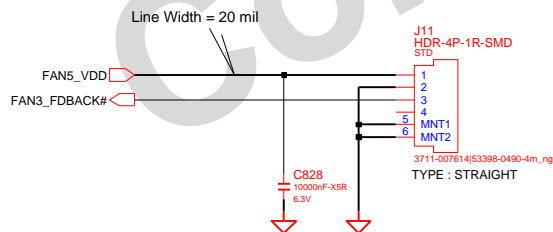
THERMAL SENSOR & FAN CONTROL



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

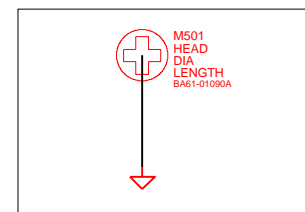
ADDRESSSEL_MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

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



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

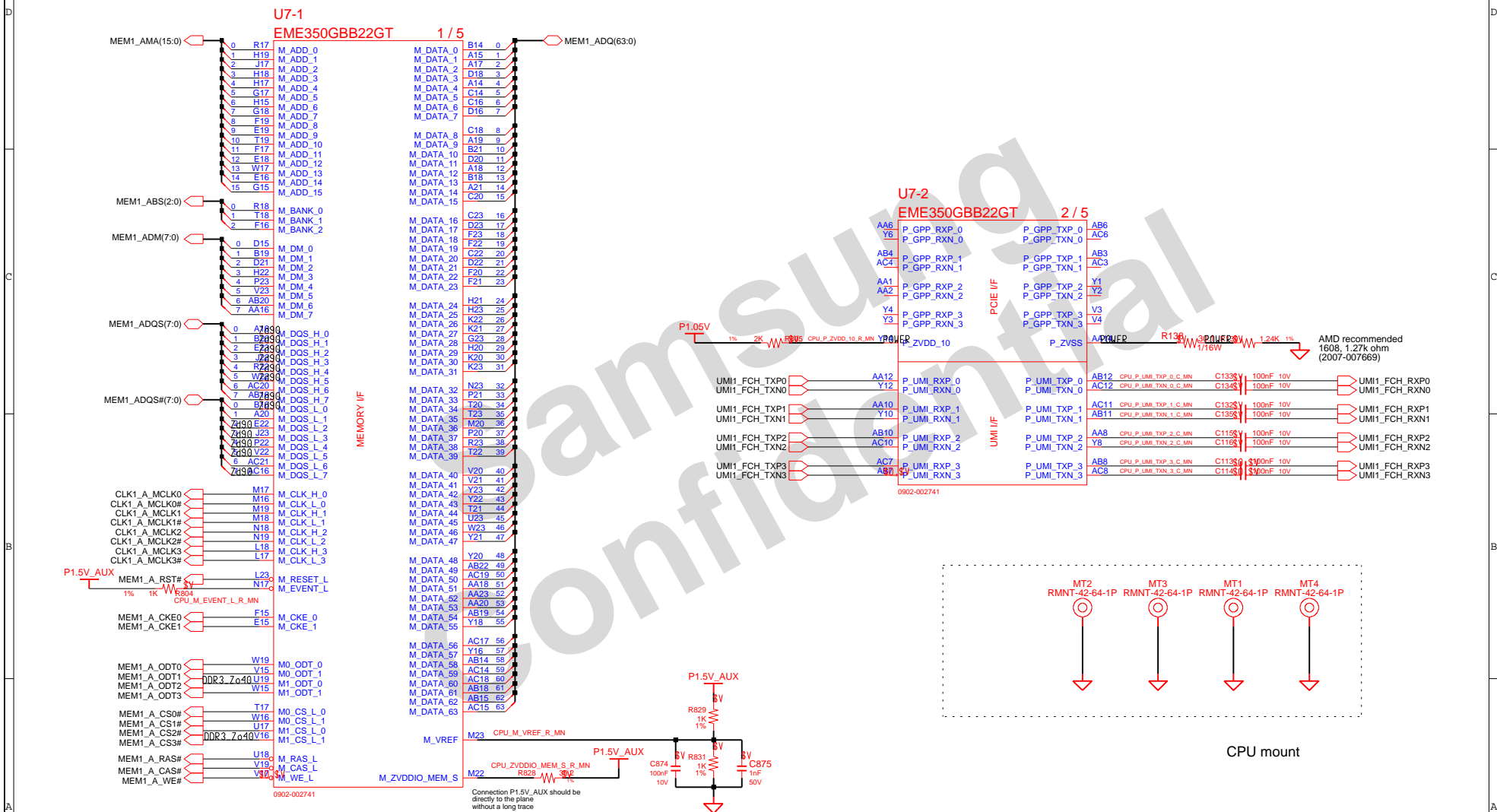
FAN PEM



DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT THERMAL SENSOR THERMAL SENSOR EMC2112	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV			PART NO. BA41-*****A
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE		LAST EDIT				

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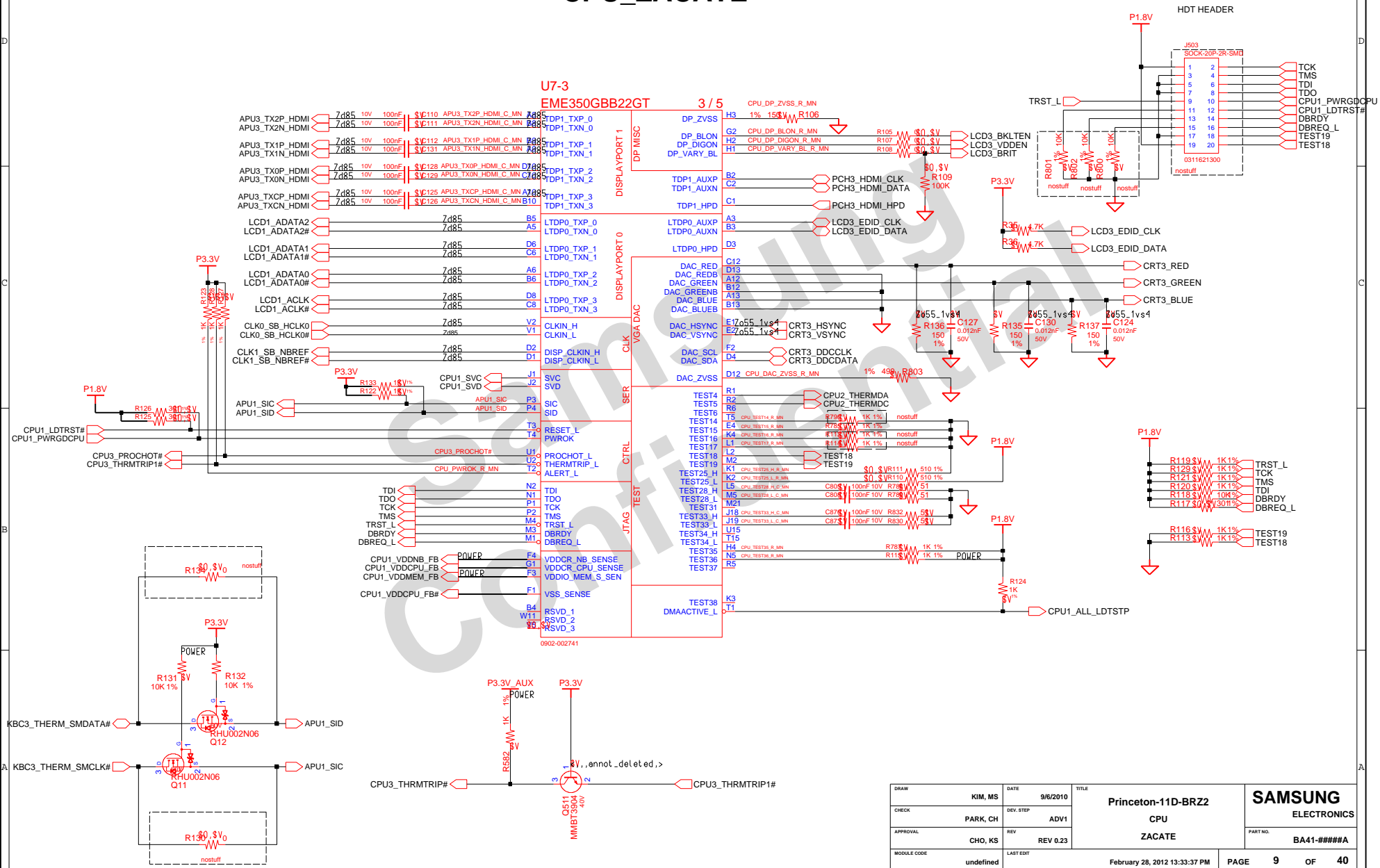
CPU_ZACATE



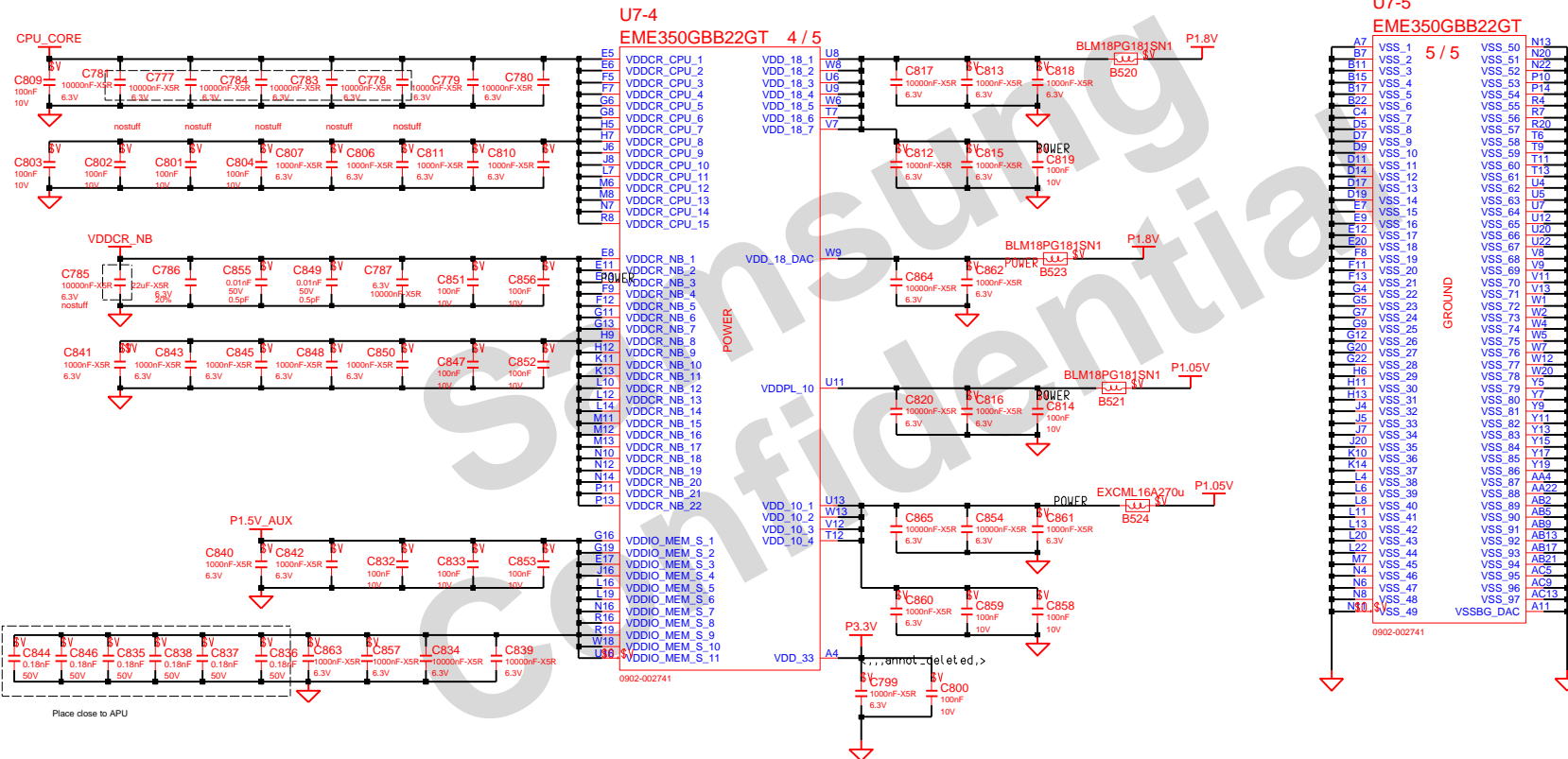
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CHECK	PARK, CH	DEV. STEP	ADV1		
APPROVAL	CHO, KS	REV	REV 0.23		
PART NO.					
MODULE CODE		LAST EDIT		February 28, 2012 13:33:37 PM	PAGE 8 OF 40

