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PRINCETON-D

CPU : AMD Ontario

Chip Set : FCH(Hudson-M1)

Remarks : Brazos Platform

Model Name : PRINCETON

PBA Name : MAIN

PCB Code :

BA41-01686A GCE

BA41-01686A NANYA

BA41-01686A HANSTAR

Dev. Step : MP

Revision : 1.0

T.R. Date : 2011.06.23

Design	CHECK	APPROVAL
Cun Jiajun	Guo Lei	BC LEE

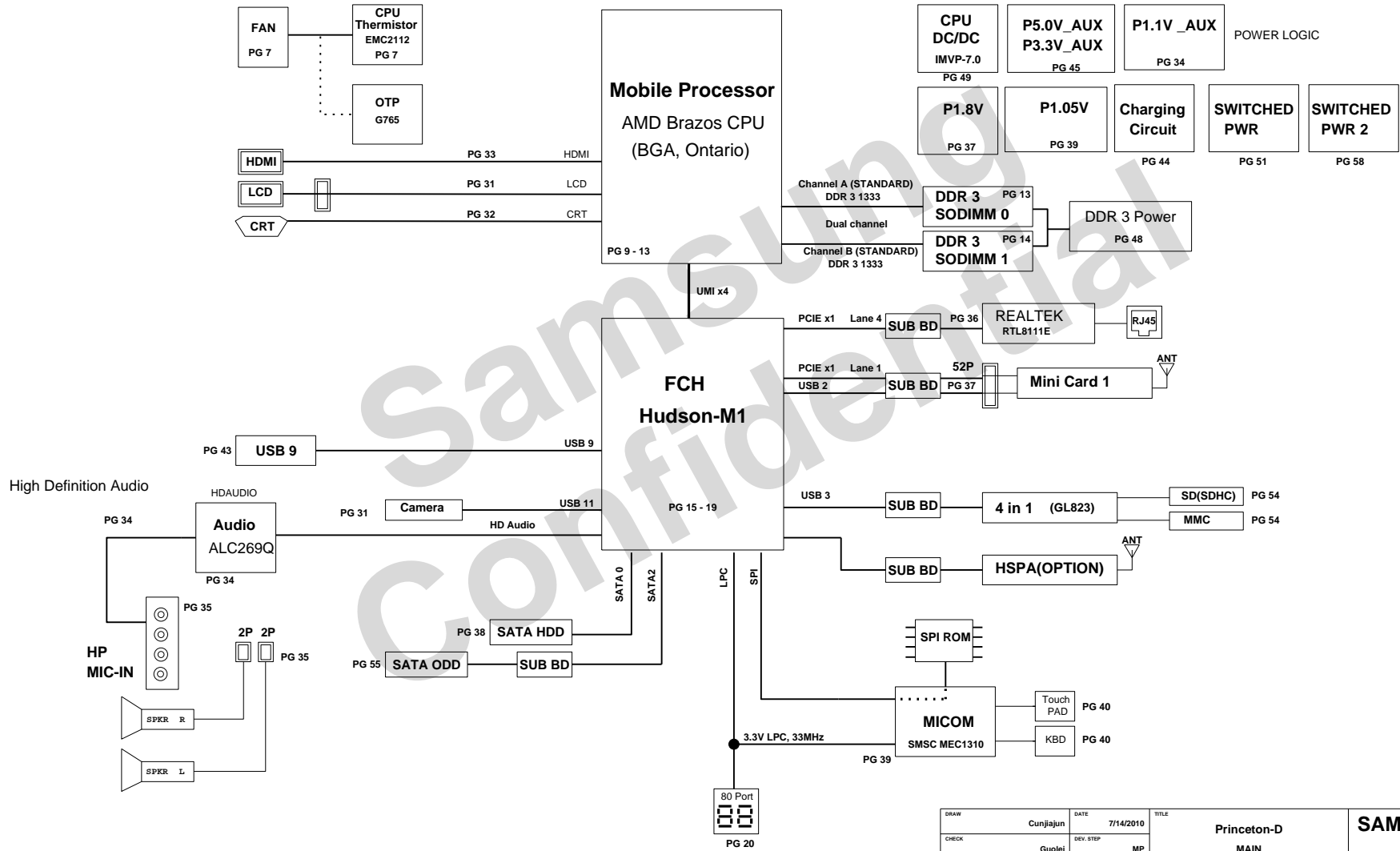
■ Owner : SEC Mobile R & D Signature : X

sheet01 : Cover
sheet02 : Cover
sheet03 : Cover
sheet04 : Cover
sheet05 : Cover
sheet06 : Cover
sheet07 : GREEN CLK
sheet08 : Thermal Sensor
sheet09 : CPU
sheet10 : CPU
sheet11 : CPU
sheet12 : FCH
sheet13 : FCH
sheet14 : FCH
sheet15 : FCH
sheet16 : FCH STRAP
sheet17 : DDR3 SODIMM
sheet18 : 80 port
sheet19 : LVDS LCD connector
sheet20 : HDMI
sheet21 : CRT
sheet22 : MICOM
sheet23 : MICOM Glue Logic
sheet24 : Audio
sheet25 : Audio
sheet26 : LAN
sheet27 : WLAN/HSPA
sheet28 : 3-in-1 card
sheet29 : USB connector & Bluetooth
sheet30 : Sub Board connector & SATA Interface(Main to Sub)

sheet31 : Sub Board connector(Sub to Main)
sheet32 : Power - charger
sheet33 : Power - P3.3V_AUX / P5.0V_AUX
sheet34 : Power - P1.05V
sheet35 : Power - DDR3
sheet36 : Power - P1.1V_AUX
sheet37 : Power - CPU VRM
sheet38 : Power - P1.8V
sheet39 : Power - Switched Power
sheet40 : Power - Power Discharge
sheet41 : EMI CAP

DRAW	Cun Jiajun	DATE	06/23/2011	TITLE	Princeton-D	SAMSUNG ELECTRONICS
CHECK	Guo lei	DEV. STEP	MP	MAIN		
APPROVAL	BC LEE	REV	REV 1.0	COVER	PART NO. BA41-####A	
MODULE CODE		LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	1	OF 41

BLOCK DIAGRAM



DRAW	Cunjajun	DATE	7/14/2010	TITLE	Princeton-D MAIN	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP	BLOCK DIAGRAM	PART NO. BA41-####A	
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	2	OF 41

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BOARD INFORMATION**SCHEMATIC ANNOTATIONS AND BOARD INFORMATION**

Voltage Rails		Active in
VDC P3.3V_MICOM P5.0V_ALW P5.0V_STB	Primary DC system power supply (7 to 21V) 3.3V always power rail (for Micom) 5.0V always power rail 5.0V always power rail	S4 - S5
P5.0V_AUX P3.3V_AUX P1.5V_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 P1.5V P0.75V P0.85V	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) 1.5V switched power rail (off in S3-S5) 0.75V power rail for DDR3 (off in S3-S5) 0.85V 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 COUGARPOINT	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	Multi Memory Card Controller	4	LAN CONTROLLER
4	NC	5	USB3.0 BRIDGE
5	NC	6	NC
6	NC (N/A WITH HM65)	7	NC
7	NC (N/A WITH HM65)	8	NC
8	Mini PCI Express (HSPA)		
9	SYSTEM PORT 2		
10	NC		
11	Camera		
12	USIM		
13	NC		

SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD
1	SSD
2	ODD
3	
4	
5	

Crystal / Oscillator

TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	COUGAR POINT	Real Time Clock
Crystal	25MHz	LAN	REALTEK
Crystal	25MHz	COUGAR POINT	
Crystal	27MHz	N12P	
Crystal	24MHz	USB3.0 CHIP	

LCD Pannel Detect (TBD)

Devices	Resolution	PANNEL_DETECT_0

I²C / SMB Address

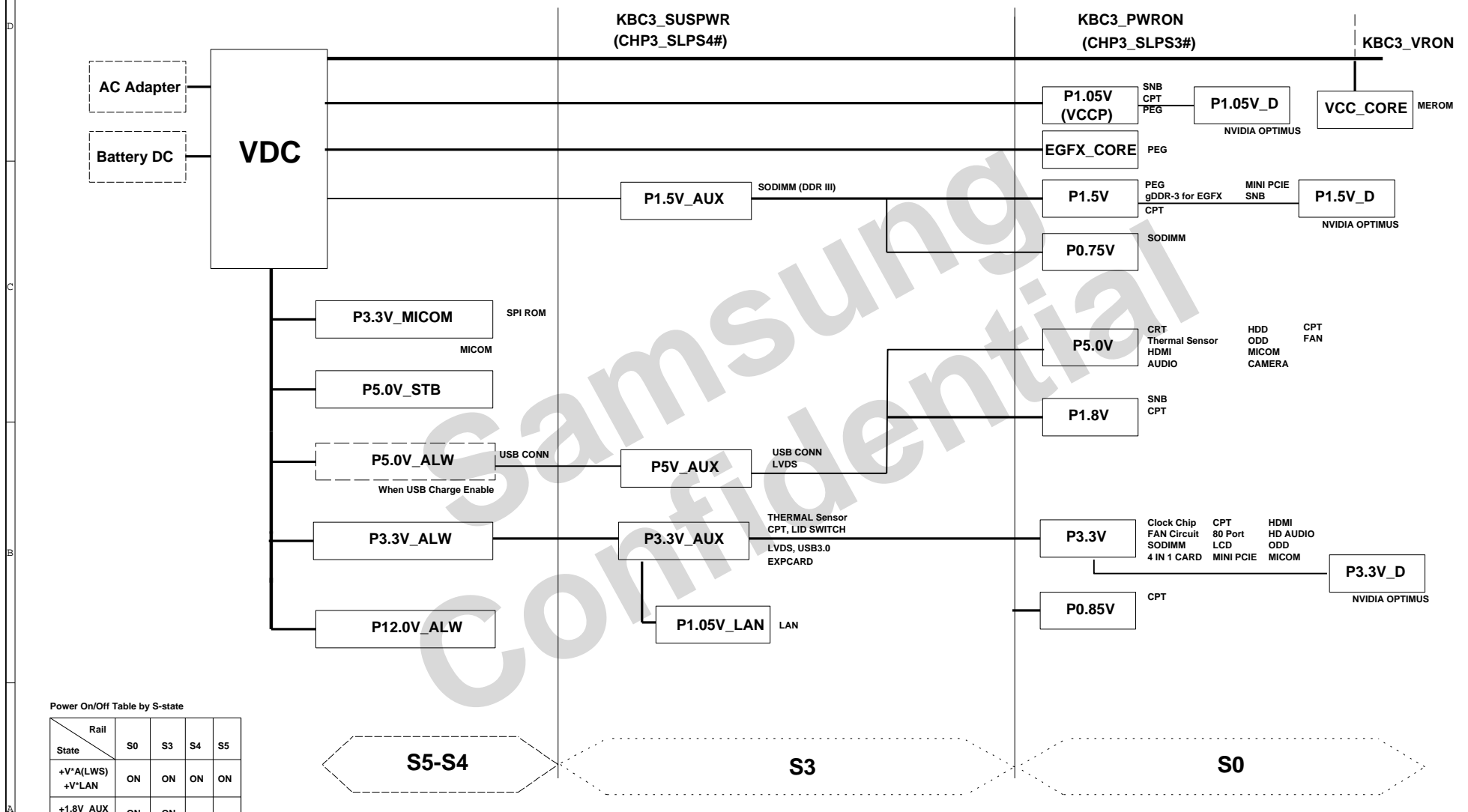
Devices	Address	Hex	Bus
COUGARPOINT	Master	-	SMBUS Master
CPU Thermal Sensor	0011 000X	30h	
SODIMM0	1010 000x	A0h	Thermal Sensor
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
on board DDR3 thermal Sensor	1001 100x	98h	
Platform thermal management TS	1001 011x	96h	

DRAW	Cunjajun	DATE	7/14/2010	TITLE	Princeton-D MAIN BOARD INFO	SAMSUNG ELECTRONICS
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POWER DIAGRAM

Rev 0.7

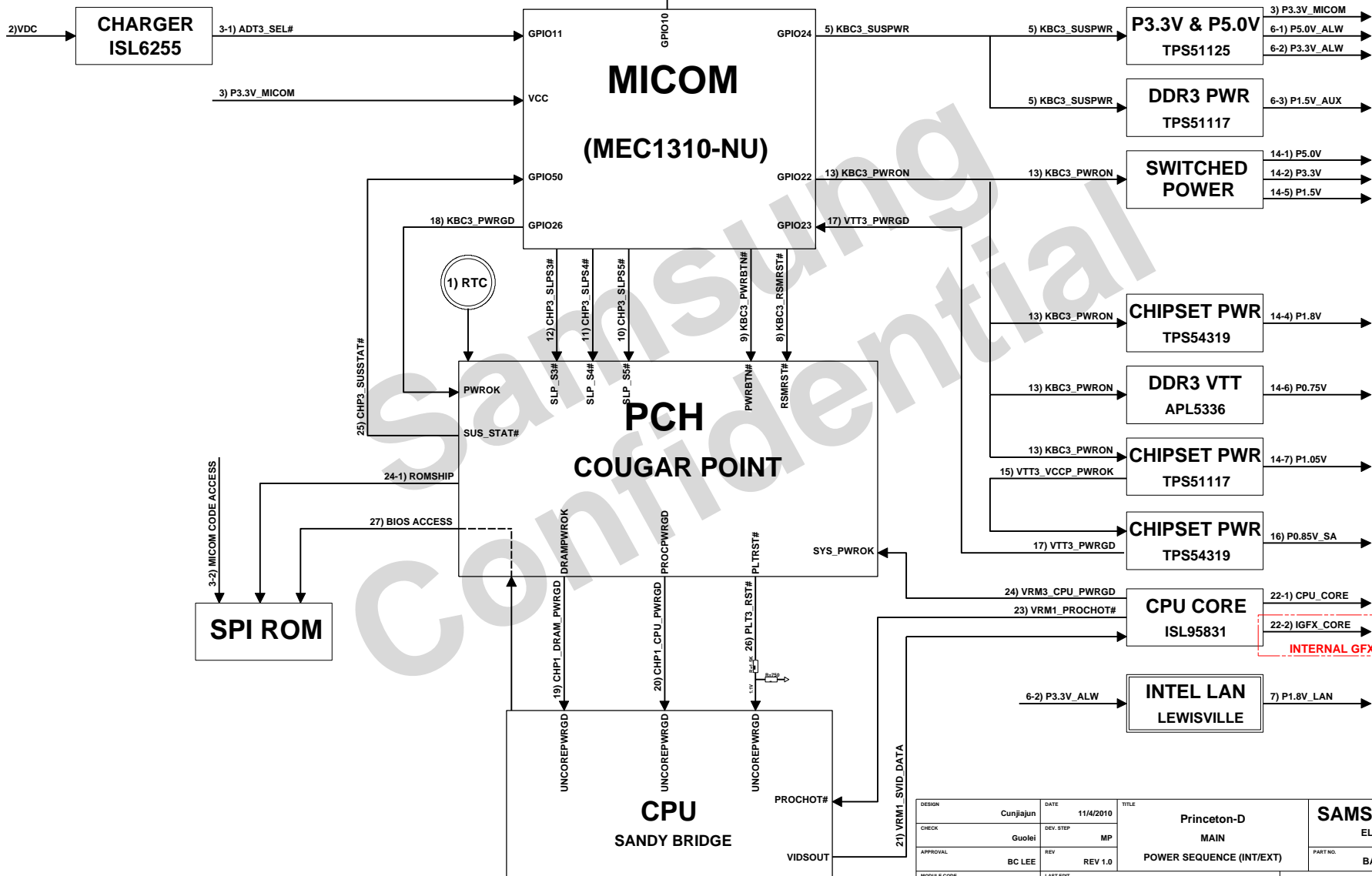


DRAW	Cunjajun	DATE	7/14/2010	TITLE	Princeton-D MAIN POWER DIAGRAM	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
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POWER SEQUENCE (INT GFX)

