

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

Suzhou_L

CPU : Intel Penryn
Chip Set : Intel Cantiga & ICH9M
Remarks : Montevina Platform

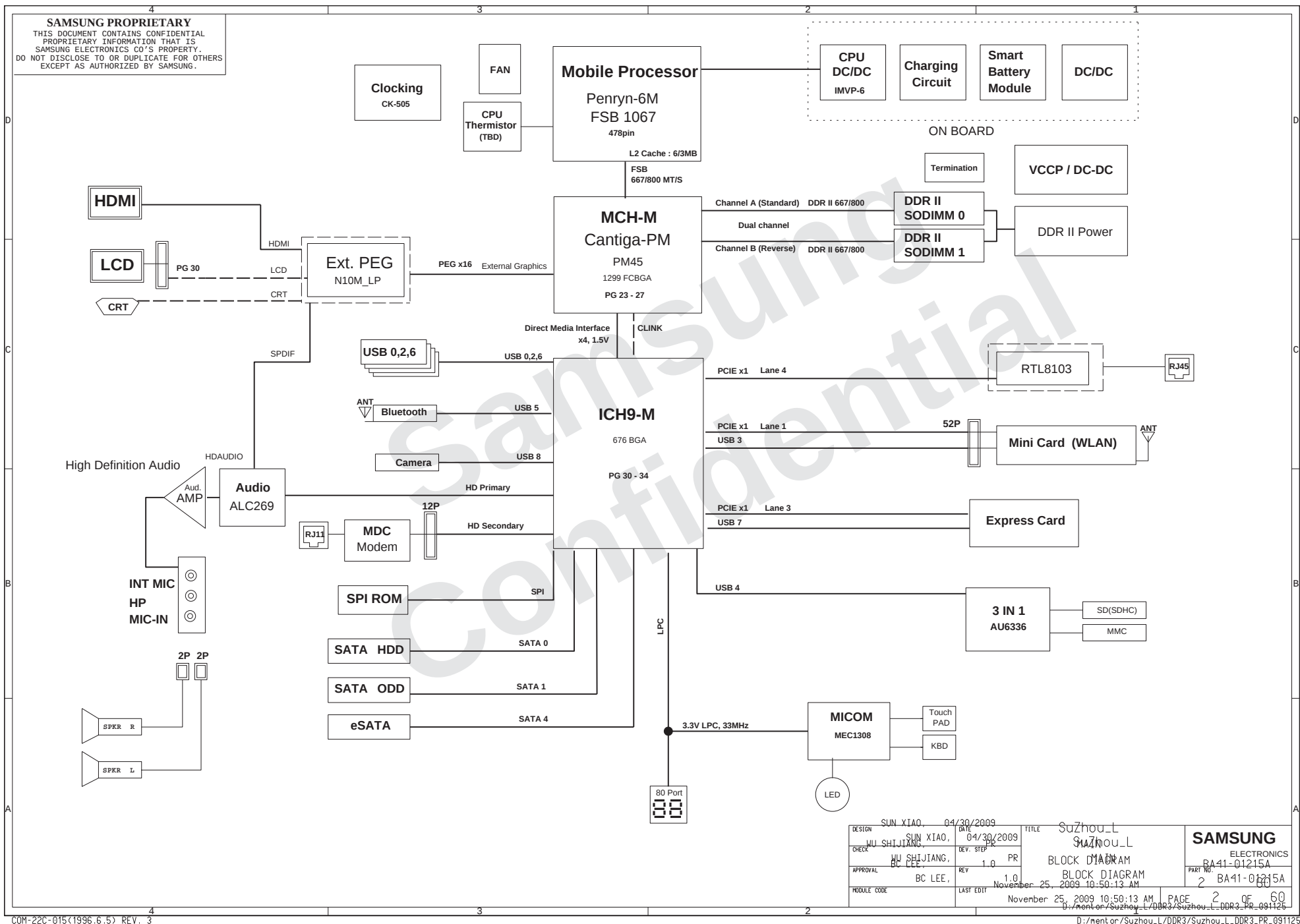
Model Name : Suzhou_L_DDR3
PCB Code : GCE BA41-01215A
NY BA41-01217A
HAN BA41-01216A

Dev. Step : P R
Revision : 1.0
T.R. Date : 2009.08.16

DESIGN	CHECK	APPROVAL

DESIGN	SUN XIAO,	DATE	8/16/2009	TITLE	SuZhou_L	SAMSUNG
CHECK	WU SHIJIANG,	DEV. STEP	PR			ELECTRONICS
APPROVAL	BC LEE,	REV	1.0	COVER		PART NO. BA41-01215A
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	1	OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



DESIGN	SUN XIAO, 04/30/2009	TITLE	Suzhou_L
CHECK	MU SHIJIANG, 04/30/2009	DATE	04/30/2009
APPROVAL	MU SHIJIANG, BC LEE, 1.0	DEV. STEP	PR
MODULE CODE	BC LEE, 1.0	REV	1.0
	November 25, 2009 10:50:13 AM	LAST EDIT	November 25, 2009 10:50:13 AM
		PAGE	2 OF 60
		FILE	01/11/2010/Suzhou_L/DDR3/Suzhou_L.DDR3.PR.091125

BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

PCI Devices

Devices	IDSEL#	REQ/GNT#	Interrupts
Cardbus	AD25	3	A,B,C
USB	AD29(internal)	-	USB2.0 #0 (USB0) : A USB2.0 #1 (USB1) : D USB2.0 #2 (USB4) : C USB2.0 #3 (USB5) : E USB2.0 #4 (EHCI) : H
Hub to PCI	AD30(internal)	-	-
LPC bridge//DE/AC97/SMBUS	AD31(internal)	-	B
Internal MAC	AD24(internal)	-	E
AC Link	-	-	B
GLAN	-	-	F

Voltage Rails

VDC	Primary DC system power supply (9 to 20V)
VCC_CORE	Core Voltage for CPU
P1.05V (VCCP)	VTT for CPU, Crestline & ICH9-M
P3.3V_MICOM	3.3V always power rail (for Micom)
P1.5V	1.5V switched power rail (off in S3-S5)
P1.8V	1.8V switched power rail (off in S3-S5)
P1.8V_AUX	1.8V power rail for DDR (off in S4-S5)
P0.9V	0.9V power rail for DDR (off in S3-S5)
P3.3V	3.3V switched power rail (off in S3-S5)
P3.3V_AUX	3.3V switched on power rail (off in S4-S5)
P5.0V	5.0V switched power rail (off in S3-S5)
P5.0V_AUX	5.0V switched on power rail (off in S4-S5)
P5.0V_ALW	5.0V always power rail

Crystal / Oscillator

TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	ICH9-M	Real Time Clock
Crystal	10MHz	MICOM	HD64F2169/2160
Crystal	14.318MHz	CLOCK-Generator	CK-505
Crystal	25MHz	LAN	RealTek 88E8057

LCD Pannel Detect (TBD)

Devices	Resolution	PANNEL_DETECT_0

I²C / SMB Address

Devices	Address	Hex	Bus
ICH9-M	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	Thermal Sensor
SODIMM0	1010 000x	A0h	-
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
CK-505M (Clock Generator)	1101 001x	D2h	Clock, Unused Clock Output Disable

REVISION HISTORY

See rev notes for more information.

USB PORT Assign		PCI Express Assign	
PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	SYSTEM PORT 0	0	NC
1	SYSTEM PORT 1	1	Mini Card 1 (WLAN)
2	SYSTEM PORT 2	2	NC
3	NC	3	LOM
4	NC	4	Mini Card 2 (ROBSON or DVB-T)
5	Bluetooth	5	NC
6	Mini PCI Express 2		
7	Camera		
8	NC		
9	NC		

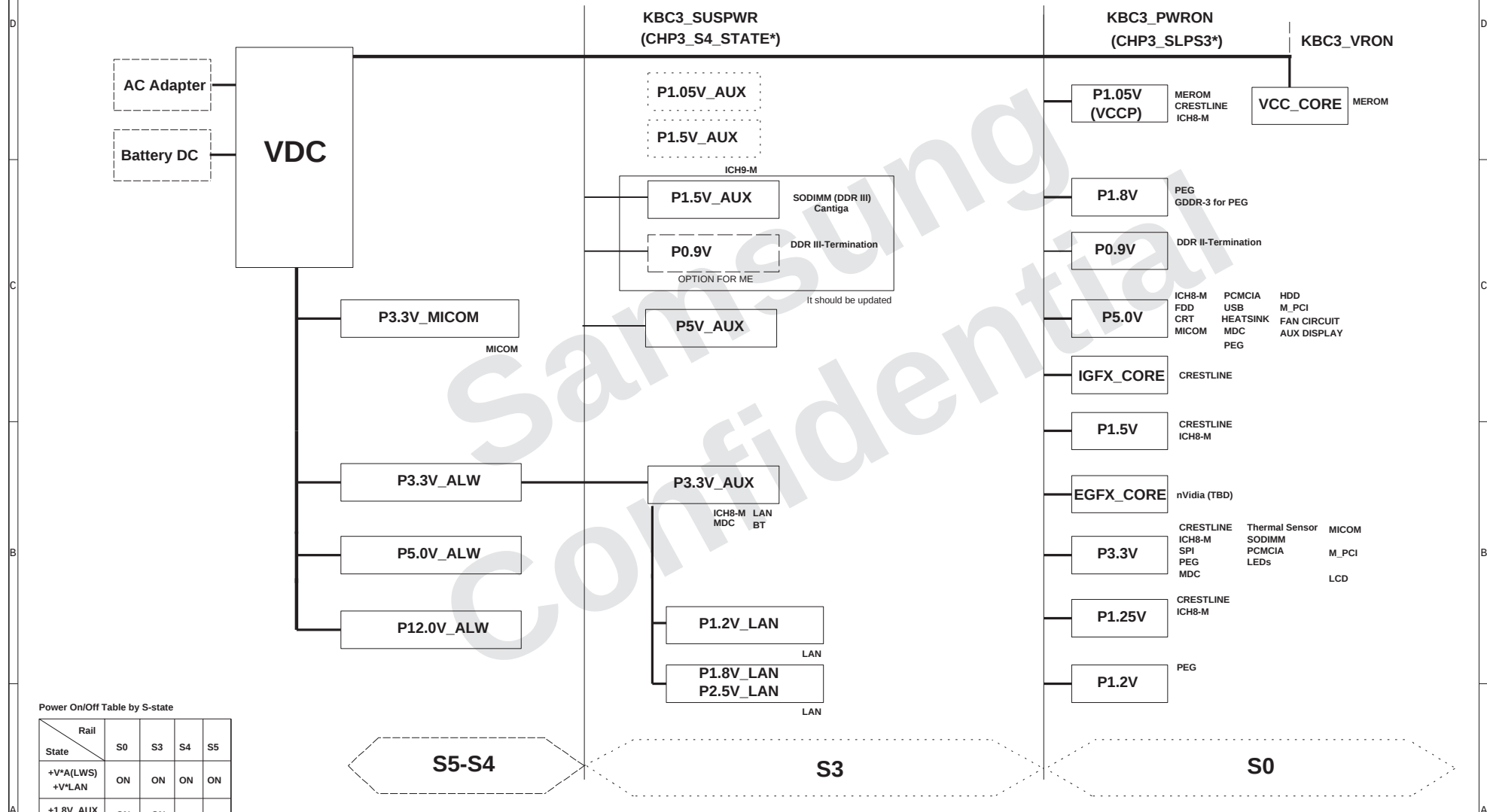
(This table will be update.)

DESIGN	SUN XIAO,	DATE	8/16/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR		MAIN	
APPROVAL	BC LEE,	REV	1.0		BCAFDINFO	
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM			
				PAGE	3	OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

POWER DIAGRAM

Rev 0.1



Power On/Off Table by S-state

Rail	S0	S3	S4	S5
State	S0	S3	S4	S5
+V*(LWS)	ON	ON	ON	ON
+V*LAN	ON	ON	—	—
+1.8V_AUX	ON	ON	—	—
+0.9V	ON	ON	—	—
+V*AUX	ON	ON	—	—
+V	ON	—	—	—
+V* (CORE)	ON	—	—	—

S5-S4

S3

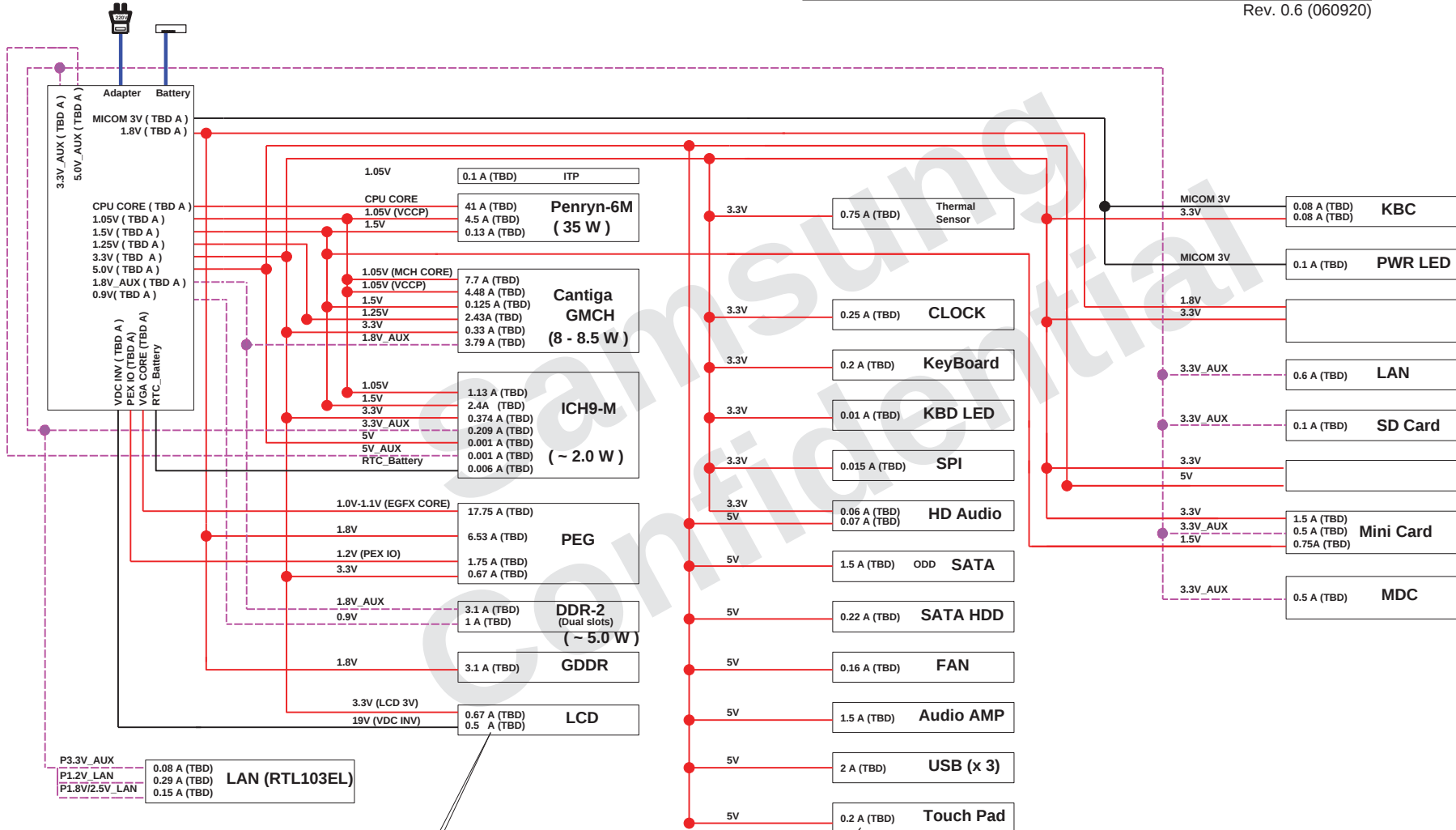
S0

DESIGN	SUN XIAO,	DATE	8/16/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		MAIN	
APPROVAL	BC LEE,	REV	1.0		POWER DIAGRAM	
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM			
PAGE 4 OF 60						PART NO. BA41-01215A

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

POWER RAILS ANALYSIS

Rev. 0.6 (060920)



Value by Datasheet/Application notes (Value by measurement)

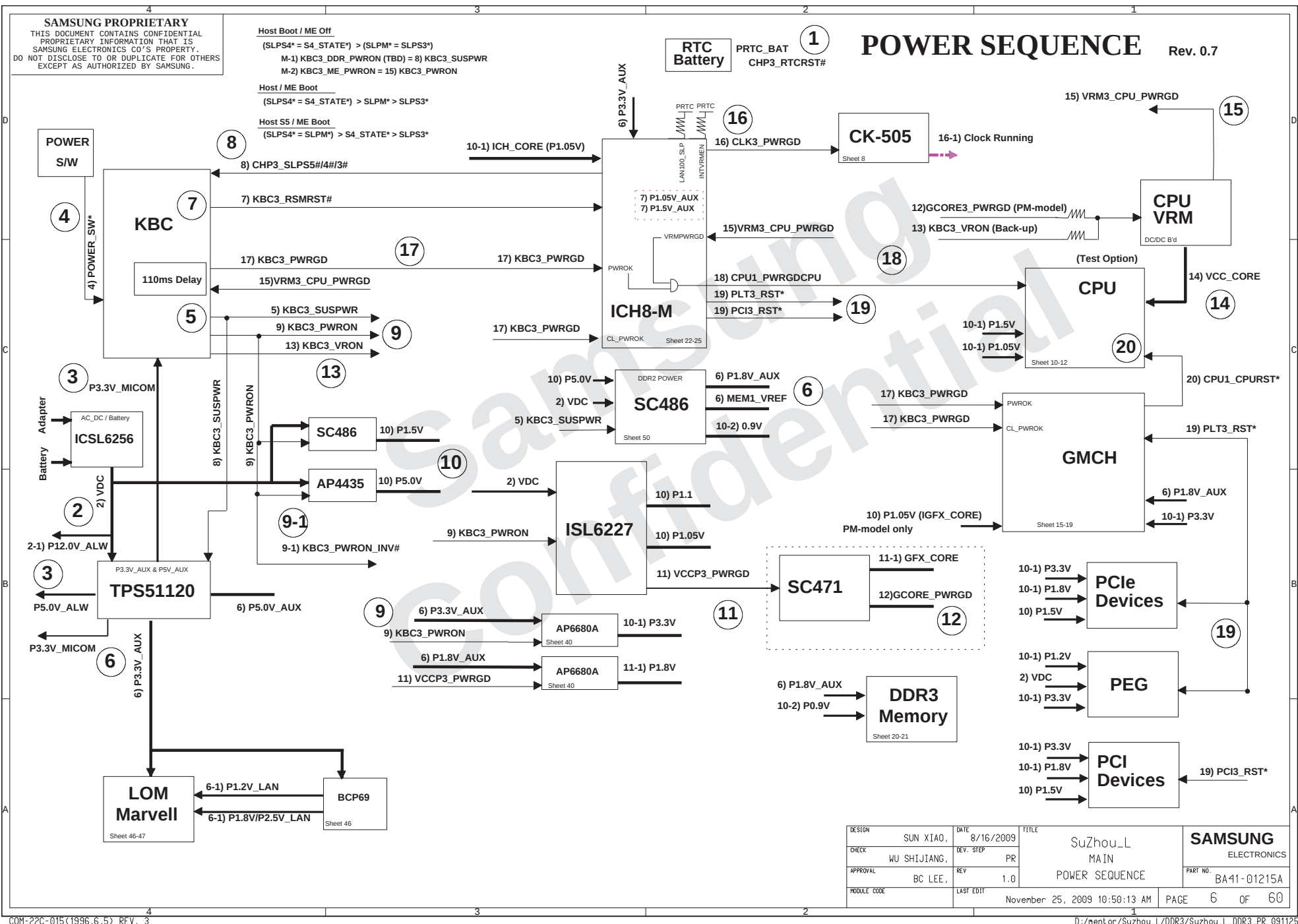
DESIGN	SUN XIAO,	DATE	8/16/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN	POWER RAILS	
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01215A
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	5	OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

Host Boot / ME Off
 (SLPS4* = S4_STATE*) > (SLPM* = SLPS3*)
 M-1) KBC3_DDR_PWRON (TBD) = 8) KBC3_SUSPWR
 M-2) KBC3_ME_PWRON = 15) KBC3_PWRON