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CPU ZACATE



CPU_ZACATE

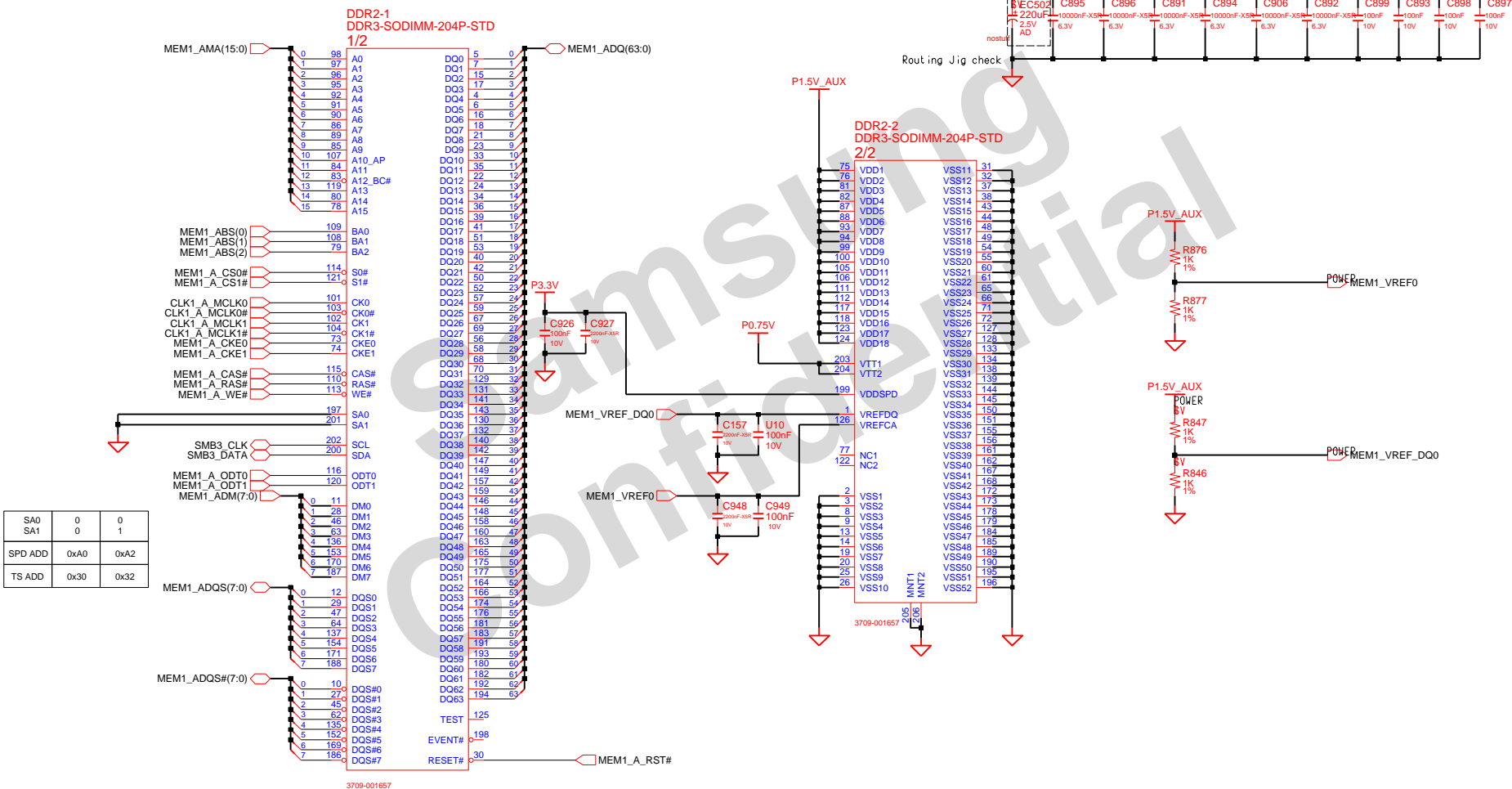


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CHECK	PARK, CH	DEV. STEP	ADV1	CPU		
APPROVAL	CHO, KS	REV	REV 0.23	ZACATE		
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SO-DIMM#0 : 2nd SO-DIMM

DDR SO-DIMM #0



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

DRAW	RM LI	DATE	08/03/2012	TITLE	<div><div>Ramos-14/15-2SP</div><div>MEMORY #0 2 RANK(4/4)</div><div>DDR3 2Gb</div></div> <div><div>SAMSUNG</div><div>ELECTRONICS</div></div>			
CHECK	XIAO SUN	DEV. STEP	DV					
APPROVAL	LEI GUO	REV	REV 1.0					
MODULE CODE		LAST EDIT						
				August 11, 2012 09:48:52 AM	PAGE	13	OF	56

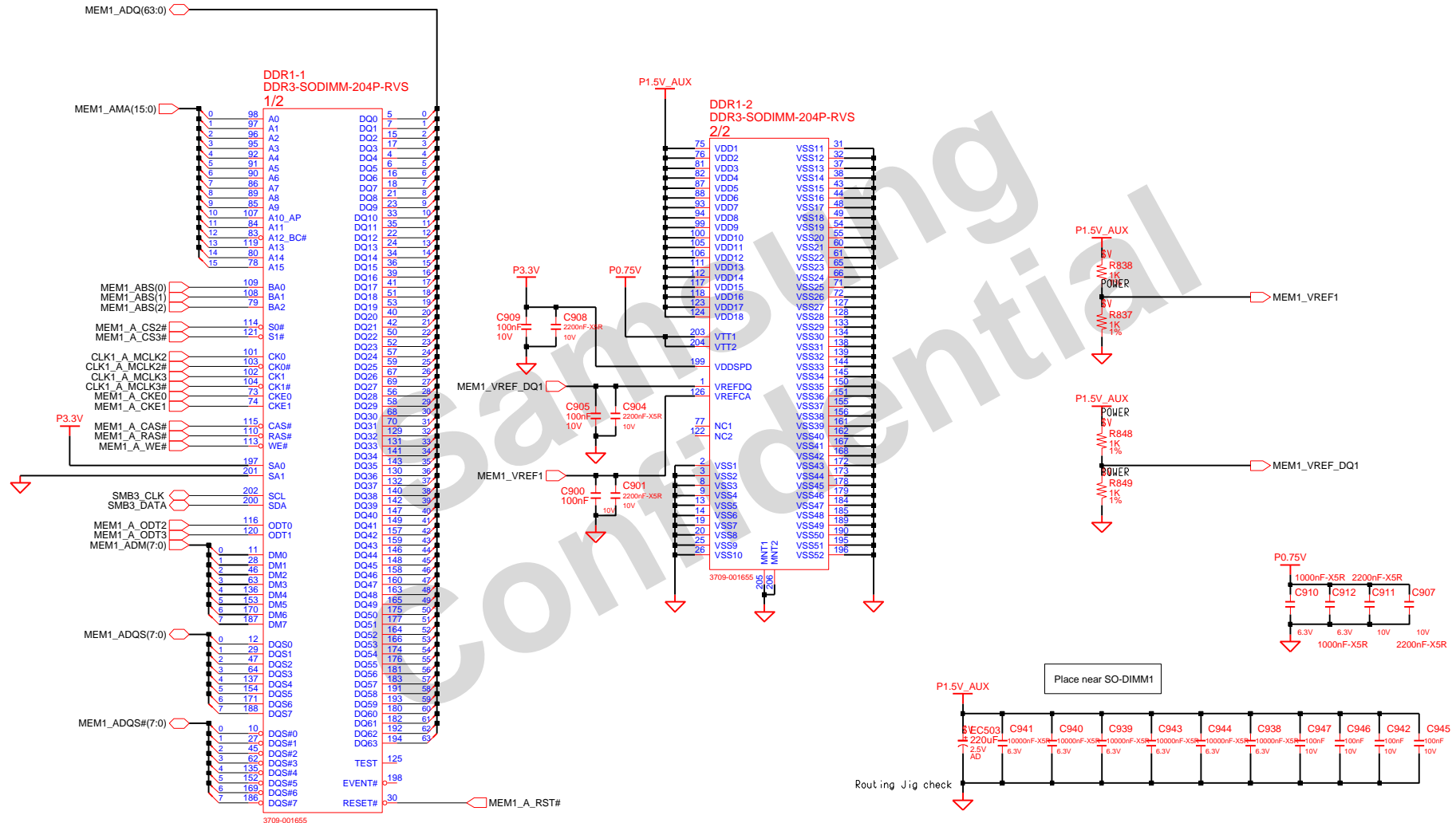
SO-DIMM #1 : 1st SO-DIMM

DDR SO-DIMM #1

Height : 8 mm (STANDARD)

P/N : 3709-001615 (FOXCONN)

P/N : 3709-001622 (CONCRAFT)



DRAW	RM LI	DATE	08/03/2012	TITLE	Ramos-14/15-2SP	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	XIAO SUN	DEV. STEP	DV		SODIMM B	
APPROVAL	LEI GUO	REV	REV 1.0		DDR3 2Gb	
MODULE CODE		LAST ENT			August 11, 2012 09:48:52 AM	PAGE 14 OF 56

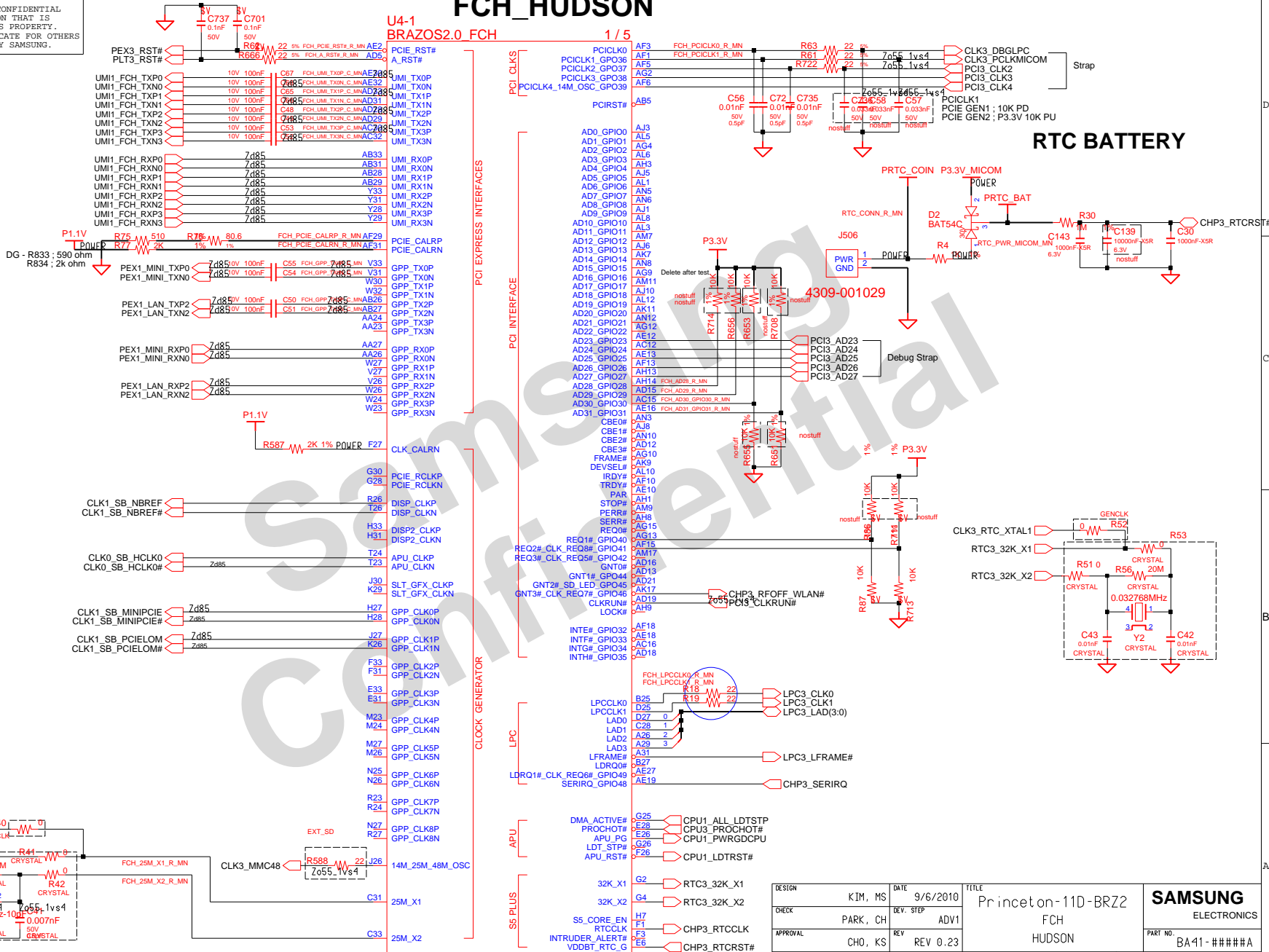
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FCH_HUDSON

U4-1
BRAZOS2.0 FCH

1 / 5



0904-002736

DESIGN	KIM, MS	DATE	9/6/2010	TITLE	Princeton-11D-BRZ2	SAMSUNG ELECTRONICS PART NO. BA41-#####A
CHECK	PARK, CH	DEV. STEP	ADV1	FCH		
APPROVAL	CHO, KS	REV	REV 0.23	HUDSON		
MODULE CODE		LAST EDIT	February 28, 2012 13:33:37 PM			
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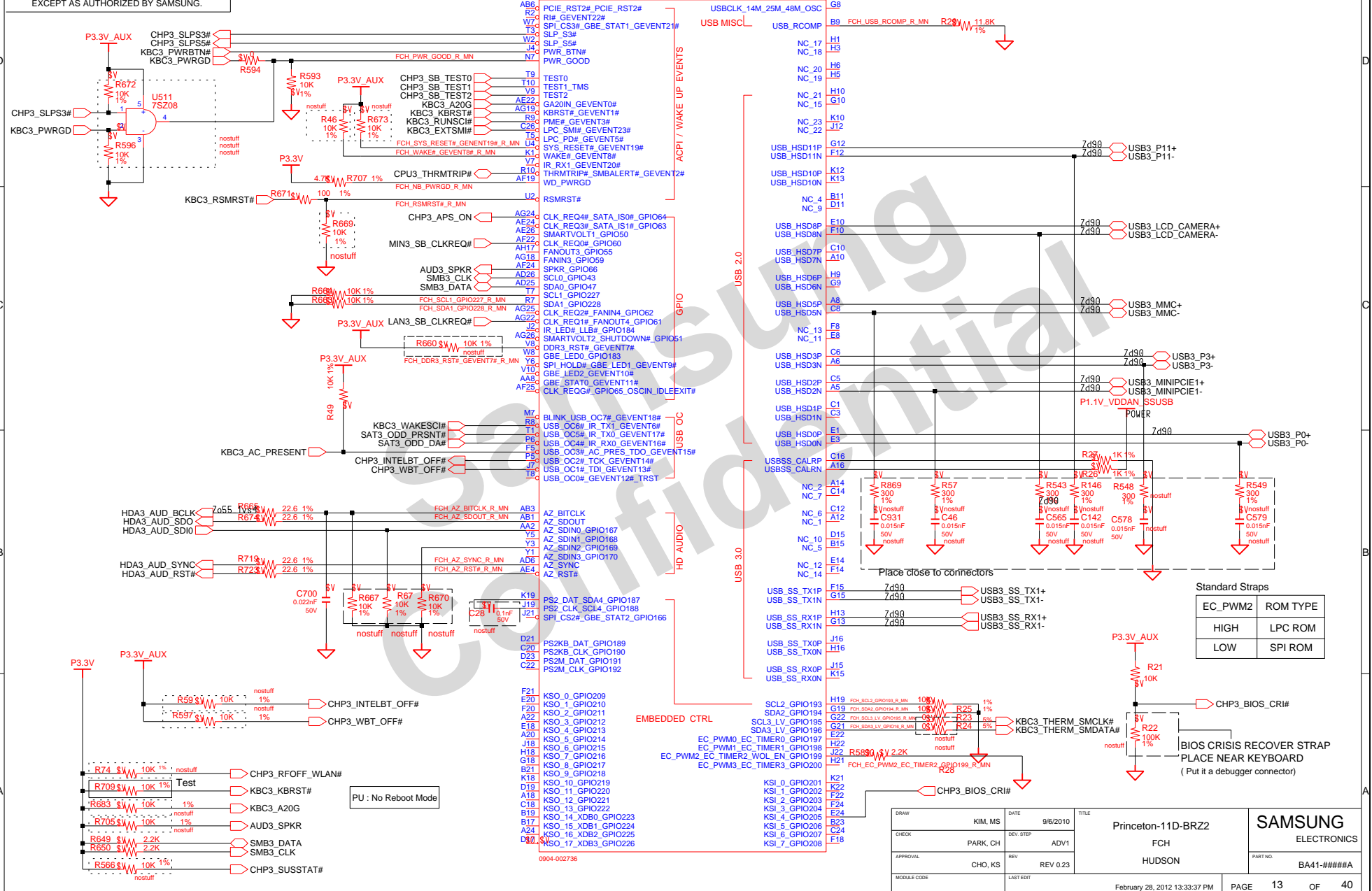