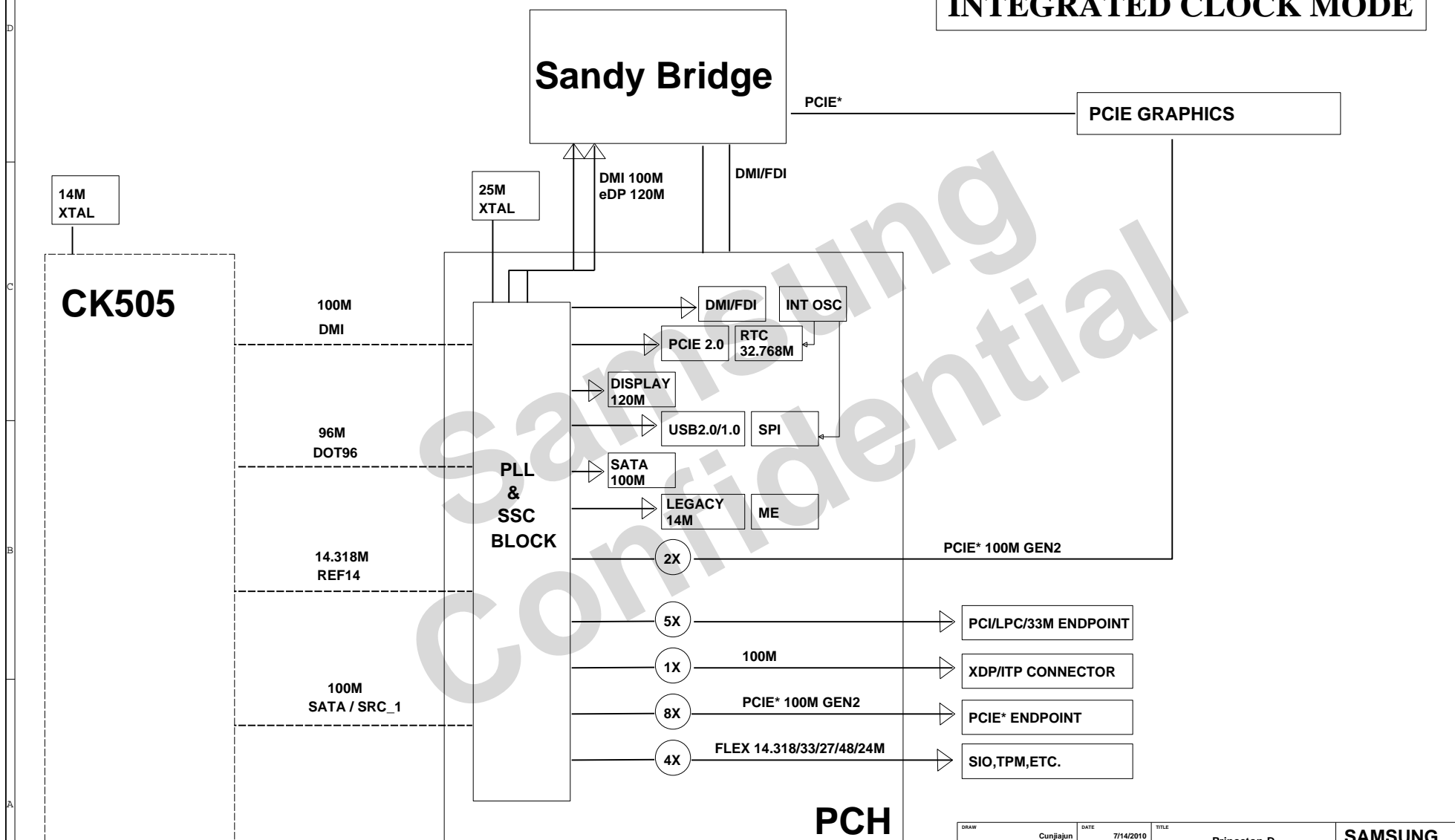
4) KBC3_PWRSW#



DESIGN	Cunjajun	DATE	11/4/2010	TITLE	Princeton-D MAIN	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0		POWER SEQUENCE (INT/EXT)	PART NO. BA41-####A
MODULE CODE		LAST EDIT			June 24, 2011 10:34:24 AM	PAGE 5 OF 41

CLOCK DISTRIBUTION Rev. 1.0

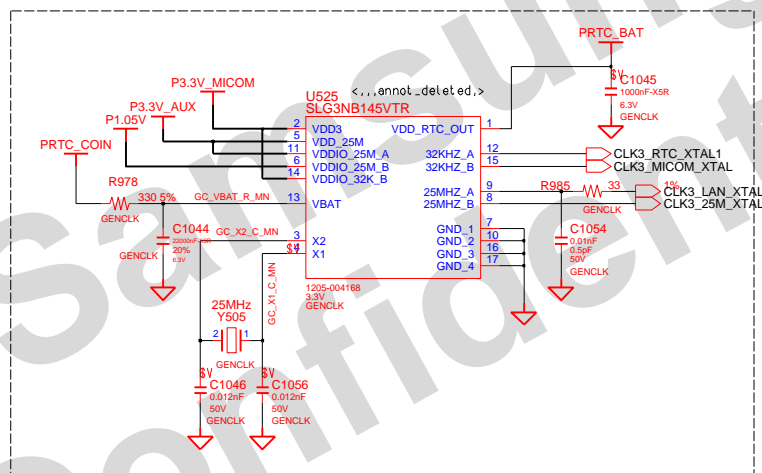
INTEGRATED CLOCK MODE



DRAW	Cunjiajun	DATE	7/14/2010	Princeton-D MAIN CLOCK DIAGRAM		SAMSUNG ELECTRONICS		
CHECK	Guolei	DES. STEP	MP					
APPROVAL	BC LEE	REV	REV 1.0					
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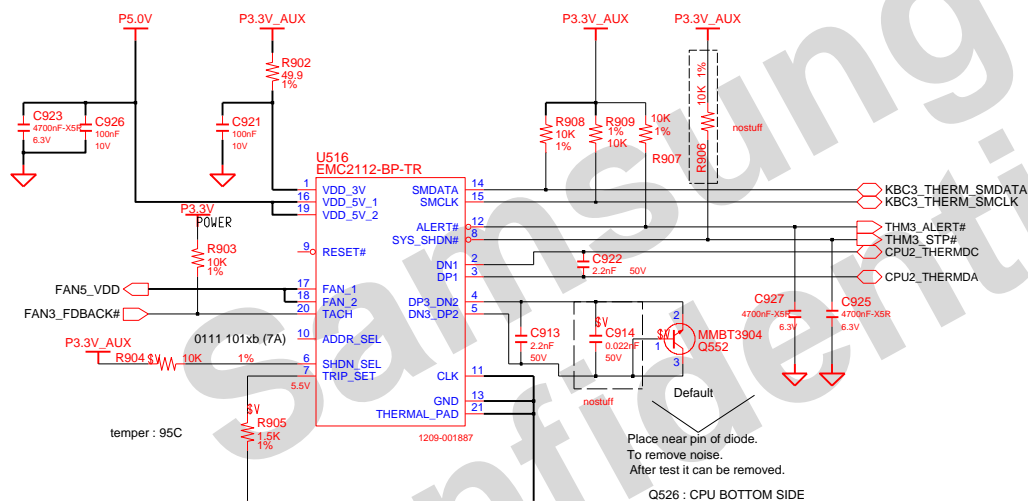
CLOCK DISTRIBUTOR

DRAW	Cunjajun	DATE	9/23/2008	TITLE	Princeton-D MAIN GREEN CLK	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	7	OF 41

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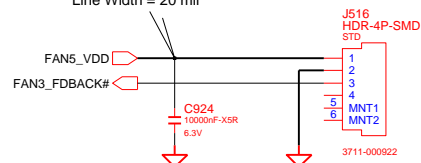
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THERMAL SENSOR & FAN CONTROL



Place near pin of diode.
To remove noise.
After test it can be removed.
Q526 : CPU BOTTOM SIDE

Line Width = 20 mil

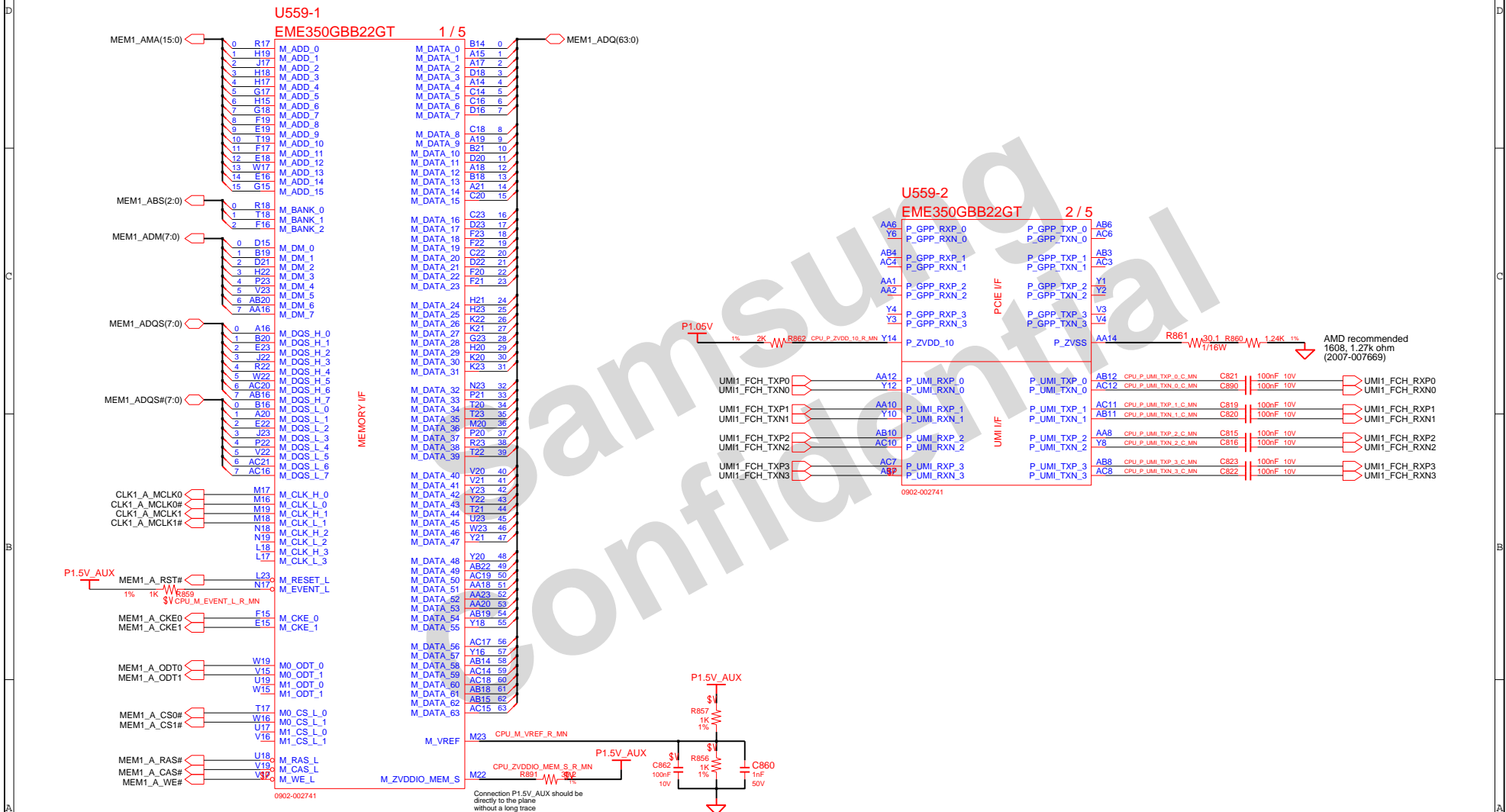


Addr_SEL MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

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

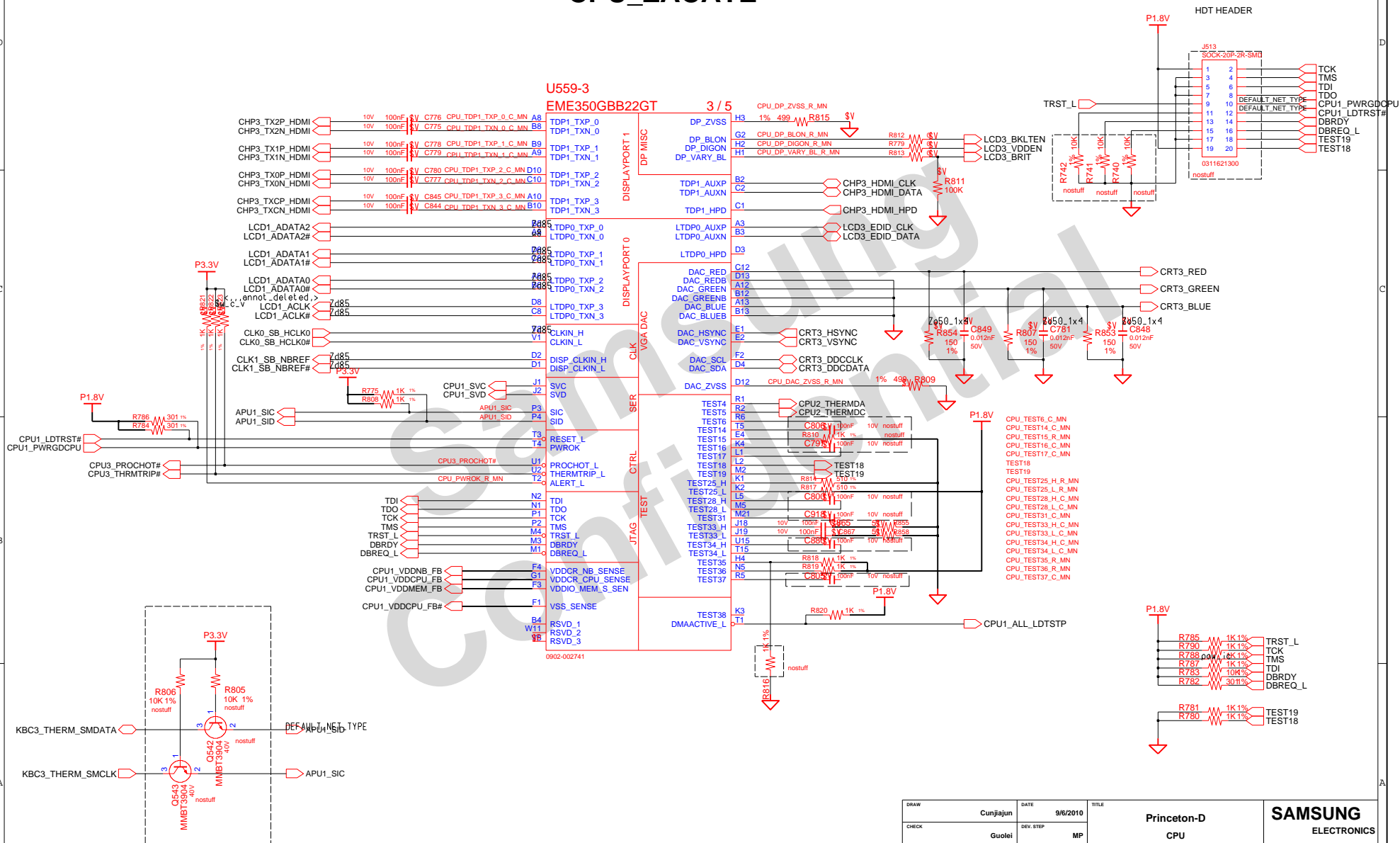
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CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0	THERMAL SENSOR EMC2112	PART NO.	BA41-####A
MODULE CODE		LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	8	OF 41