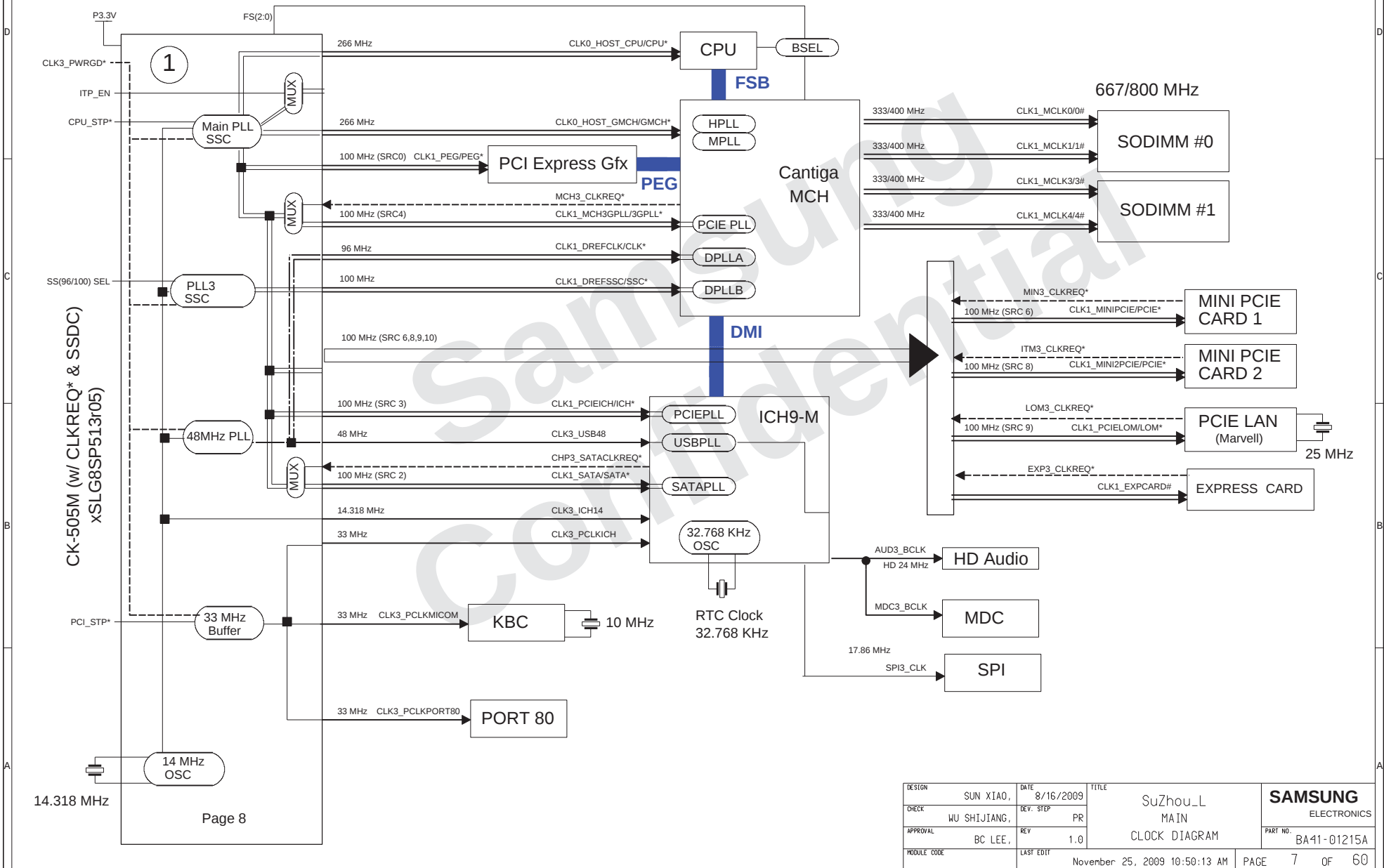
Host / ME Boot
(SLPS4* = S4 STATE*) > SLPM* > SLPS3*

Host S5 / ME Boot
(SLPS4* = SLPM*) > S4 STATE* > SLPS3*



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

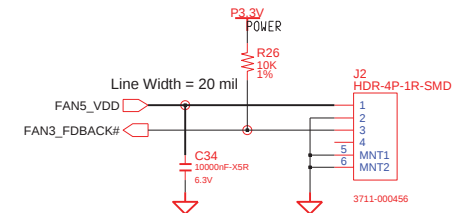
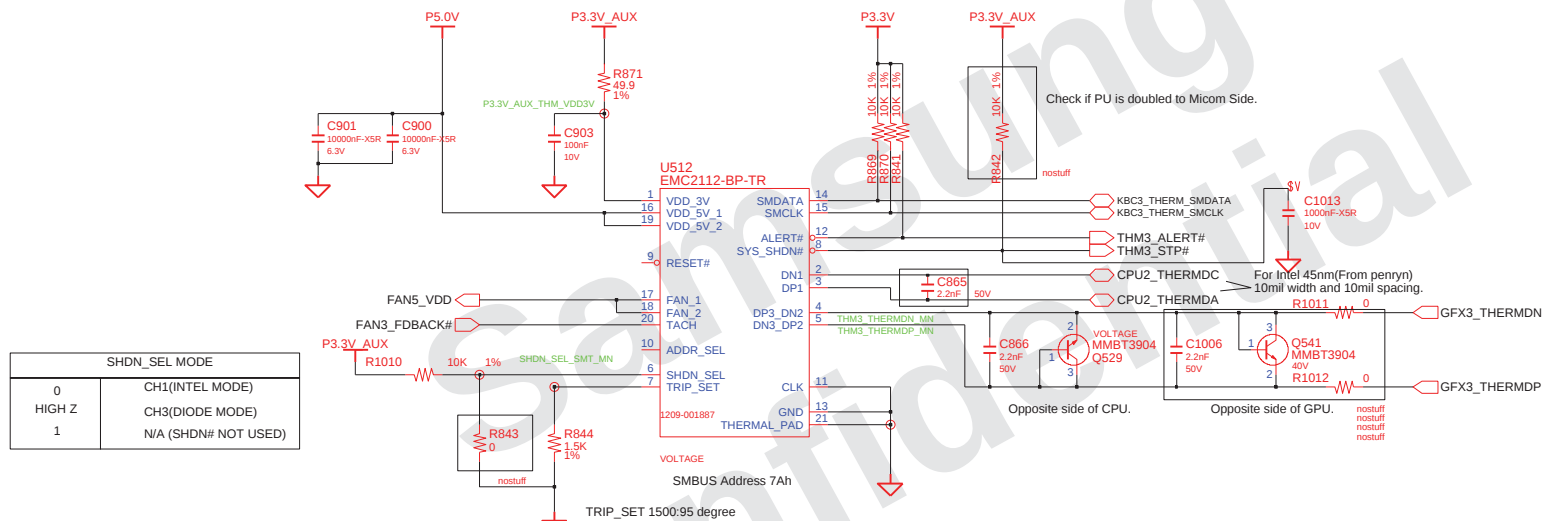
CLOCK DISTRIBUTION Rev. 0.1



DESIGN	SUN XIAO,	DATE	8/16/2009	TITLE	Suzhou_L	SAMSUNG
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		ELECTRONICS
APPROVAL	BC LEE,	REV	1.0	CLOCK DIAGRAM		PART NO. BA41-01215A
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	7	OF 60

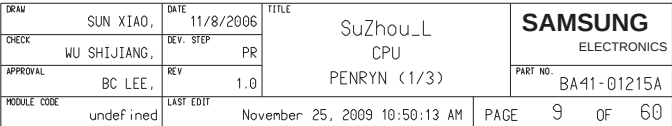
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

THERMAL SENSOR & FAN CONTROL

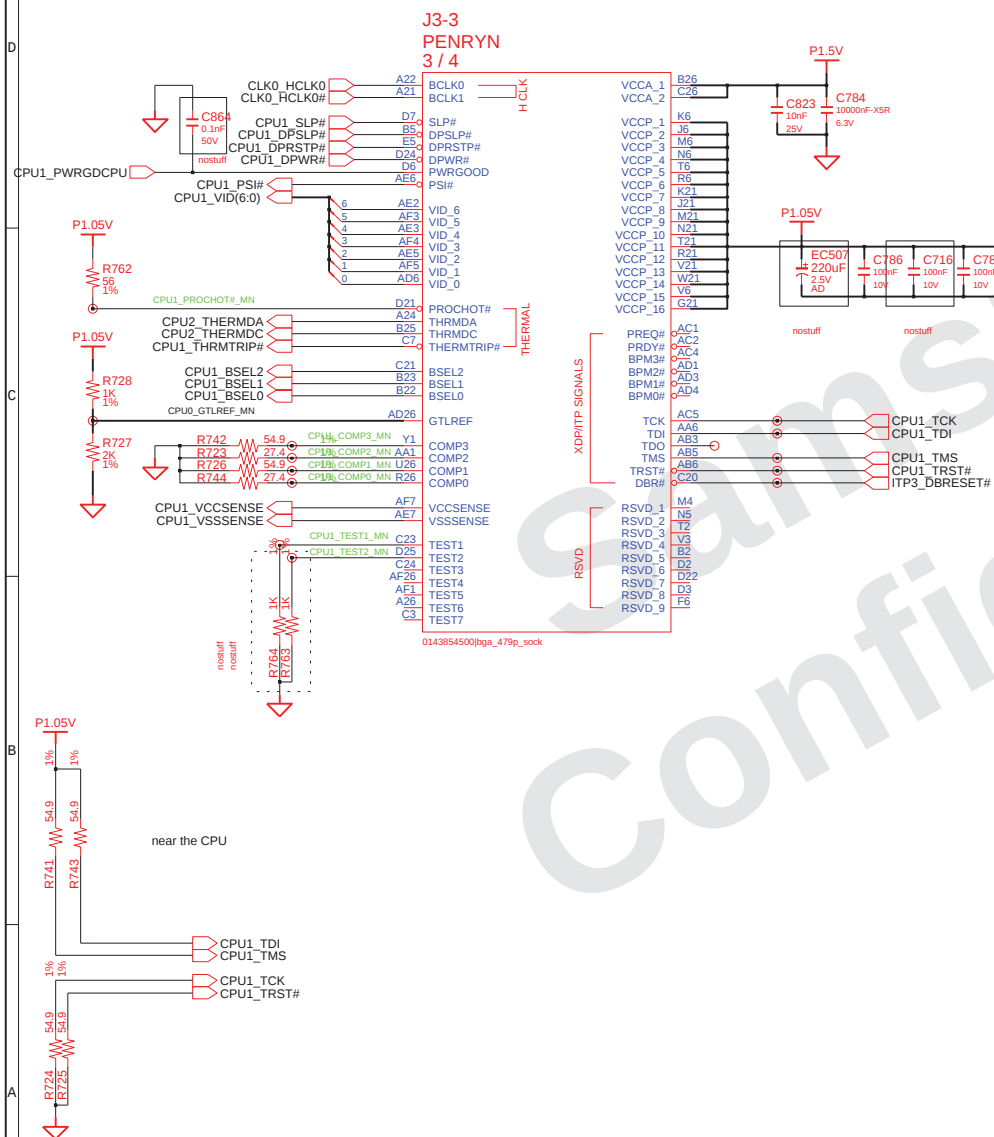


DESIGN	SUN XIAO,	DATE	6/17/2008	TITLE	SuZhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR		Thermal Sensor EMC2102	
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	8 OF 60	

CPU Socket: 3704-001153



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



CPU Core Voltage Table IMVP-6

Active Mode		Active/Deeper Sleep Dual Mode Region		Deeper Sleep/Extended Deeper Sleep Dual Mode Region	
VID(5.0)	Voltage	VID(5.0)	Voltage	VID(5.0)	Voltage
0 0 0 0 0 0 0 0	1.5000 V	0 1 0 1 0 0 0 0	1.0000 V	1 0 0 0 0 0 0 0	0.4875 V
0 0 0 0 0 0 0 1	1.4875 V	0 1 0 1 0 0 0 1	0.9875 V	1 0 1 0 0 0 0 0	0.4750 V
0 0 0 0 0 0 1 0	1.4750 V	0 1 0 1 0 1 0 0	0.9750 V	1 0 1 0 0 0 1 0	0.4625 V
0 0 0 0 0 0 1 1	1.4625 V	0 1 0 1 0 1 0 1	0.9625 V	1 0 1 0 1 0 0 0	0.4500 V
0 0 0 0 0 1 0 0	1.4500 V	0 1 0 1 0 1 0 0	0.9500 V	1 0 1 0 1 0 0 1	0.4375 V
0 0 0 0 1 0 0 0	1.4375 V	0 1 0 1 0 1 0 1	0.9375 V	1 0 1 0 1 0 1 0	0.4250 V
0 0 0 0 1 0 1 0	1.4250 V	0 1 0 1 1 0 0 0	0.9250 V	1 0 1 0 1 1 0 0	0.4125 V
0 0 0 0 1 1 0 0	1.4125 V	0 1 0 1 1 0 1 0	0.9125 V	1 0 1 1 0 0 0 0	0.4000 V
0 0 0 0 1 1 0 1	1.4000 V	0 1 1 0 0 0 0 0	0.9000 V	1 0 1 1 0 0 0 1	0.3875 V
0 0 0 0 1 1 0 1	1.3875 V	0 1 1 0 0 0 0 1	0.8875 V	1 0 1 1 0 1 0 0	0.3750 V
0 0 0 0 1 1 0 1	1.3750 V	0 1 1 0 0 0 0 1	0.8750 V	1 0 1 1 0 1 0 1	0.3625 V
0 0 0 0 1 1 0 1	1.3625 V	0 1 1 0 0 0 1 0	0.8625 V	1 0 1 1 1 0 0 0	0.3500 V
0 0 0 0 1 1 0 0	1.3500 V	0 1 1 0 1 0 0 0	0.8500 V	1 0 1 1 1 0 0 1	0.3375 V
0 0 0 0 1 1 0 1	1.3375 V	0 1 1 0 1 0 0 1	0.8375 V	1 0 1 1 1 1 0 0	0.3250 V
0 0 0 0 1 1 0 1	1.3250 V	0 1 1 0 1 0 0 1	0.8250 V	1 0 1 1 1 1 0 1	0.3125 V
0 0 0 0 1 1 1 0	1.3125 V	0 1 1 0 1 0 1 0	0.8125 V	1 1 0 0 0 0 0 0	0.3000 V
0 0 0 0 1 1 0 0	1.3000 V	0 1 1 0 1 0 0 0	0.8000 V	1 1 0 0 0 0 0 1	0.2875 V
0 0 0 1 0 0 0 0	1.2875 V	0 1 1 1 0 0 0 0	0.7875 V	1 1 0 0 0 0 1 0	0.2750 V
0 0 0 1 0 0 0 1	1.2750 V	0 1 1 1 0 0 0 1	0.7750 V	1 1 0 0 0 0 1 1	0.2625 V
0 0 0 1 0 0 0 1	1.2625 V	0 1 1 1 0 0 0 1	0.7625 V	1 1 0 0 0 0 1 1	0.2500 V
0 0 0 1 0 0 1 0	1.2500 V	0 1 1 1 1 0 0 0	0.7500 V	1 1 0 0 0 0 1 1	0.2375 V
0 0 0 1 0 0 1 0	1.2375 V	0 1 1 1 1 0 0 1	0.7375 V	1 1 0 0 0 1 0 0	0.2250 V
0 0 0 1 0 1 0 0	1.2250 V	0 1 1 1 1 0 1 0	0.7250 V	1 1 0 0 0 1 1 0	0.2125 V
0 0 0 1 0 1 0 0	1.2125 V	0 1 1 1 1 0 1 0	0.7125 V	1 1 0 0 0 1 1 0	0.2000 V
0 0 0 1 0 1 0 0	1.2000 V	1 0 0 0 0 0 0 0	0.7000 V	1 1 0 0 0 1 1 0	0.1875 V
0 0 0 1 0 1 0 0	1.1875 V	1 0 0 0 0 0 0 1	0.6875 V	1 1 0 0 1 0 0 0	0.1750 V
0 0 0 1 0 1 0 0	1.1750 V	1 0 0 0 0 0 1 0	0.6750 V	1 1 0 0 1 0 0 1	0.1625 V
0 0 0 1 0 1 0 0	1.1625 V	1 0 0 0 0 0 1 1	0.6625 V	1 1 0 0 1 0 0 1	0.1500 V
0 0 0 1 0 1 0 0	1.1500 V	1 0 0 0 0 0 1 1	0.6500 V	1 1 0 0 1 0 1 0	0.1375 V
0 0 0 1 1 0 0 0	1.1375 V	1 0 0 0 0 0 1 0	0.6375 V	1 1 0 0 1 1 0 0	0.1250 V
0 0 0 1 1 0 0 0	1.1250 V	1 0 0 0 0 0 1 0	0.6250 V	1 1 0 0 1 1 0 1	0.1125 V
0 0 0 1 1 0 1 0	1.1125 V	1 0 0 0 0 1 0 0	0.6125 V	1 1 0 0 1 0 0 0	0.1000 V
0 0 1 0 0 0 0 0	1.1000 V	1 0 0 0 1 0 0 0	0.6000 V	1 1 0 0 1 0 0 1	0.0875 V
0 0 1 0 0 0 0 0	1.0875 V	1 0 0 0 1 0 0 0	0.5875 V	1 1 0 0 1 0 0 1	0.0750 V
0 0 1 0 0 0 1 0	1.0750 V	1 0 0 0 1 0 0 0	0.5750 V	1 1 0 0 1 0 0 1	0.0625 V
0 0 1 0 0 0 1 0	1.0625 V	1 0 0 0 1 0 0 1	0.5625 V	1 1 0 0 1 0 0 0	0.0500 V
0 0 1 0 0 1 0 0	1.0500 V	1 0 0 0 1 0 0 0	0.5500 V	1 1 0 0 1 0 0 1	0.0375 V
0 0 1 0 0 1 0 0	1.0375 V	1 0 0 0 1 0 0 1	0.5375 V	1 1 0 0 1 0 0 1	0.0250 V
0 0 1 0 0 1 0 0	1.0250 V	1 0 0 0 1 0 0 1	0.5250 V	1 1 0 0 1 0 0 1	0.0125 V
0 0 1 0 0 0 1 0	1.0125 V	1 0 0 0 1 0 1 0	0.5125 V	1 1 0 0 1 0 0 0	0.0000 V
0 1 0 0 0 0 1 1	1.0000 V	1 0 0 0 1 0 0 0	0.5000 V	1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
				1 1 0 0 1 0 0 0	0.0000 V
			</		

*Yonah Processor (2.33 GHz / 800 MHz : TBD)

GTLREF : Keep the Voltage divider within 0.5" of the first GTLREF0 pin with $Z_0=55\Omega$ trace. Minimize coupling of any switching signals to this net.

COMP0,2(COMP1,3) should be connected with $Z_0=27.4\text{ohm}(55\text{ohm})$ trace shorter than $1/2"$ to their respective Banias socket pins.

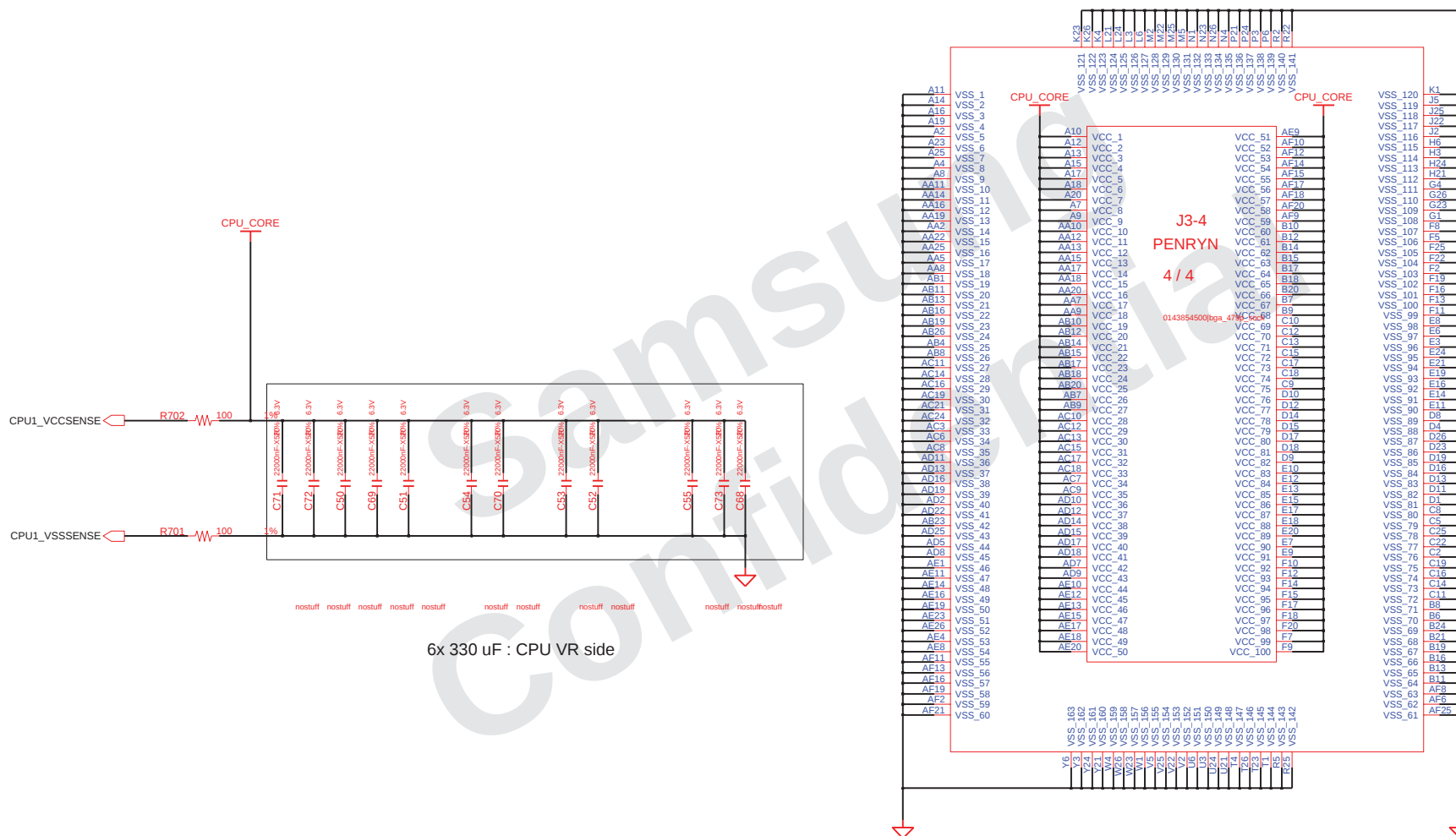
GND test points within 100mil of the VCC/VSSsense at the end of the line. Route the VCC/VSSsense as a $Z_0=55\text{ohm}$ traces with equal length. Observe 3:1 spacing b/w VCC/VSSsense lines and 25mil away (preferred 50mil) from any other signal. And GND via 100mil away from each of the VCC/VSS test point vias.