DESIGN	KIM, MS	DATE	9/6/2010	TITLE Princeton-11D-BRZ2 FCH HUDSON	PART NO. BA41-#####	SAMSUNG ELECTRONICS
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APPROVAL	CHO, KS	REV	REV 0.23			
MODULE CODE	LAST EDIT		February 28, 2012 13:33:37 PM			

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U4-2 FCH_HUDSON

BRAZOS2.0 FCH 2 / 5

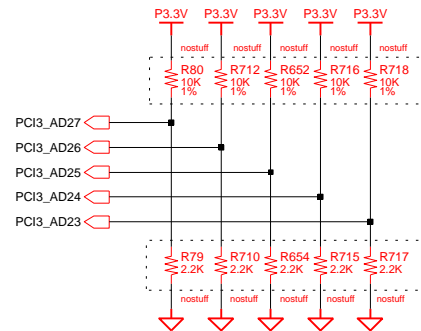


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APPROVAL	CHO, KS	REV	REV 0.23	HUDSON		
MODULE CODE		LAST ENT	February 28, 2012 13:33:37 PM	PAGE	13 OF 40	

Strap

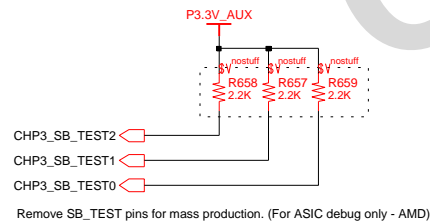
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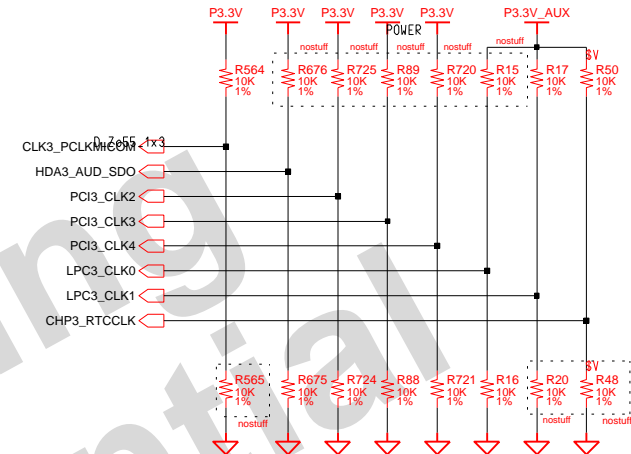


DEBUG STRAPS

	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

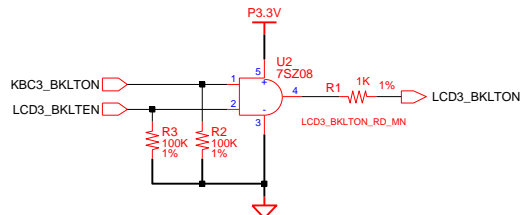
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CHECK	PARK, CH	DEV. STEP	ADV1	STRAP	STRAP	
APPROVAL	CHO, KS	REV	REV 0.23	STRAP	STRAP	
MODULE CODE	undefined	LAST EDIT	February 28, 2012 13:33:37 PM	PAGE	15 OF 40	

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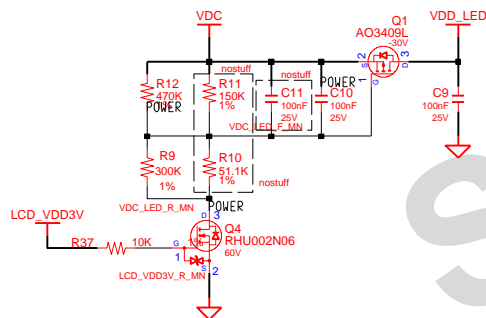
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LVDS LOGIC

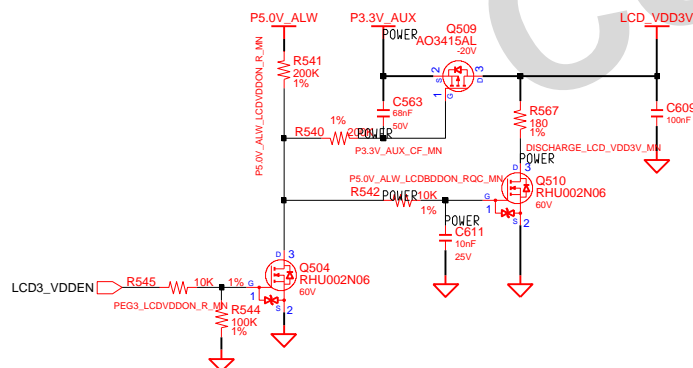
Backlight On



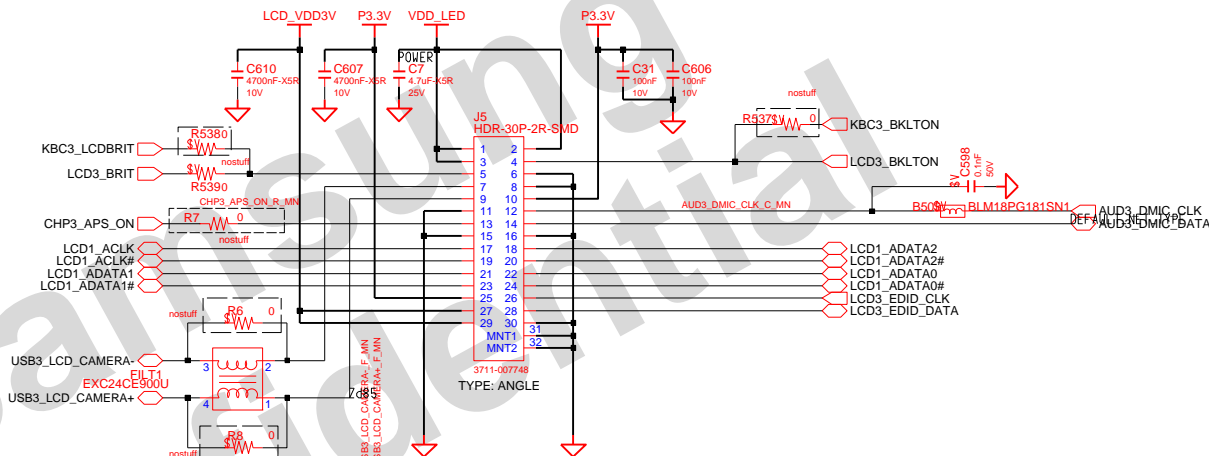
LED Power



LCD Power



1Ch. LCD Connector + CAMERA + INT MIC



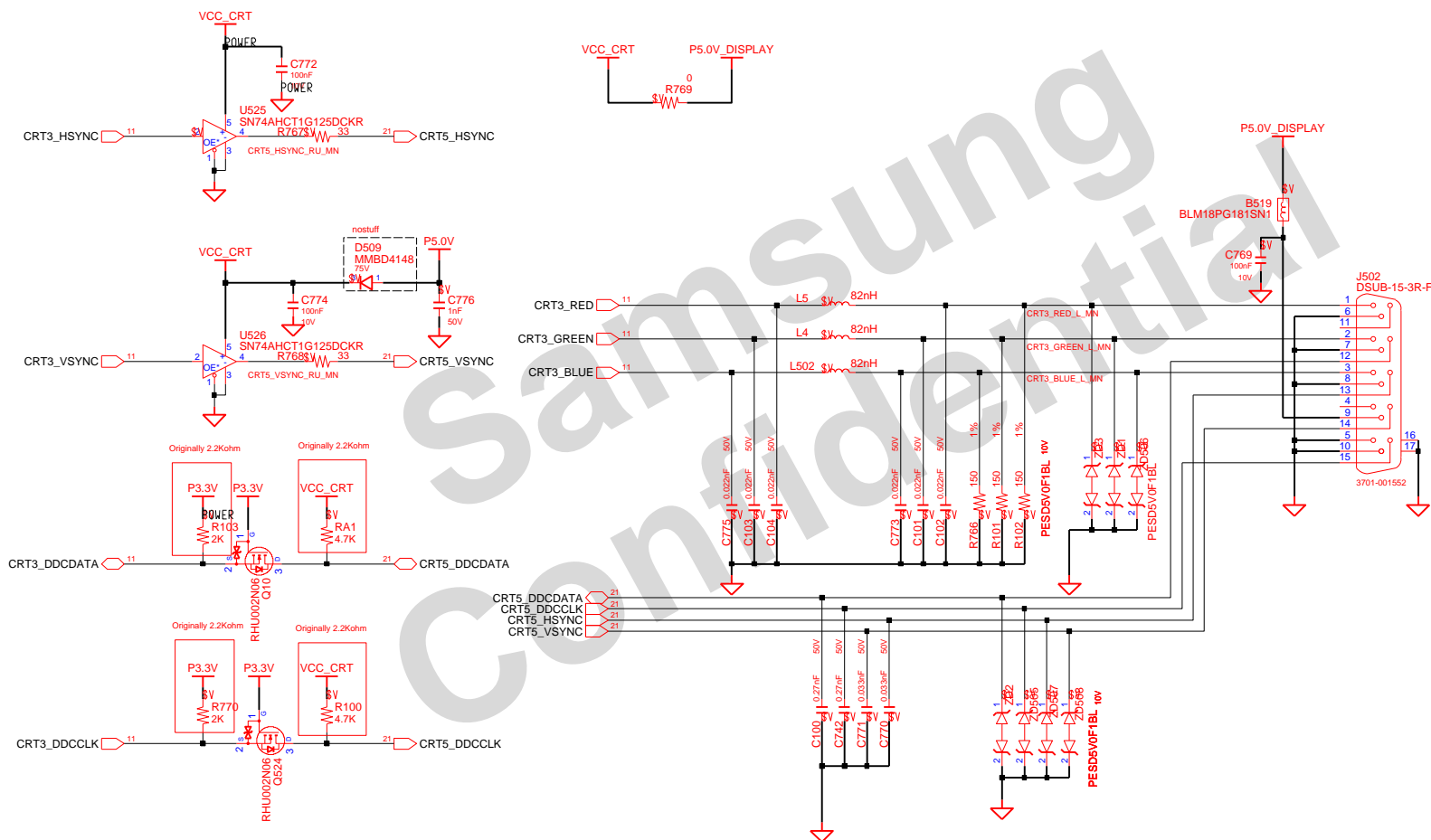
USB signal stub should be less than 100mil

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		
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VGA

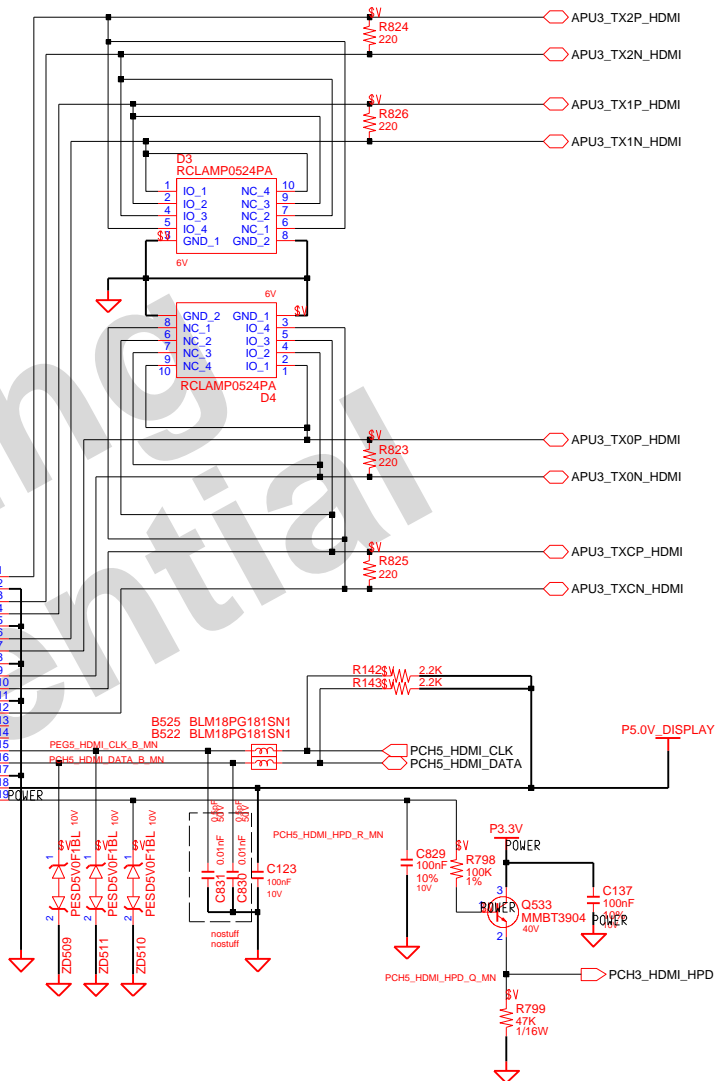
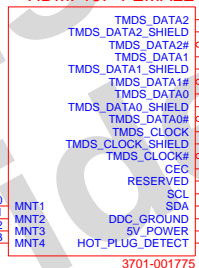
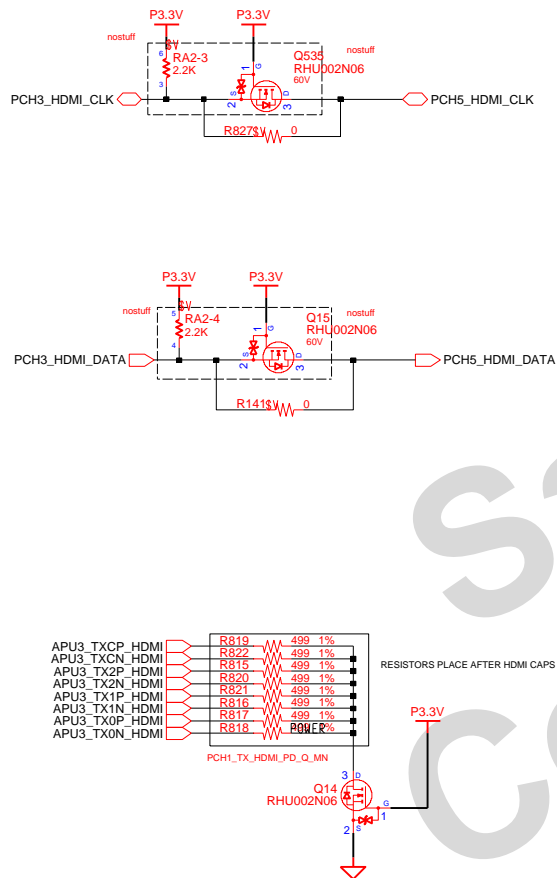


DESIGN	LI CHEN	DATE	08/03/2012	TITLE Lampard-14/15-INT GRAPHIC_IF CRT	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	XIAO SUN	DEV. STEP	PV		
APPROVAL	LEI GUO	REV	REV 1.0		
MODULE CODE		LAST EDIT			
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After checking, Houston need to use CMC for each signal.