CPU_ZACATE



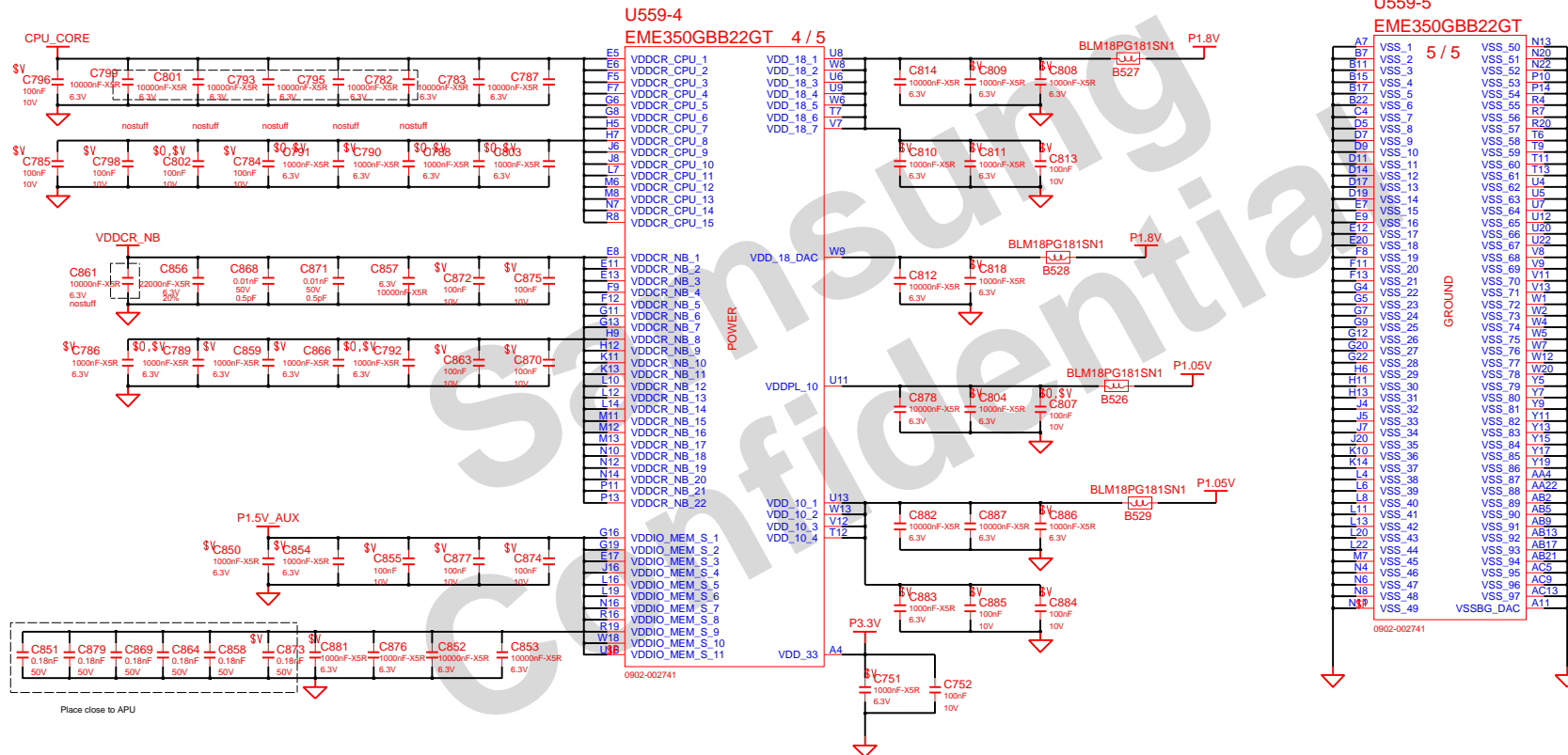
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CPU ZACATE



DRAW	Cunjajun	DATE	9/6/2010	Princeton-D CPU ONTARIO	SAMSUNG ELECTRONICS		
CHECK	Guolei	DEV. STEP	MP				
APPROVAL	BC LEE	REV	REV 1.0				
MODULE CODE	undefined	LAST EDIT	June 24, 2011 10:34:24 AM				
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				PART NO. BA41-####A			

CPU_ZACATE



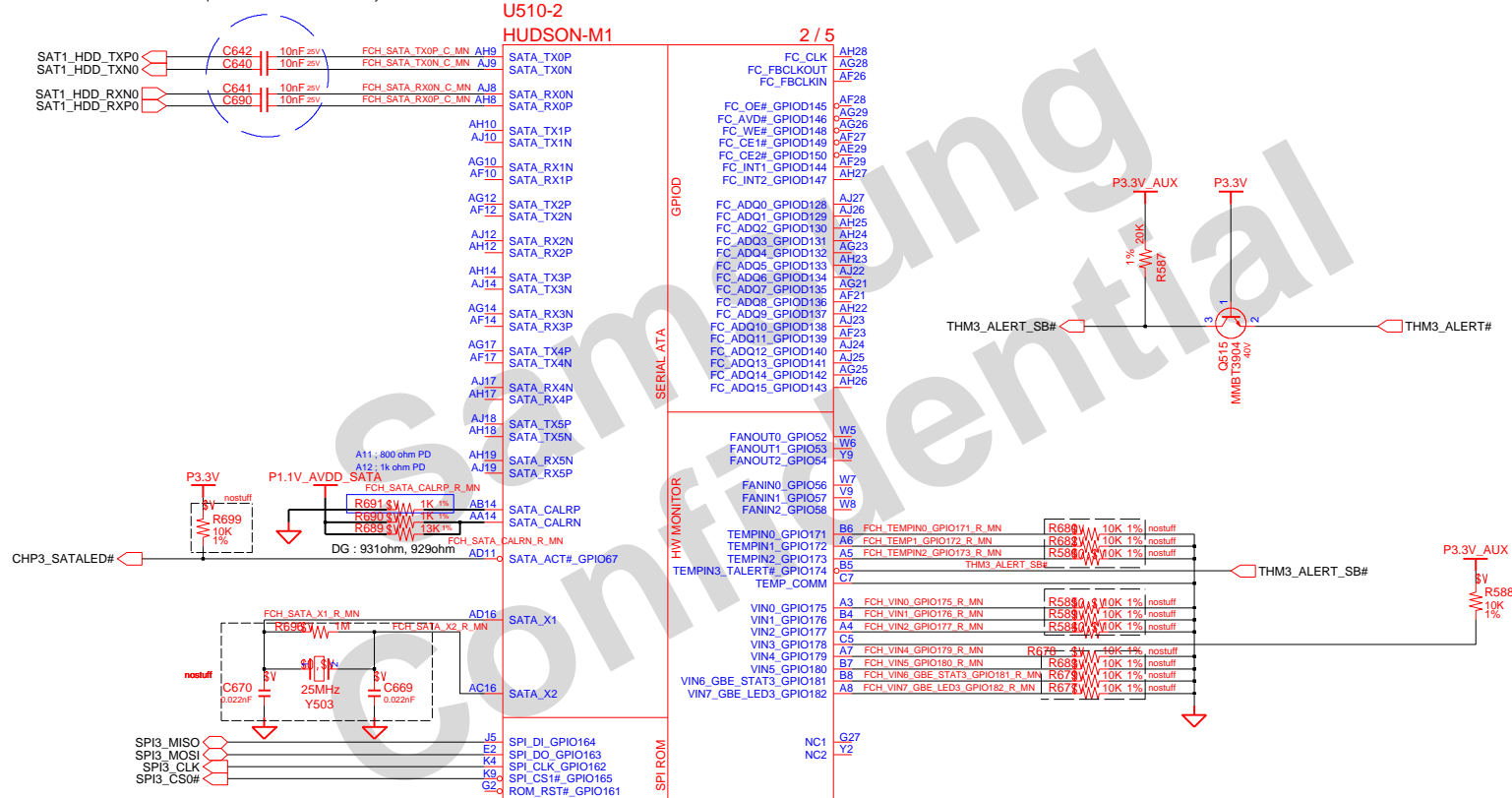
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APPROVAL	BC LEE	REV	REV 1.0		ONTARIO	
MODULE CODE		LAST EDIT		June 24, 2011 10:34:24 AM	PAGE 11 OF	

U510-1
HUDSON-M1



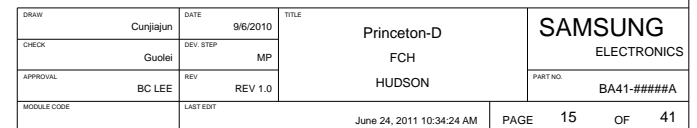
U510-2
HUDSON-M1

Place Cap to HDD connector side closely



0904-002660

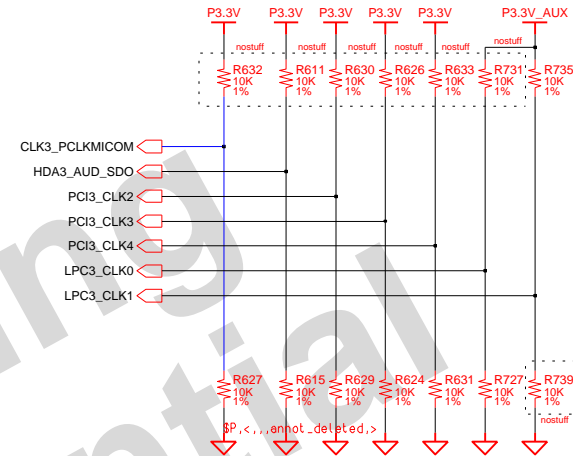
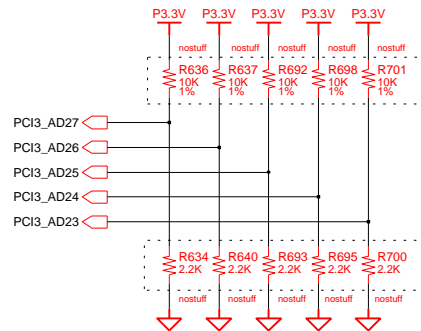
DESIGN	Cunjiajun	DATE	9/6/2010	TITLE	Princeton-D FCH HUDSON	SAMSUNG ELECTRONICS
CHECK	Guoli	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0			
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						PART NO. BA41-#####



Strap

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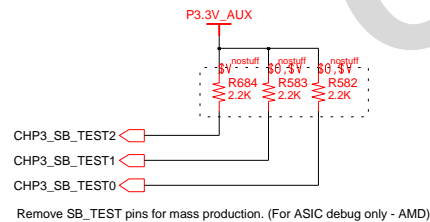
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DEBUG STRAPS

	PCI3_AD(27)	PCI3_AD(26)	PCI3_AD(25)	PCI3_AD(24)	PCI3_AD(23)
	Bypass PCI PLL	ILA auto run Enable	Bypass FC CLK	I2C ROM Enable	Booting from PCI memory
STRAP HIGH	USE PCI PLL DEFAULT	DISABLE ILA AUTORUN DEFAULT	USE FC PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	DISABLE PCI MEM BOOT DEFAULT
STRAP LOW	BYPASS PCI PLL	ENABLE ILA AUTORUN	BYPASS FC PLL	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT

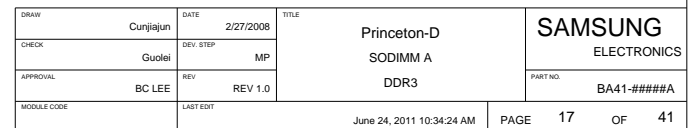
	HDA3_AUD_SDO AZ_SDOOUT	PCI3_CLK2	PCI3_CLK3	PCI3_CLK4	LPC3_CLK0	LPC3_CLK1
PULL HIGH	LOW POWER MODE	Watchdog Timer Enabled	USE DEBUG STRAP	non_Fusion CLOCK MODE	EC ENABLE	CLKGEN ENABLE DEFAULT
PULL LOW	PERFORMANCE MODE DEFAULT	Watchdog Timer Disabled DEFAULT	IGNORE DEBUG STRAP DEFAULT	FUSION CLOCK MODE DEFAULT	EC DISABLED	CLKGEN DISABLED



Remove SB_TEST pins for mass production. (For ASIC debug only - AMD)

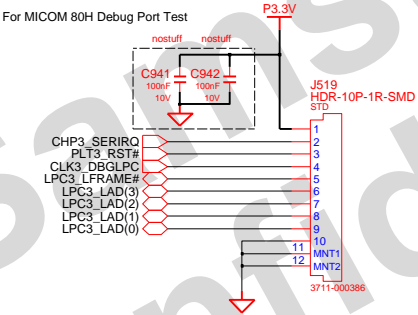
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CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	16	OF 41

DDR SO-DIMM #0
Height : 4 mm (STANDARD)
P/N : 3709-001608
P/N : 3709-001654



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80H PORT DEBUG



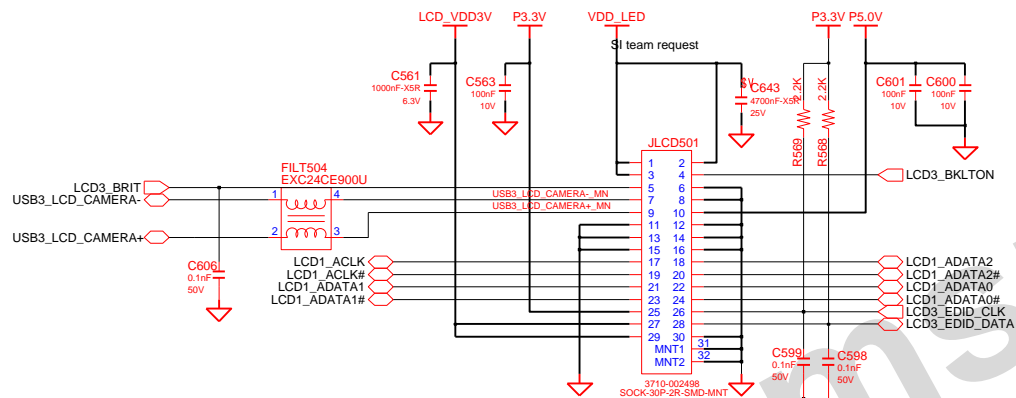
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CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-####A
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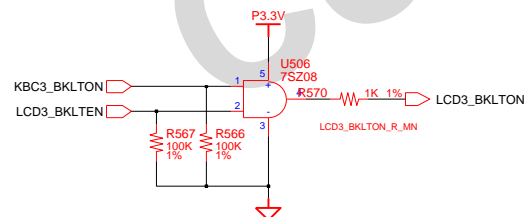
LVDS LOGIC

