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Scala_14L

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

Model Name : Scala_14L
 PCB Code : GCE BA41-01335A
 NY BA41-01334A
 HAN BA41-01336A

Dev. Step : PR
 Revision : 1.0
 T.R. Date : 2010.06.17

DESIGN	CHECK	APPROVAL
Dai Qingzhu	Wu Shijiang	BC LEE

DESIGN	DAI QINGZHU,	DATE	8/16/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0	COVER		PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	1	OF 60

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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 (EHC1) : H
Hub to PCI	AD30(internal)	-	-
LPC bridge/IDE/AC97/SMBUS	AD31(internal)	-	B
Internal MAC	AD24(internal)	-	E
AC Link	-	-	F
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 Panel 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
SODIMMO	1010 000x	A0h	-
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMMO	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
CK-505M (Clock Generator)	1101 001x	D2h	Clock, Unused Clock Output Disable

USB PORT Assign

PORT #	ASSIGNED TO
0	SYSTEM PORT 0
1	SYSTEM PORT 1
2	SYSTEM PORT 2
3	NC
4	NC
5	Bluetooth
6	Mini PCI Express 2
7	Camera
8	NC
9	NC

PCI Express Assign

PORT #	ASSIGNED TO
0	NC
1	Mini Card 1 (WLAN)
2	NC
3	LOM
4	Mini Card 2 (ROBSON or DVB-T)
5	NC

(This table will be update.)

REVISION HISTORY

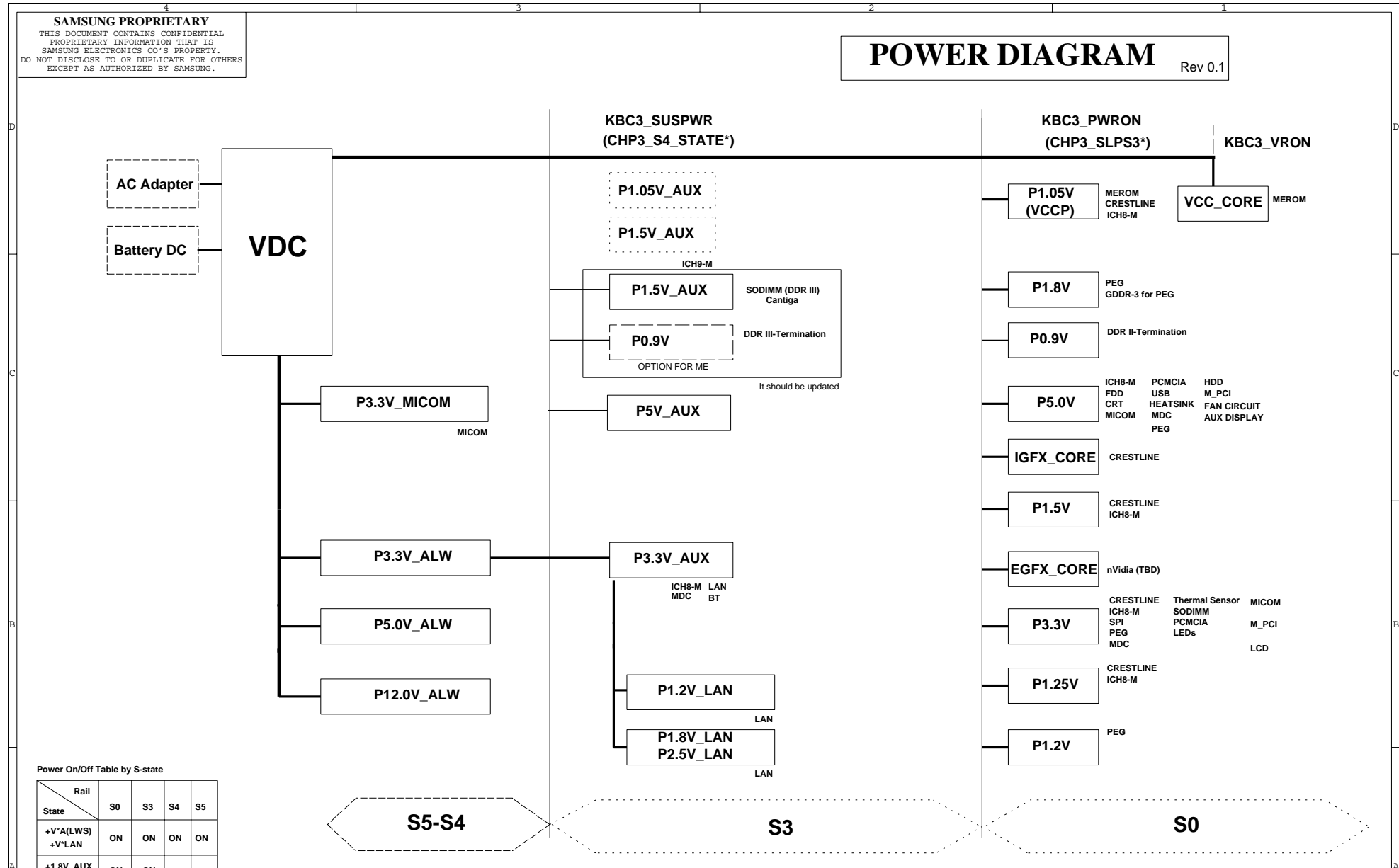
See rev notes for more information.