FOR HDMI VERIFICATION TEST



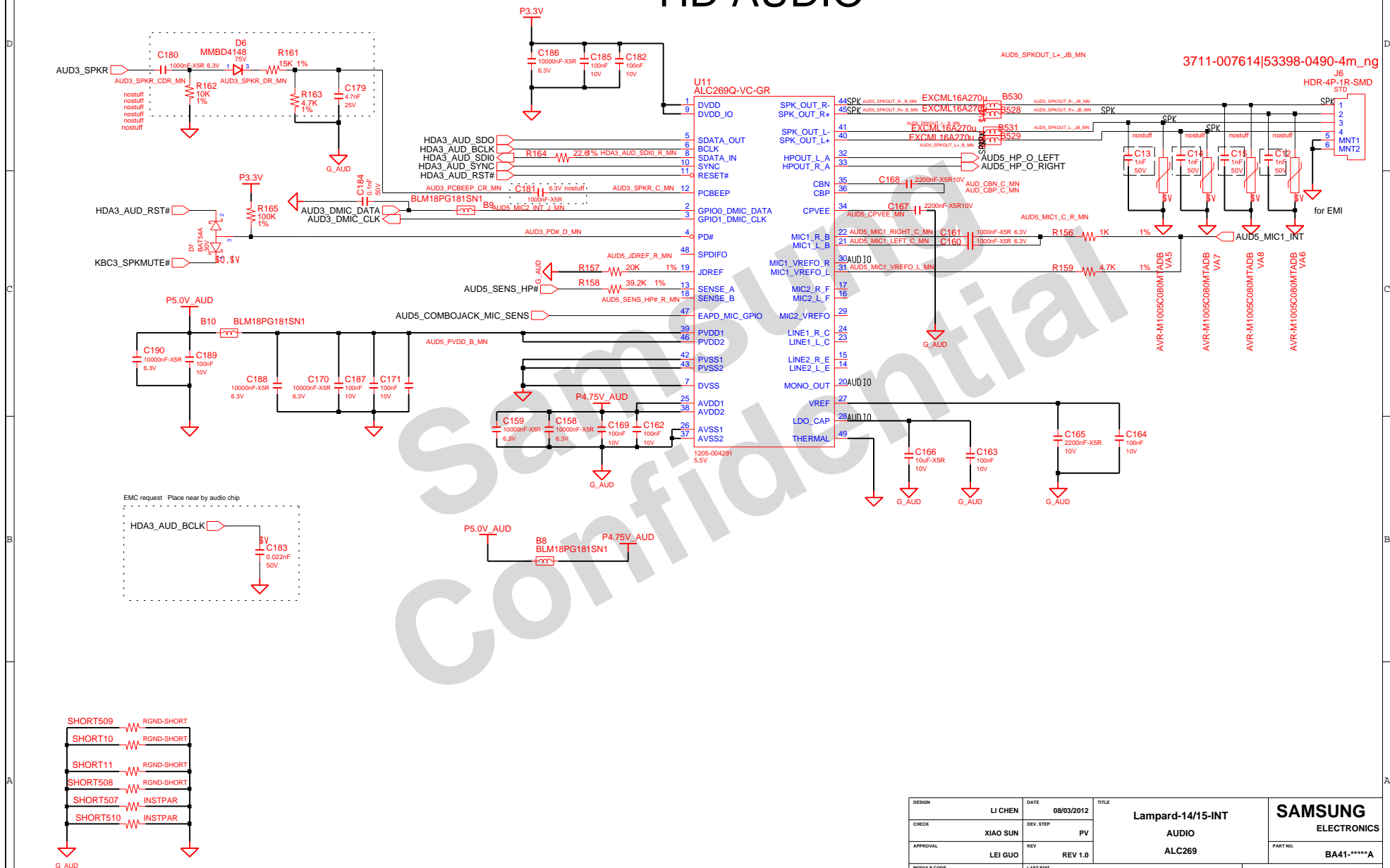
N10x/N11x_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance

DESIGN	LI CHEN	DATE	08/03/2012	Lampard-14/15-INT GRAPHICS_IF HDMI		SAMSUNG ELECTRONICS	
CHECK	XIAO SUN	DEV. STEP	PV				
APPROVAL	LEI GUO	REV	REV 1.0			PART NO.	BA41-*****A
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HD AUDIO



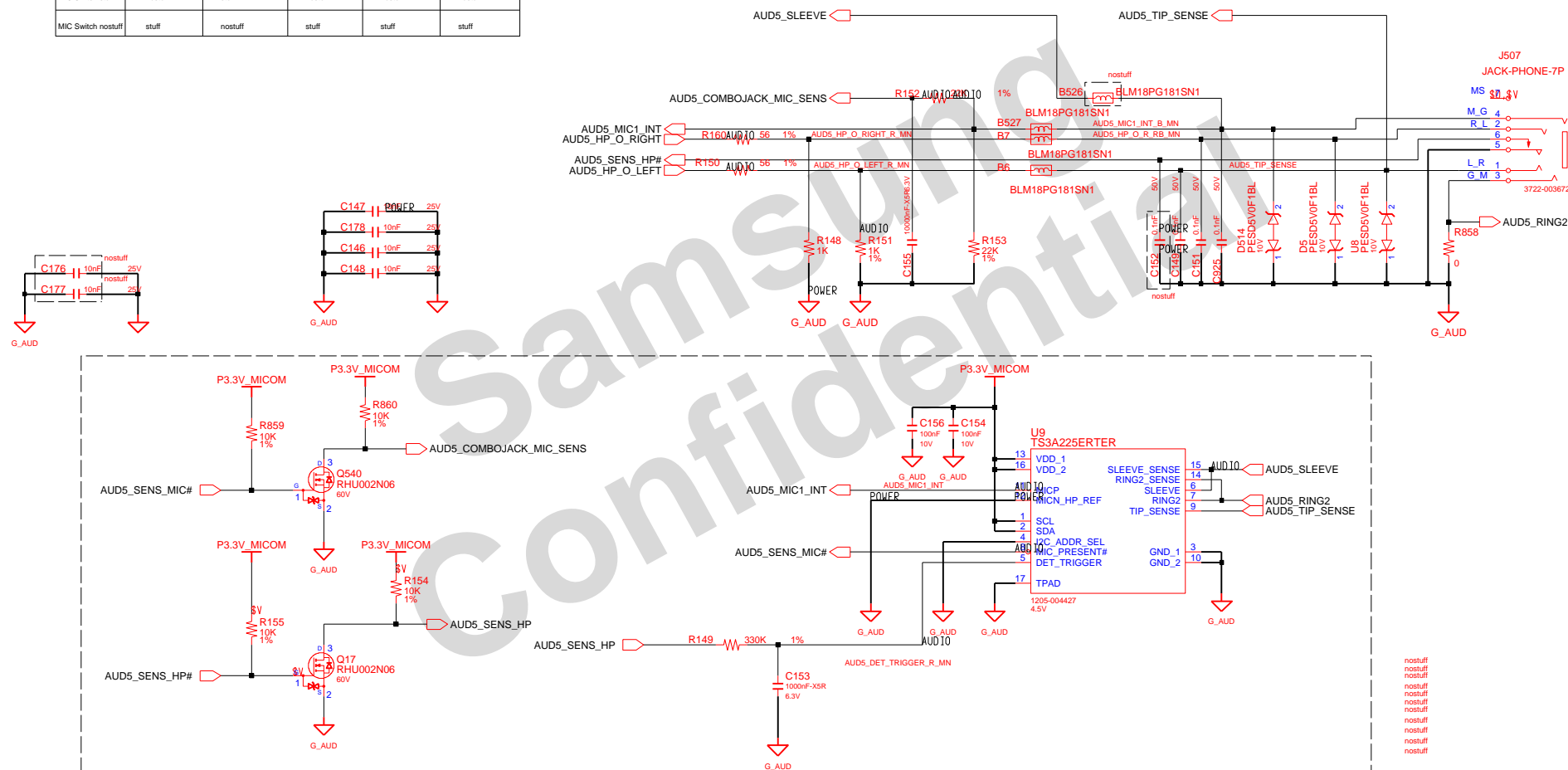
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HD AUDIO

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

COMBO JACK

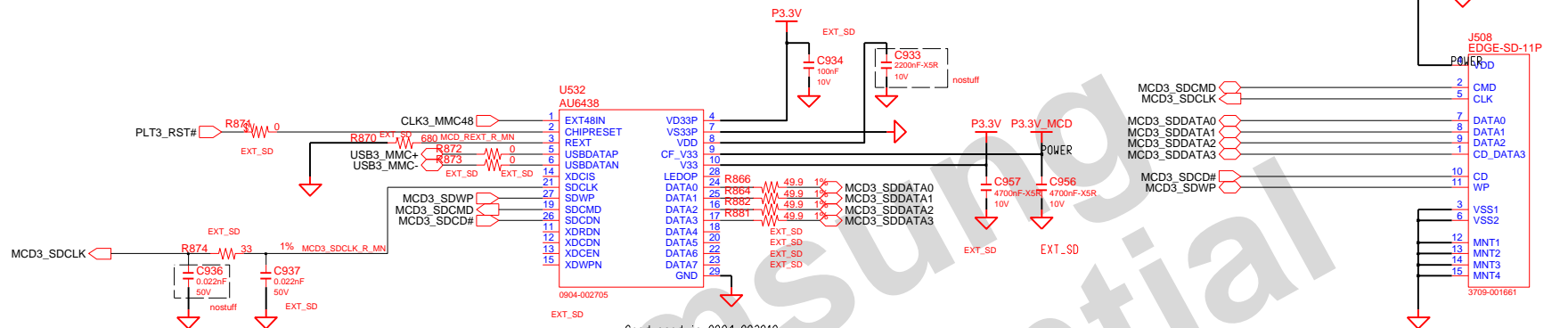


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT AUDIO AUDIO COMBO JACK	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV			PART NO. BA41-****A
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE		LAST EDIT				
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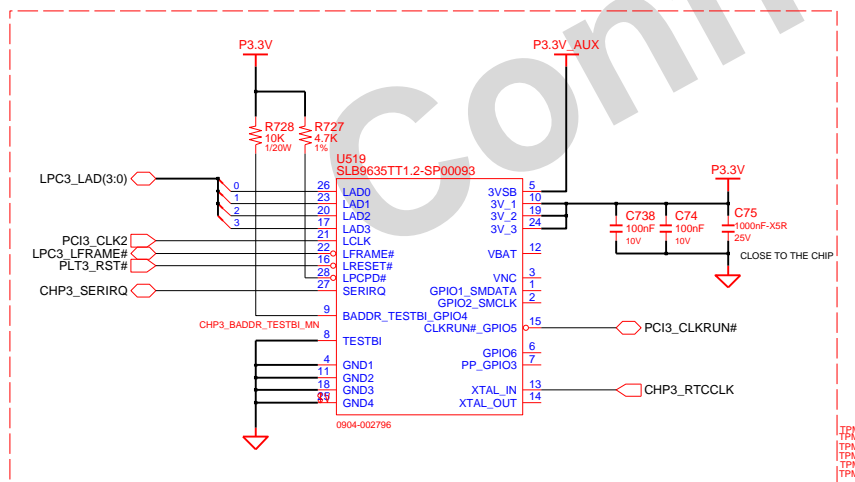
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3IN1(AU6438)



TPM1.2

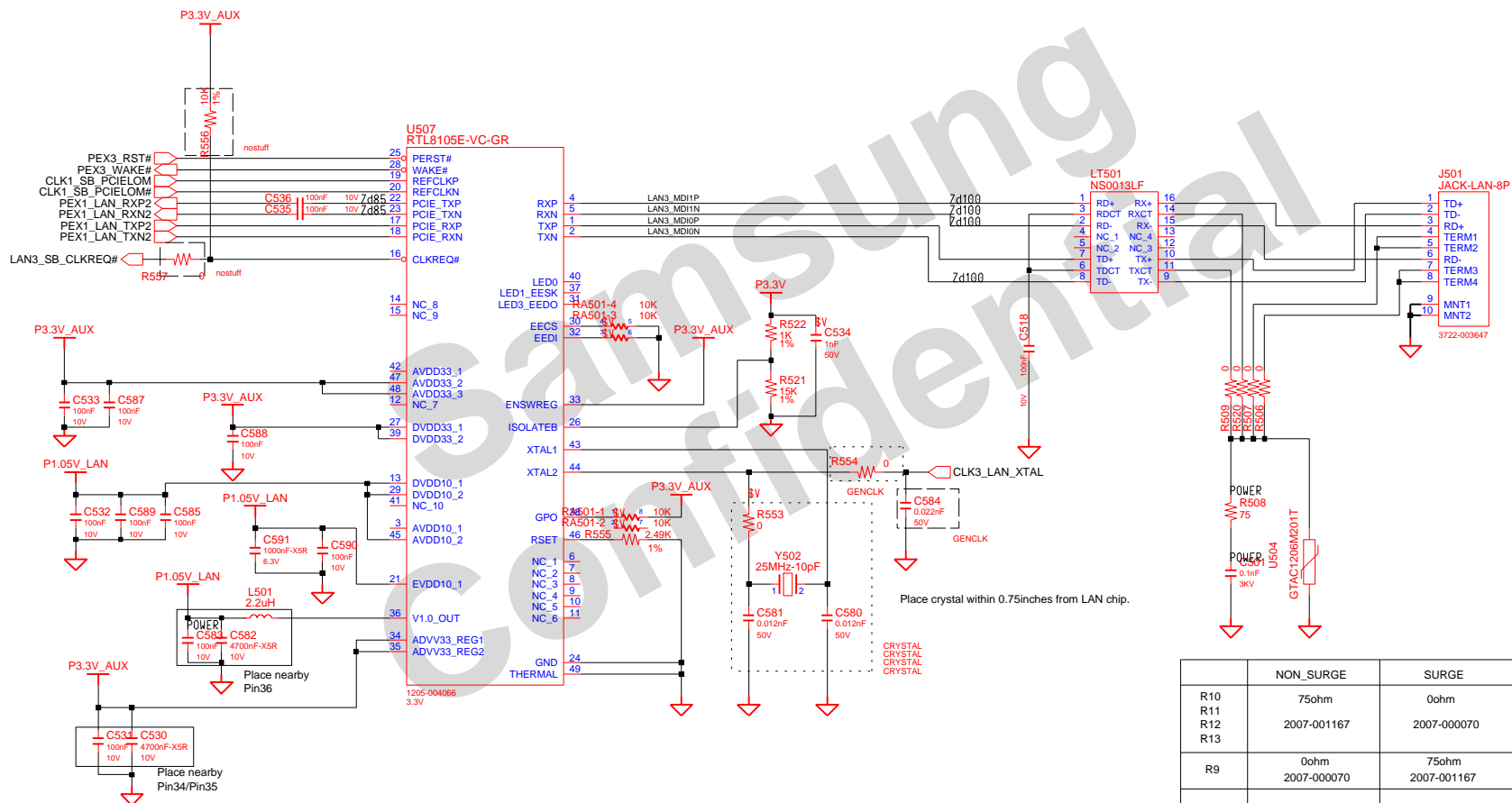


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CHECK	XIAO SUN	DEV. STEP	PV			PART NO. BA41-*****A
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 25 OF 42	