BSEL

		Pull-down
FSB 1067 MHz		BSEL0, BSEL1, BSEL2
FSB 800 MHz		BSEL0, BSEL2

DRAM	SUN XIAO,	DATE	11/8/2006	TITLE	SuZhou_L CPU PENRYN (2/3)	
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE	undef ined	LAST EDIT	November 25, 2009 10:50:13 AM			

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

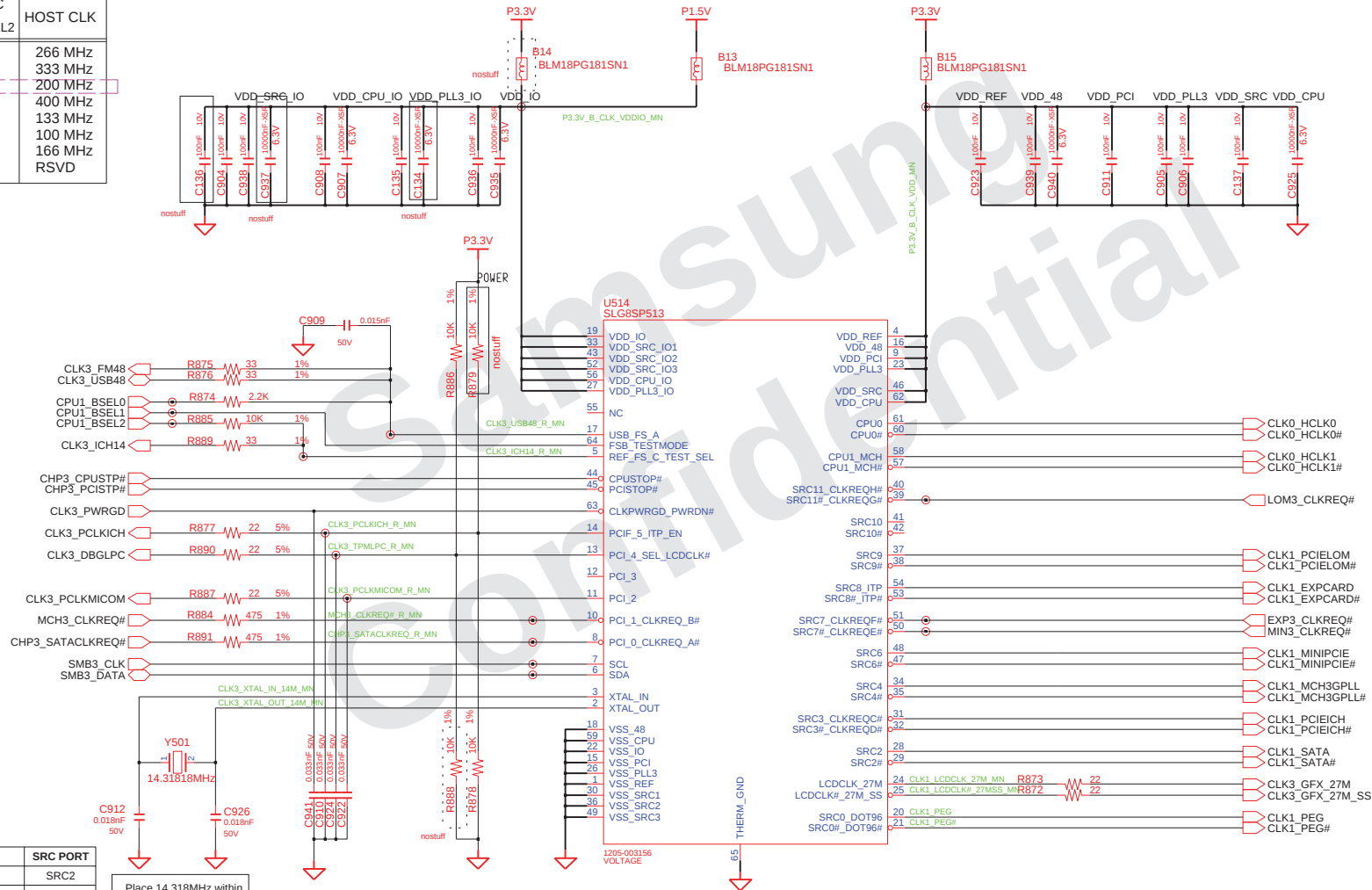


DRAW	SUN XIAO,	DATE	11/8/2006	TITLE	SuZhou_L CPU PENRYN (3/3)		
CHECK	WU SHIJIANG,	DEV. STEP	PR				
APPROVAL	BC LEE,	REV	1.0				
MODULE CODE	undef ined	LAST EDIT	November 25, 2009 10:50:13 AM				PAGE

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

CK505M

FSA	FSB	FSC	HOST CLK
BSEL0	BSEL1	BSEL2	
0	0	0	266 MHz
0	0	1	333 MHz
0	1	0	200 MHz
0	1	1	400 MHz
1	0	0	133 MHz
1	0	1	100 MHz
1	1	0	166 MHz
1	1	1	RSVD



CLK REQ	DEVICE	SRC PORT
CLK REQ A	SATA	SRC2
CLK REQ B	GMCH	SRC4
CLK REQ E	MINI CARD	SRC6
CLK REQ F	EXP3_CLKREQ#	SRC8

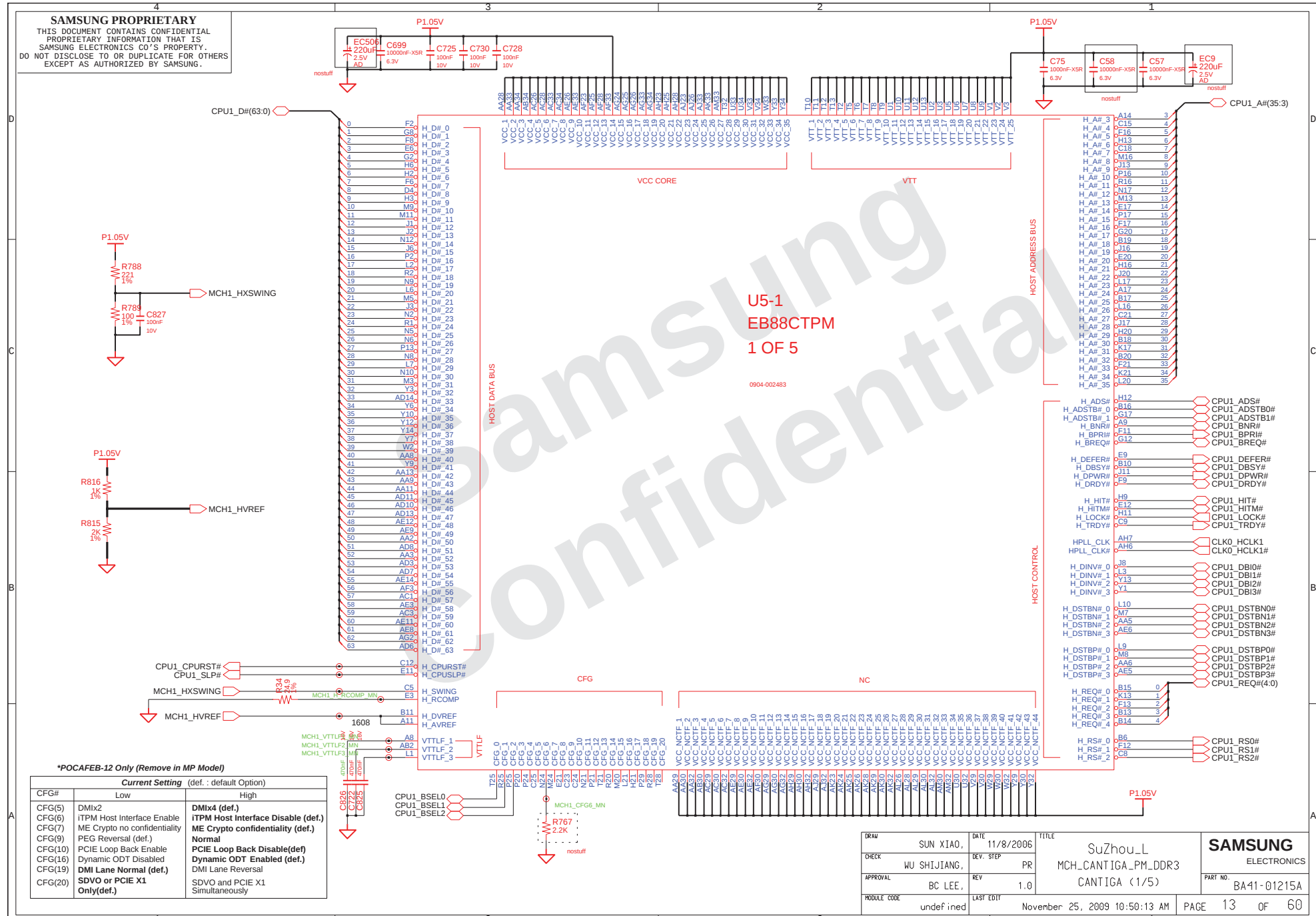
SEL_LCDCCLK*	Pin 20/21	Pin 24/25
LOW	DOT_96/DOT_96#	PEG_CLK/PEG_CLK#
HIGH	SRC_0/SRC_0#	27M & 27M_SS

This part is 64pin QFN package.

IDT: 1205-003159
SL: 1205-003533

DRAW	SUN XIAO,	DATE	8/12/2006	TITLE	SuZhou_L Main_Clock_Circuit CK_Clock_505M	SAMSUNG ELECTRONICS		
CHECK	WU SHIJIANG,	DEV. STEP	PR				PART NO.	BA41-01215A
APPROVAL	BC LEE,	REV	1.0					
MODULE CODE	undefined	LAST EDIT	November 25, 2009 10:50:13 AM		PAGE	12 OF 60		

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

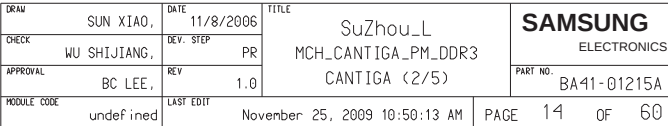


U5-1
EB88CTPM
1 OF 5

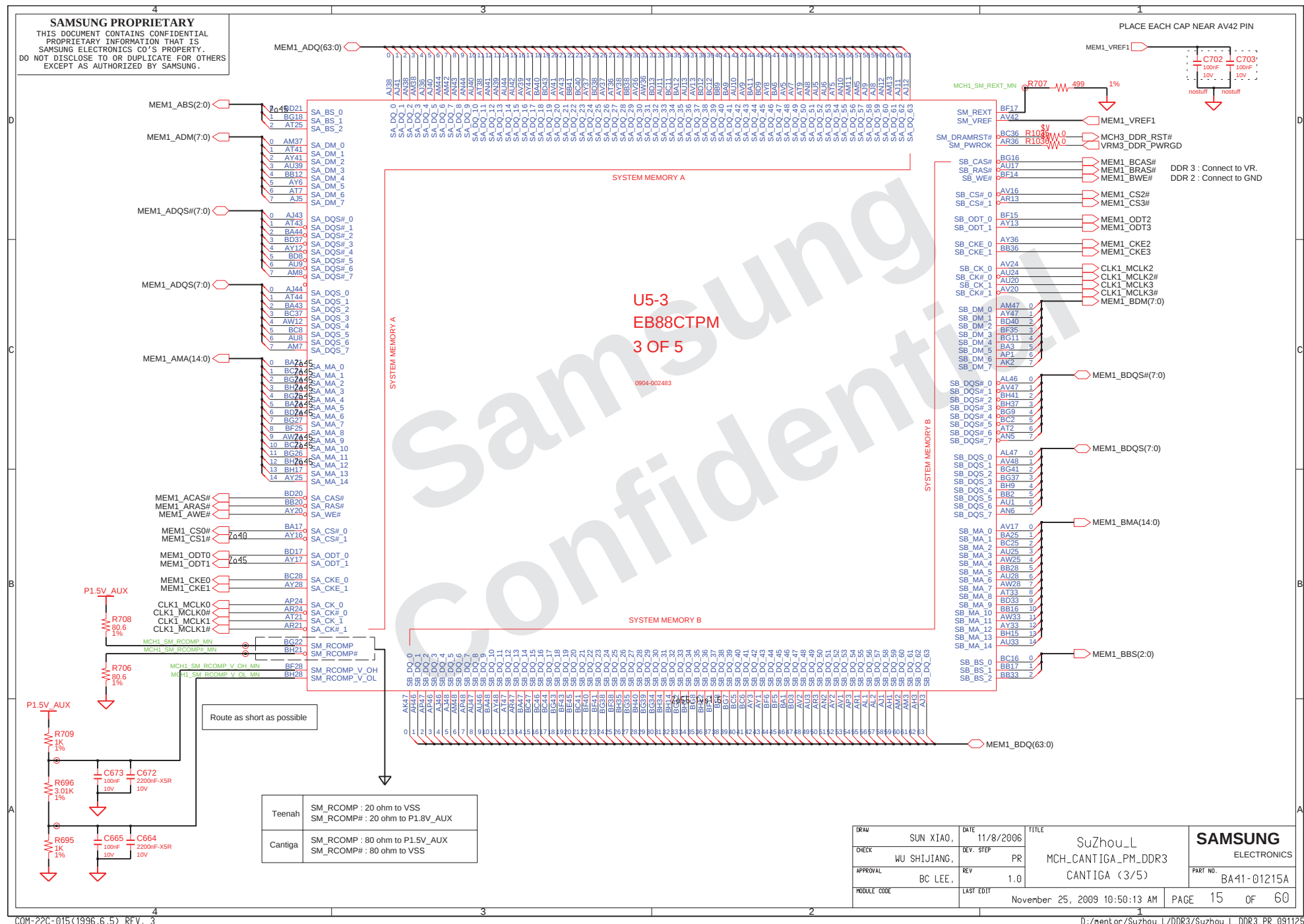
0904-002483

DRAW	SUN XIAO,	DATE	11/8/2006	TITLE	SuZhou_L MCH_CANTIGA_PM_DDR3 CANTIGA (1/5)	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE	undefined	LAST EDIT	November 25, 2009 10:50:13 AM			
				PAGE	13	OF 60

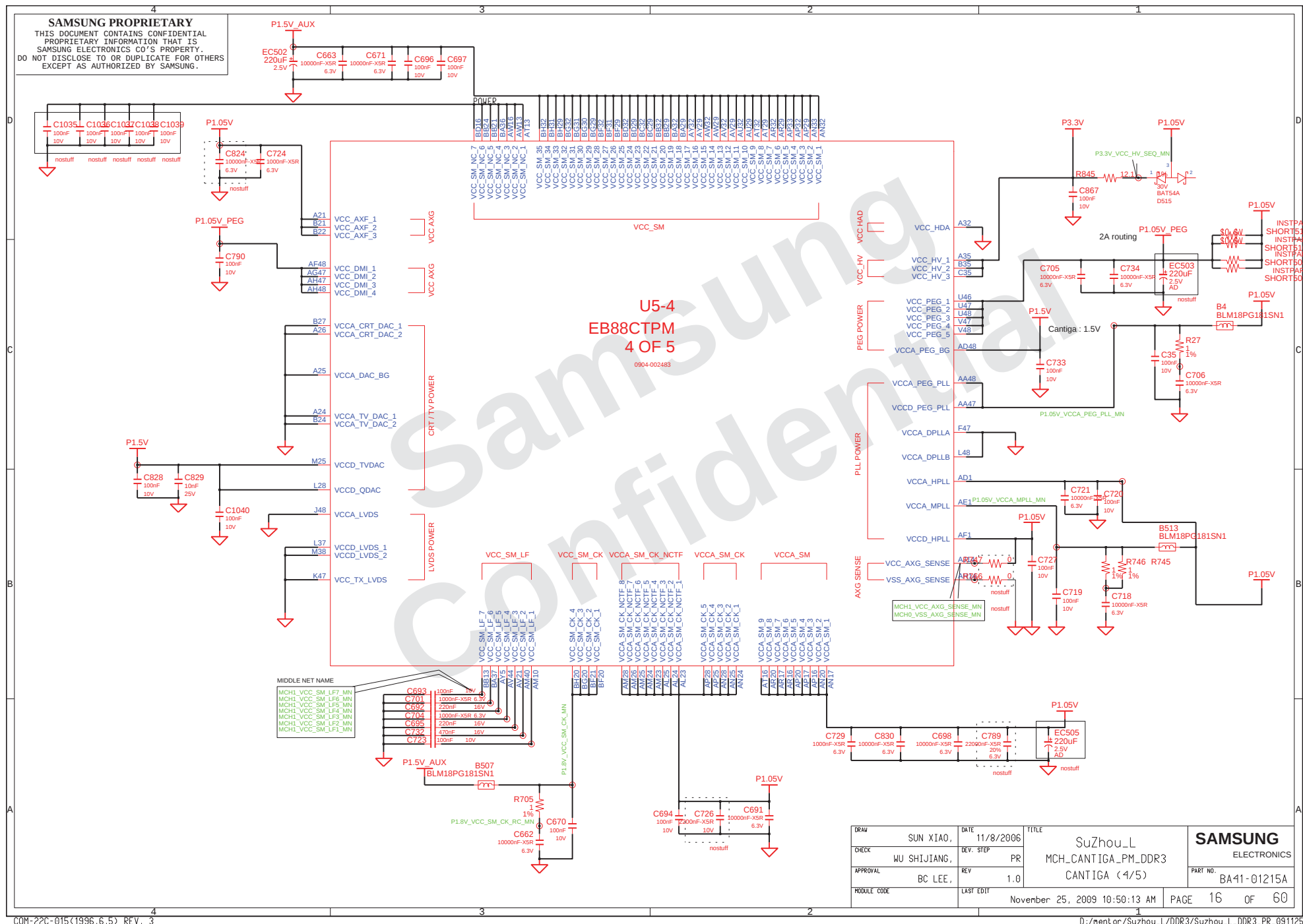
PEG1 RXN(15:0)



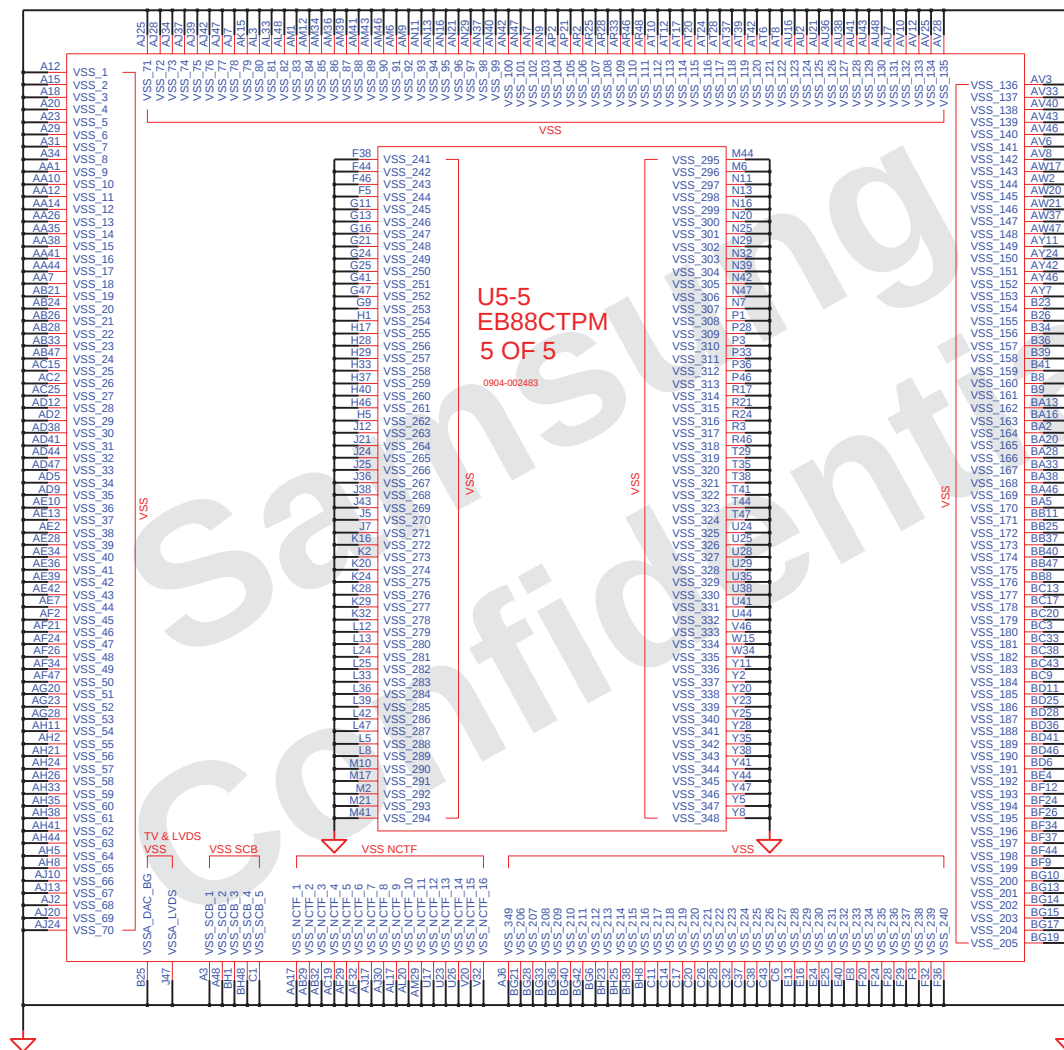
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