DESIGN	DAI QINGZHU,	DATE	8/16/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		MAIN	
APPROVAL	BC LEE,	REV	1.0		BCAFDINFO	PART NO. BA41-01335A
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POWER DIAGRAM

Rev 0.1



Power On/Off Table by S-state

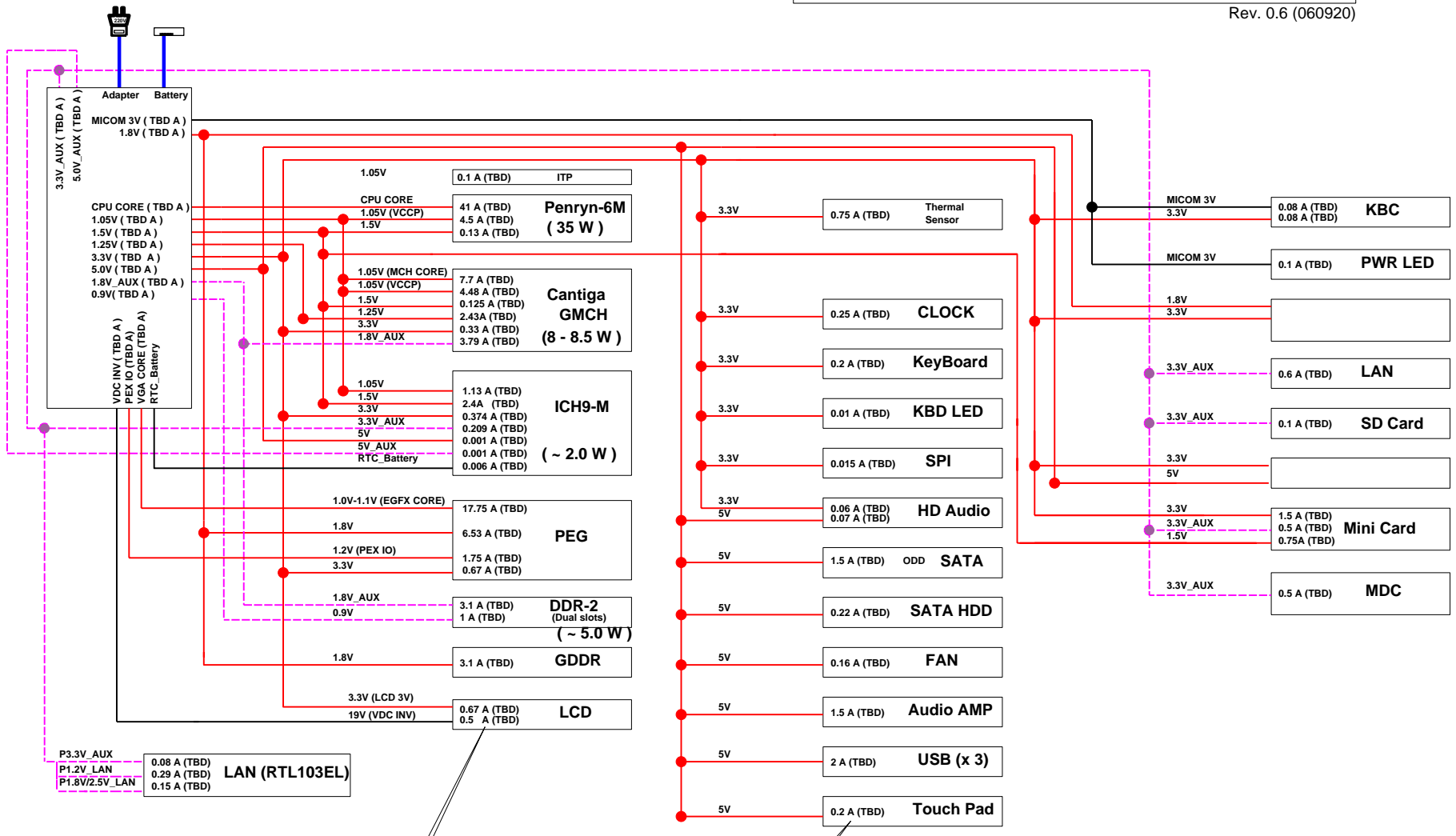
Rail	S0	S3	S4	S5
+V*(LWS) +V*LAN	ON	ON	ON	ON
+1.8V_AUX +0.9V	ON	ON	---	---
+V*AUX	ON	ON	---	---
+V	ON	---	---	---
+V* (CORE)	ON	---	---	---