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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

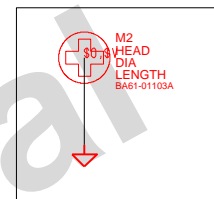
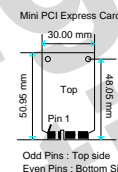
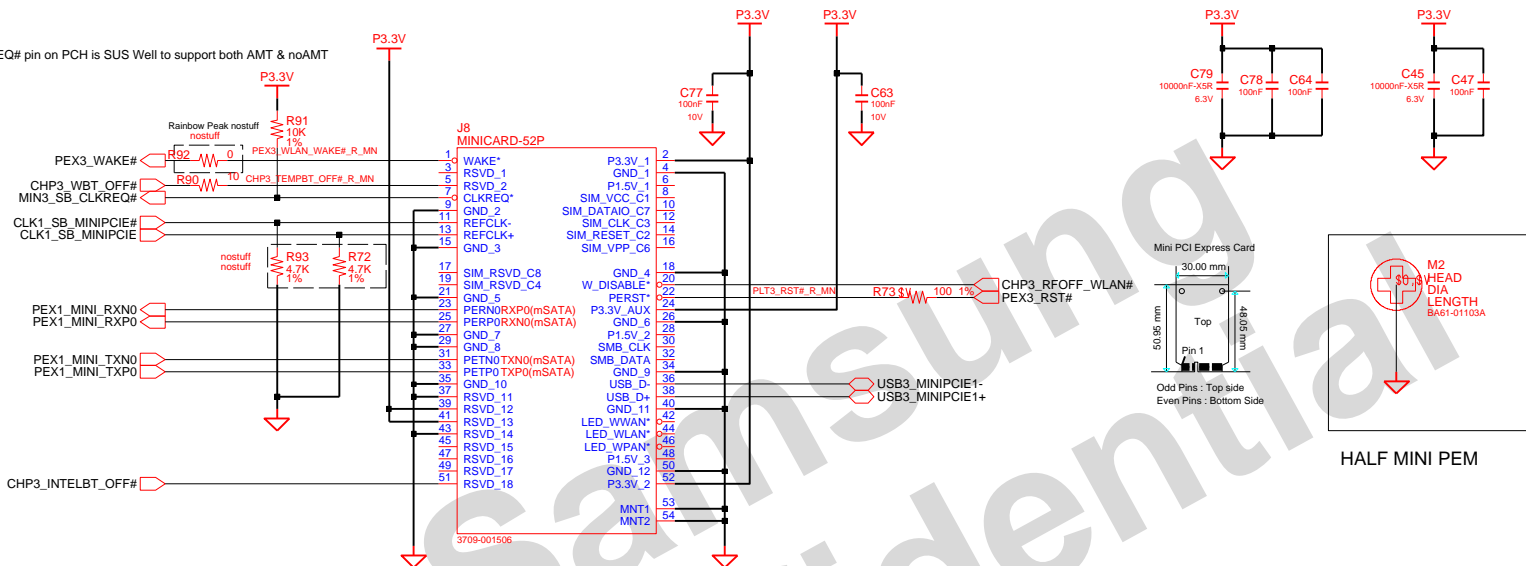
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APPROVAL	LEI GUO	REV	REV 1.0		LAN_Realtek_RTL8111E)	
MODULE CODE		LAST EDIT				
				September 25, 2012 07:52:37 AM	PAGE 26 OF 42	

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WLAN

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

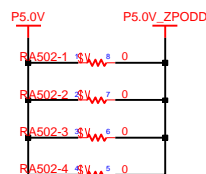
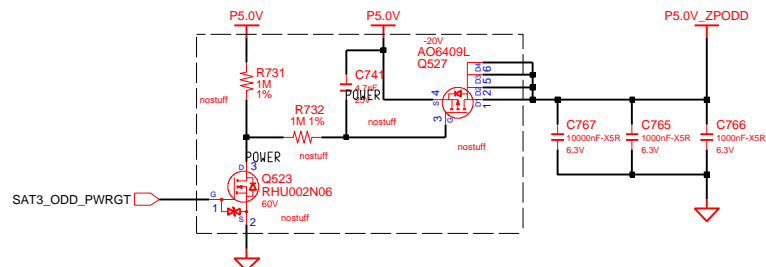


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APPROVAL	LEI GUO	REV	REV 1.0		WLAN	
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 27 OF 42	PART NO. BA41-*****A

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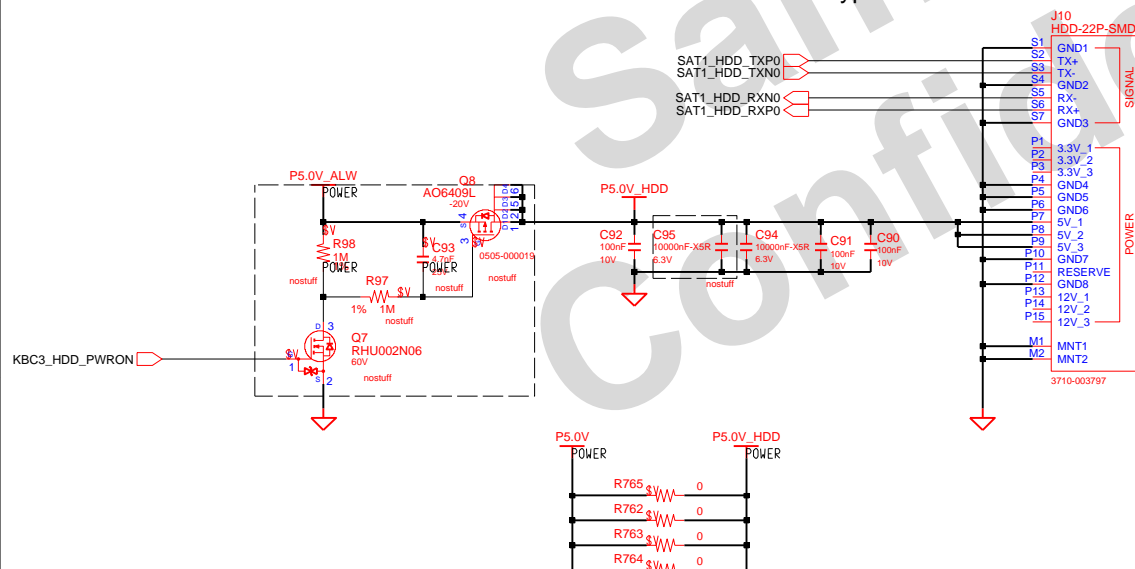
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SATA I/F CONN

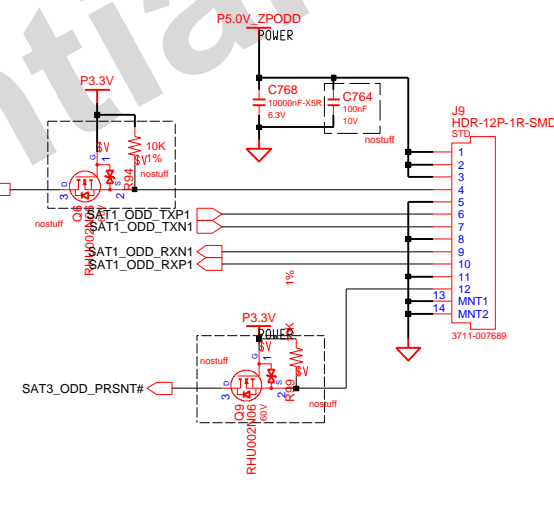


SATA HDD CONN

Cable Connector Type



SATA ODD CONN

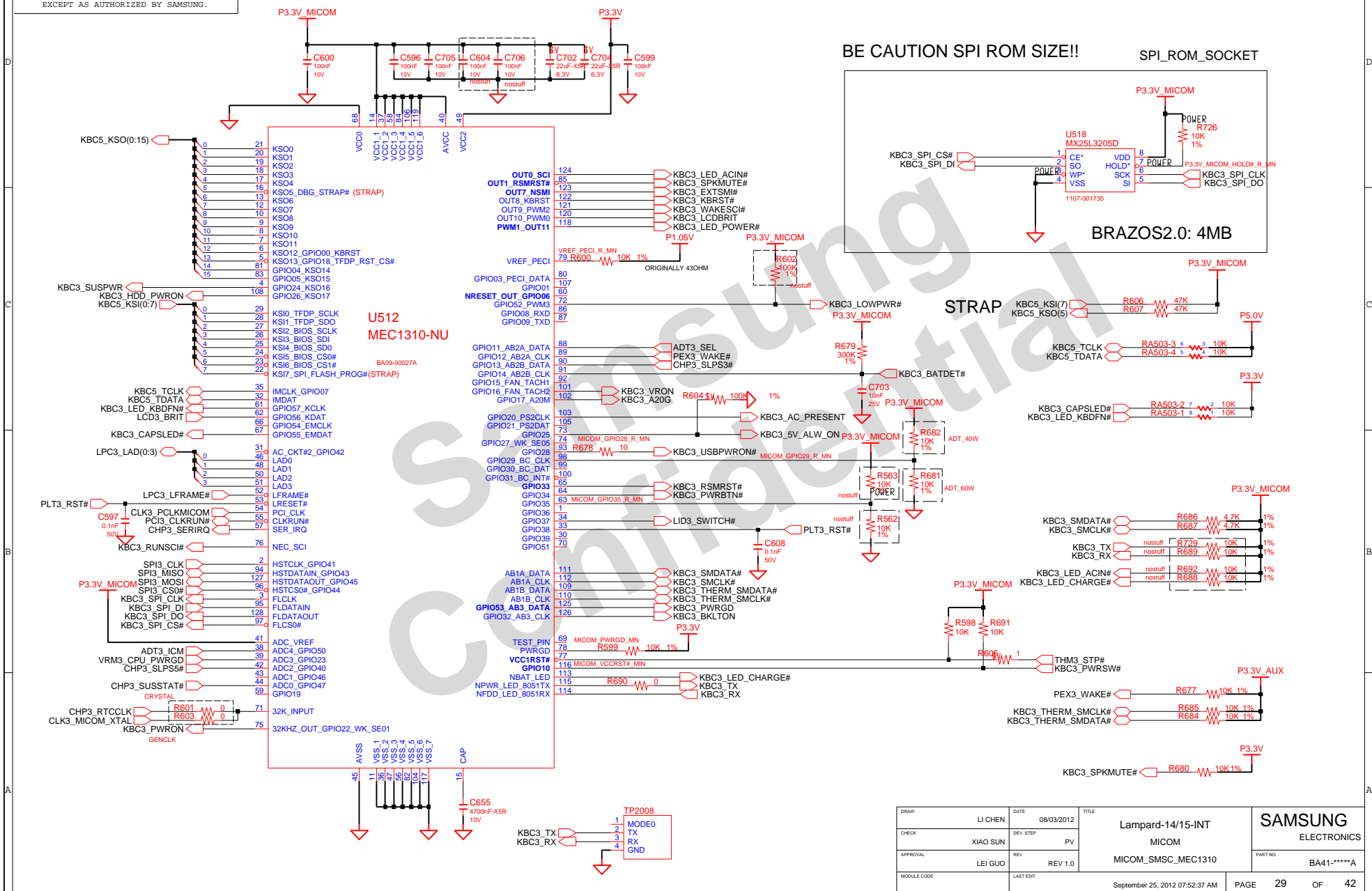


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG
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APPROVAL	LEI GUO	REV	REV 1.0		SATA I/F	PART NO. BA41-*****A
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 28	OF 42

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MAIN BOARD (MICOM)



BE CAUTION SPI ROM SIZE!!