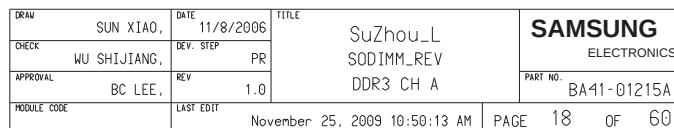


DRAW		DATE		TITLE		SAMSUNG	
SUN XIAO,		11/8/2006		SuZhou_L		ELECTRONICS	
CHECK		DEV. STEP		MCH_CANTIGA_PM_DDR3		PART NO.	
WU SHIJIANG,		PR		CANTIGA (4/5)		BA41-01215A	
APPROVAL		REV					
BC LEE,		1.0					
MODULE CODE		LAST EDIT		November 25, 2009 10:50:13 AM		PAGE 16 OF 60	



DRAW	SUN XIAO,	DATE	11/8/2006	TITLE	SuZhou_L	SAMSUNG ELECTRONICS	
CHECK	WU SHIJIANG,	DEV. STEP	PR				MCH.CANTIGA_PM_DDR3 CANTIGA (5/5)
APPROVAL	BC LEE,	REV	1.0				
MODULE CODE	LAST EDIT		November 25, 2009 10:50:13 AM				
				PART NO.	BA41-01215A		

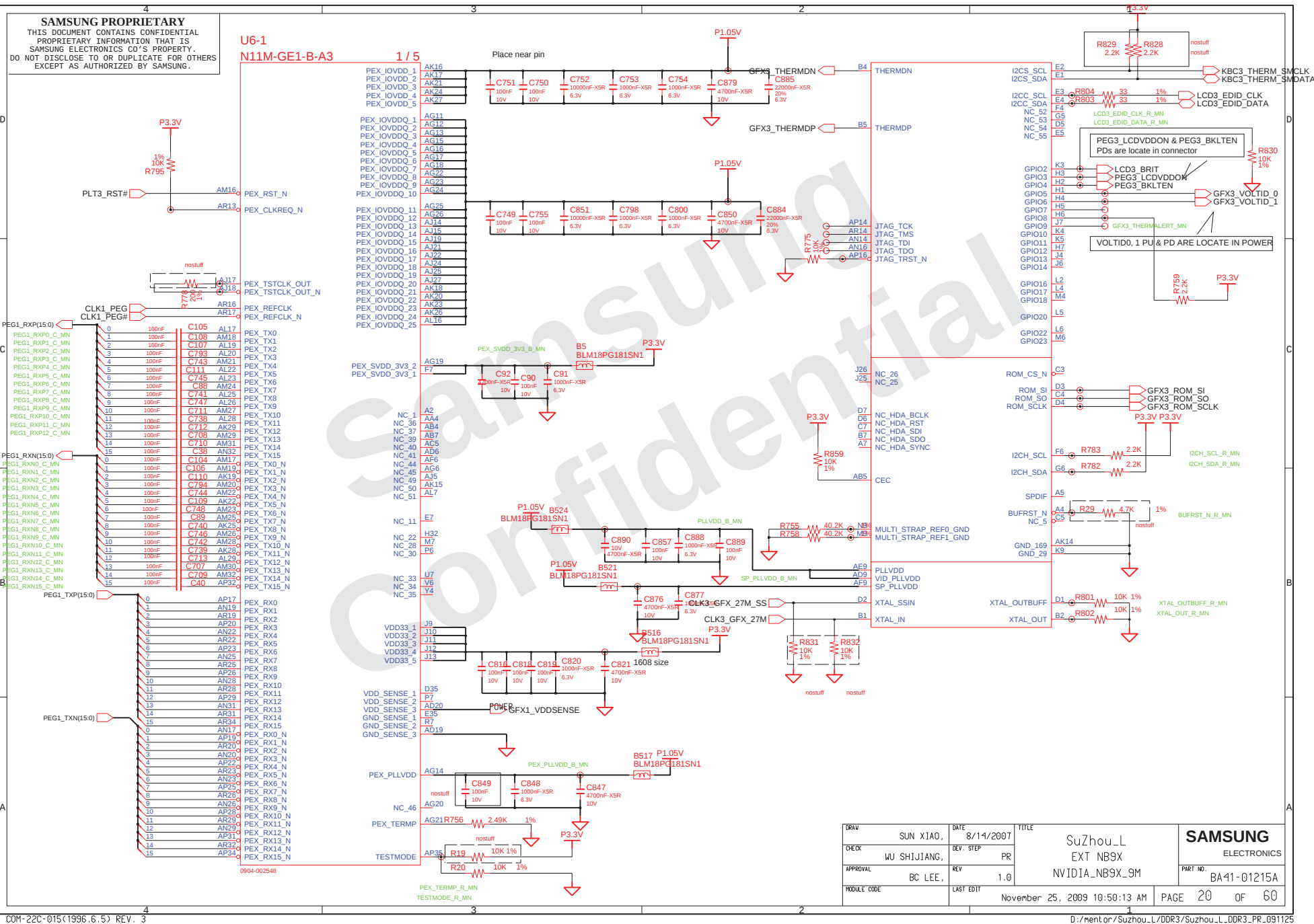
DDR SO-DIMM #0



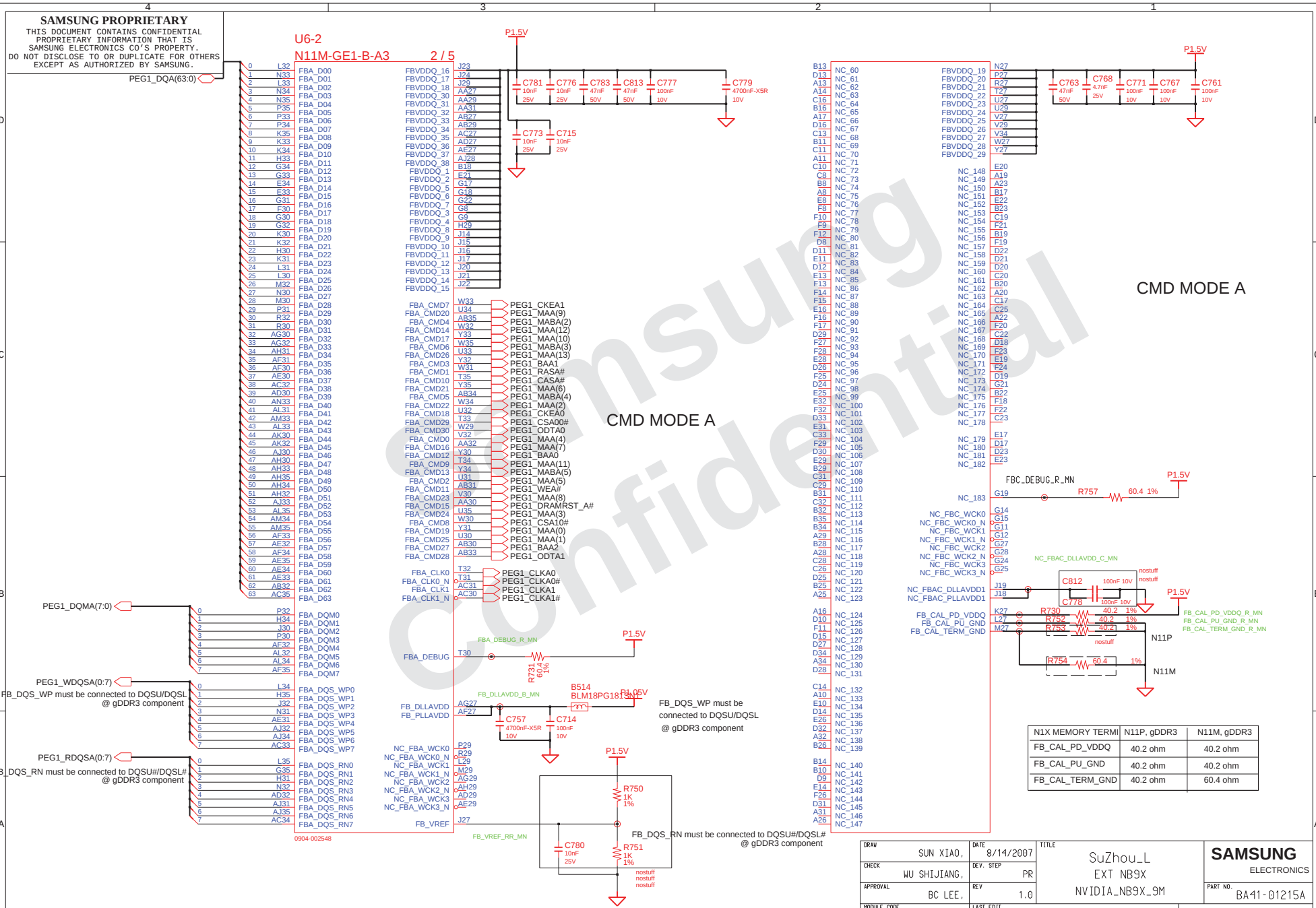
DDR SO-DIMM #1



COM-22C-015(1996.6.5) REV. 3



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

U6-3

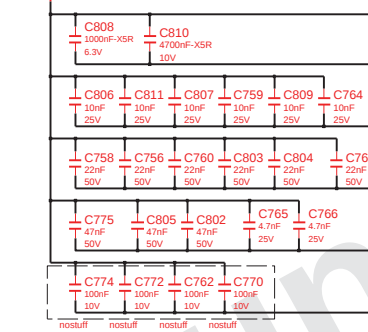
N11M-GE1-B-A3

3 / 5

EGFX_CORE

EGFX_CORE

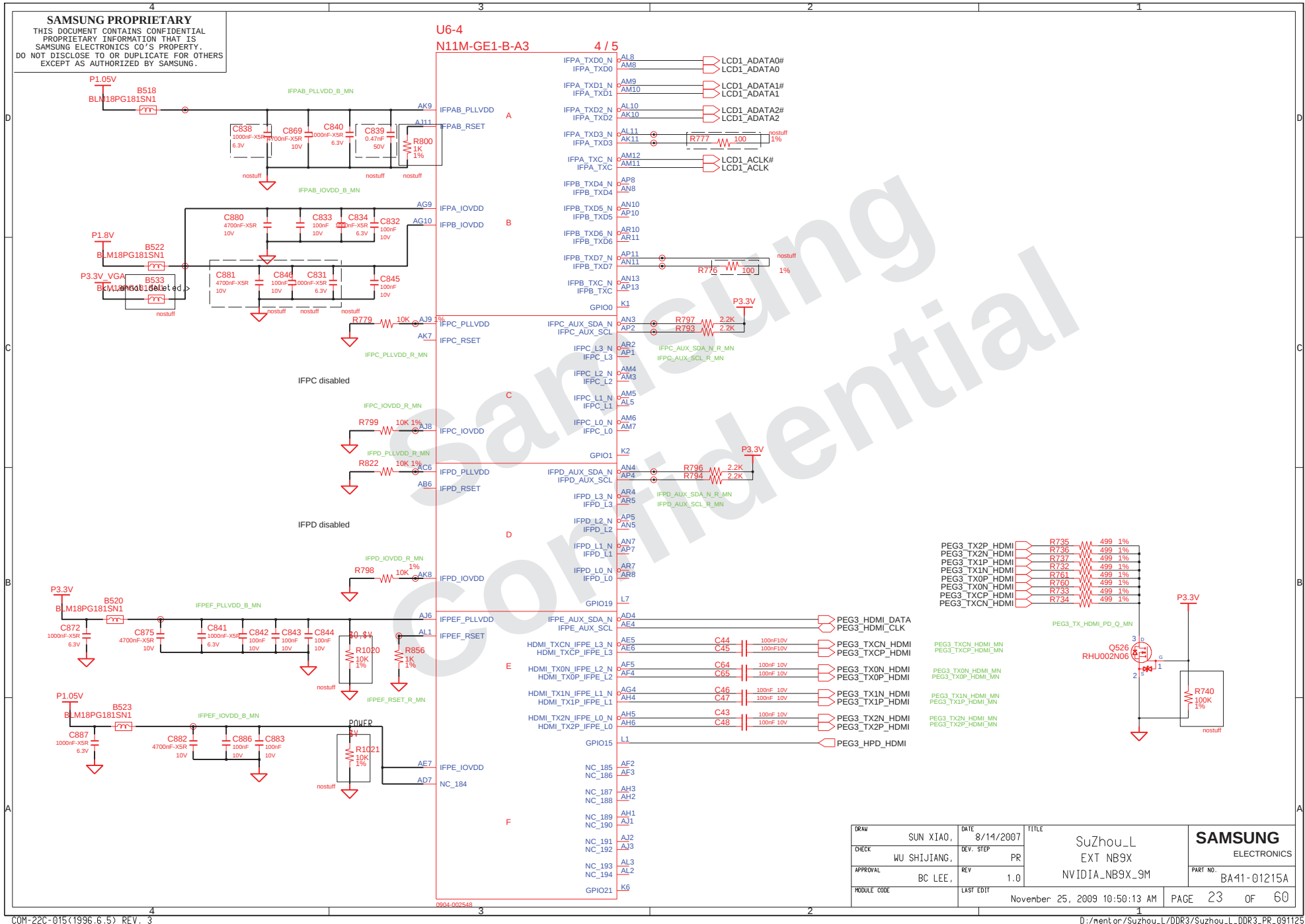
B3	GND_1	V18
B6	GND_2	V18
B9	GND_3	V20
B12	GND_4	V22
B15	GND_5	V24
B21	GND_6	V21
B24	GND_7	Y11
B27	GND_8	Y13
B30	GND_9	Y15
B33	GND_10	Y17
C2	GND_11	Y19
C34	GND_12	Y21
E6	GND_13	Y23
E9	GND_14	Y25
E12	GND_15	AA2
E15	GND_16	AA5
E18	GND_17	AA11
E24	GND_18	AA12
E27	GND_19	AA13
F2	GND_20	AA15
F5	GND_21	AA16
F31	GND_22	AA17
F34	GND_23	AA18
J2	GND_24	AA19
J5	GND_25	AA20
J31	GND_26	AA21
J34	GND_27	AA22
L9	GND_28	AA23
M2	GND_29	AA24
M5	GND_30	AA25
M11	GND_31	AB12
M13	GND_32	AB17
M15	GND_33	AB14
M17	GND_34	AB16
M19	GND_35	AB18
M21	GND_36	AB20
M23	GND_37	AB22
M25	GND_38	AB24
M31	GND_39	AC9
M34	GND_40	AD2
N11	GND_41	AD5
N12	GND_42	AD11
N13	GND_43	AD13
N14	GND_44	AD15
N15	GND_45	AD17
N16	GND_46	AD21
N17	GND_47	AD23
N18	GND_48	AD25
N19	GND_49	AD34
N20	GND_50	AE11
N21	GND_51	AE12
N22	GND_52	AE13
N23	GND_53	AE14
N24	GND_54	AE15
N25	GND_55	AE16
P12	GND_56	AE17
P16	GND_57	AE18
P18	GND_58	AE19
P20	GND_59	AE20
P22	GND_60	AE21
P24	GND_61	AE22
R2	GND_62	AE23
R5	GND_63	AE24
R31	GND_64	AE25
R34	GND_65	AG2
T11	GND_66	AG31
T13	GND_67	AG34
T15	GND_68	AK2
T17	GND_69	AK5
T19	GND_70	AK31
T21	GND_71	AK34
T23	GND_72	AL6
T25	GND_73	AL9
U11	GND_74	AL12
U12	GND_75	AL15
U13	GND_76	AL18
U14	GND_77	AL21
U15	GND_78	AL24
U16	GND_79	AL27
U17	GND_80	AL30
U18	GND_81	AN2
U19	GND_82	AN34
U20	GND_83	AP3
U21	GND_84	AP6
U22	GND_85	AP9
U23	GND_86	AP15
U24	GND_87	AP18
U25	GND_88	AP21
V2	GND_89	AP24
V5	GND_90	AP27
V9	GND_91	AP30
V12	GND_92	AP33
V14	GND_93	
V17	GND_94	
	GND_95	
	GND_96	
	GND_97	
	GND_98	
	GND_99	
	GND_100	
	GND_101	
	GND_102	
	GND_103	
	GND_104	
	GND_105	
	GND_106	
	GND_107	
	GND_108	
	GND_109	
	GND_110	
	GND_111	
	GND_112	
	GND_113	
	GND_114	
	GND_115	
	GND_116	
	GND_117	
	GND_118	
	GND_119	
	GND_120	
	GND_121	
	GND_122	
	GND_123	
	GND_124	
	GND_125	
	GND_126	
	GND_127	
	GND_128	
	GND_129	
	GND_130	
	GND_131	
	GND_132	
	GND_133	
	GND_134	
	GND_135	
	GND_136	
	GND_137	
	GND_138	
	GND_139	
	GND_140	
	GND_141	
	GND_142	
	GND_143	
	GND_144	
	GND_145	
	GND_146	
	GND_147	
	GND_148	
	GND_149	
	GND_150	
	GND_151	
	GND_152	
	GND_153	
	GND_154	
	GND_155	
	GND_156	
	GND_157	
	GND_158	
	GND_159	
	GND_160	
	GND_161	
	GND_162	
	GND_163	
	GND_164	
	GND_165	
	GND_166	
	GND_167	
	GND_168	
	GND_169	
	GND_170	
	GND_171	
	GND_172	
	GND_173	
	GND_174	
	GND_175	
	GND_176	
	GND_177	
	GND_178	
	GND_179	
	GND_180	
	GND_181	
	GND_182	
	GND_183	
	GND_184	
	GND_185	
	GND_186	
	GND_187	
	GND_188	
	GND_189	
	GND_190	
	GND_191	
	GND_192	
	GND_193	



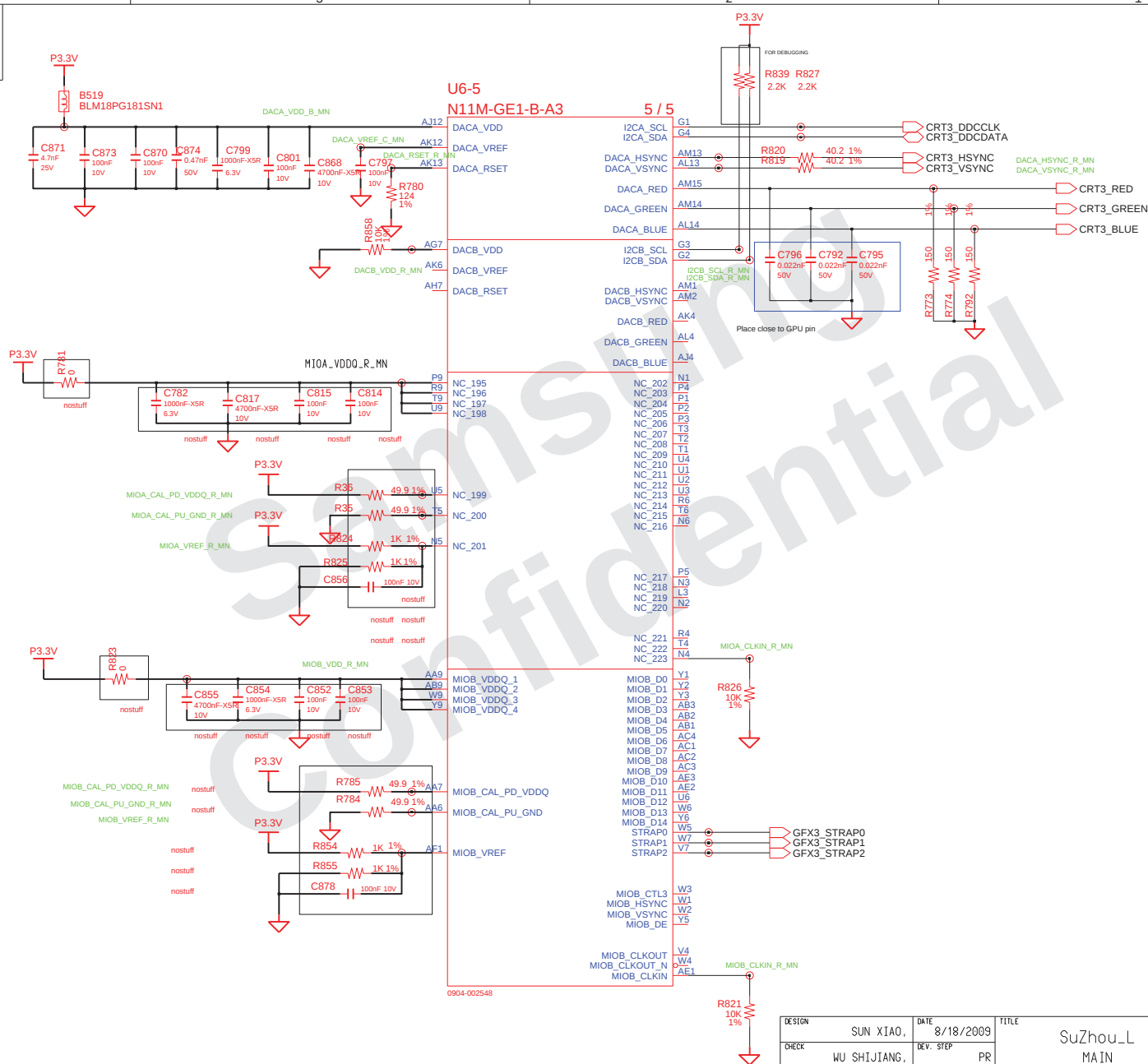
L11	VDD_1	V19
L12	VDD_2	V21
L13	VDD_3	V23
L14	VDD_4	V25
L15	VDD_5	W11
L16	VDD_6	W12
L17	VDD_7	W13
L18	VDD_8	W14
L19	VDD_9	W15
L20	VDD_10	W16
L21	VDD_11	W17
L22	VDD_12	W18
L23	VDD_13	W19
L24	VDD_14	W20
L25	VDD_15	W21
M12	VDD_16	W22
M14	VDD_17	W23
M16	VDD_18	W24
M18	VDD_19	W25
M20	VDD_20	Y12
M22	VDD_21	Y14
M24	VDD_22	Y16
P11	VDD_23	Y18
P13	VDD_24	Y20
P15	VDD_25	Y22
P17	VDD_26	Y24
P19	VDD_27	AB11
P21	VDD_28	AB13
P23	VDD_29	AB15
P25	VDD_30	AB17
R11	VDD_31	AB19
R12	VDD_32	AB21
R13	VDD_33	AB23
R14	VDD_34	AB25
R15	VDD_35	AC11
R16	VDD_36	AC12
K17	VDD_37	AC13
R18	VDD_38	AC14
R19	VDD_39	AC15
R20	VDD_40	AC16
R21	VDD_41	AC17
R22	VDD_42	AC18
R23	VDD_43	AC19
R24	VDD_44	AC20
R25	VDD_45	AC21
Y12	VDD_46	AC22
T14	VDD_47	AC23
T16	VDD_48	AC24
T18	VDD_49	AC25
AD31	VDD_50	AD12
T22	VDD_51	AD14
T24	VDD_52	AD16
V11	VDD_53	AD18
V13	VDD_54	AD22
V15	VDD_55	AD24
V17	VDD_56	AD26