LCD Connector + CAMERA

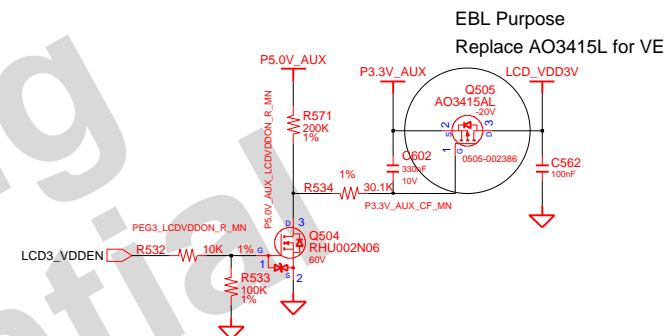


1Ch. LCD Connector

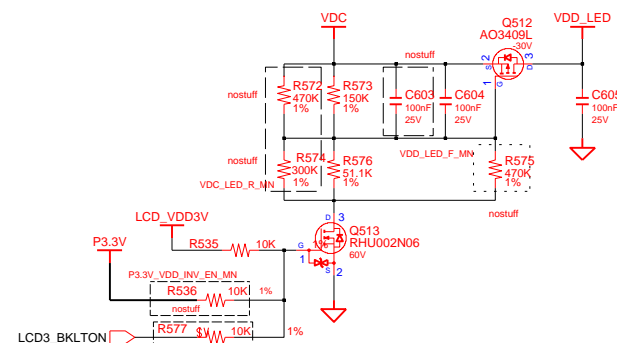
Backlight On



LCD Power



LED Power



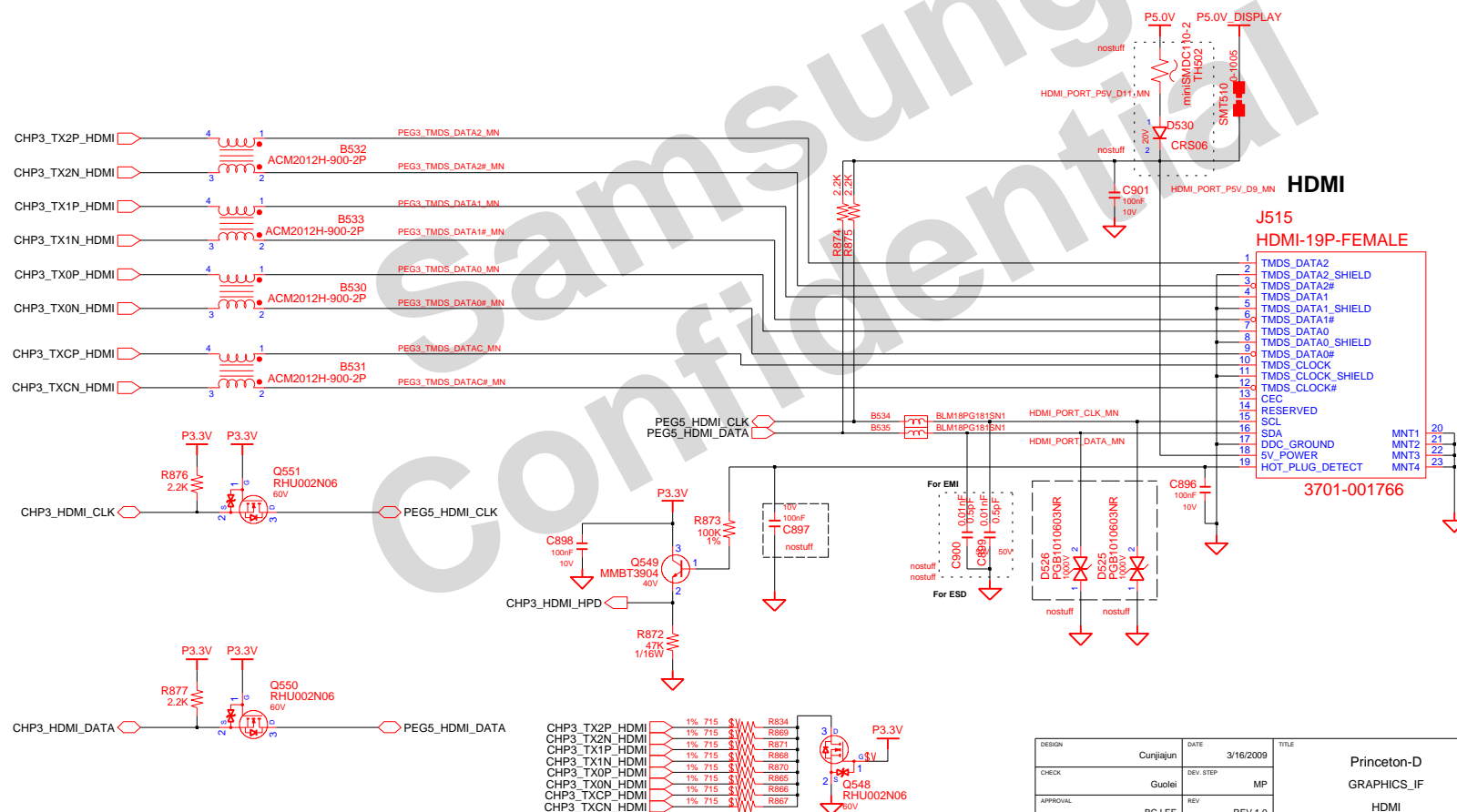
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APPROVAL	BC LEE	REV	REV 1.0	LVDS		
MODULE CODE		LAST EDIT				PART NO. BA41-####A
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HDMI

HDMI port for internal Graphics



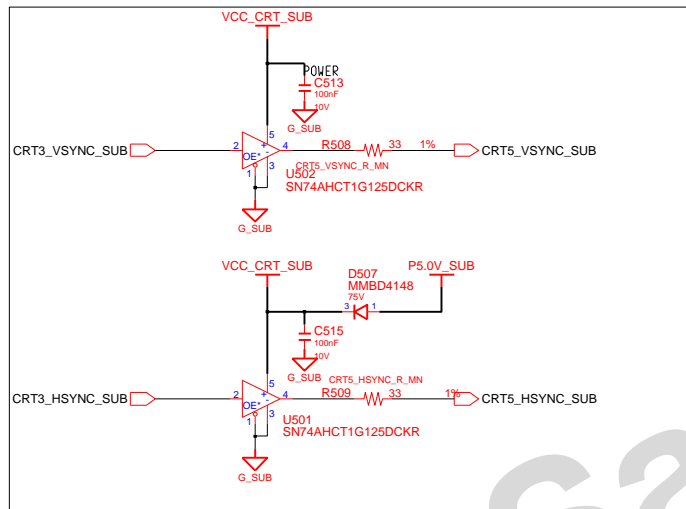
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APPROVAL	BC LEE	REV	REV 1.0		HDMI	
MODULE CODE		LAST EDIT				
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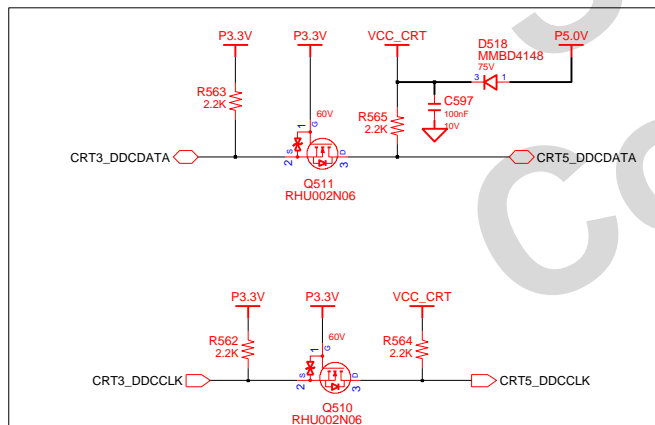
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CRT LOGIC

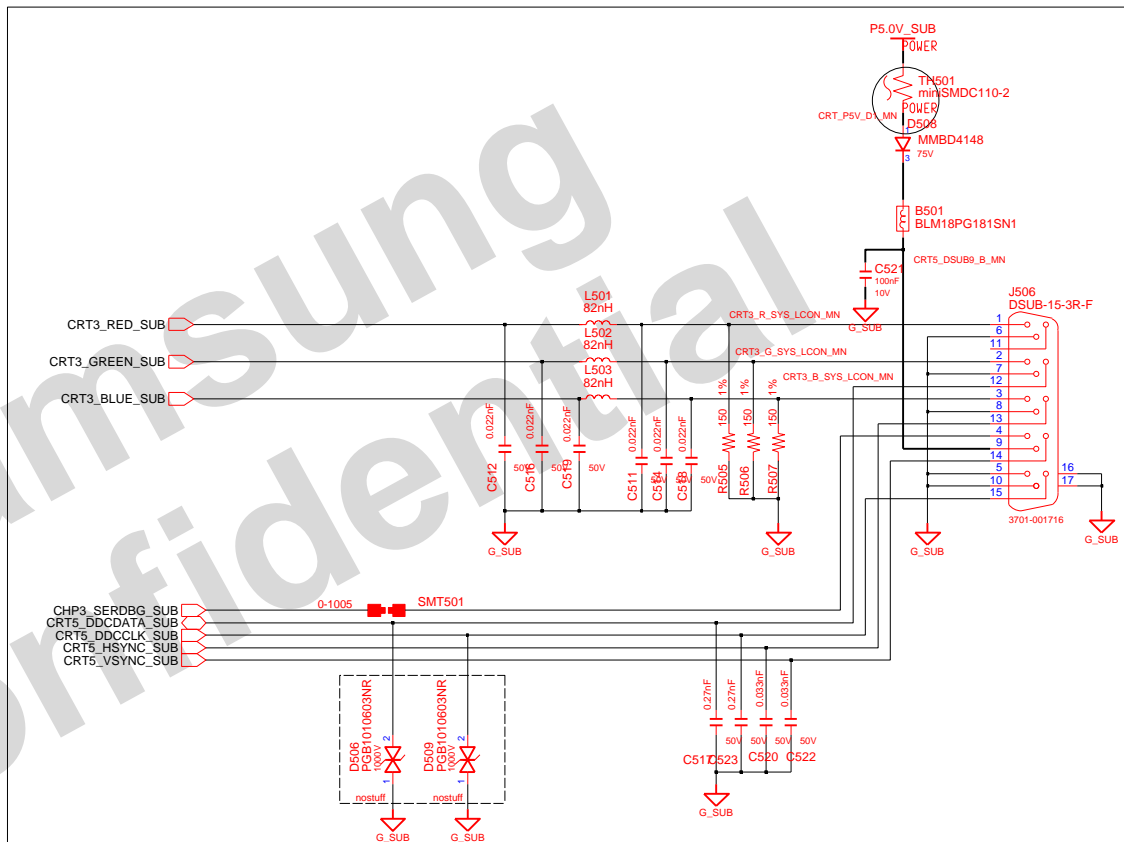
ON SUB_BOARD



ON MAINBOARD



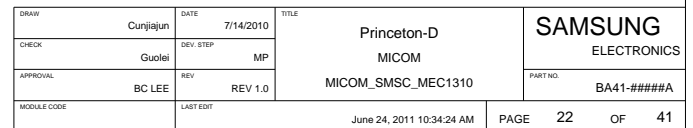
ON SUB_BOARD



DESIGN	Cunjiajun	DATE	9/23/2008	TITLE	Princeton-D	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP		GRAPHICS_IF	
APPROVAL	BC LEE	REV	REV 1.0		CRT	
MODULE CODE		LAST EDIT		June 24, 2011 10:34:24 AM	PAGE 21 OF 41	PART NO. BA41-####A

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BE CAUTION SPI ROM SIZE!!



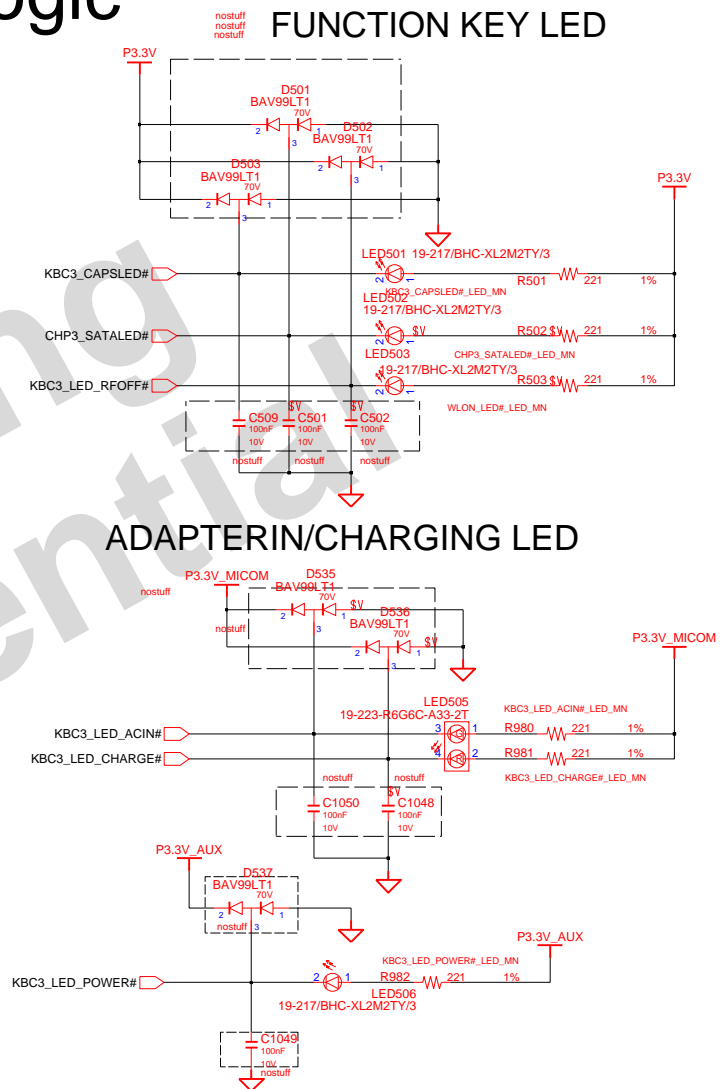
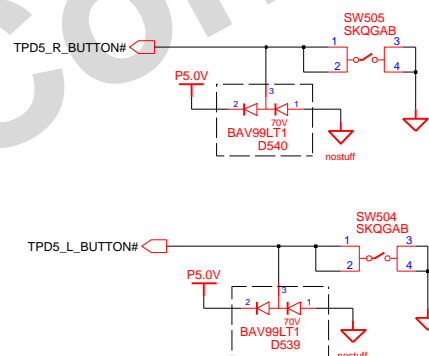
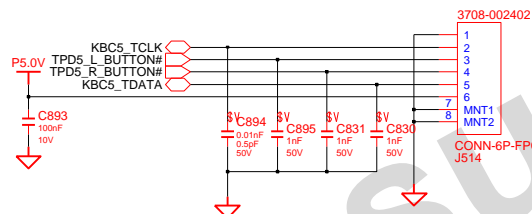
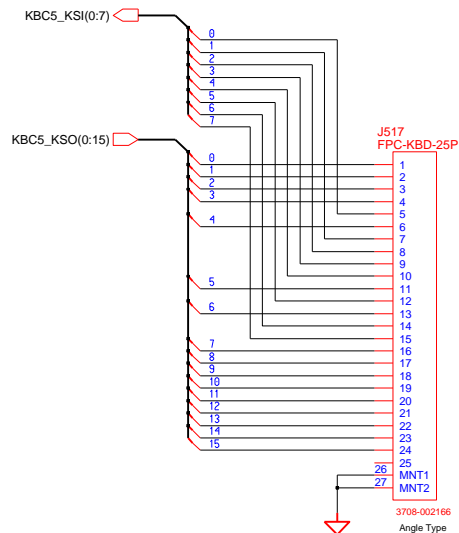
Micom Glue Logic

KEYBOARD

TOUCHPAD

FUNCTION KEY LED

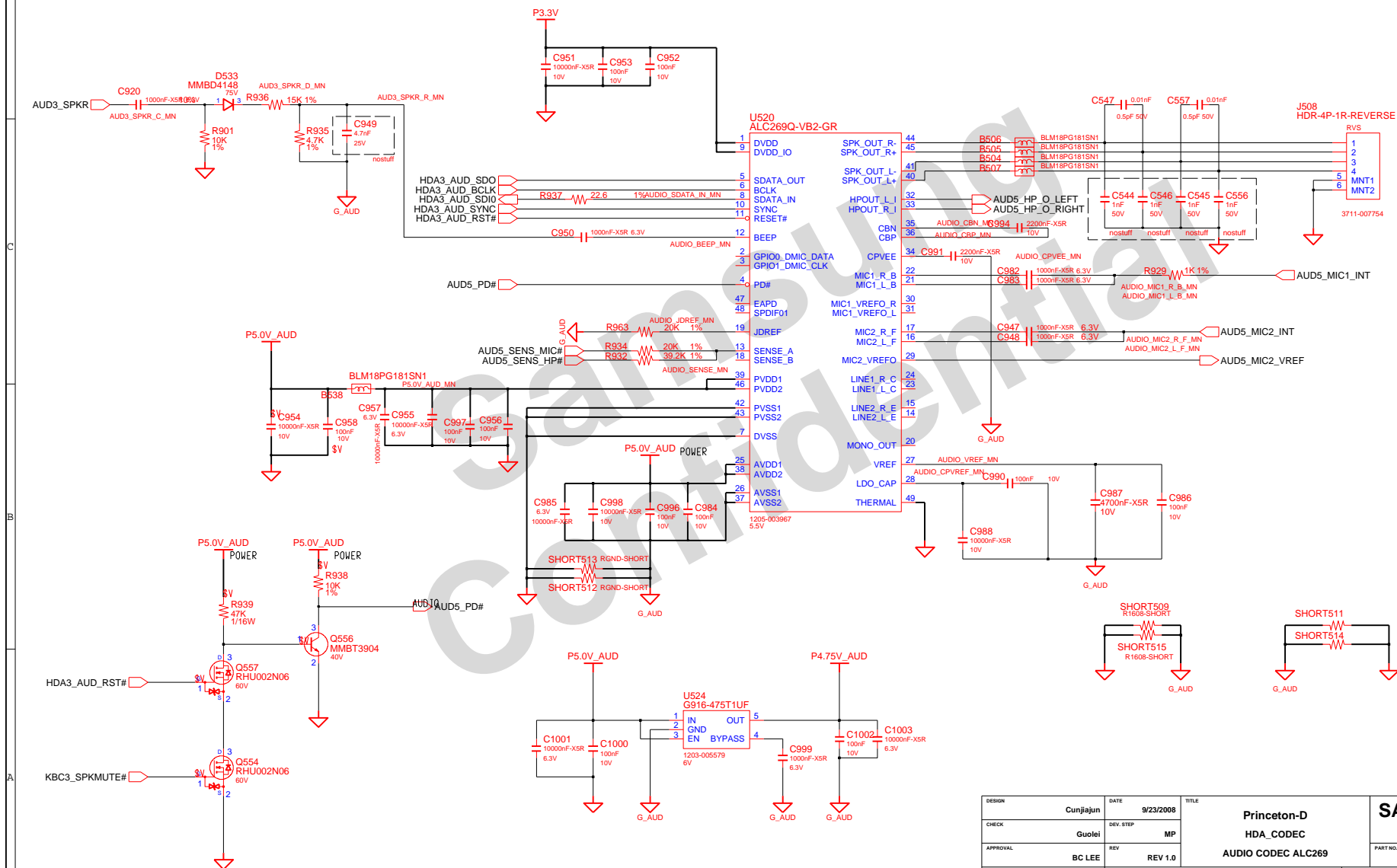
ADAPTERIN/CHARGING LED



DESIGN	Cunjaun	DATE	9/23/2008	TITLE	Princeton-D MICOM GLUE LOGIC KEYBOARD & TOUCHPAD	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT				