SPI_ROM_SOCKET

BRAZOS2.0: 4MB

STRAP

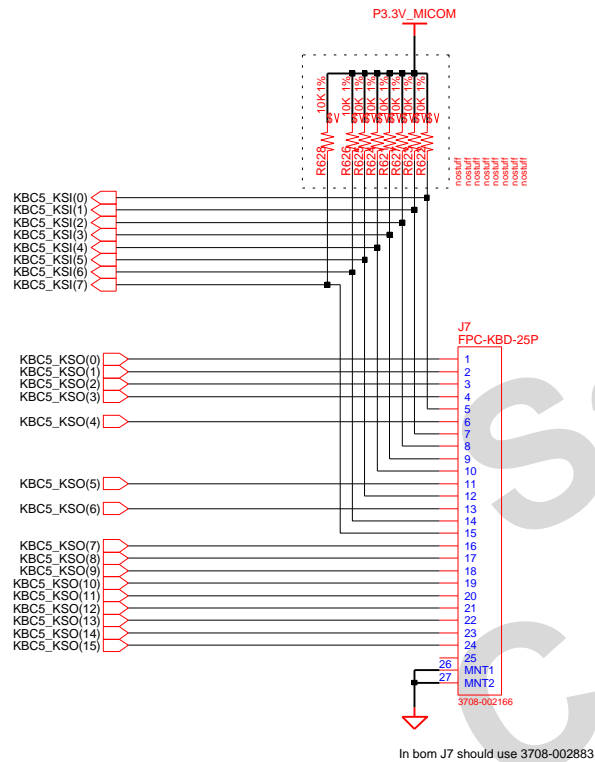
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CHECK	XIAO SUN	DEV. STEP	PV		MICOM
APPROVAL	LEI GUO	REV	REV 1.0		MICOM_SMSC_MEC1310
MODULE CODE		LAST EDIT			
September 25, 2012 07:52:37 AM					PAGE 29 OF 42

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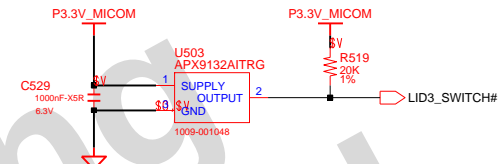
PART NO. BA41-****A

Micom Glue

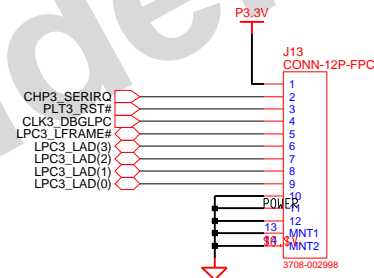
KEYBOARD



LID3_SWITCH



80H PORT DEBUG

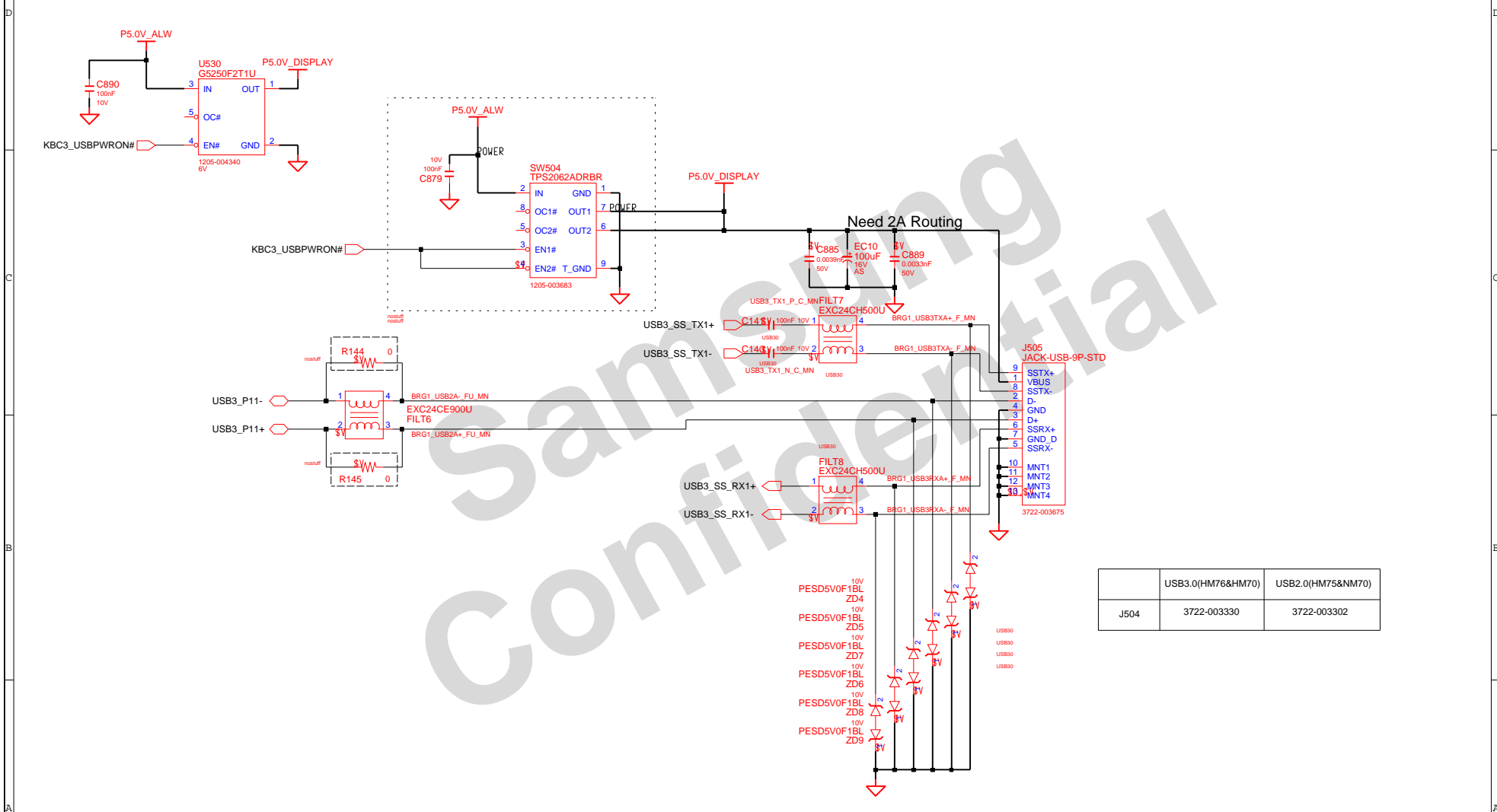


DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT MICOM MICOM GLUE LOGIC	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV			PART NO. BA41-*****A
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 30 OF 42	

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USB 3.0 CONNECTOR



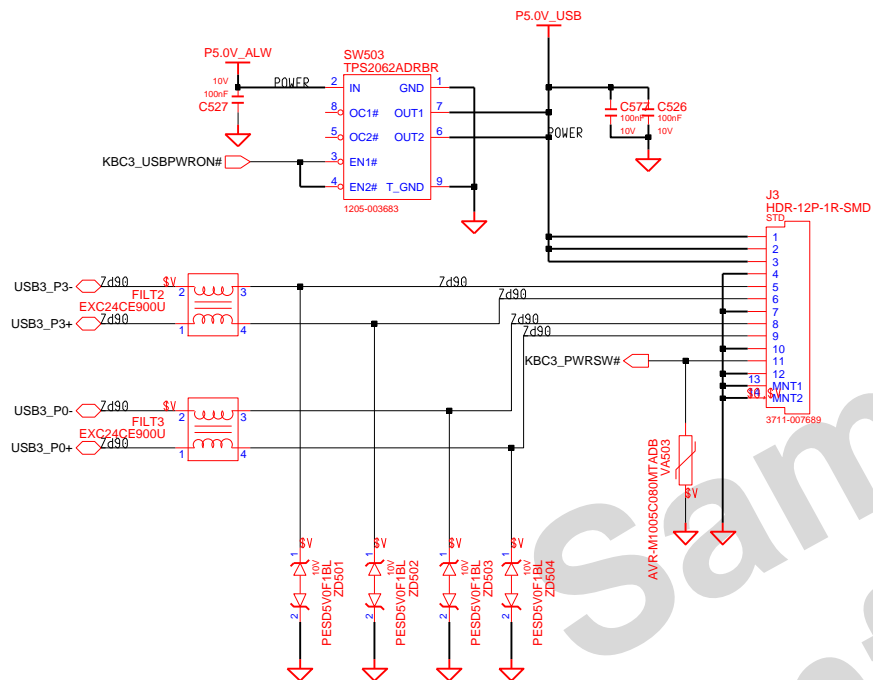
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CHECK	XIAO SUN	DEV. STEP	PV		USB3.0	
APPROVAL	LEI GUO	REV	REV 1.0		USB 3.0 CONNECTOR	
MODULE CODE		LAST EDIT				
September 25, 2012 07:52:37 AM						PAGE 31 OF 42

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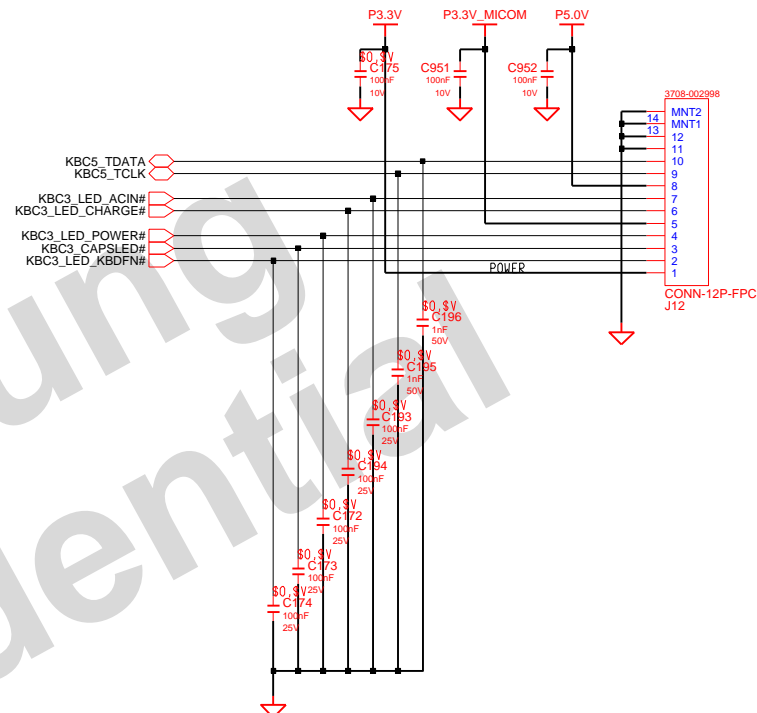
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MAIN TO SUB

MAIN to 3-in-1 / USB SUB



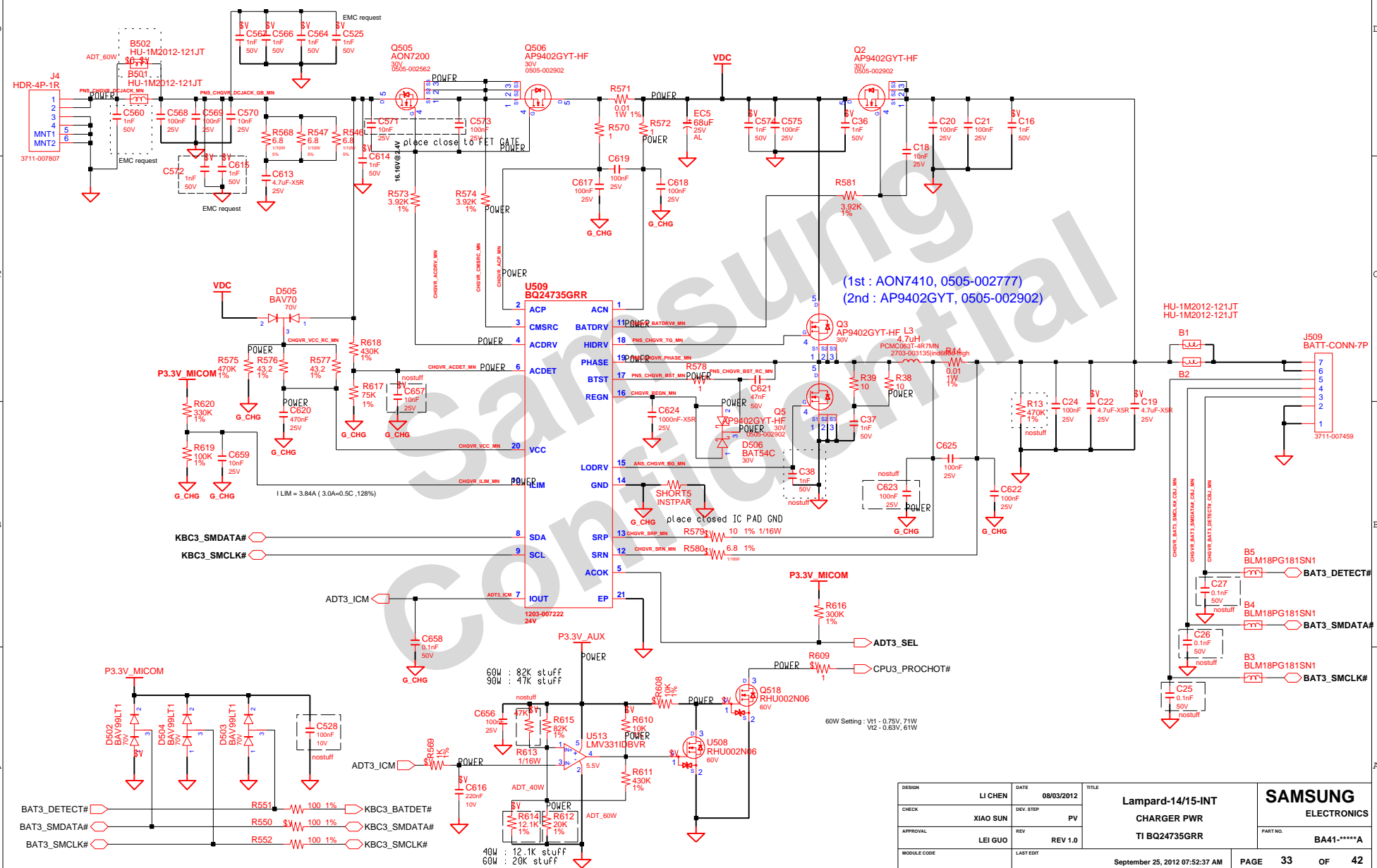
TOUCHPAD & LED MAIN TO SUB



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

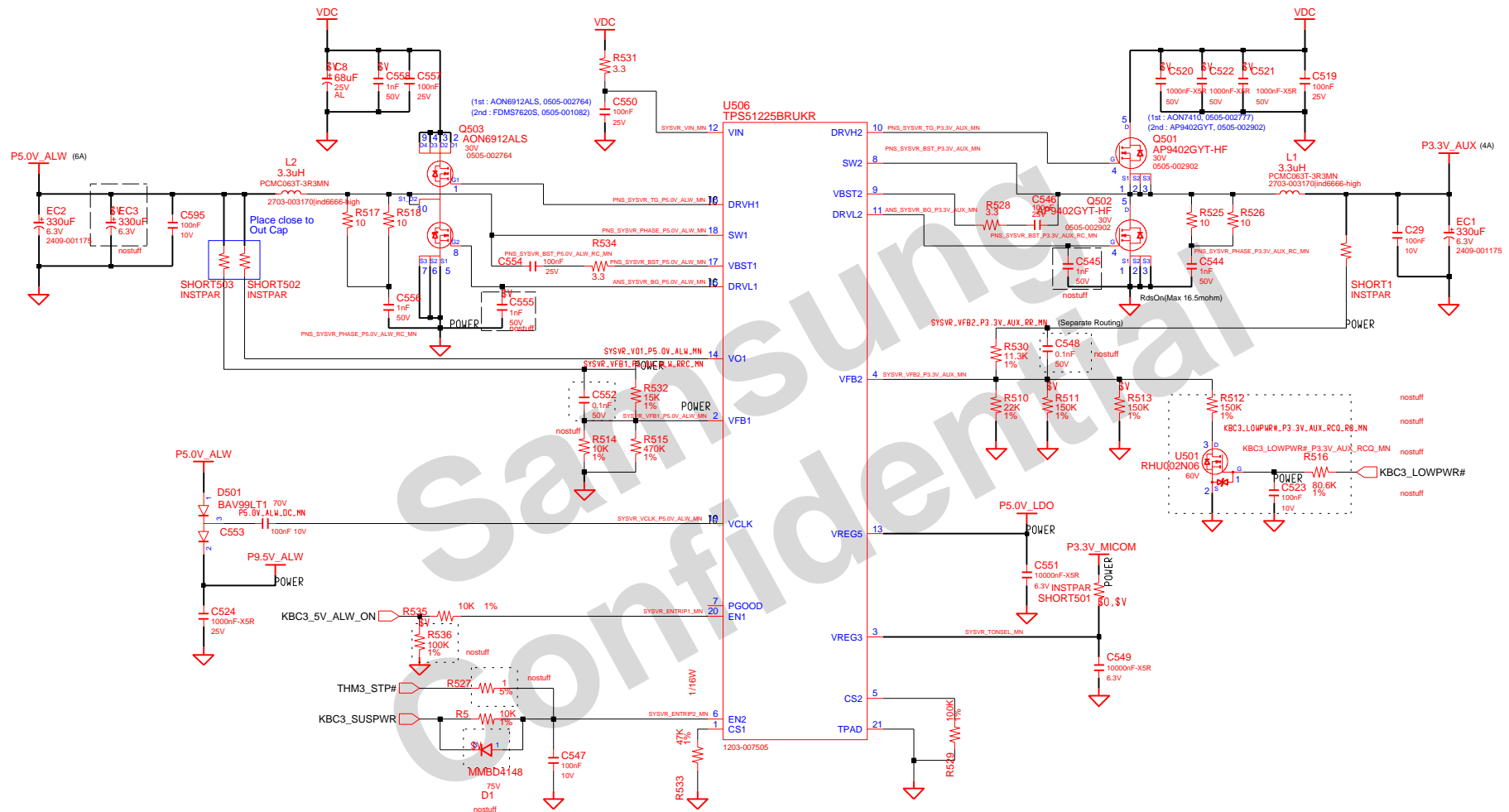
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CHARGER & POWER MANAGEMENT