DRAW	SUN XIAO,	DATE	8/14/2007	TITLE	SuZhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR		EXT NB9X	
APPROVAL	BC LEE,	REV	1.0		NVIDIA-NB9X_9M	
MODULE CODE		LAST EDIT		November 25, 2009 10:50:13 AM	PAGE 22 OF 60	

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



DESIGN	SUN XIAO,	DATE	8/18/2009	TITLE	SuZhou_L MAIN N11M-GS	SAMSUNG ELECTRONICS		
CHECK	WU SHIJIANG,	DEV. STEP	PR				PART NO.	BA41-01215A
APPROVAL	BC LEE,	REV	1.0					
MODULE CODE	LAST EDIT			November 25, 2009 10:50:13 AM	PAGE	24 OF 60		

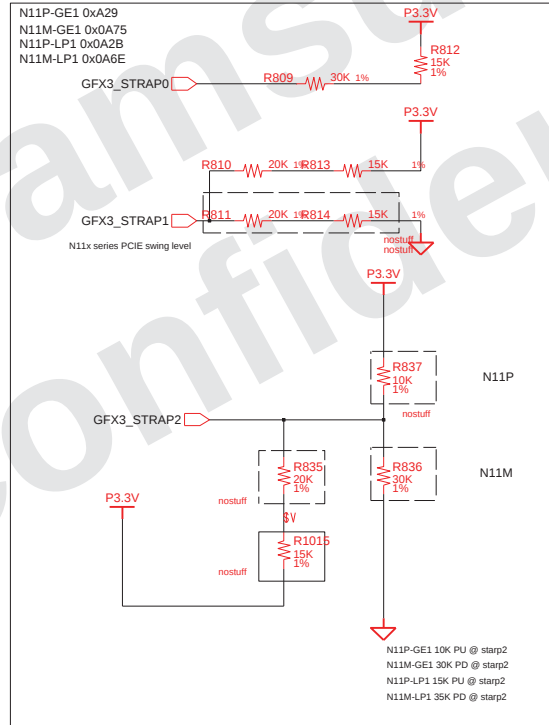
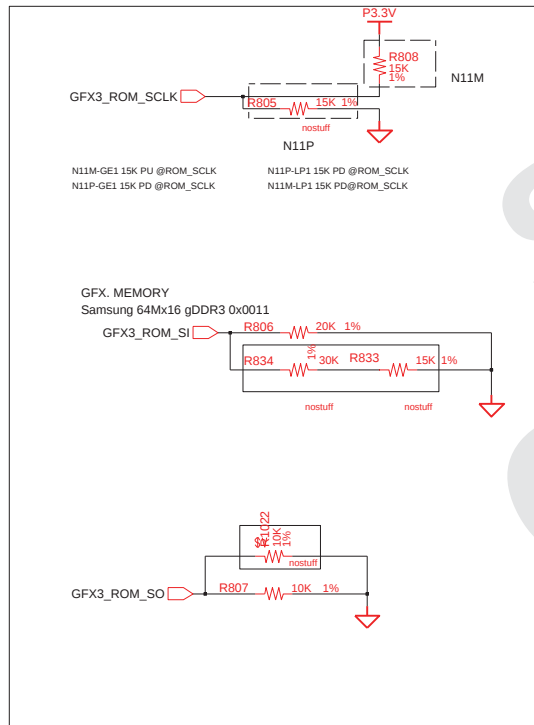
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

N11x_40nm STRAP

Pin	Description	Activate	Pin	Description	Activate
GPIO(0)	General Purpose	NC	GPIO(12)	PWR_LEVEL	NC
GPIO(1)	HPD-C	NC	GPIO(13)	MEM_VID	NC
GPIO(2)	LCD0_BL_PWM	High	GPIO(14)	PWR_CTRL1	NC
GPIO(3)	LCD0_VDD	High	GPIO(15)	HPD-E	High
GPIO(4)	LCD0_BL_EN	High	GPIO(16)	FAN_PWM	NC
GPIO(5)	GPU VID0	00 0.8v 10 0.95v	GPIO(17)	Reserved	NC
GPIO(6)	GPU_VID1	01 0.85v 11 1.03v	GPIO(18)	Reserved	NC
GPIO(7)	GPU VID2	NC	GPIO(19)	HPD-D	NC
GPIO(8)	OVERT	LOW			
GPIO(9)	ALERT	NC			
GPIO(10)	MEM_VREF	NC			
GPIO(11)	SLI_SYNC	NC			

STRAP PIN	BIT 3	BIT 2	BIT 1	BIT0
ROM_SO	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]

RESISTOR	PULL UP	PULL DOWN
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111



N11P-GE1	Bit3	Bit2	Bit1	Bit0	
ROMSO	0	0	0	1	27M
SCLK	0	0	1	0	DEVICE ID GFX TPYE
SI	0	0	1	1	gDDR3 1Gb
Strap2	1	0	0	1	N11P-GE1 DEVICE ID
Strap1	1	1	1	0	PEG PCIE swing level
Strap0	1	1	1	1	EDID_EN

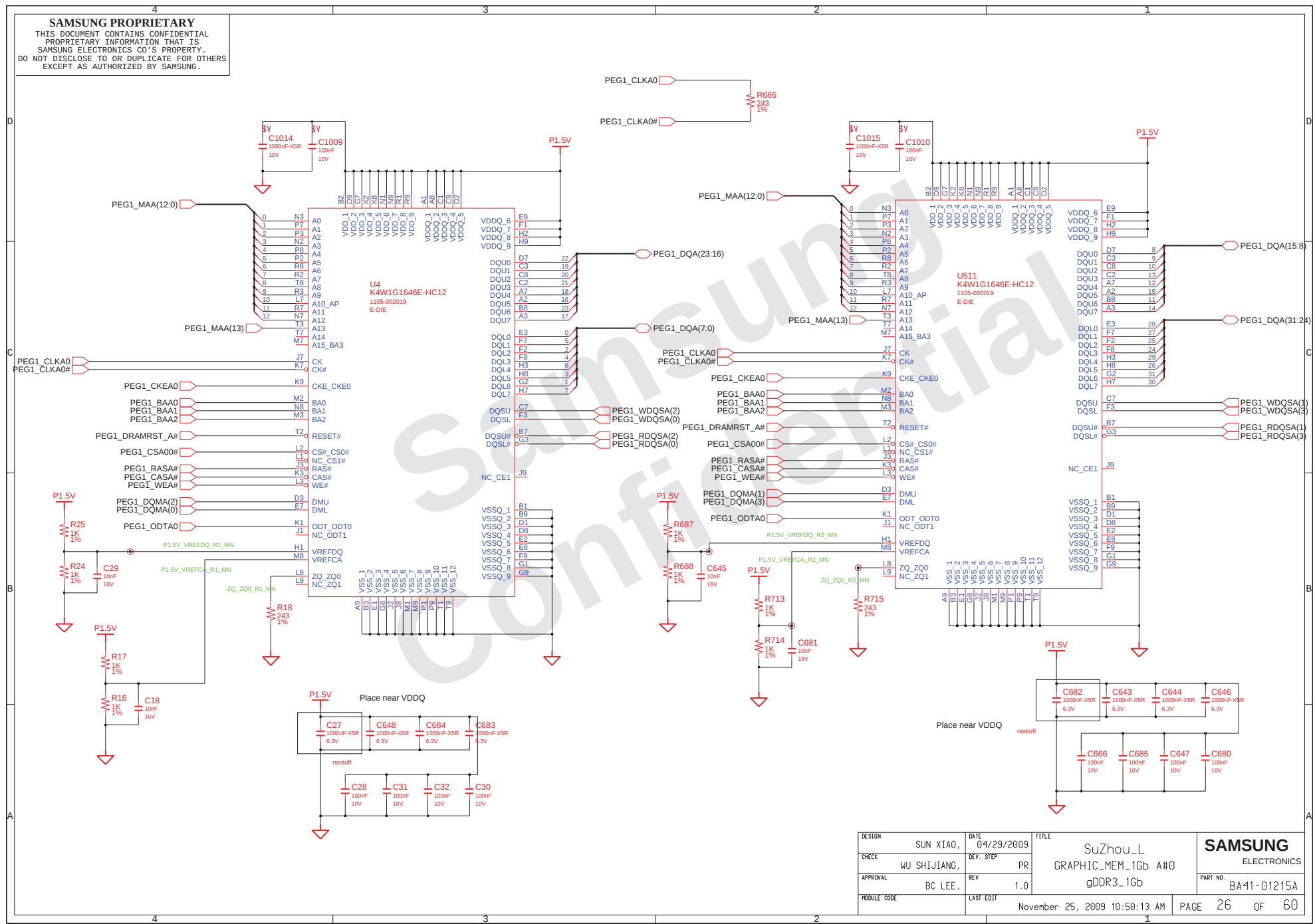
N11P-GE1 0x0A29

N11M-GE1	Bit3	Bit2	Bit1	Bit0	
ROMSO	0	0	0	1	27M
SCLK	0	0	1	0	DEVICE ID GFX TPYE
SI	0	0	1	1	gDDR3 1Gb
Strap2	0	1	0	1	N11M-GE1 DEVICE ID
Strap1	1	1	1	0	PEG PCIE swing level
Strap0	1	1	1	1	EDID_EN

N11M-GE1 0x0A75

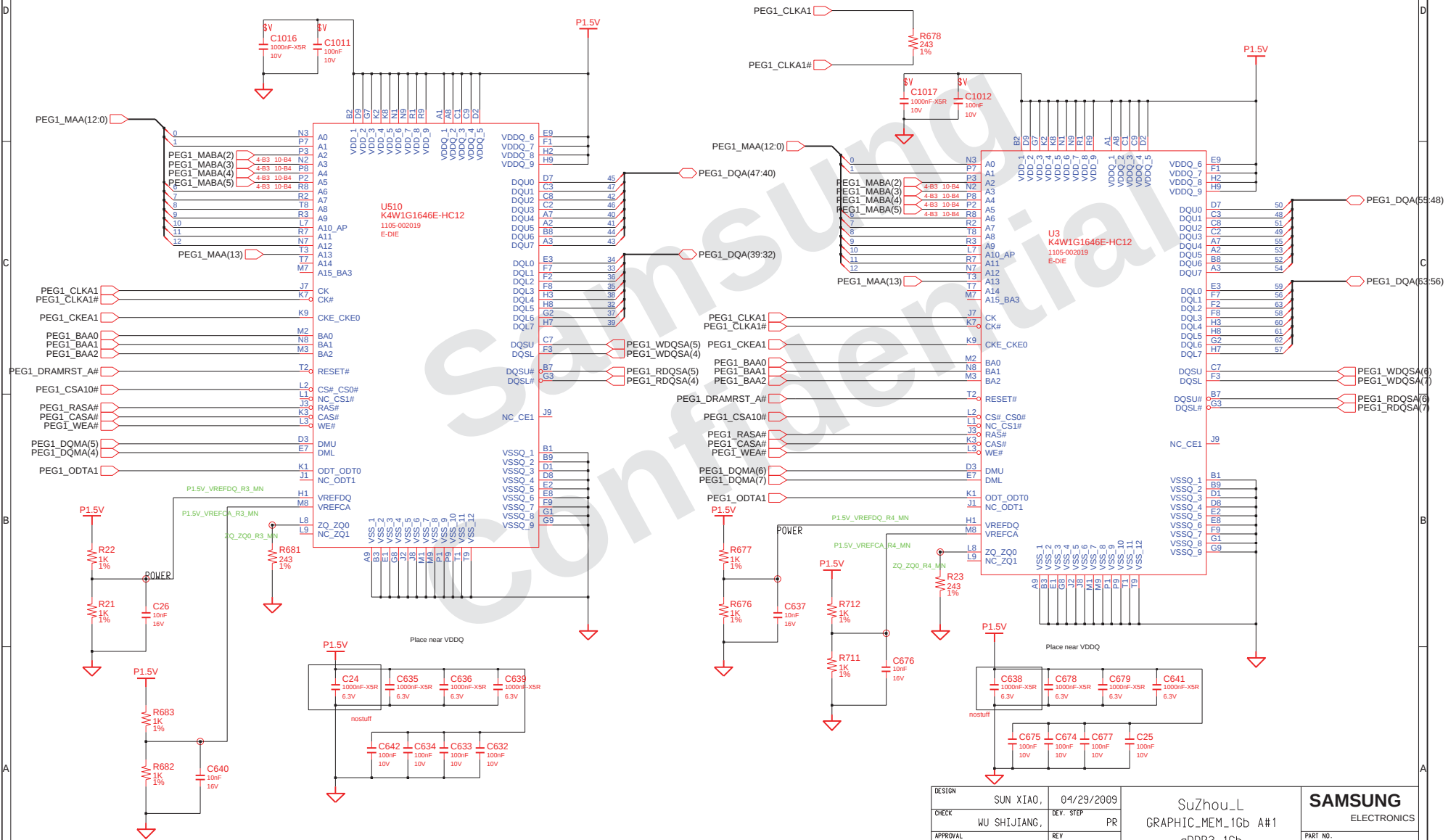
DESIGN	SUN XIAO,	DATE	8/21/2009	TITLE	Suzhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR		MAIN	
APPROVAL	BC LEE,	REV	1.0		N11M-GS	
MODULE CODE		LAST EDIT		November 25, 2009 10:50:13 AM	PAGE 25 OF 60	

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

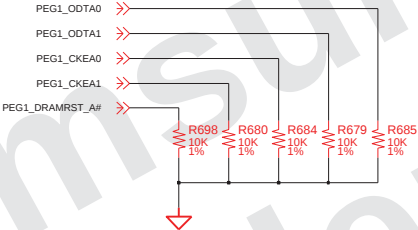
A-Channel #1



DESIGN	SUN XIAO,	04/29/2009	SuZhou_L	SAMSUNG
CHECK	WU SHIJIANG,	DEV. STEP	GRAPHIC_MEM_1Gb A#1	ELECTRONICS
APPROVAL	BC LEE,	REV	gDDR3-1Gb	PART NO.
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	BA41-01215A
PAGE 27 OF 60				

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

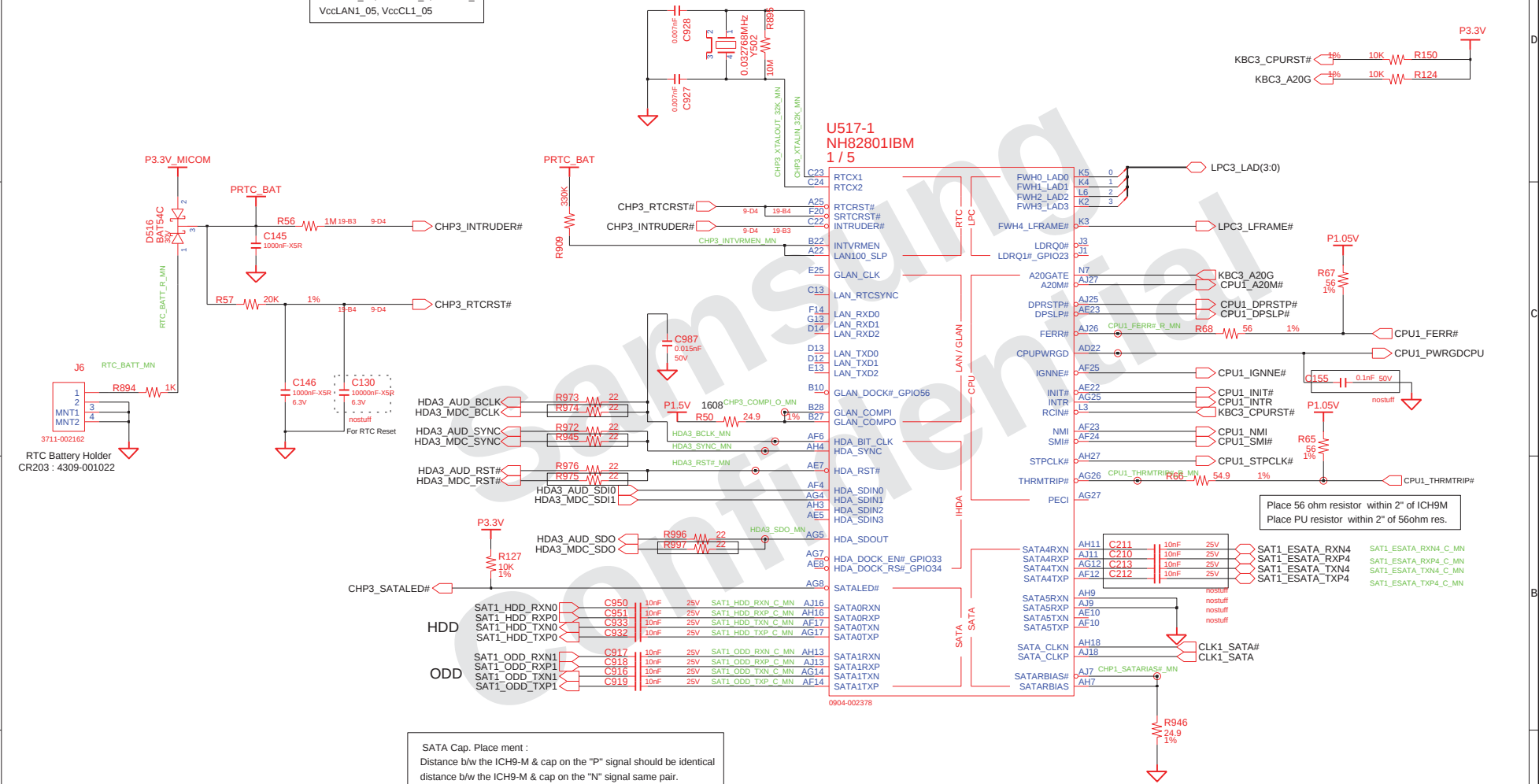
gDDR3 Memory PULL UP & PULL DOWN



DESIGN	SUN XIAO,	DATE	03/14/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR	PULL-UP&PULL-DOWN		
APPROVAL	BC LEE,	REV	1.0	gDDR3_1Gb		
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE 28 OF 60		

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

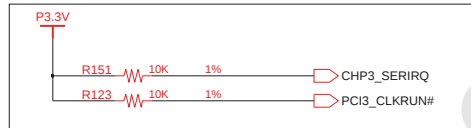
Internal VR Strap	
INTVRMEN	Pull up
VccSus1_05, VccSus1_5, VccCL1_5	
VccLAN1_05, VccCL1_05	



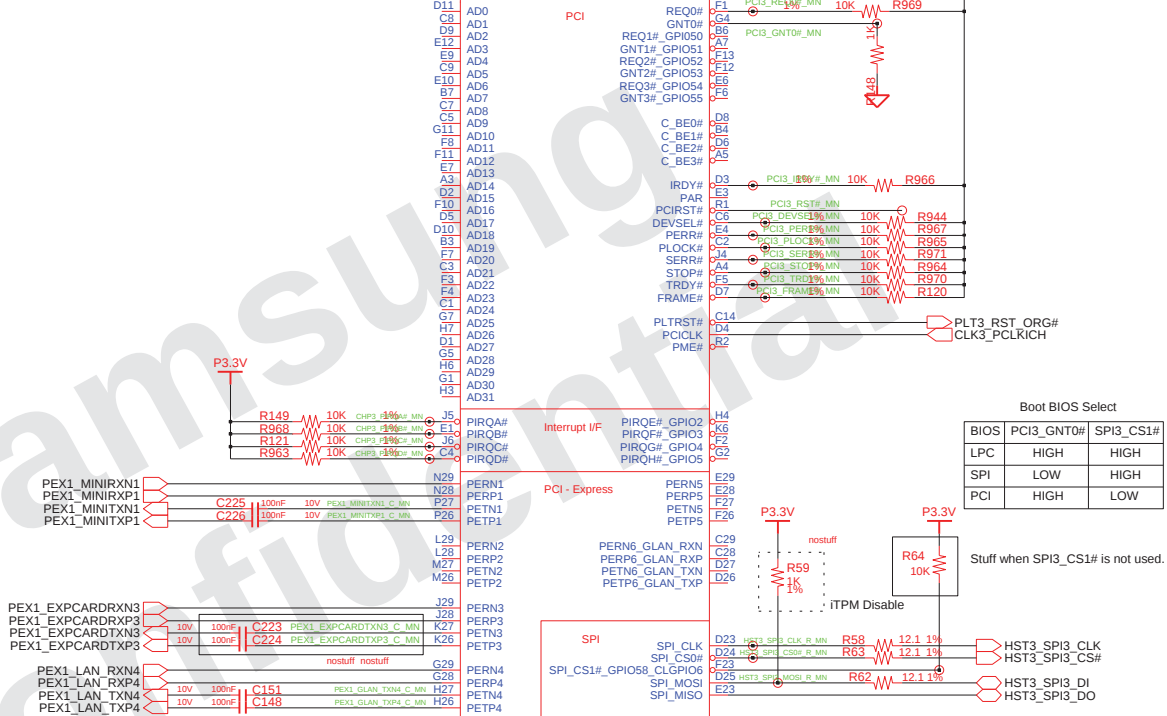
DATE	1/10/2008	TITLE	SuZhou_L ICH9M_B	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	PART NO. BA41-01215A
APPROVAL	BC LEE,	REV	1.0	November 25, 2009 10:50:13 AM
MODULE CODE		LAST EDIT		PAGE 29 OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