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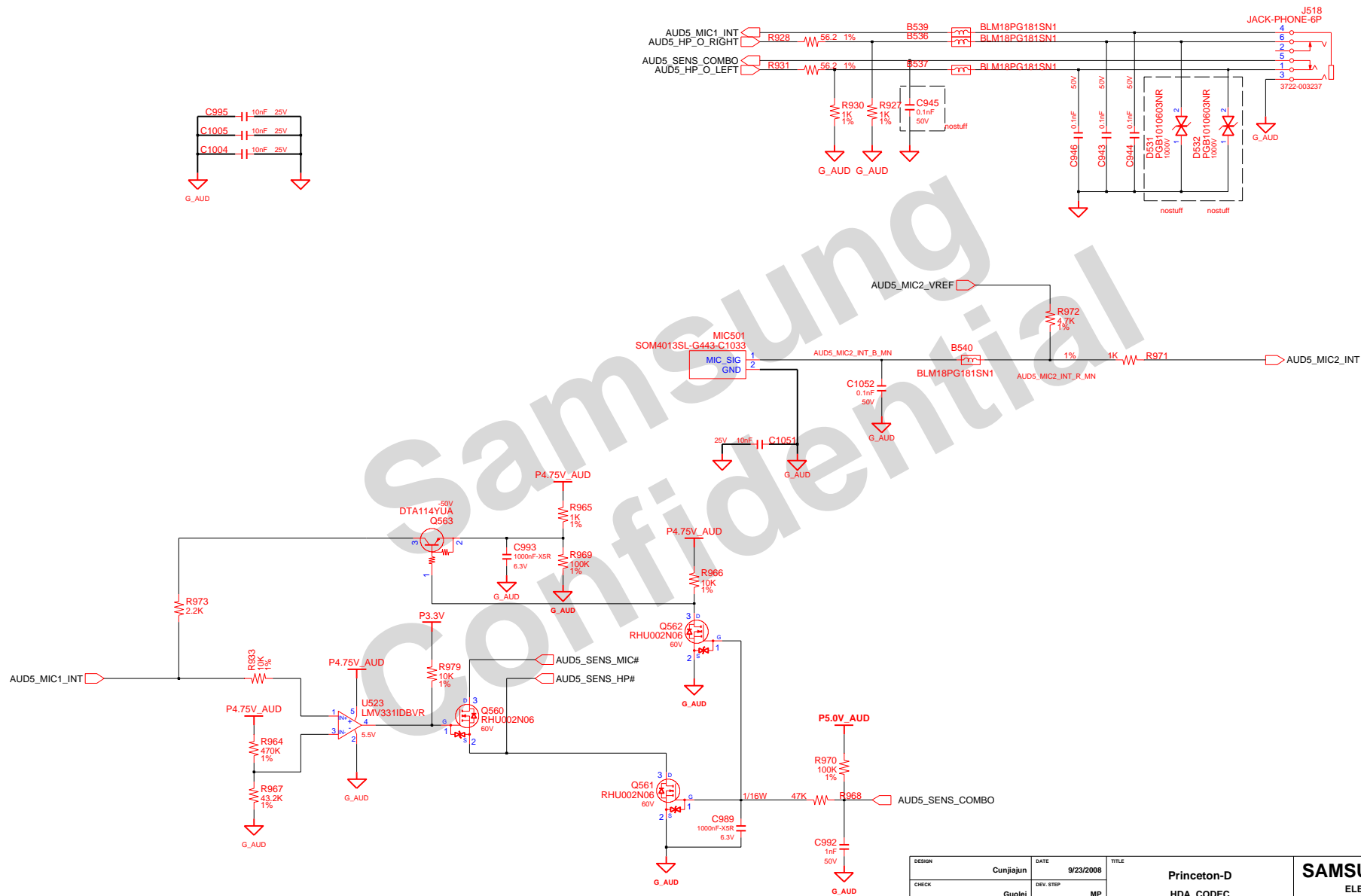
Codec Pin9 Setting	
S/B with Low Voltage IO	S/B without Low Voltage IO
Pin9 : 1.5V	Pin9 : 3.3V



DESIGN	Cunjiajun	DATE	9/23/2008	Princeton-D HDA_CODEC AUDIO CODEC ALC269	SAMSUNG ELECTRONICS	
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE	LAST EDIT		June 24, 2011 10:34:24 AM			
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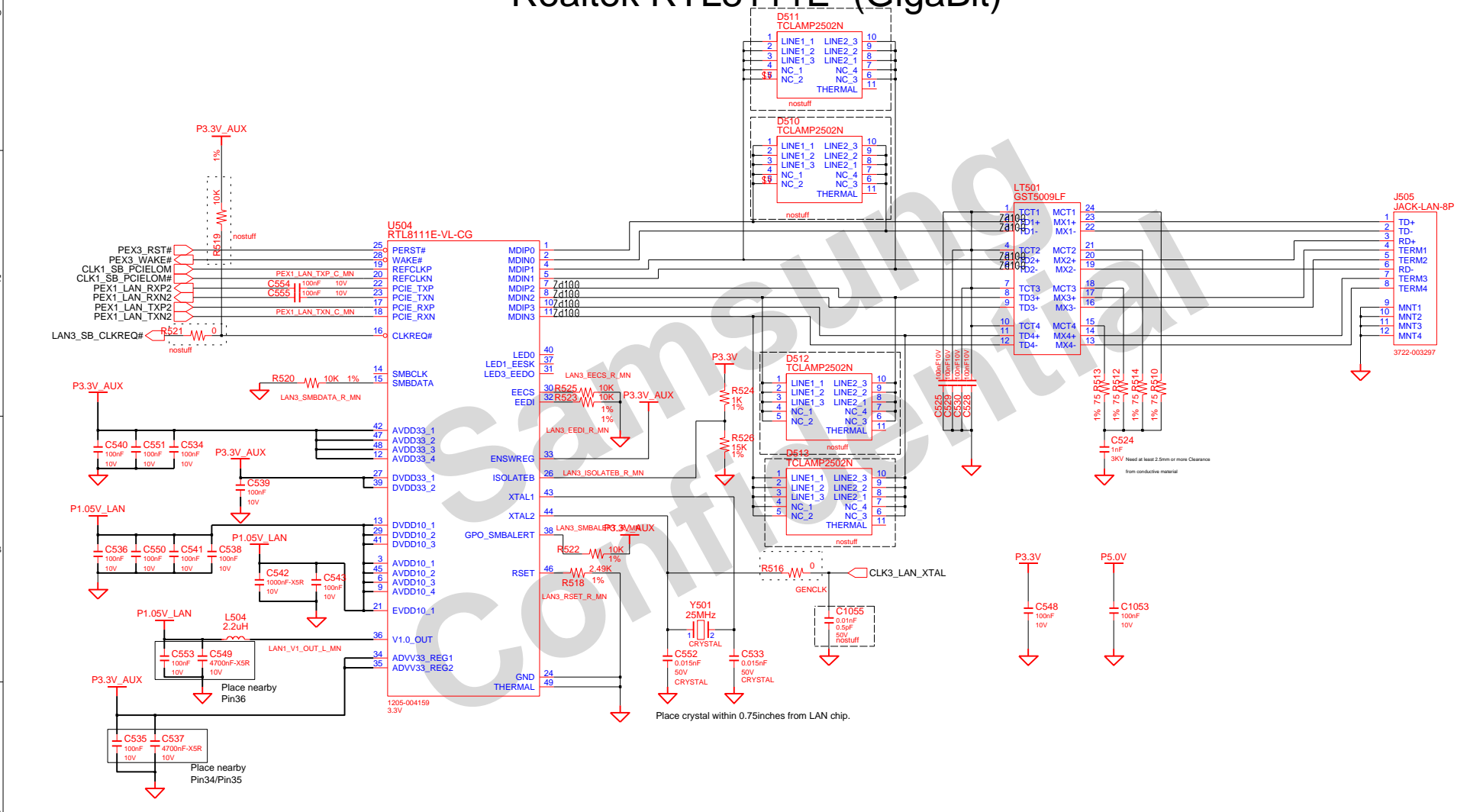
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DESIGN	Cunjiajun	DATE	9/23/2008	TITLE	Princeton-D HDA_CODEC AUDIO JACK	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT				
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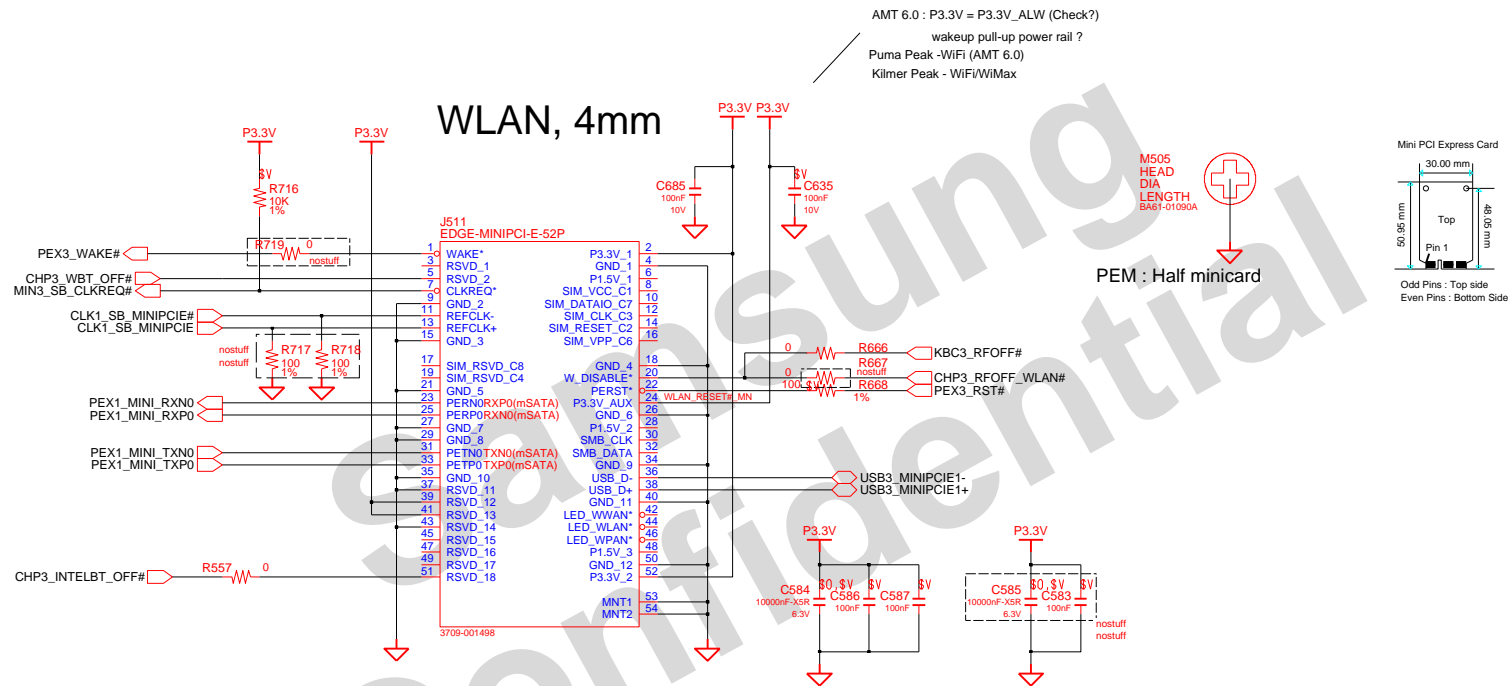
Realtek RTL8111E (GigaBit)



DESIGN	Cunjiajun	DATE	9/23/2008	Princeton-D LAN REALTEK RTL8111E	SAMSUNG ELECTRONICS	
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0			PART NO.
MODULE CODE	LAST EDIT					BA41-####A
				June 24, 2011 10:34:24 AM	PAGE 26 OF 41	

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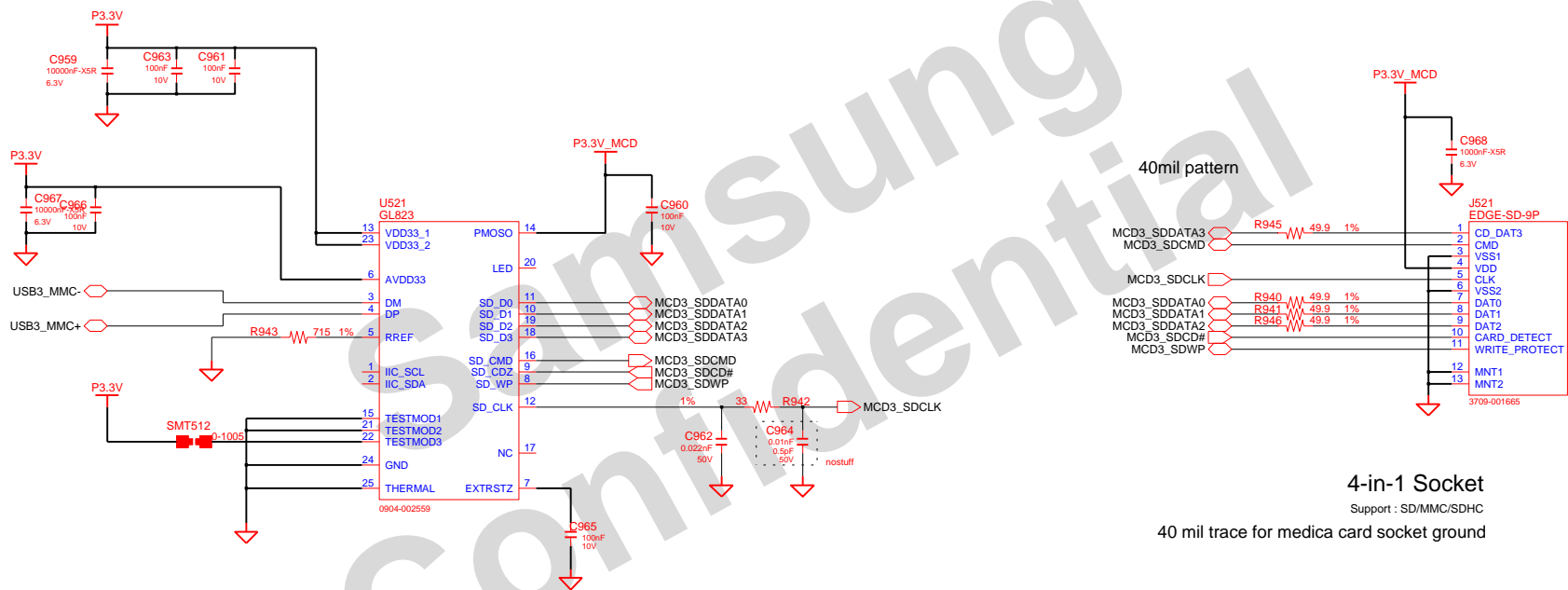


DESIGN	Cunjajun	DATE	9/23/2008	TITLE	Princeton-D	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP		MINI_PCIE_CONN	
APPROVAL	BC LEE	REV	REV 1.0		WLAN_HSPA	
MODULE CODE		LAST EDIT				PART NO. BA41-####A
				June 24, 2011 10:34:24 AM	PAGE 27 OF 41	

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4 IN 1 CARD (GL823)