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P3.3V_AUX & P5.0V_ALW

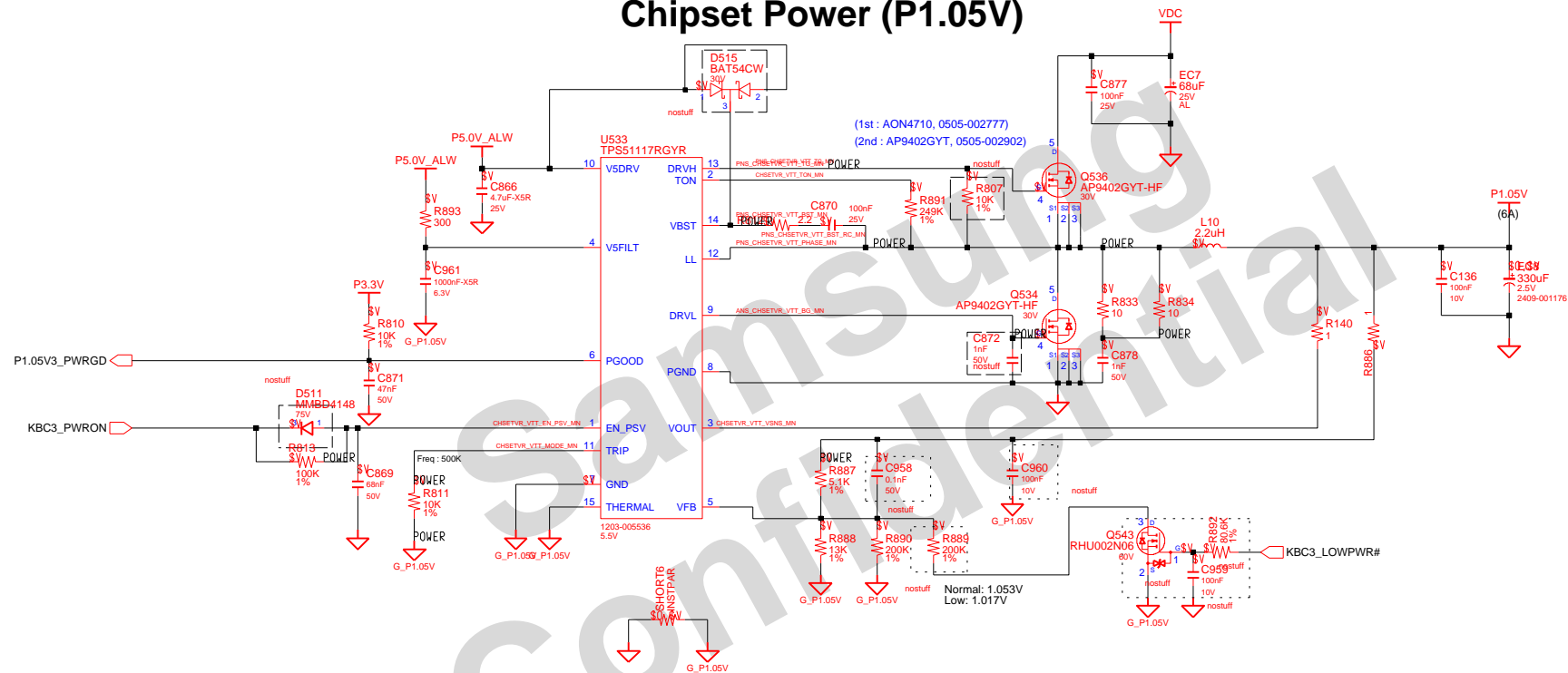


DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV		P3.3V_AUX & P5.0V_ALW	
APPROVAL	LEI GUO	REV	REV 1.0		P3.3V_AUX & P5.0V_ALW	
MODULE CODE	undefined	LAST EDIT	September 25, 2012 07:52:37 AM	PAGE	34	OF 42

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Chipset Power (P1.05V)

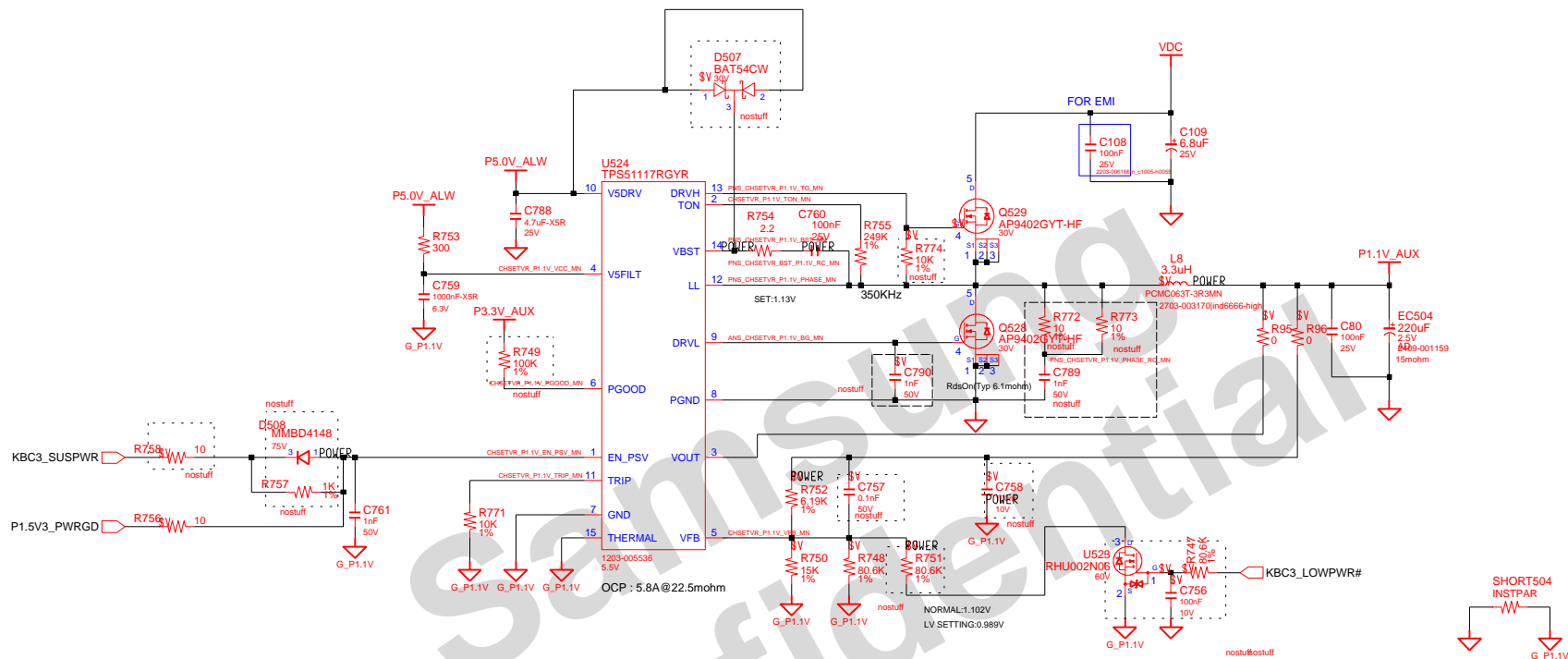


DESIGN	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT CHIPSET PWR	SAMSUNG ELECTRONICS
CHECK	XIAO SUN	DEV. STEP	PV			
APPROVAL	LEI GUO	REV	REV 1.0			
MODULE CODE		LAST EDIT				
				September 25, 2012 07:52:37 AM	PAGE 35	OF 42

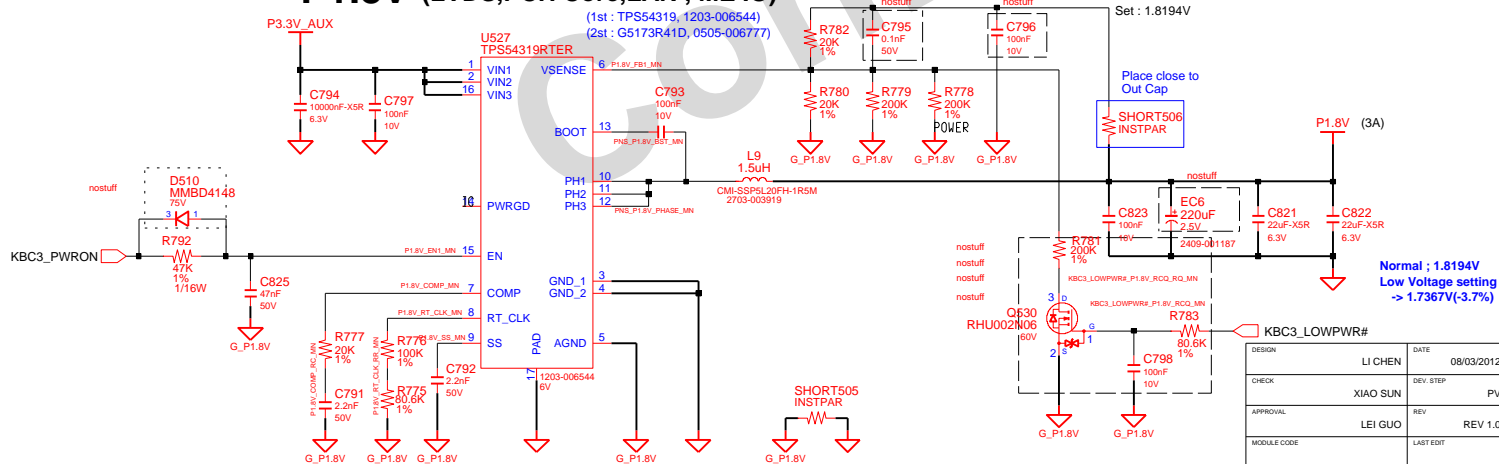
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CHIPSET POWER(P1.1V_AUX)



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



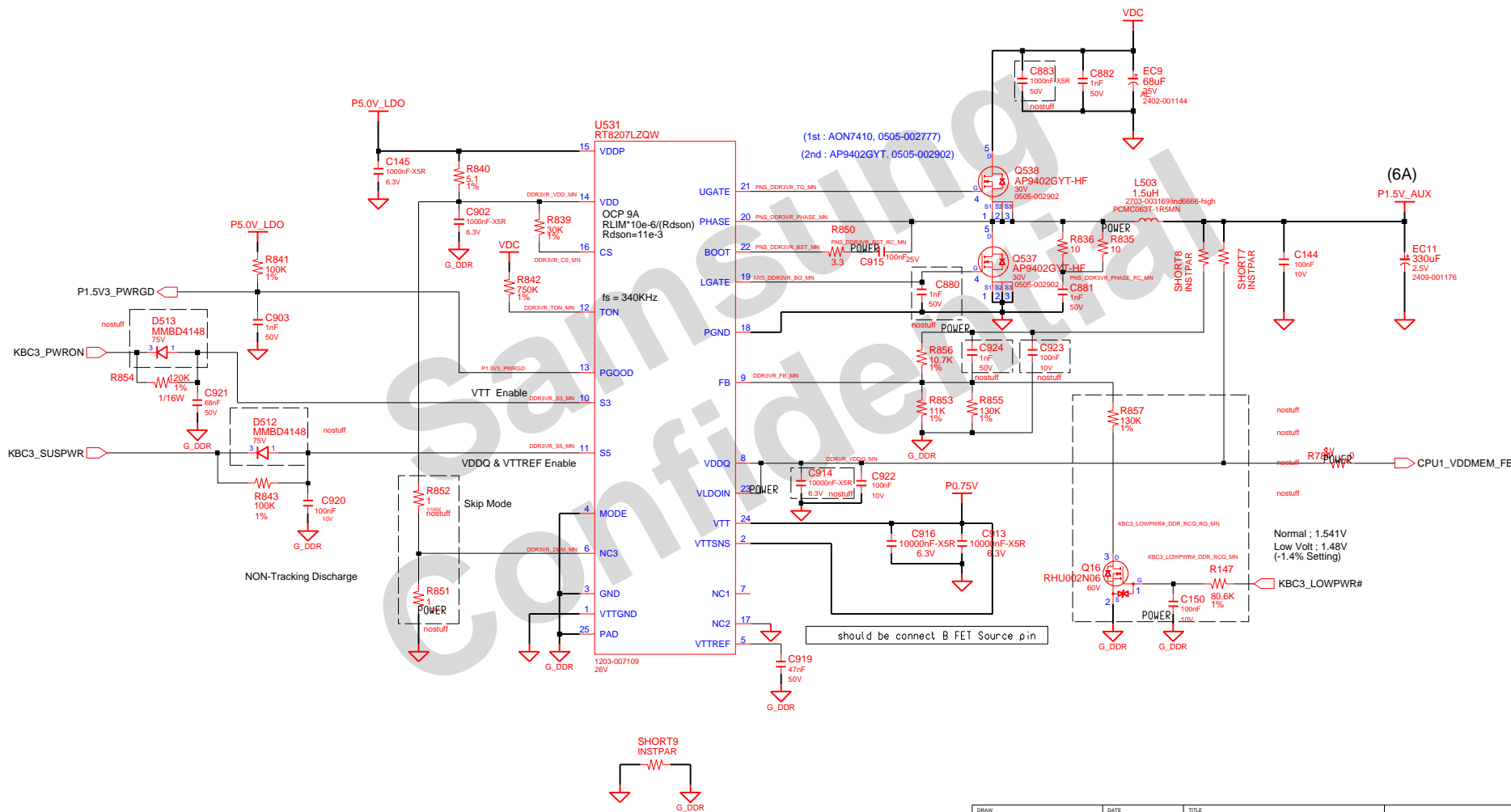
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APPROVAL	LEI GUO	REV	REV 1.0	VCCSA	VCCSA
MODULE CODE		LAST EDIT			
September 25, 2012 07:52:37 AM				PAGE	36
				OF	