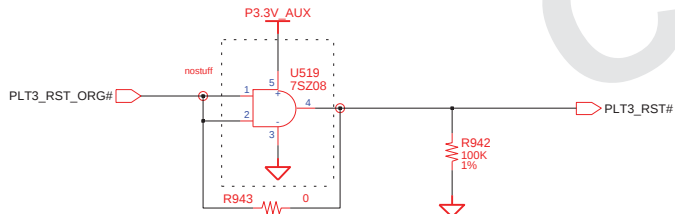
U517-2 NH82801IBM 2/5



LPC option ; These are used with LPC

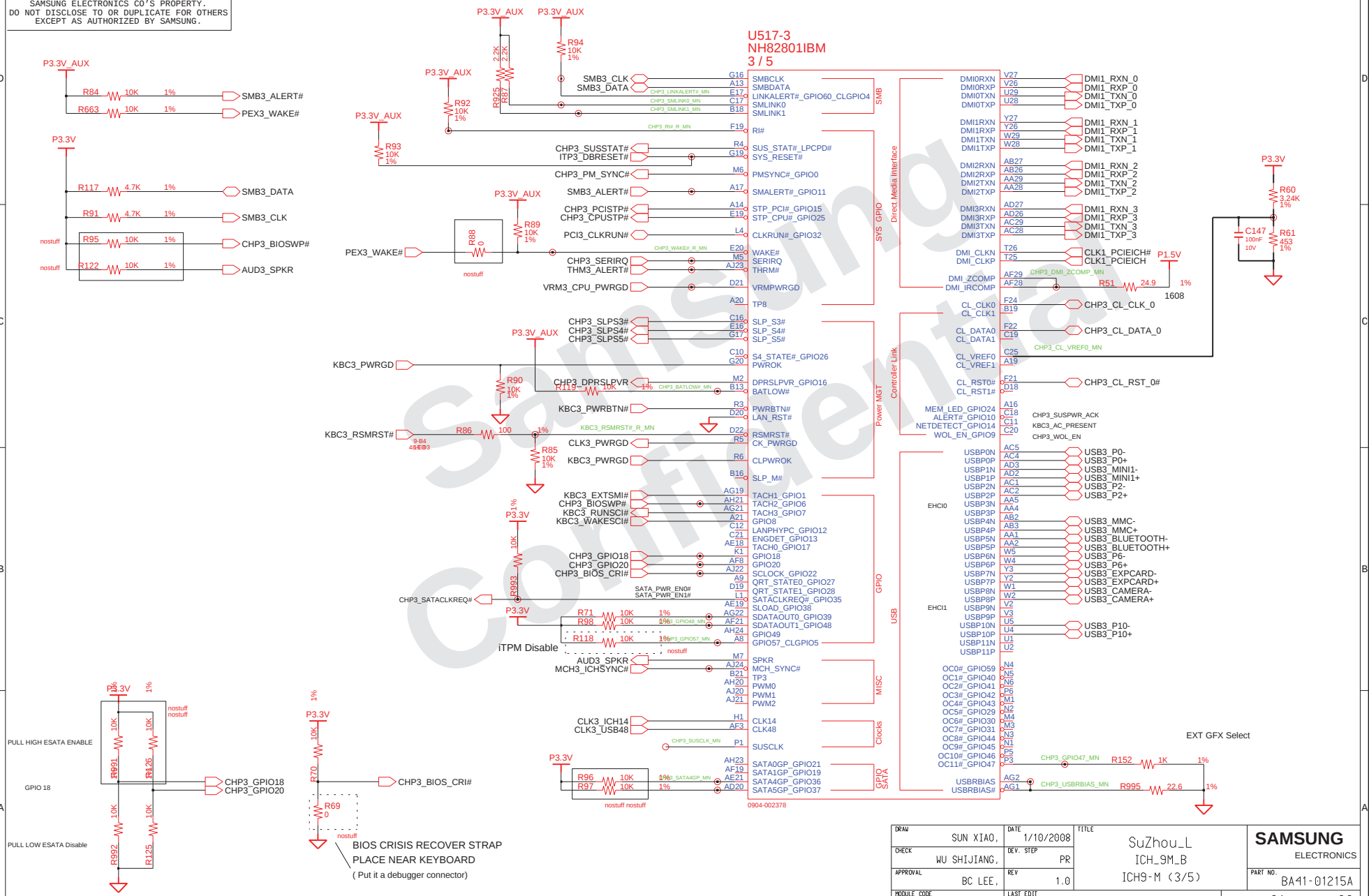


AC caps : PCIe need to be within 250mils of the driver
Resistor for Test : Place Stuffing Option to minimize stubs



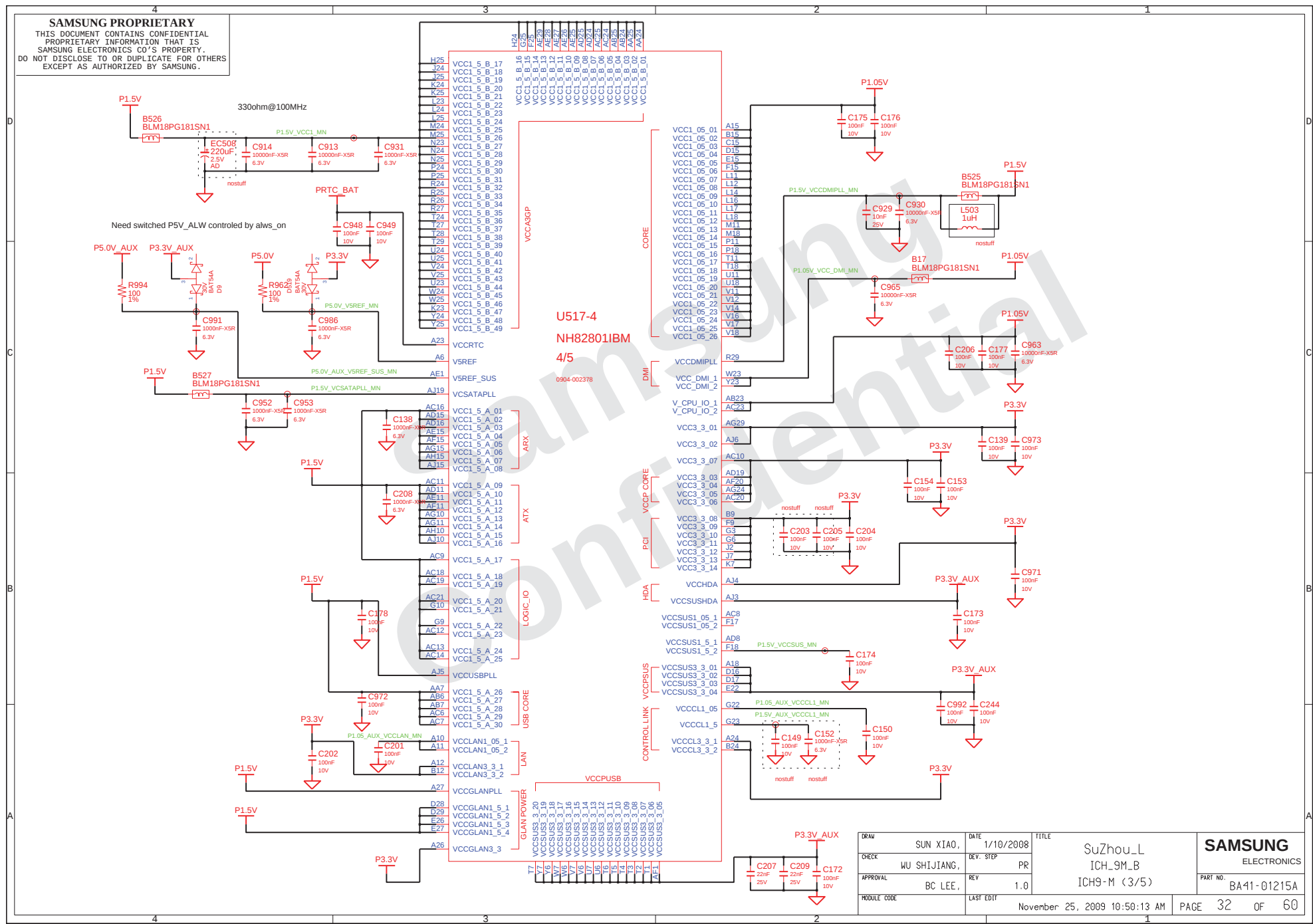
DRAW	SUN XIAO,	DATE	1/10/2008	TITLE	SuZhou_L ICH9M_B	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0		ICH9-M (2/5)	PART NO. BA41-01215A
MODULE CODE	undefined	LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	30	OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

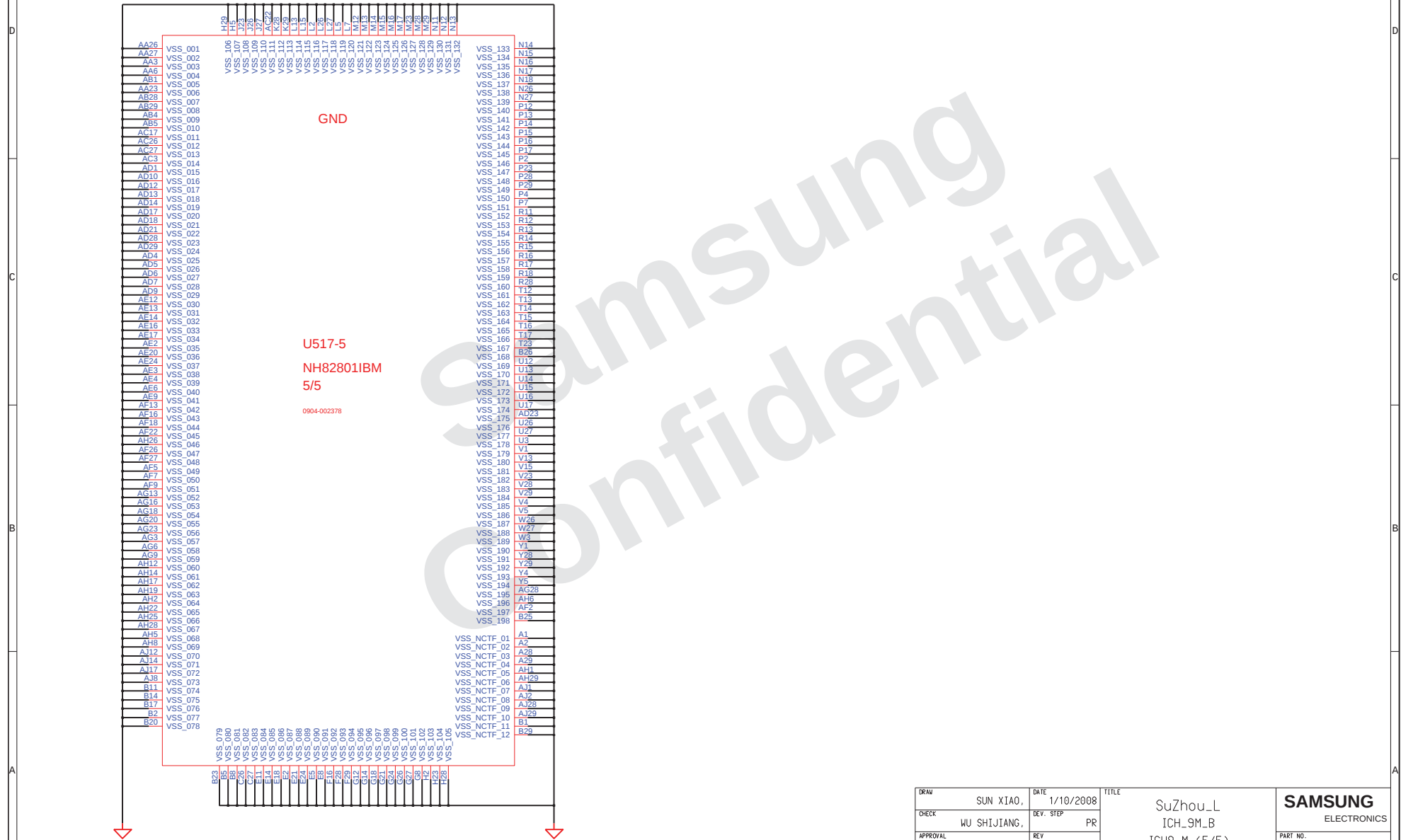


ORAN	SUN XIAO,	DATE	1/10/2008	TITLE SuZhou_L ICH_9M.B ICH9-M (3/5)	SAMSUNG ELECTRONICS	
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0		PART NO.	BA14-01215A
MODULE CODE	LAST EDIT				November 25, 2009 10:50:13 AM	PAGE

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



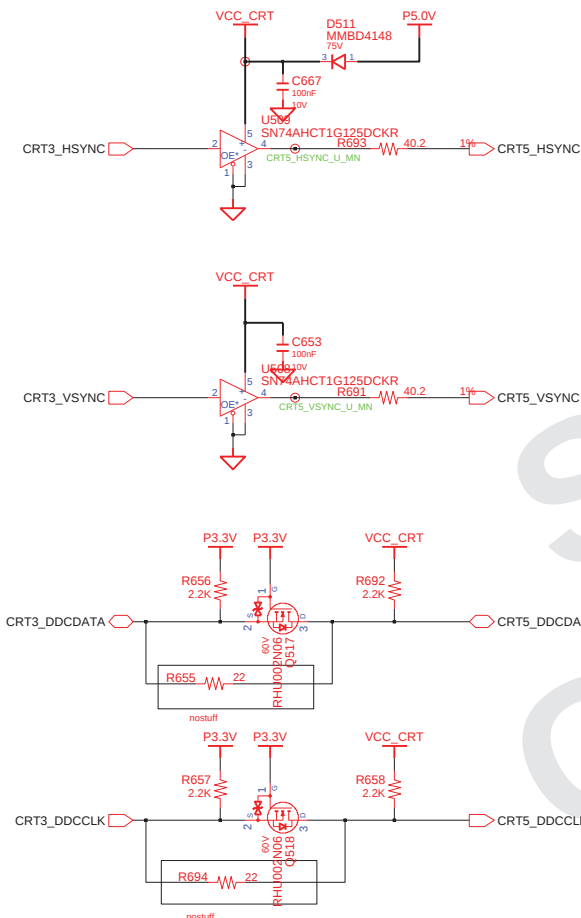
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



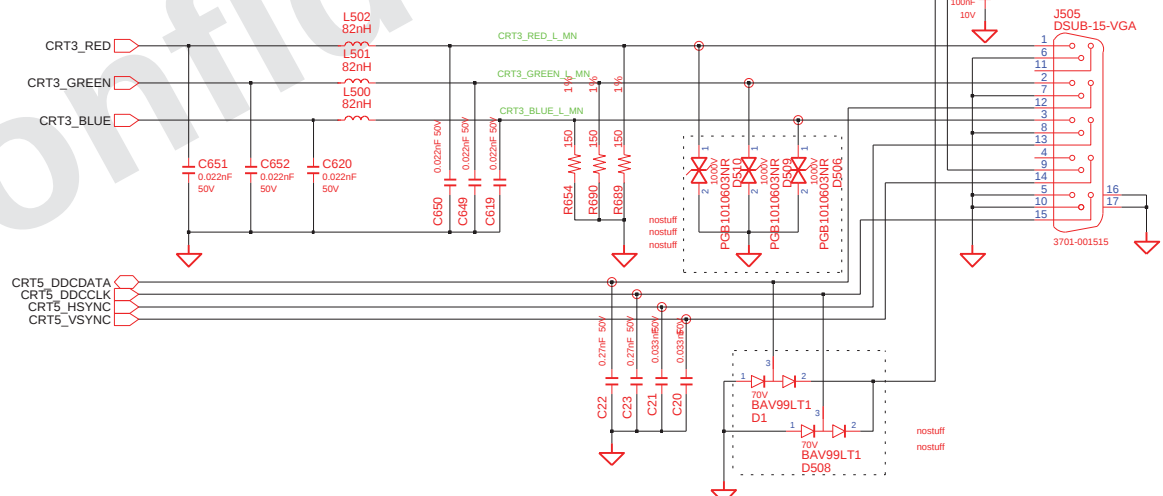
DRAM	SUN XIAO,	DATE	1/10/2008	TITLE	SuZhou_L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		ICH9M_B	
APPROVAL	BC LEE,	REV	1.0		ICH9-M (5/5)	
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM			
						PART NO. BA41-01215A
						PAGE 33 OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

CRT



CRT CONNECTOR



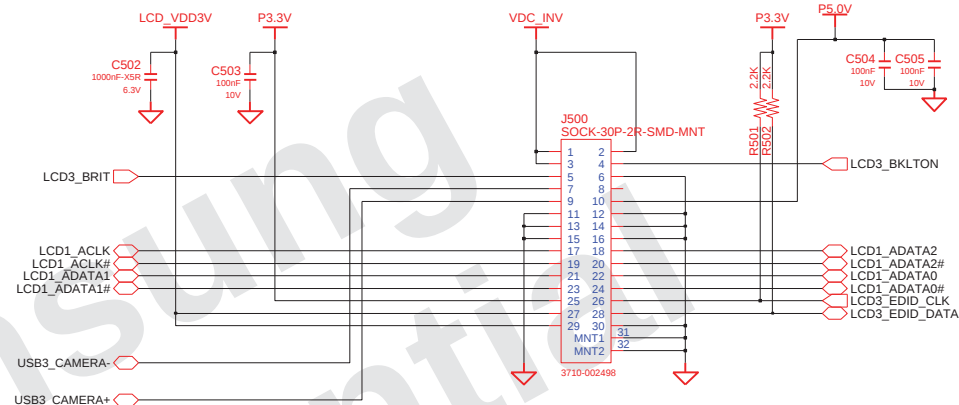
Check "CRT3_DDCCLK/DATA" Voltage Level
2N06 Can be replaced with SM6K2

DESIGN	SUN XIAO,	DATE	01/08/2009	TITLE	SuZhou_L
CHECK	WU SHIJIANG,	DEV. STEP	PR	GRAPHICS_IF	
APPROVAL	BC LEE,	REV	1.0	CRT	
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	35 OF 60

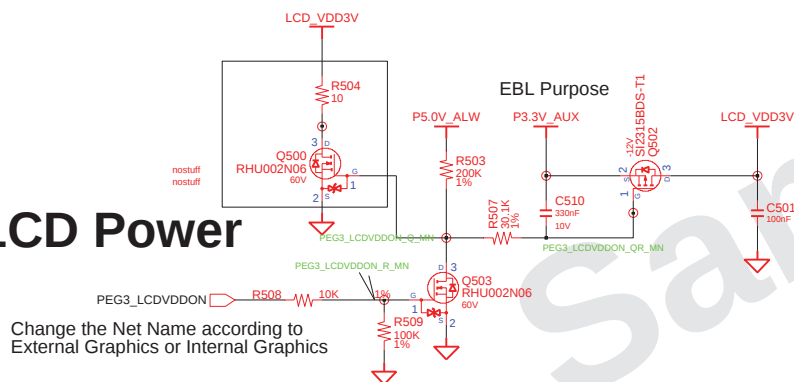
SAMSUNG	
ELECTRONICS	
PART NO.	BA41-01215A