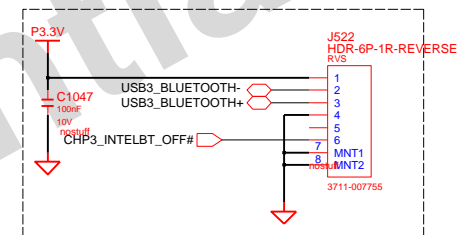
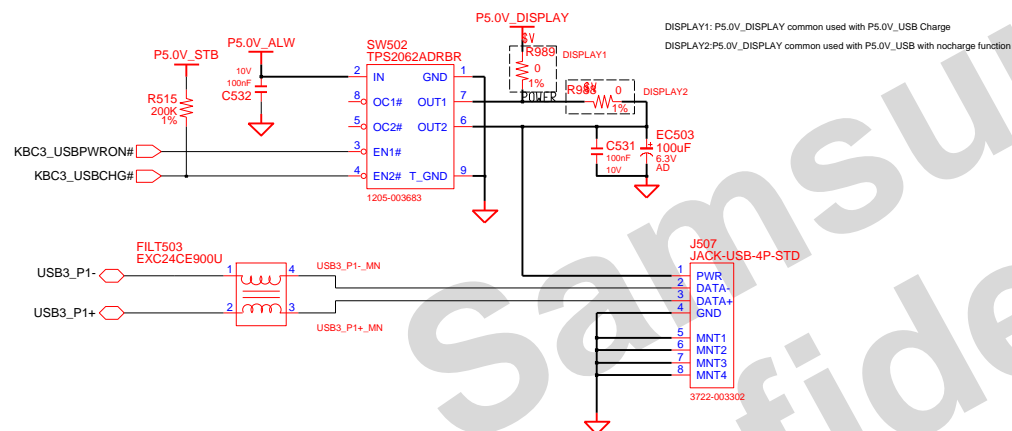
DESIGN	Cunjajun	DATE	9/23/2008	TITLE	Princeton-D	SAMSUNG
CHECK	Guolei	DEV. STEP	MP		3 IN 1 Card	ELECTRONICS
APPROVAL	BC LEE	REV	REV 1.0		GL823	PART NO.
MODULE CODE		LAST EDIT				BA41-####A
				June 24, 2011 10:34:24 AM	PAGE	28 OF 41

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USB Charge connector

USB Bluetooth



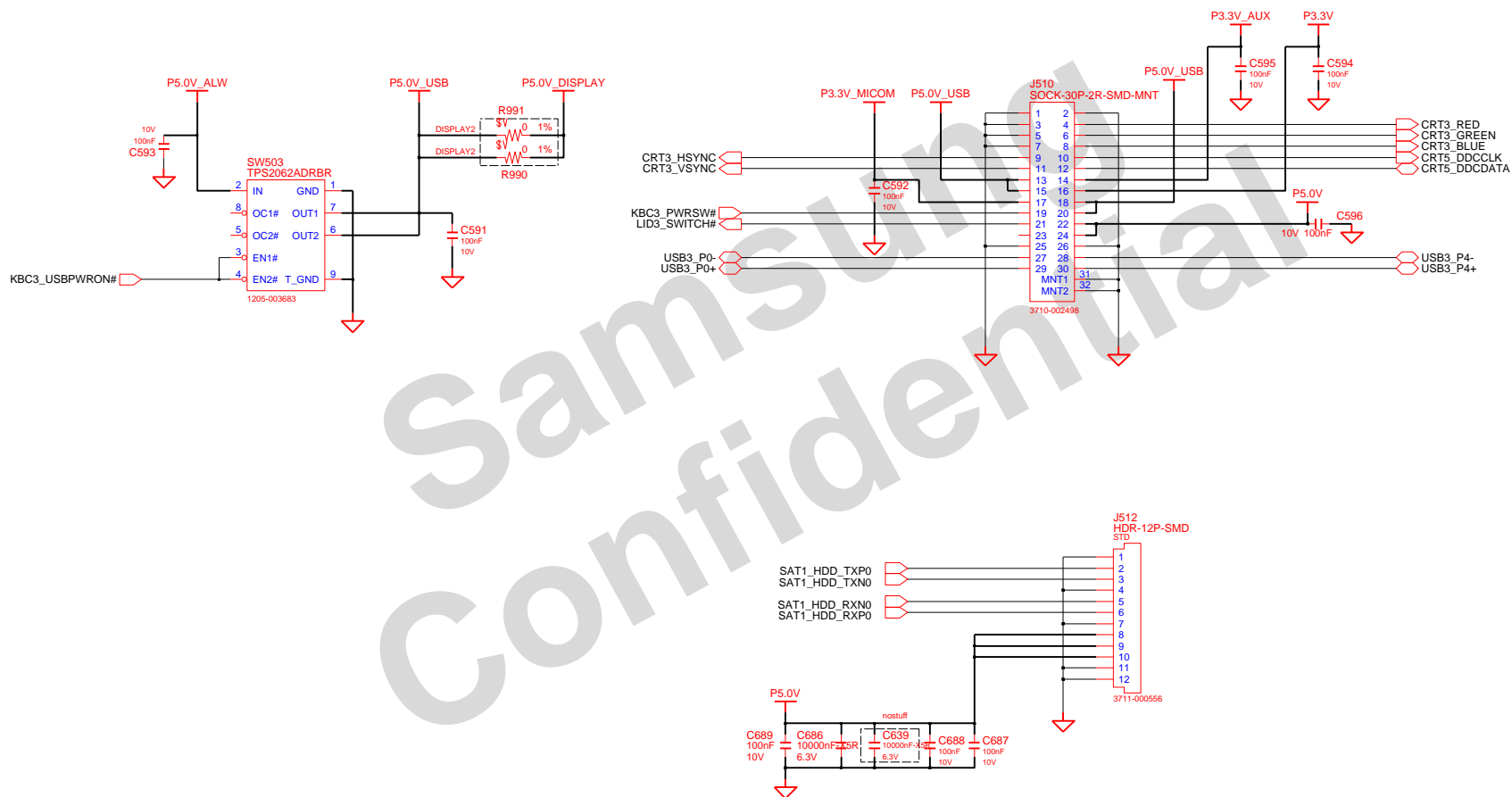
DESIGN	Cunjajun	DATE	9/23/2008	TITLE	Princeton-D	SAMSUNG
CHECK	Guolei	DEV. STEP	MP	USB_CONN	ELECTRONICS	
APPROVAL	BC LEE	REV	REV 1.0	USB_Bluetooth	PART NO.	BA41-####A
MODULE CODE		LAST EDIT				

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USB SUB BD (MAIN TO SUB)



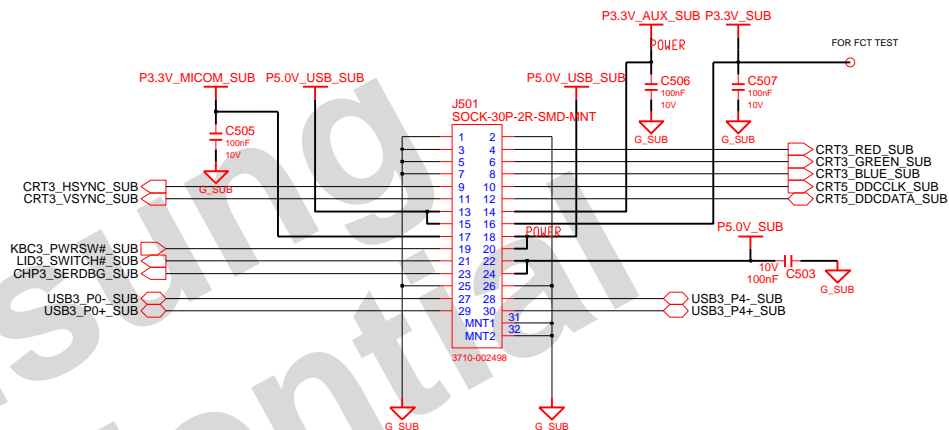
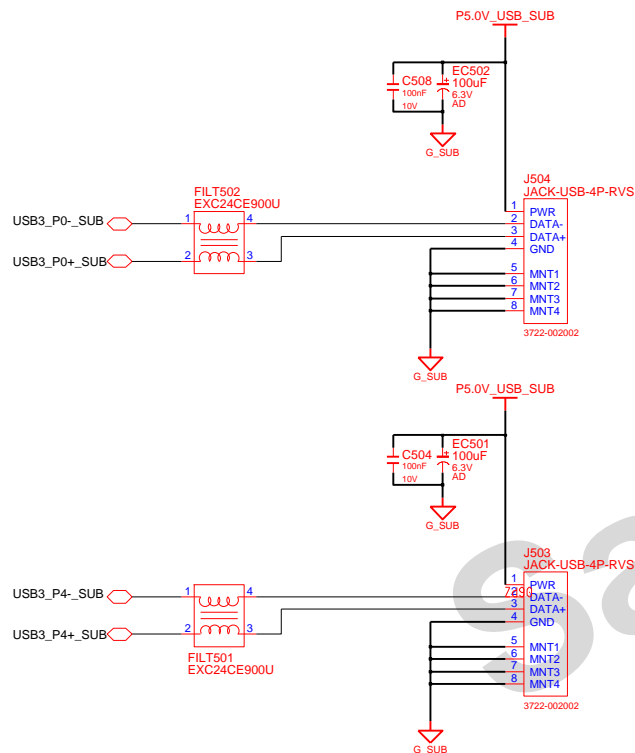
DRAW	Curjiajun	DATE	11/17/2008	TITLE	Princeton-D SUB BOARD I/F Main to SUB & HDD CONN	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	30	OF 41

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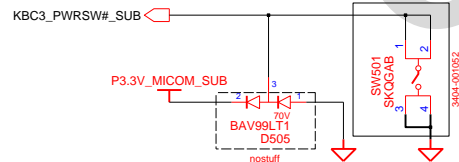
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SUB BOARD

USB SUB BD (SUB TO MAIN)

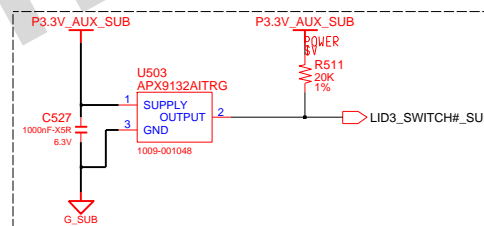


Power BUTTON



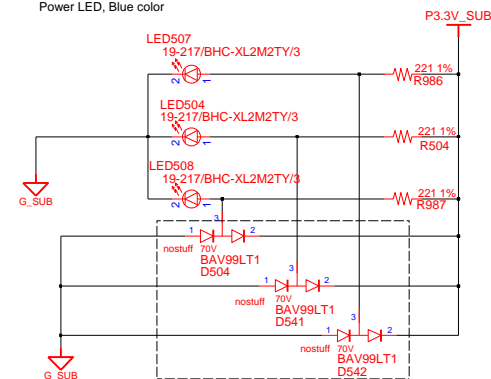
PLACE CLOSE TO USB SUB B'D Conenctor

LID_SWITCH_SUB



Power ON LED

Put this LED located near PWRSW from ME recommendation
Power LED, Blue color

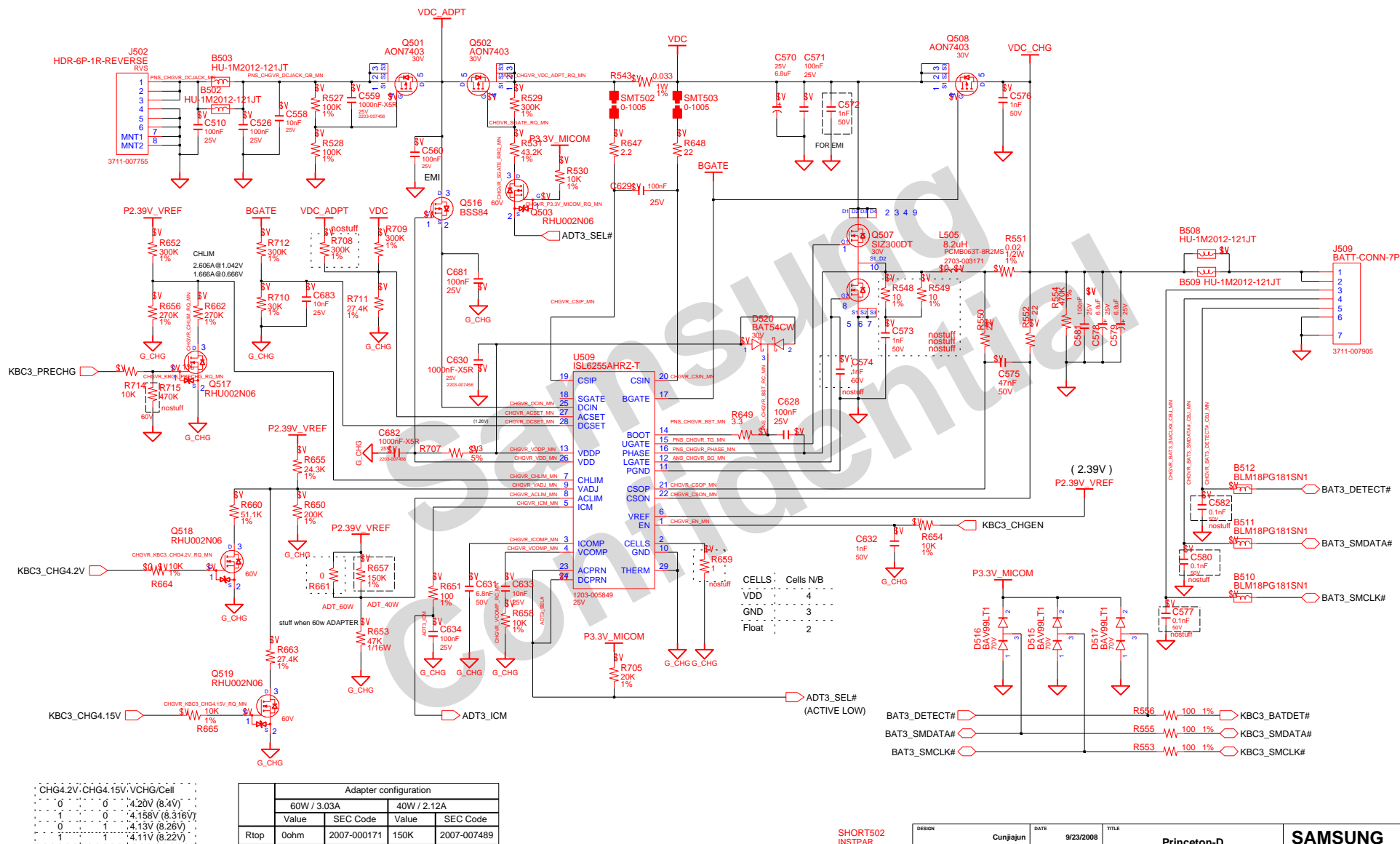


DESIGN	Curjiajun	DATE	4/7/2009	TITLE	Princeton-D SUB BOARD	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0		Sub board	PART NO. BA41-####A
MODULE CODE		LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	31	OF 41