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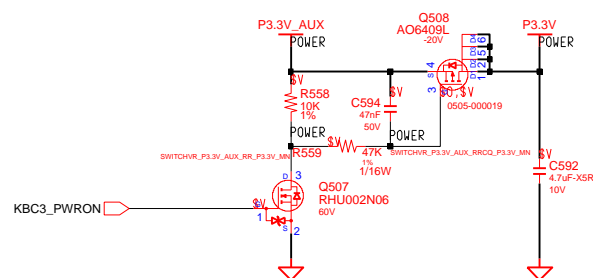
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DDR3 Power



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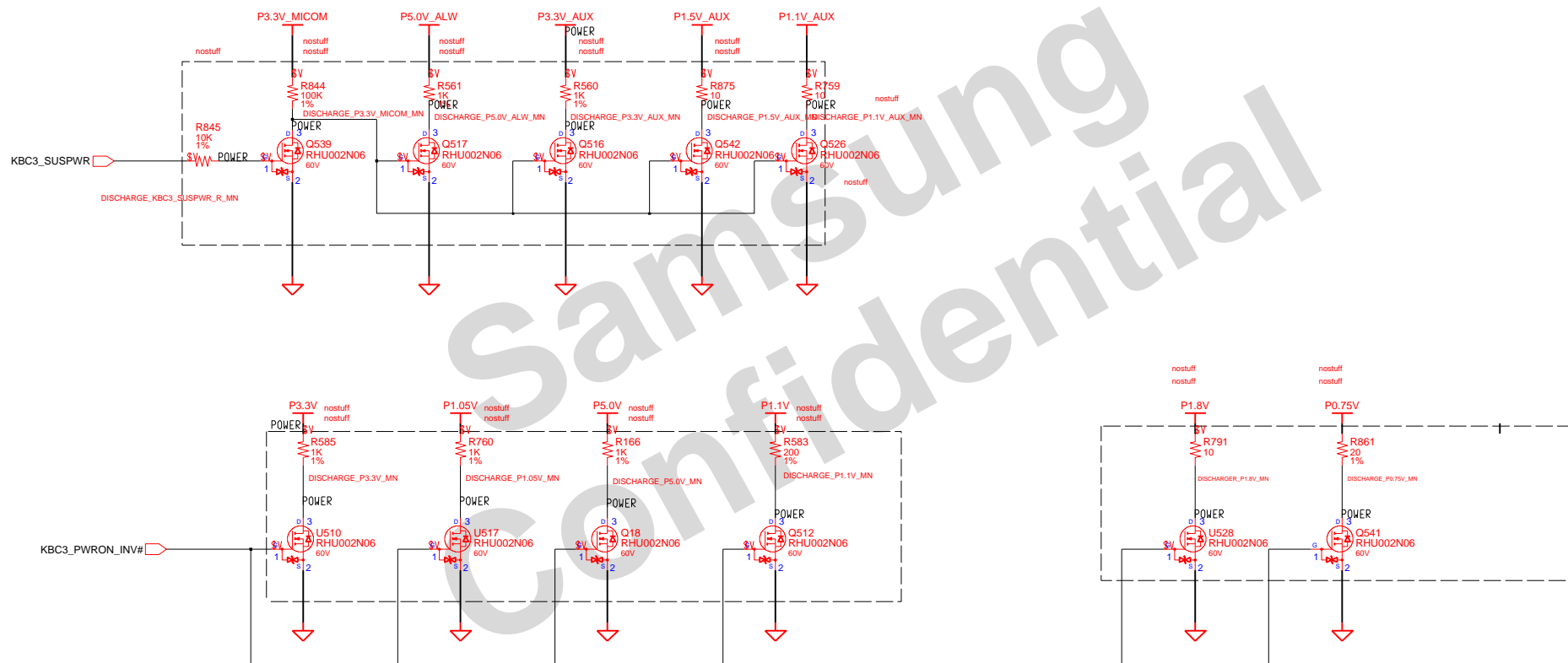
Switched Power On (P3.3V) [Multi@AP2607GY](#)[illegible]

DRAW	LI CHEN	DATE	08/03/2012	TITLE Lampard-14/15-INT PWR_MV_SWITCHED SWITCHED POWER	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	39
				OF	42

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POWER DISCHARGER

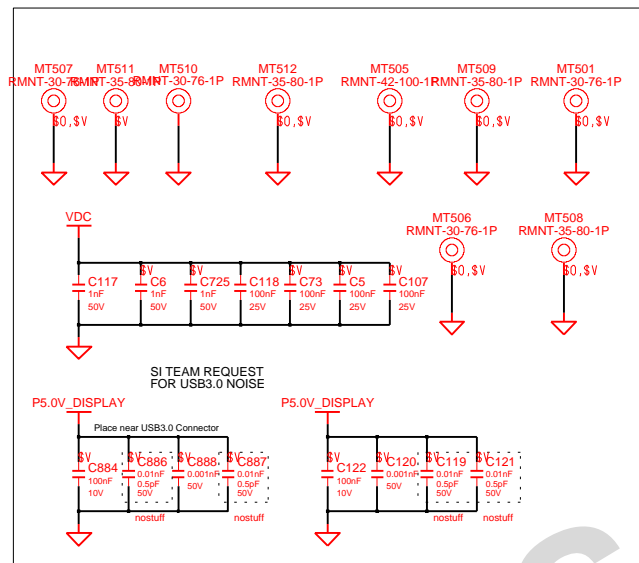


DRAW	LI CHEN	DATE	08/03/2012	TITLE	Lampard-14/15-INT	SAMSUNG ELECTRONICS
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MODULE CODE	undefined	LAST EDIT	September 25, 2012 07:52:37 AM	PAGE	40	OF 42

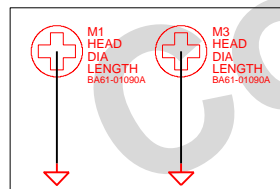
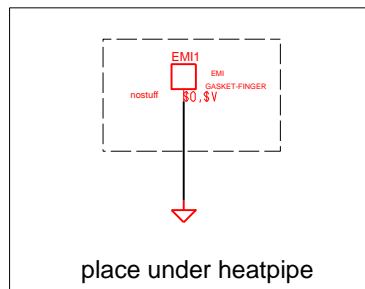
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Mainboard Mount ((40-80)X2EA, (30-76)X5EA))

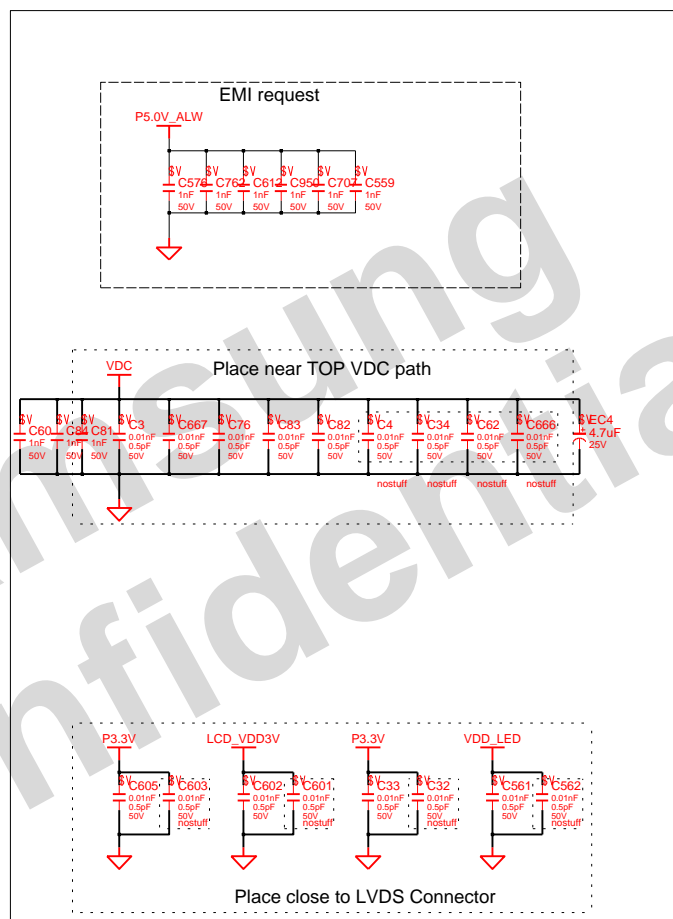


WLAN Performance issue

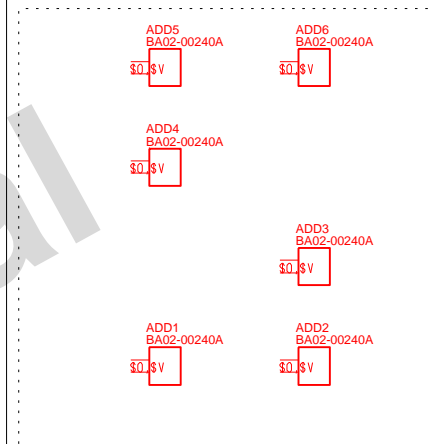


PCH mount

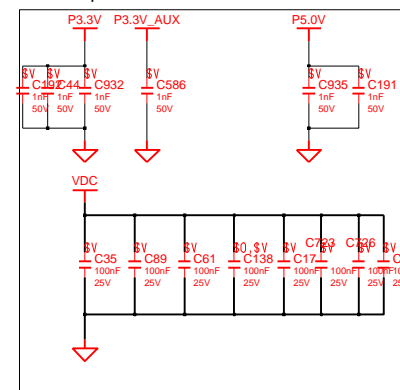
WLAN Performance issue



Corner Fill for CPU, PCH



EMI request



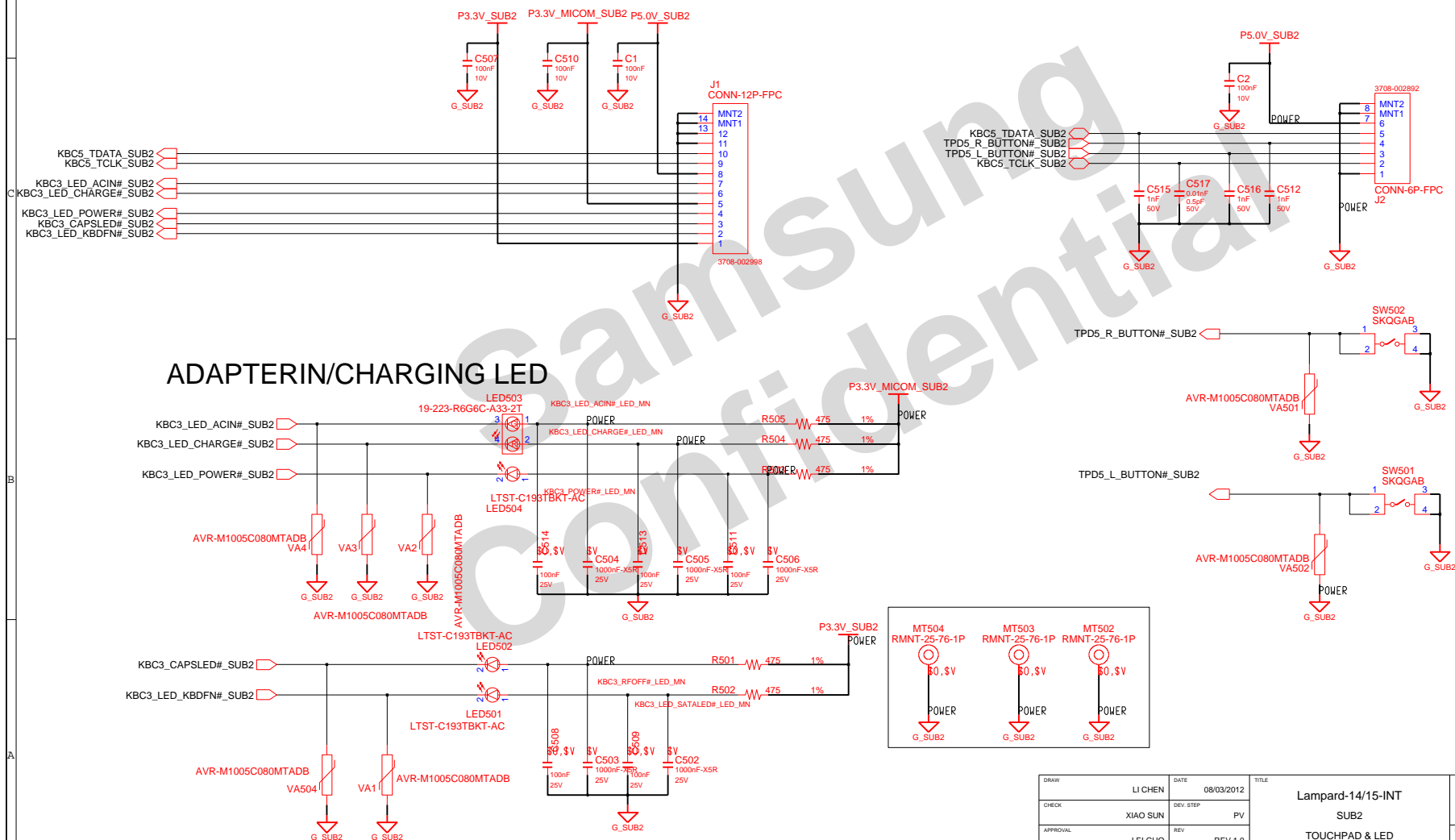
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APPROVAL	LEI GUO	REV	REV 1.0		MOUNT HOLE	
MODULE CODE		LAST EDIT		September 25, 2012 07:52:37 AM	PAGE 41 OF 42	PART NO. BA41-*****A

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TP SUB BOARD

TOUCHPAD



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