LVDS

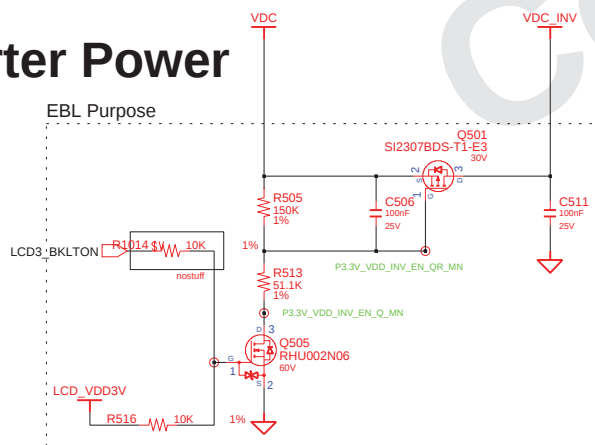
1Ch. LCD Connector



LCD Power



Inverter Power

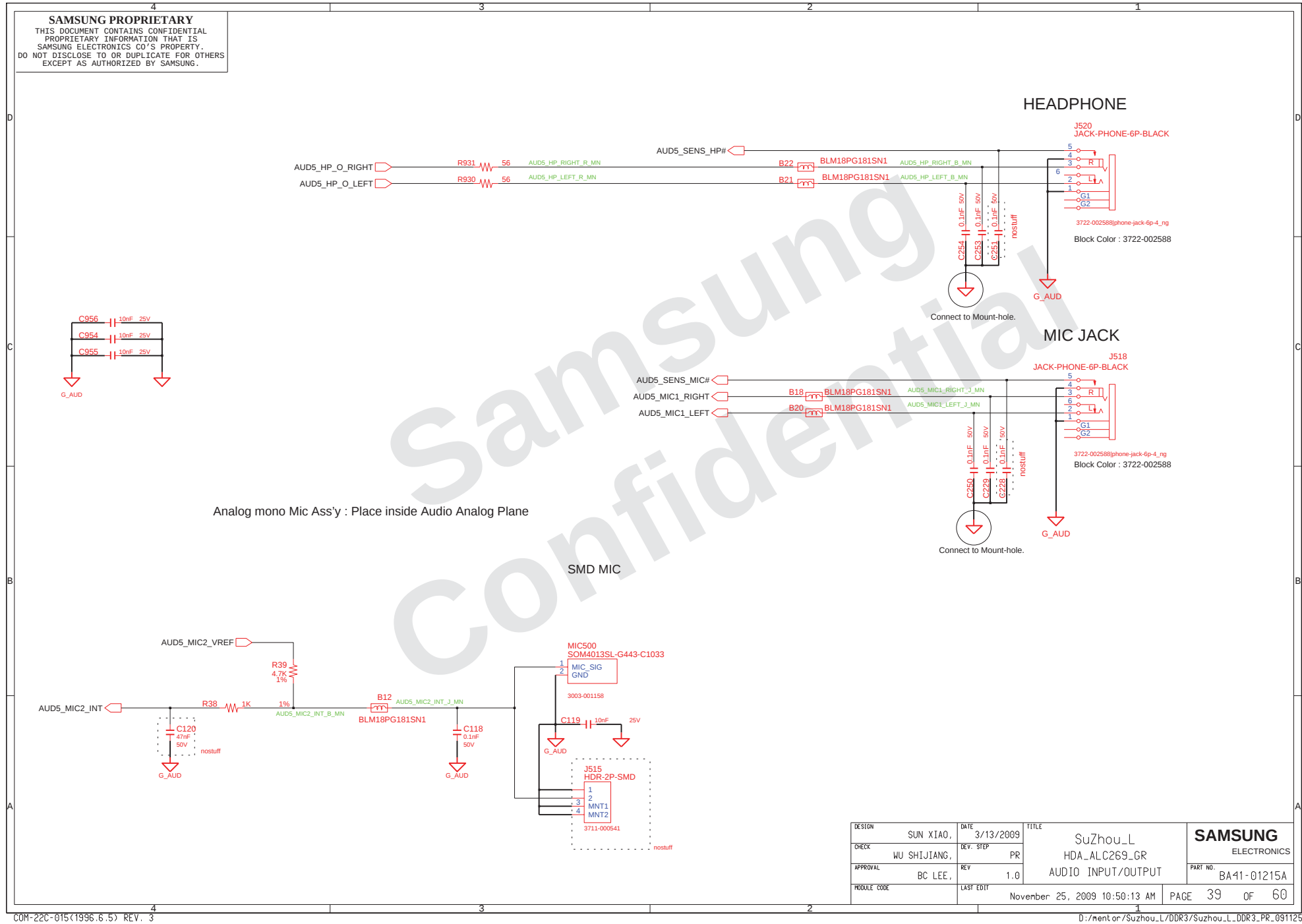


COM-22C-015(1996.6.5) REV. 3

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



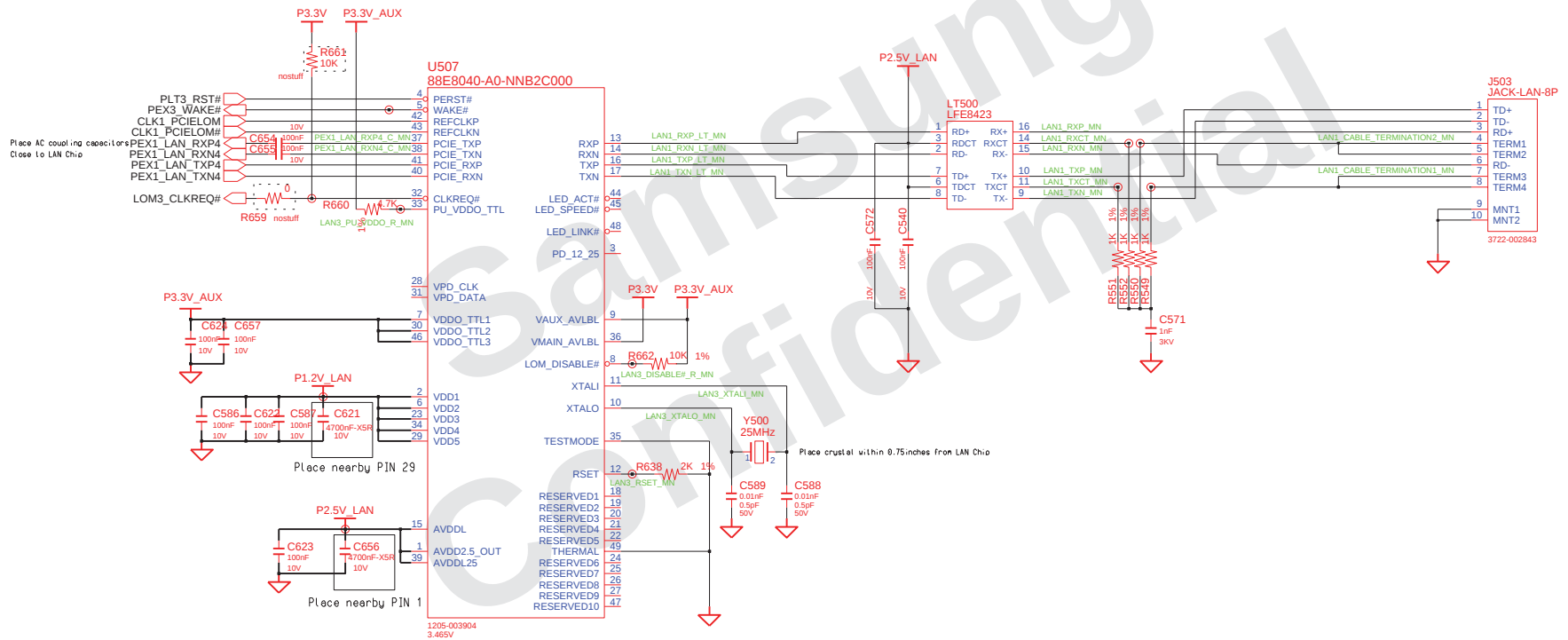
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



DESIGN	SUN XIAO,	DATE	3/13/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	HDA_ALC269_GR		
APPROVAL	BC LEE,	REV	1.0	AUDIO INPUT/OUTPUT		
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM			
PAGE 39 OF 60						PART NO. BA41-01215A

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

MARVELL 88E8040T

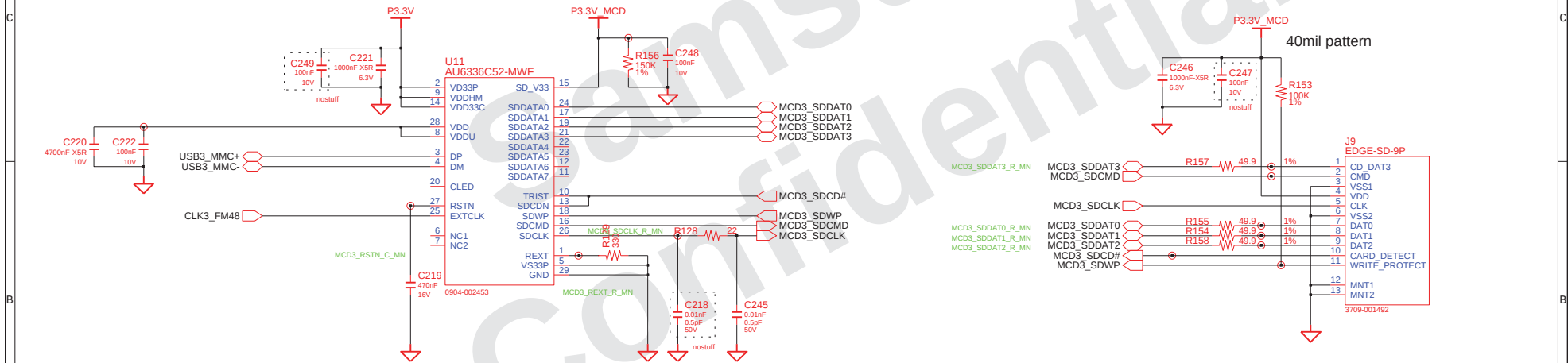


DESIGN	SUN XIAO,	DATE	3/17/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	40 OF 60	

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

3 IN 1

P3.3V_MCD distance between R5U880 and socket should be less than 2 inches

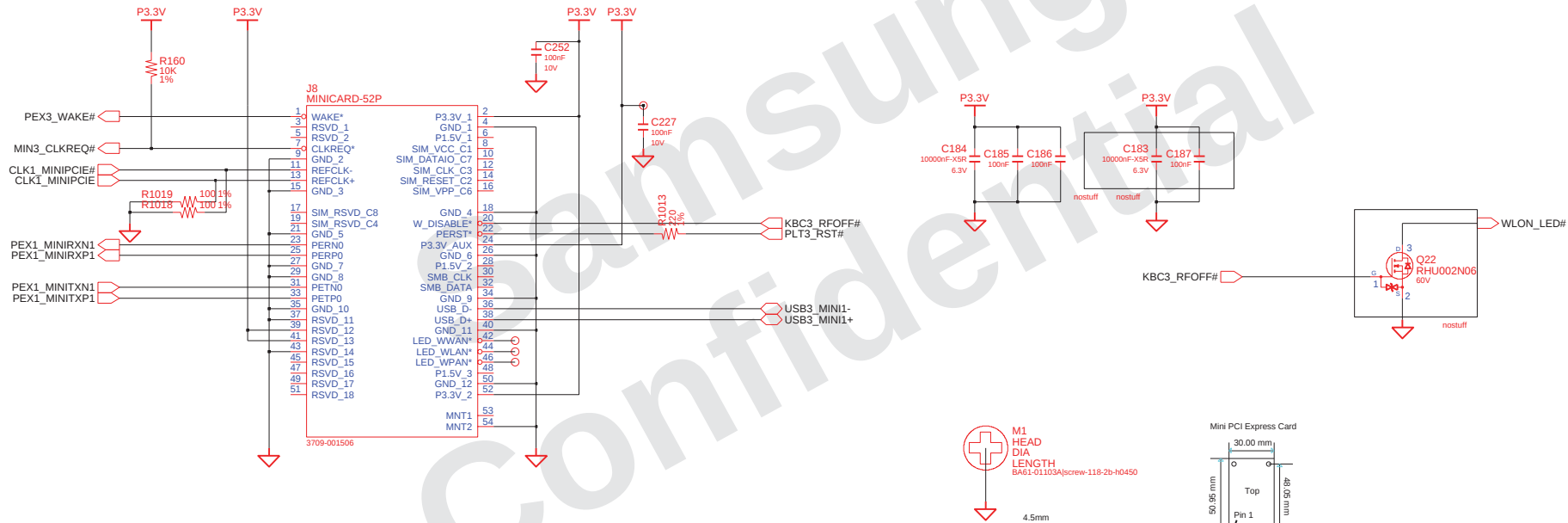


40 mil trace for medica card socket ground

DESIGN	SUN XIAO,	DATE	4/29/2009	TITLE	Suzhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	41 OF 60	

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

WLAN, 7mm



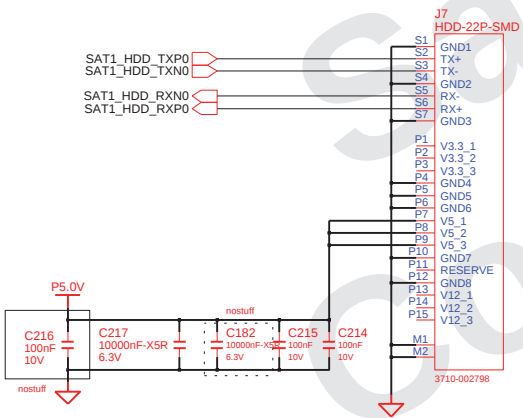
To fix Shirley Peak EMI issue
Place it at the old rubber area

DESIGN	SUN XIAO,	DATE	6/6/2008	TITLE	Suzhou_L MINI_PCIE_CONN	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			PART NO. BA41-01215A
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	42	OF 60

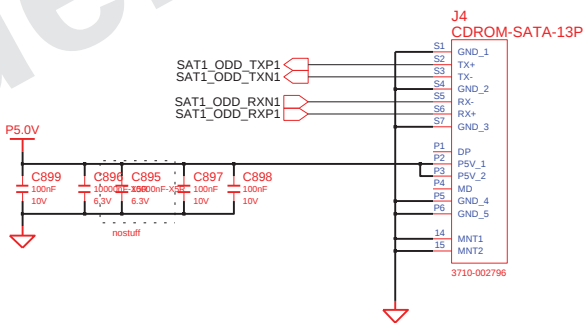
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

SATA I/F CONN

SATA HDD CONN



SATA ODD CONN



DESIGN	SUN XIAO,	DATE	6/6/2008	TITLE	SuZhou_L SATA_DEVICES	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	43 OF 60	

MAIN BOARD (MICOM)

KBC3_RST#

THM3_STP#_Q_MN

Q536 RHU002N06

60V

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

262

263

264

265

266

267

268

269

270

271

272

273

274

275

276

277

278

279

280

281

282

283

284

285

286

287

288

289

290

291

292

293

294

295

296

297

298

299

300

301

302

303

304

305

306

307

308

309

310

311

312

313

314

315

316

317

318

319

320

321

322

323

324

325

326

327

328

329

330

331

332

333

334

335

336

337

338

339

340

341

342

343

344

345

346

347

348

349

350

351

352

353

354

355

356

357

358

359

360

361

362

363

364

365

366

367

368

369

370

371

372

373

374

375

376

377

378

379

380

381

382

383

384

385

386

387

388

389

390

391

392

393

394

395

396

397

398

399

400

401

402

403

404

405

406

407

408

409

410

411

412

413

414

415

416

417

418

419

420

421

422

423

424

425

426

427

428

429

430

431

432

433

434

435

436

437

438

439

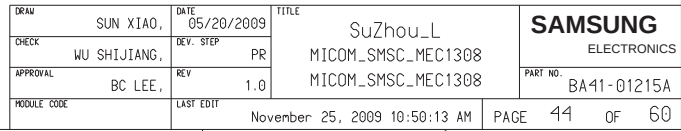
440

441

442

443

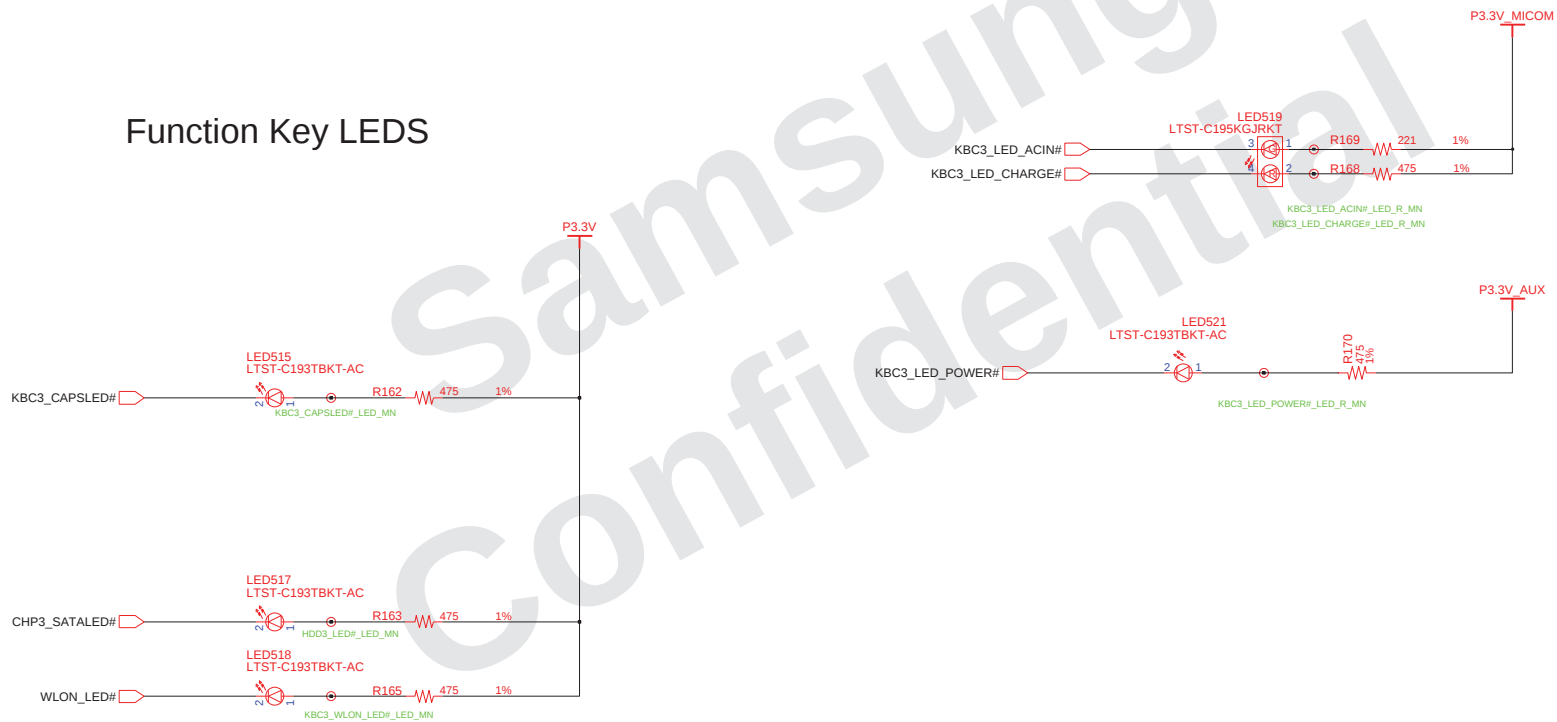
444



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

LED SWITCH LOGIC

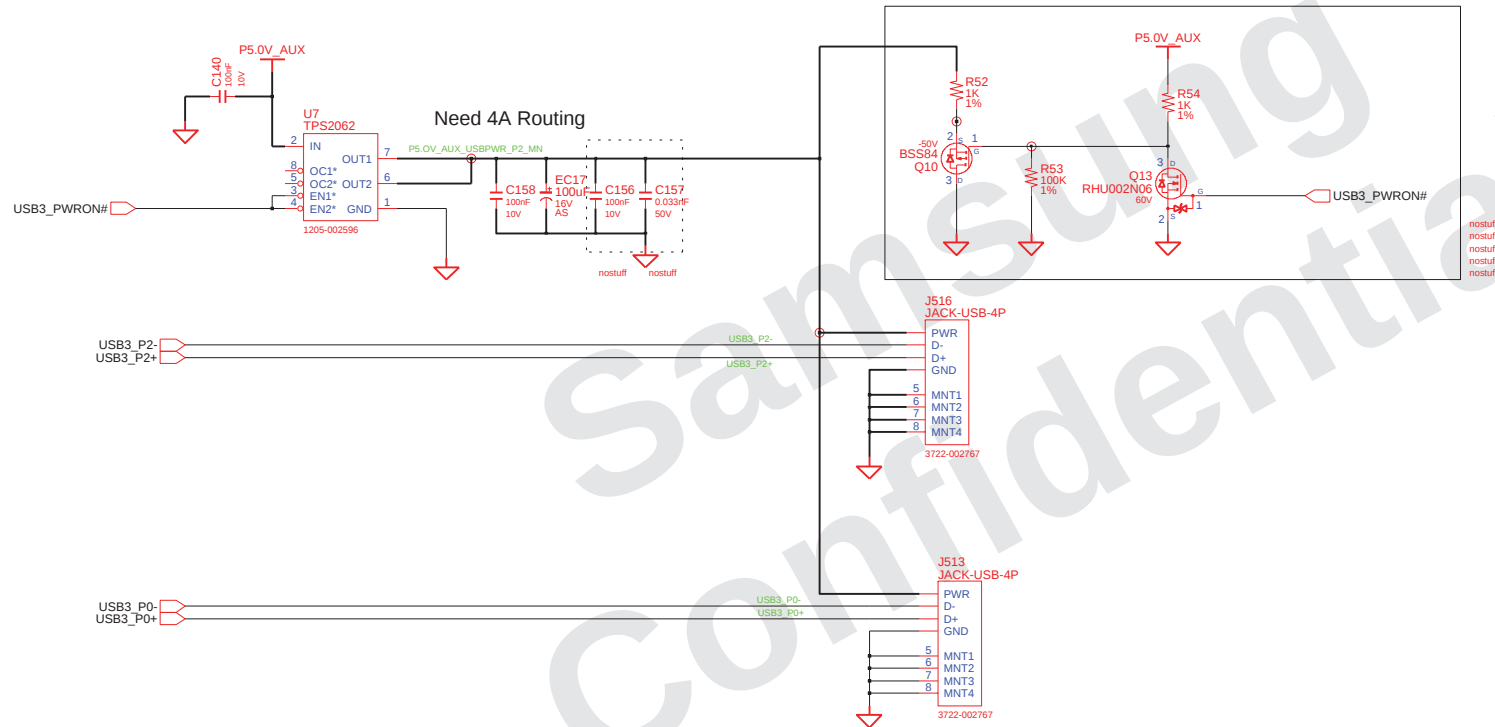
Function Key LEDs



DESIGN	SUN XIAO,	DATE	8/12/2006	TITLE	SuZhou_L	SAMSUNG
CHECK	WU SHUJANG,	REV. STEP	PR		LED_Switch	ELECTRONICS
APPROVAL	BC LEE,	REV	1.0		LED_Switch	PART NO.
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM			BA41-01215A
					PAGE	46 OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