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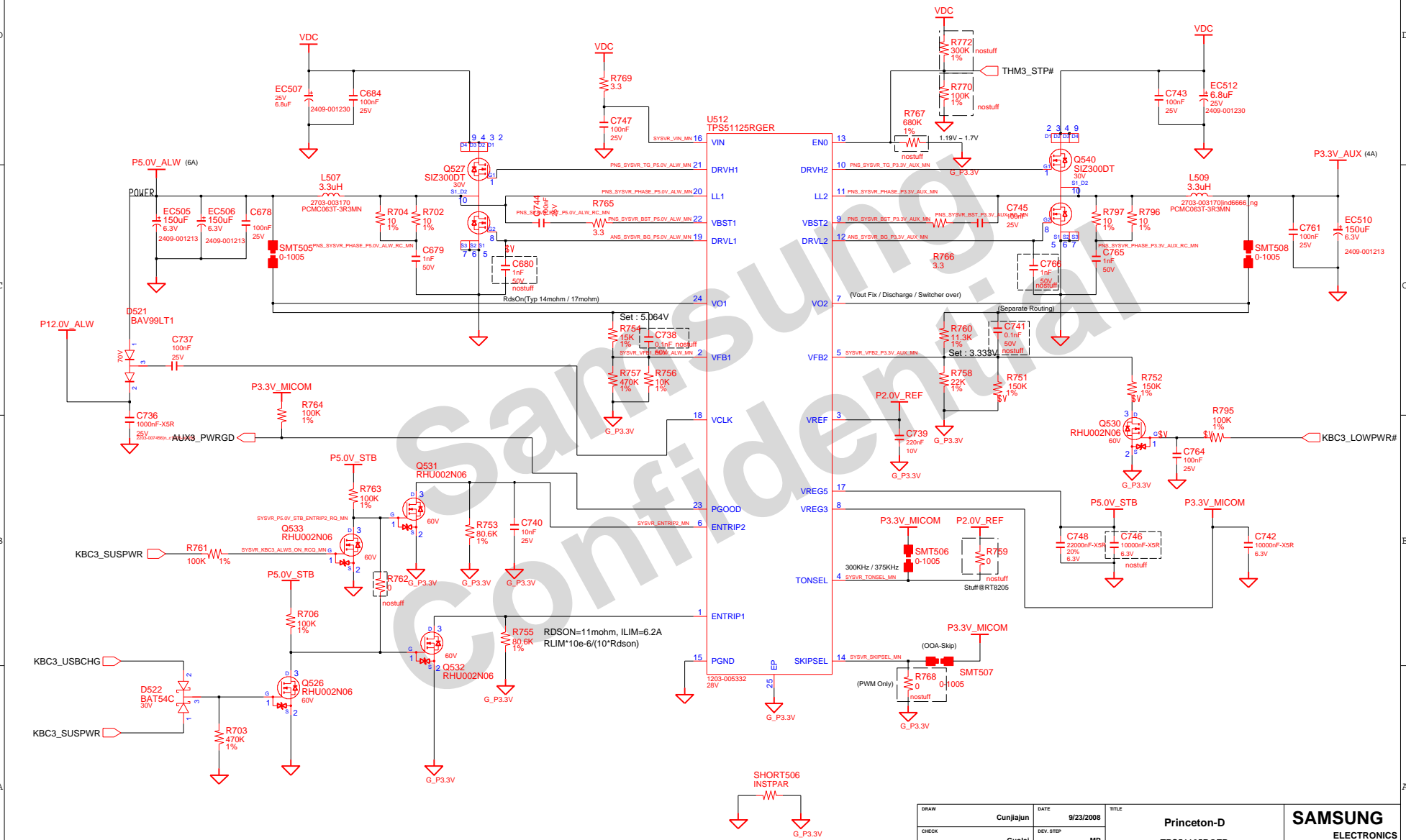
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Charger & Power Management



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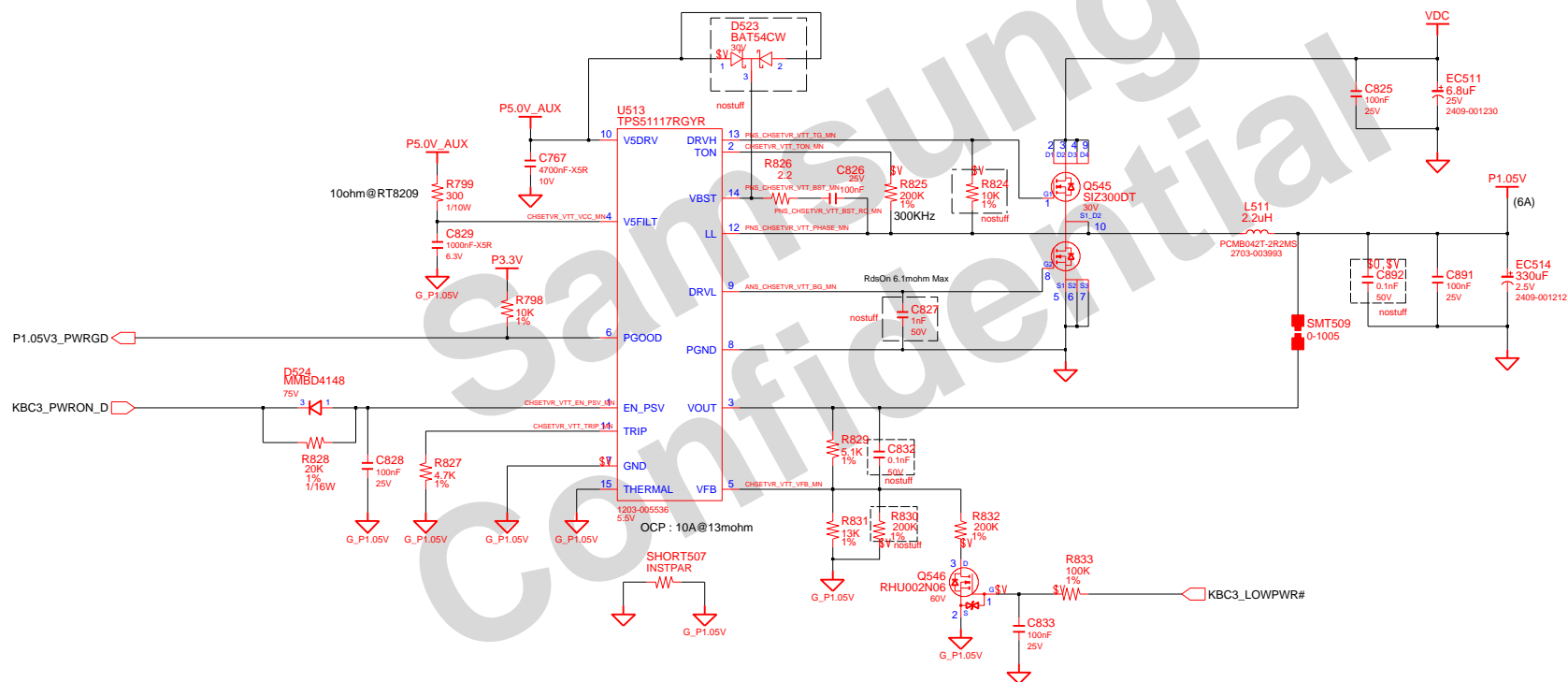
P3.3V_AUX & P5.0V_AUX



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Chipset Power (P1.05V)

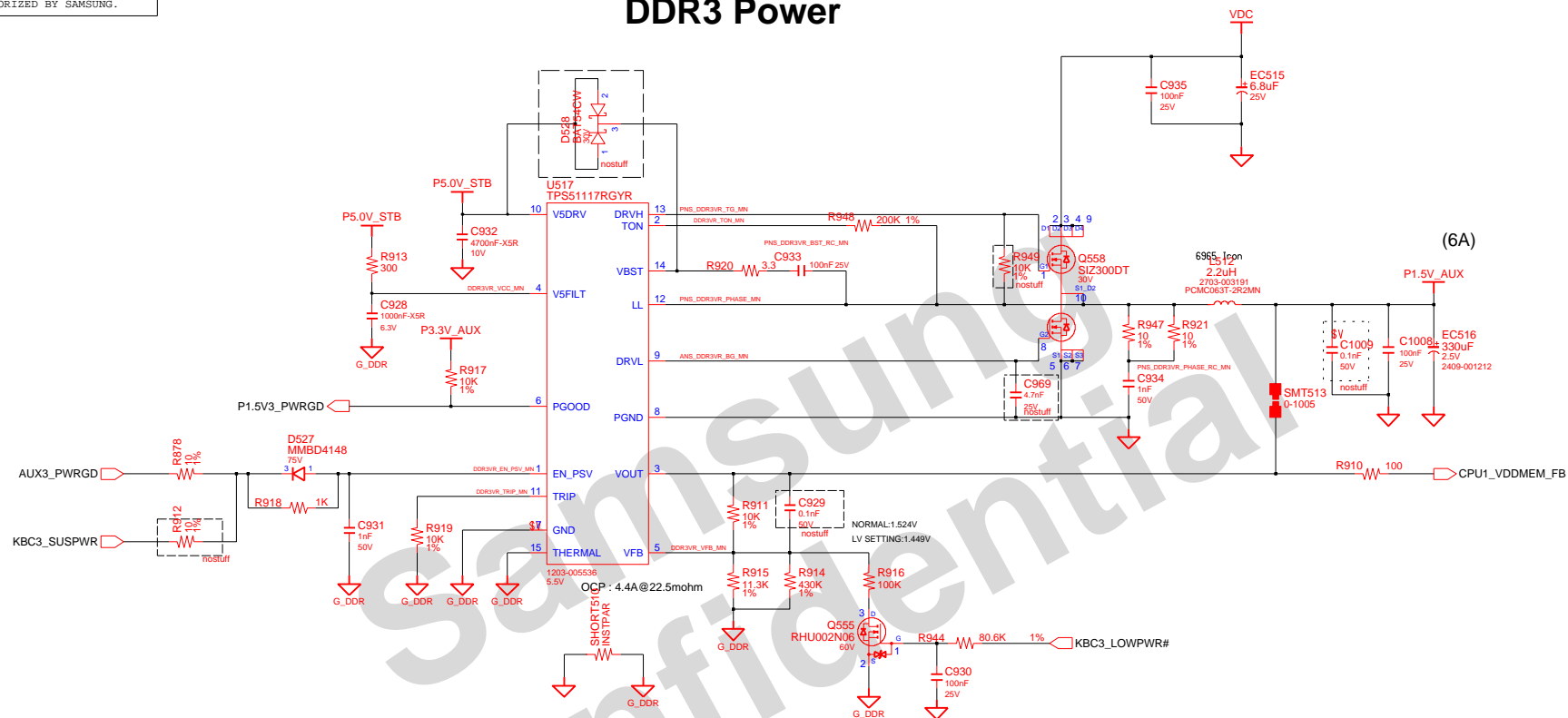


DESIGN	Cunhajun	DATE	9/23/2008	TITLE	Princeton-D PWR_Chipset(P1.05V)	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT		June 24, 2011 10:34:24 AM	PAGE 34 OF 41	

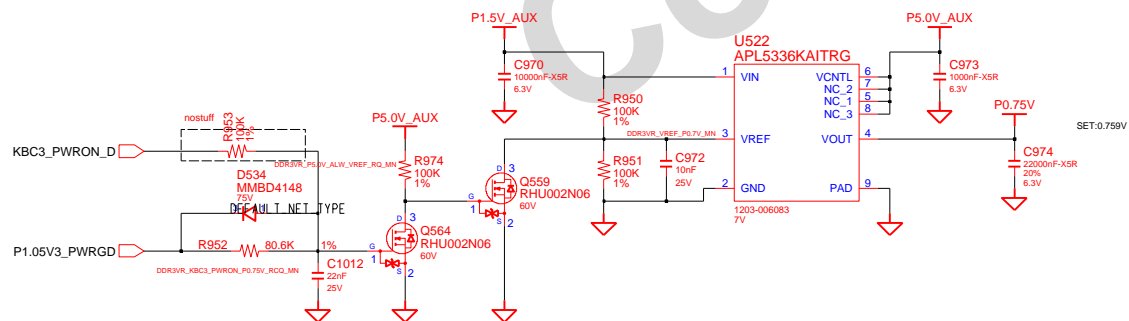
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DDR3 Power

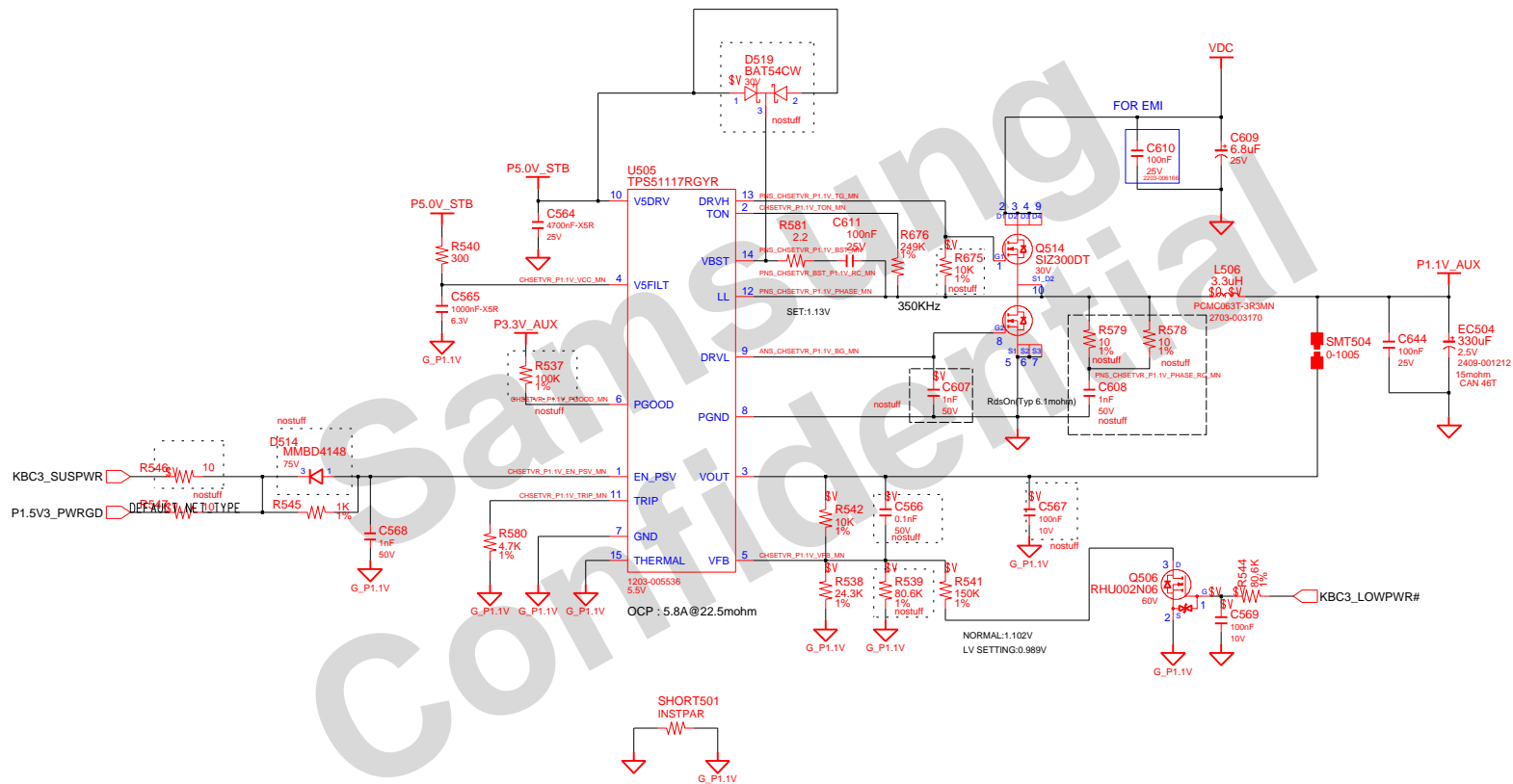


DDR3 VTT(0.75V)



DESIGN	Cunjiajun	DATE	9/23/2008	TITLE	Princeton-D PWR_MEMORY	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0		DDR3 POWER	PART NO. BA41-####A
MODULE CODE		LAST EDIT		June 24, 2011 10:34:24 AM	PAGE 35	OF 41

CHIPSET POWER(P1.1V_AUX)

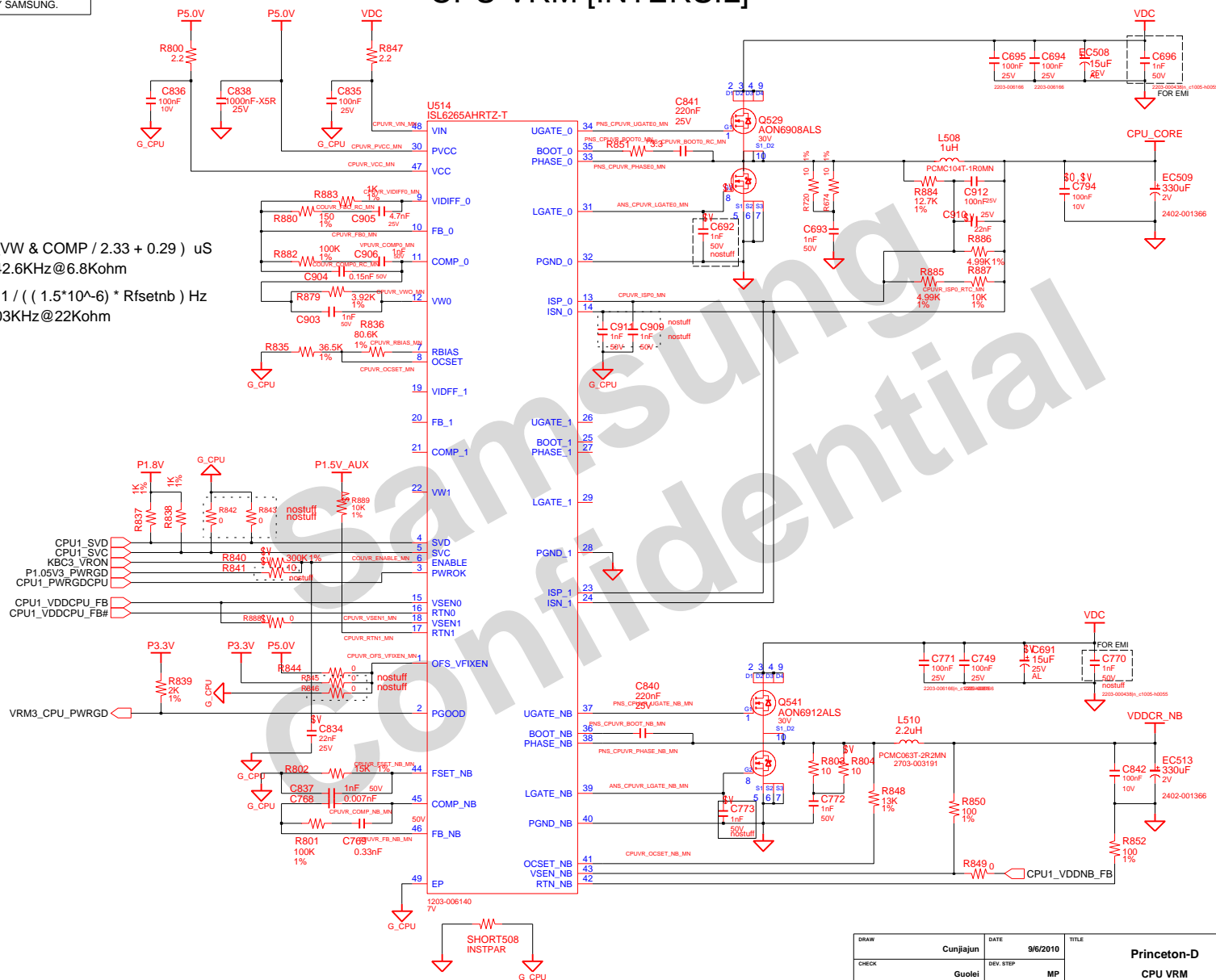


DESIGN	Cunjiajun	DATE	9/23/2008	TITLE	Princeton-D	SAMSUNG	
CHECK	Guo lei	DEV. STEP	MP	PWR_Chipset(P1.1V_AUX)		ELECTRONICS	
APPROVAL	BC LEE	REV	REV 1.0	TPSS1117RGYR		PART NO.	BA41-####A
MODULE CODE	LAST EDIT				June 24, 2011 10:34:24 AM	PAGE	36 OF 41

CPU VRM [INTERSIL]

VDD Freq = (R_VW & COMP / 2.33 + 0.29) uS
: 342.6KHz@6.8Kohm

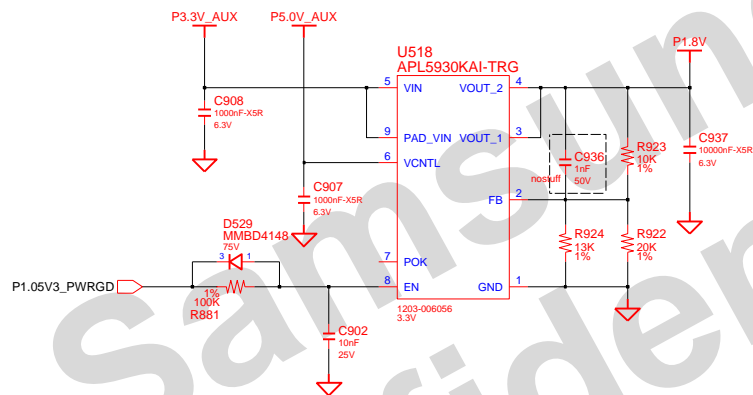
VDD_NB Freq = 1 / ((1.5*10^-6) * Rfsetnb) Hz
: 303KHz@22Kohm



DRAW	Cunjiajun	DATE	9/6/2010	TITLE	Princeton-D CPU VRM ISL6265AHRZ-T	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT				
				June 24, 2011 10:34:24 AM	PAGE	37 OF 41

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POWER P1.8V

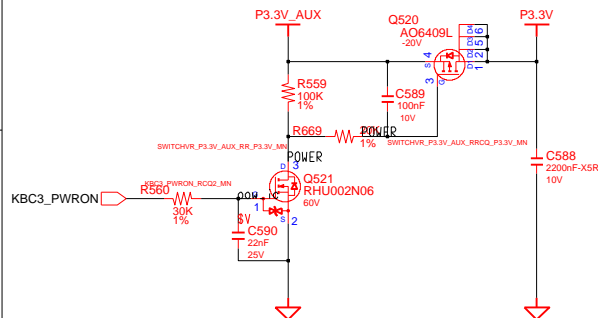
DESIGN	Cunjiejun	DATE	2/2/2009	TITLE	Princeton-D PWR_P1.8V APL5336KAITRG	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	38 OF 41	

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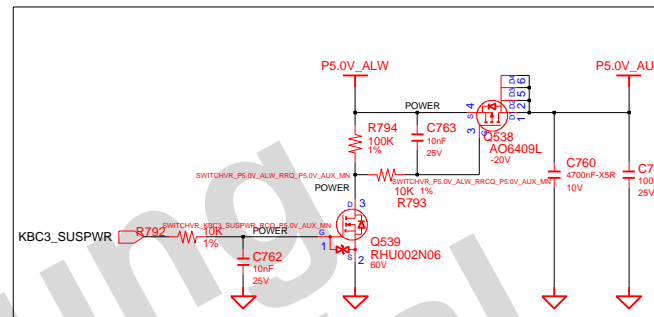
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Switched Power

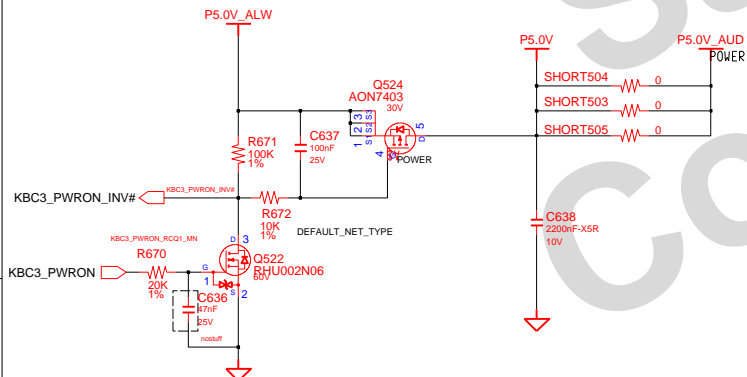
Switched Power On (P3.3V)



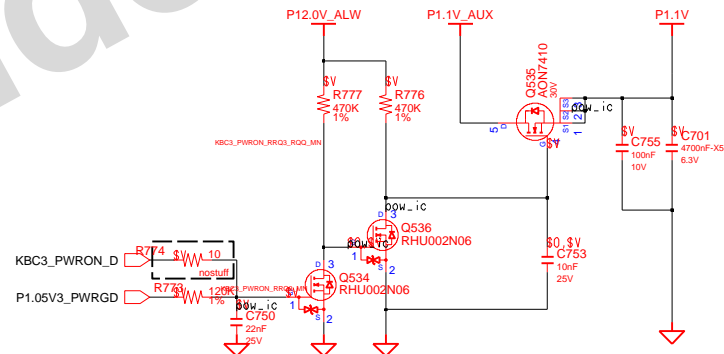
Sleep'n Charger



Switched Power On (P5.0V)



Switched Power On (P1.1V)

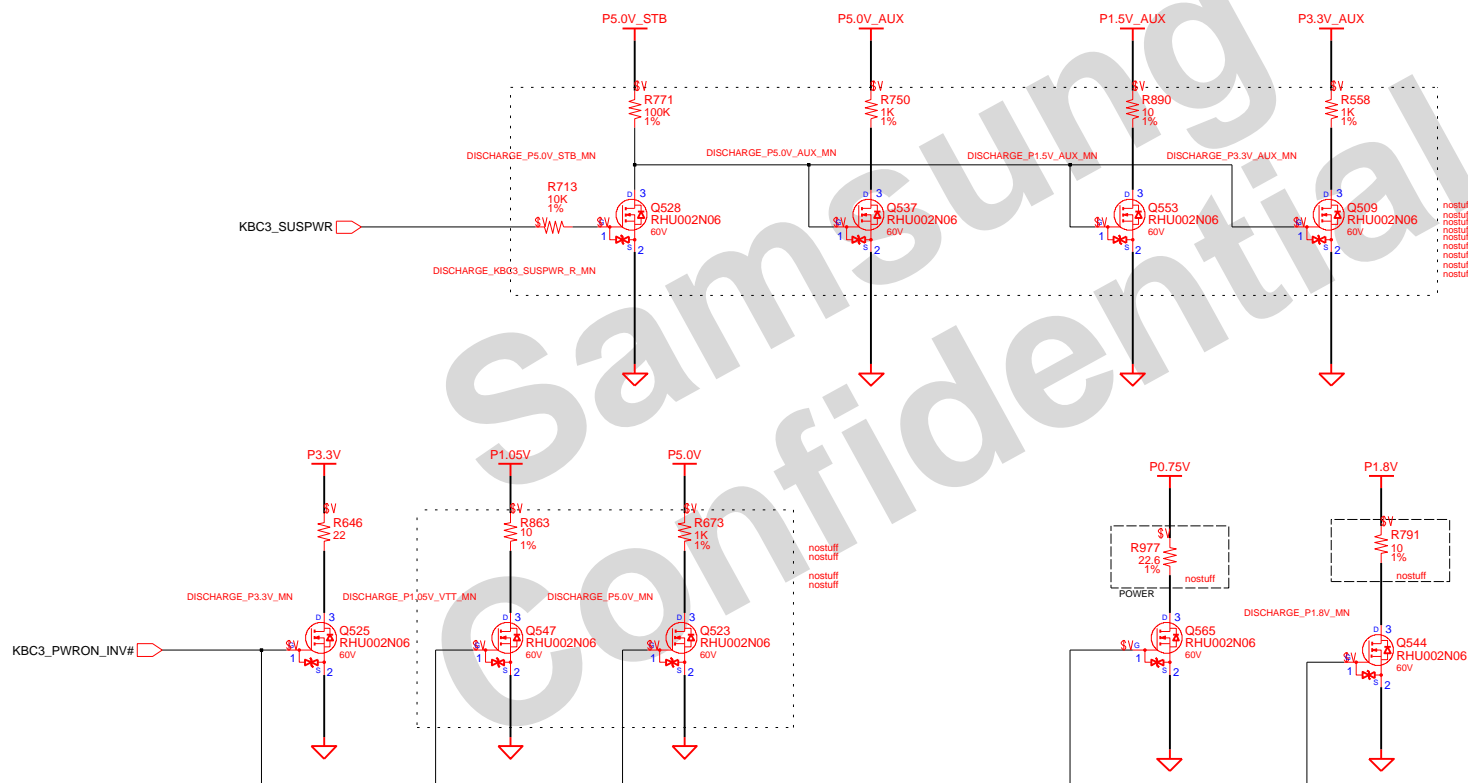


DRAW	CunJieJun	DATE	01/09/2008	TITLE	Princeton-D PWR_SWITCHED Switched Power	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	39 OF 41	

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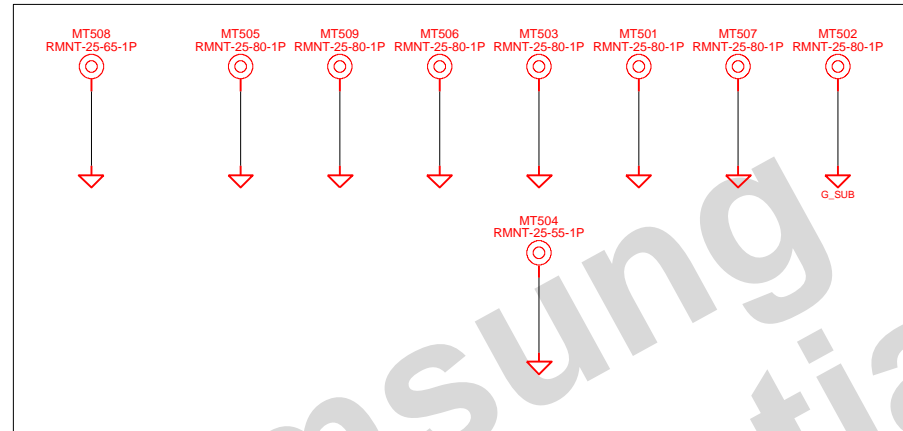
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Power DisCharge

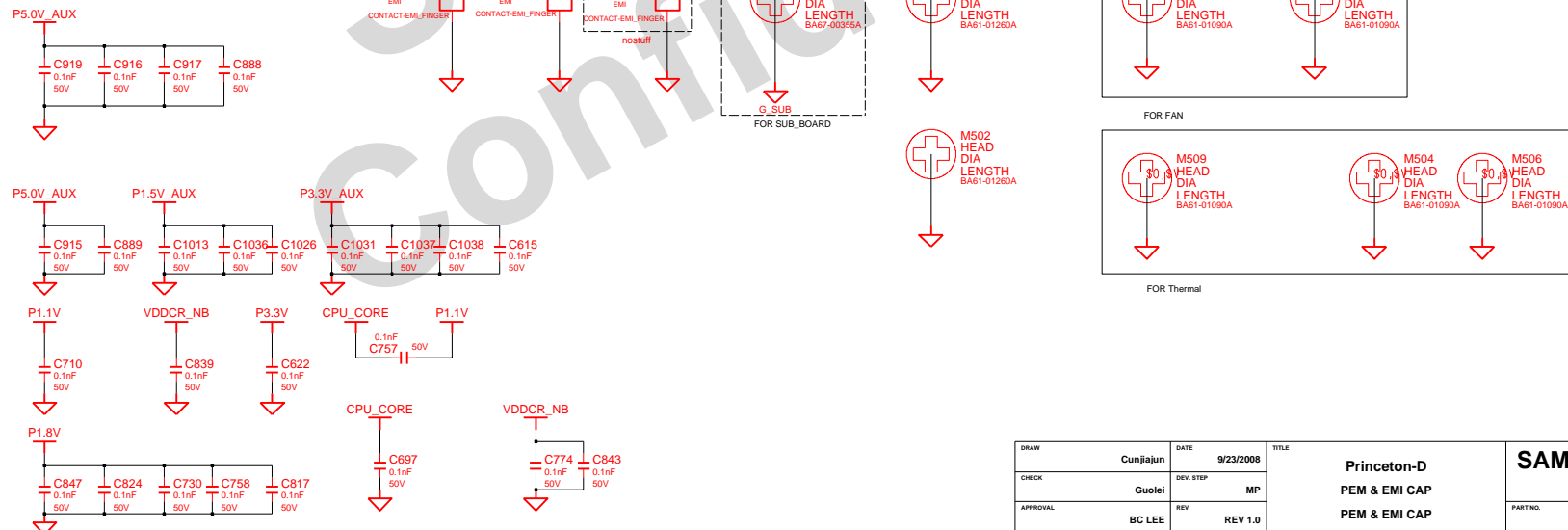


DRAW	Cunjajun	DATE	9/23/2008	TITLE Princeton-D PWR Discharge Discharge Power		SAMSUNG ELECTRONICS	
CHECK	Guolei	DEV. STEP	MP				
APPROVAL	BC LEE	REV	REV 1.0				
				PART NO.		BA41-####A	
MODULE CODE	undefined	LAST EDIT		June 24, 2011 10:34:24 AM		PAGE	40 OF 41

Mainboard BOT Mount



EMI TEAM REQUEST



DRAW	Cunjajun	DATE	9/23/2008	TITLE	Princeton-D PEM & EMI CAP	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP		PEM & EMI CAP	PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	June 24, 2011 10:34:24 AM	PAGE	41	OF 41