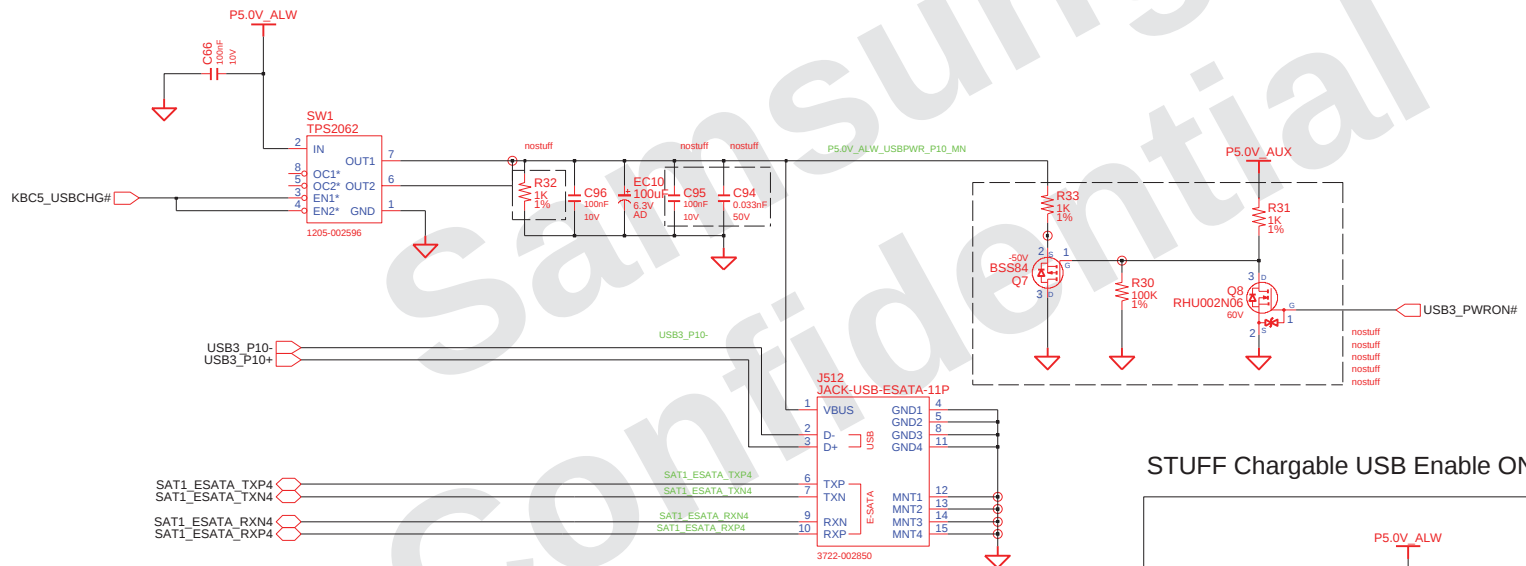
1/2 PORT USB CONNECTOR



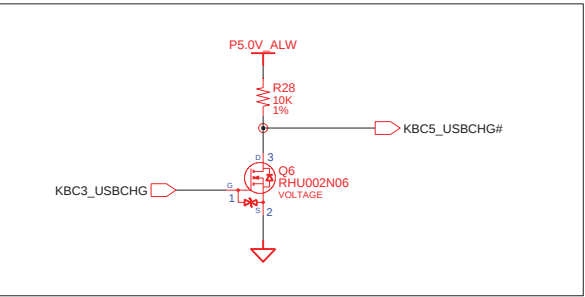
DESIGN	SUN XIAO,	DATE	6/6/2008	TITLE	SuZhou_L USB_CONN	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01215A
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	47	OF 60

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

eSATA



STUFF Chargeable USB Enable ONLY

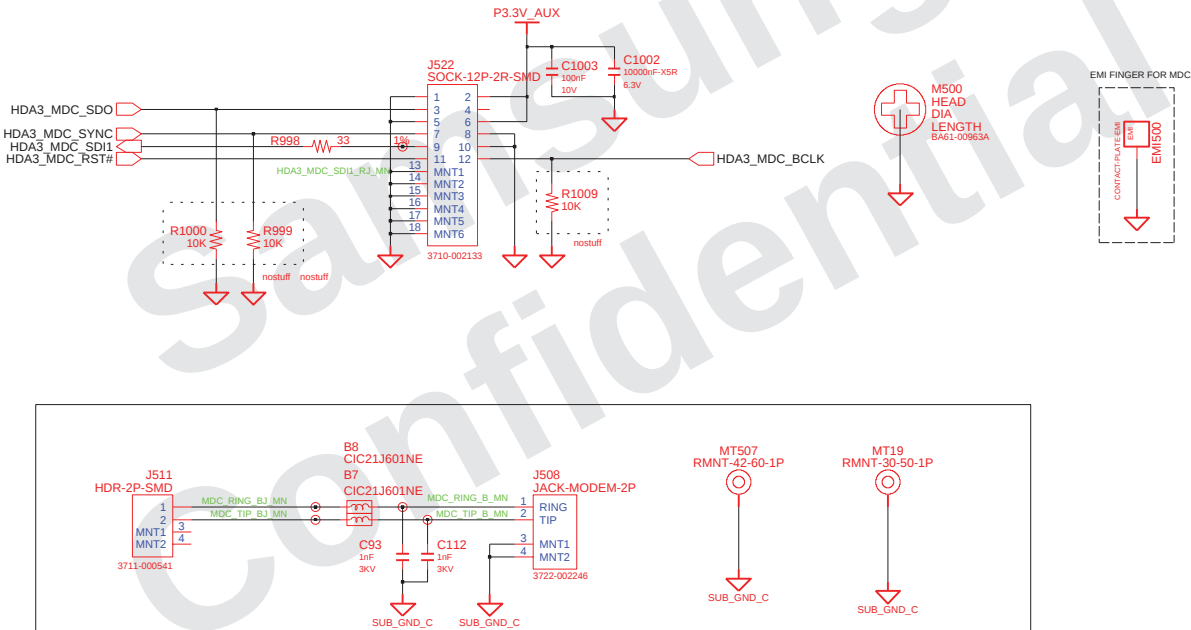


DESIGN	SUN XIAO,	DATE	8/18/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN	ESATA	
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	48 OF 60	

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

MDC

MDC Connector

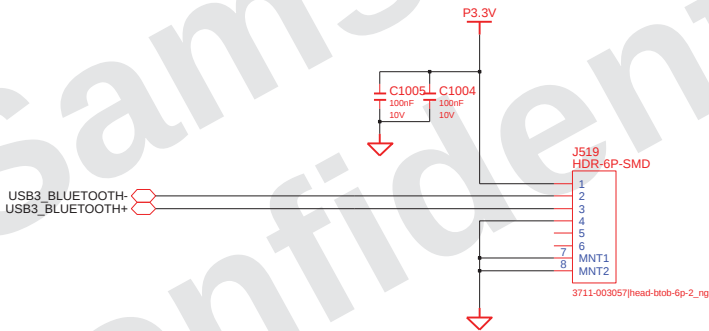


Factory Option

DESIGN	SUN XIAO,	DATE	8/18/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	HDA_MODEM		
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	49	OF 60

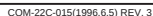
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

Bluetooth Interface



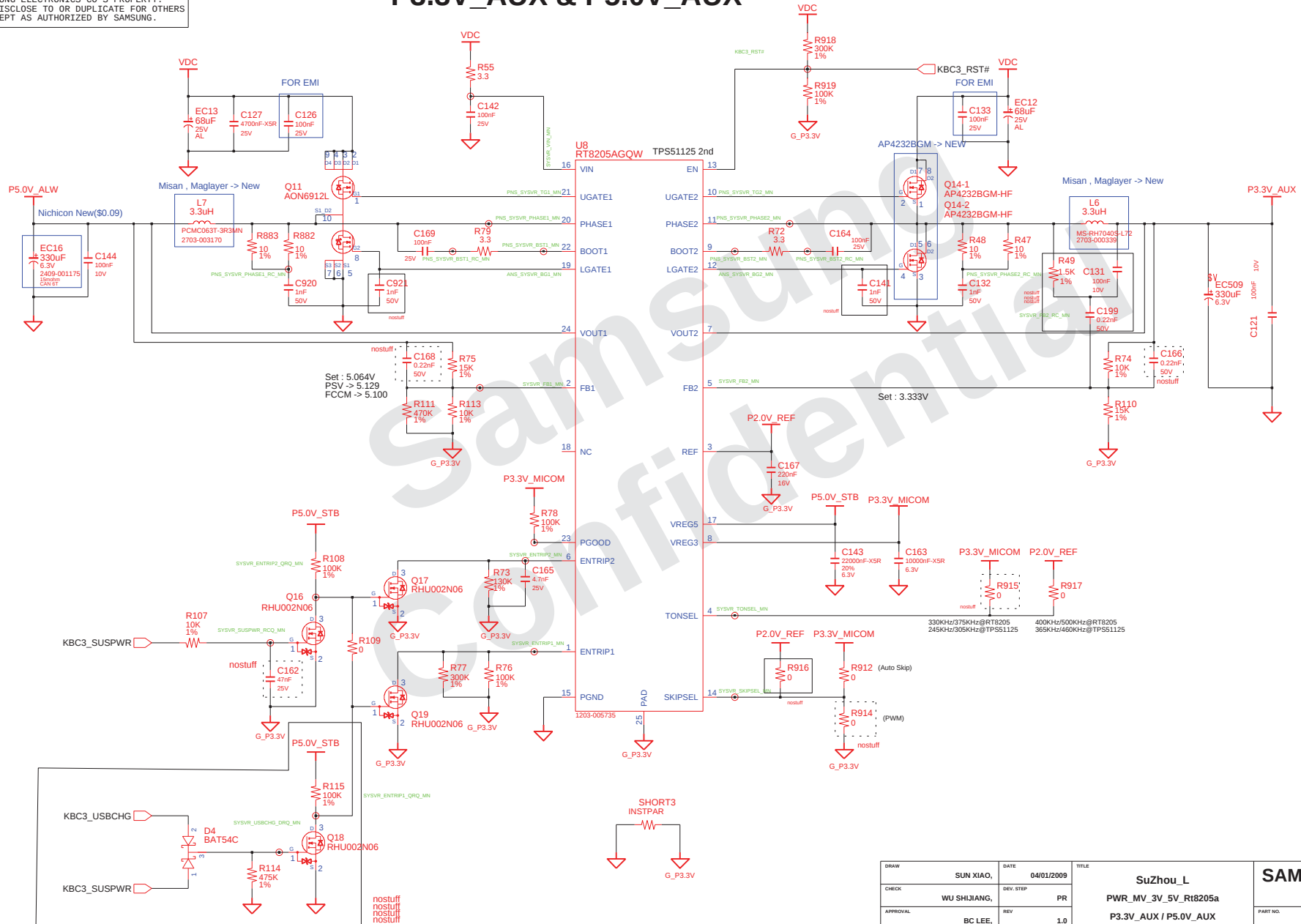
DESIGN	SUN XIAO,	DATE	6/6/2008	TITLE	SuZhou_L USB_DEVICES	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			PART NO. BA41-01215A
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	50	OF 60

CHARGER & POWER MANAGEMENT



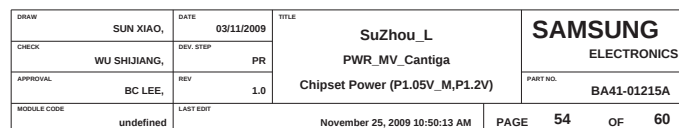
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

P3.3V_AUX & P5.0V_AUX



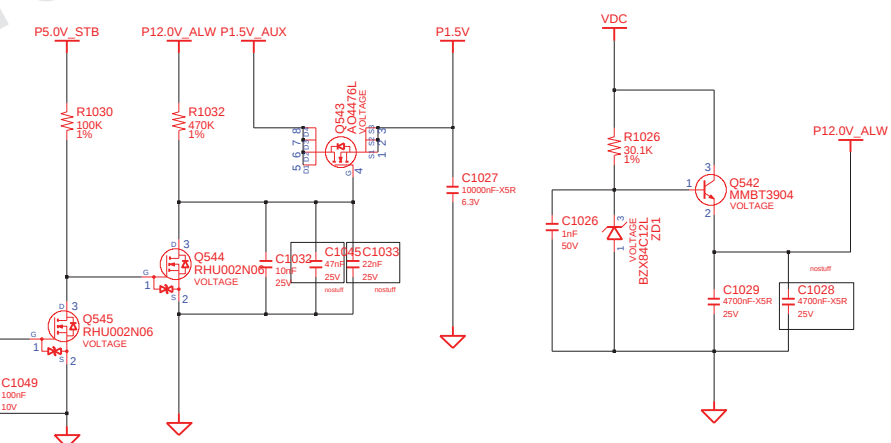
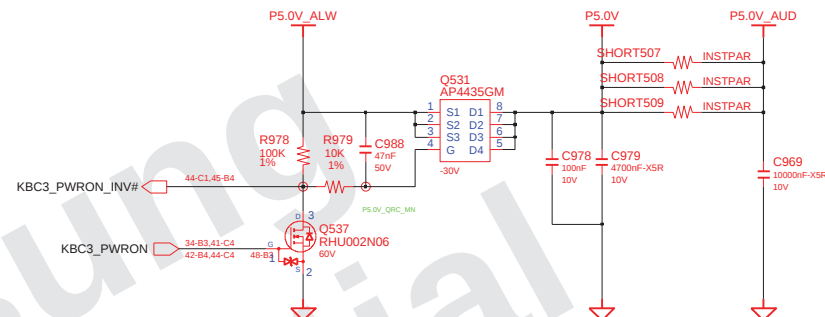
DRAWN	SUN XIAO,	DATE	04/01/2009	TITLE	SuZhou_L	SAMSUNG
CHECK	WU SHUIJIANG,	REV. STEP	PR		PWR_MV_3V_5V_Rt8205a	ELECTRONICS
APPROVAL	BC LEE,	REV	1.0		P3.3V_AUX / P5.0V_AUX	PART NO.
MODULE CODE	undefined	LAST EDIT	November 25, 2009 10:50:13 AM			BA41-01215A
					PAGE	52 OF 60

CHIPSET POWER (P1.05V)



Switched Power

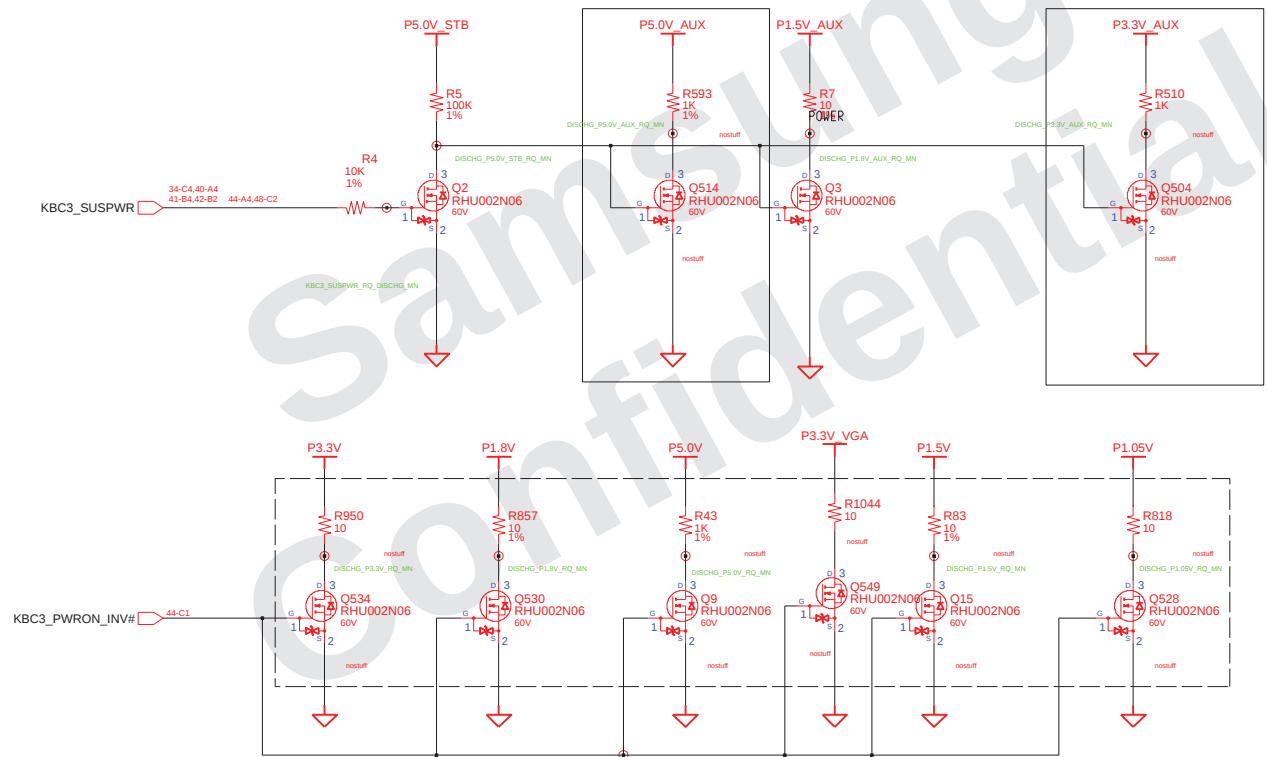
Switched Power On (P5.0V)



DRAW	SUN XIAO,	DATE	03/11/2009	TITLE SuZhou_L PWR_MV_Switched SWITCHED POWER	SAMSUNG ELECTRONIC	
CHECK	WU SHUJANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0		PART NO.	BA41-01215A
MODULE CODE	LAST EDIT				November 25, 2009 10:50:13 AM	PAGE 57 OF 60

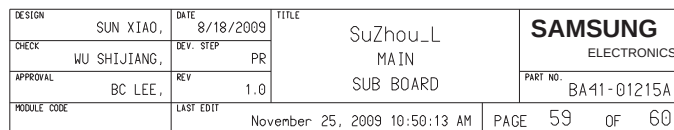
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

POWER DISCHARGER

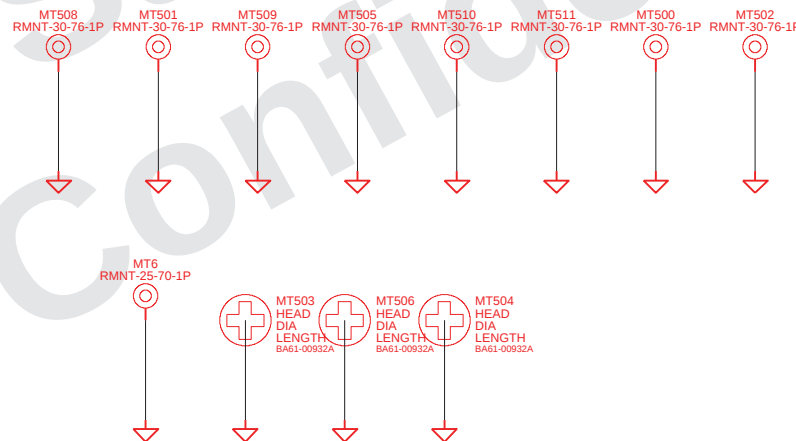
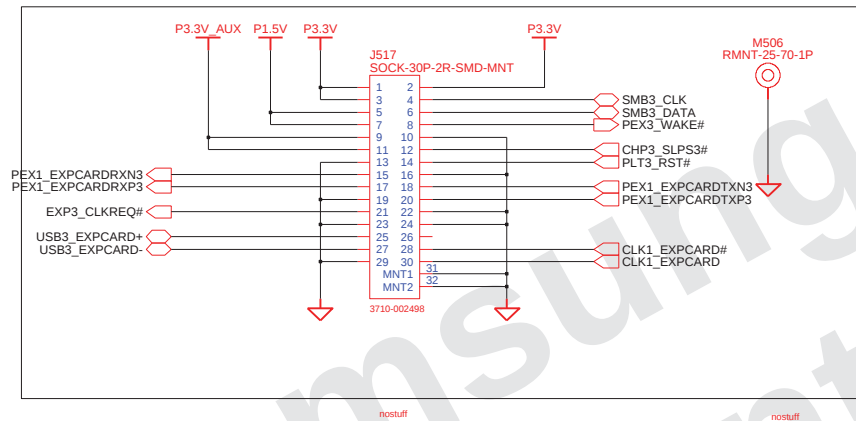


DRAWN	SUN XIAO,	DATE	03/11/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	REV. STEP	PR	PWR_MV_DisCharger	PART NO.	
APPROVAL	BC LEE,	REV	1.0	DISCHARGING LOGIC	BA41-01215A	
MODULE CODE	undefined	LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	58	OF 60

Main Board



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



DESIGN	SUN XIAO,	DATE	9/9/2009	TITLE	SuZhou_L	SAMSUNG ELECTRONICS PART NO. BA41-01215A
CHECK	WU SHIJIANG,	DEV. STEP	PR		MAIN	
APPROVAL	BC LEE,	REV	1.0		EXPRESS CARD	
MODULE CODE		LAST EDIT	November 25, 2009 10:50:13 AM	PAGE	60 OF 60	