DESIGN	DAI QINGZHU,	DATE	8/16/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		MAIN	
APPROVAL	BC LEE,	REV	1.0		POWER DIAGRAM	PART NO. BA41-01335A
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POWER RAILS ANALYSIS

Rev. 0.6 (060920)



Value by Datasheet/Application notes (Value by measurement)

DESIGN	DAI QINGZHU,	DATE	8/16/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	POWER RAILS		PART NO. BA41-01335A
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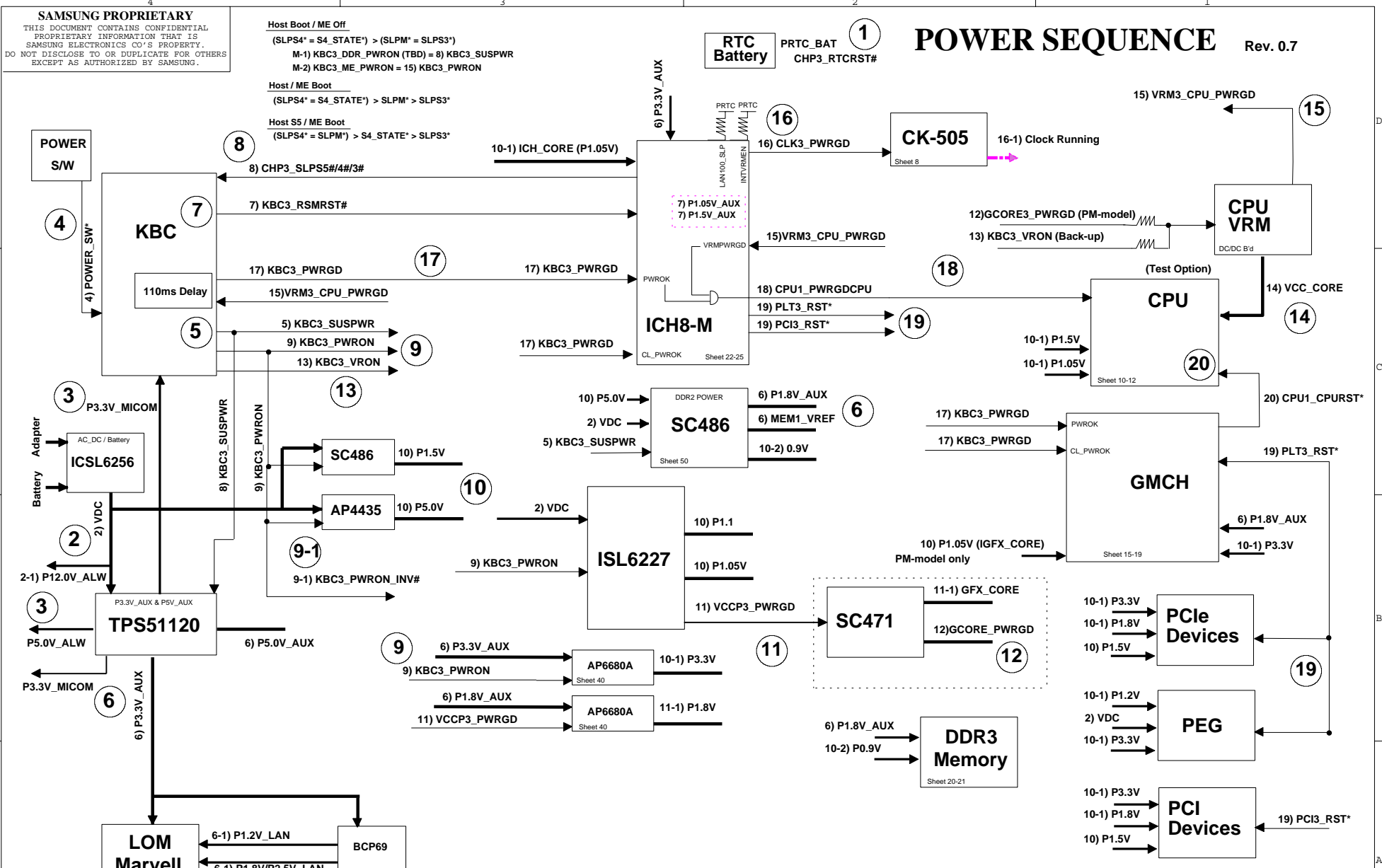
Host Boot / ME Off
 (SLPS4* = S4_STATE*) > (SLPM* = SLPS3*)
 M-1) KBC3_DDR_PWRON (TBD) = 8) KBC3_SUSPWR
 M-2) KBC3_ME_PWRON = 15) KBC3_PWRON

Host / ME Boot
 (SLPS4* = S4_STATE*) > SLPM* > SLPS3*

Host S5 / ME Boot
 (SLPS4* = SLPM*) > S4_STATE* > SLPS3*

POWER SEQUENCE

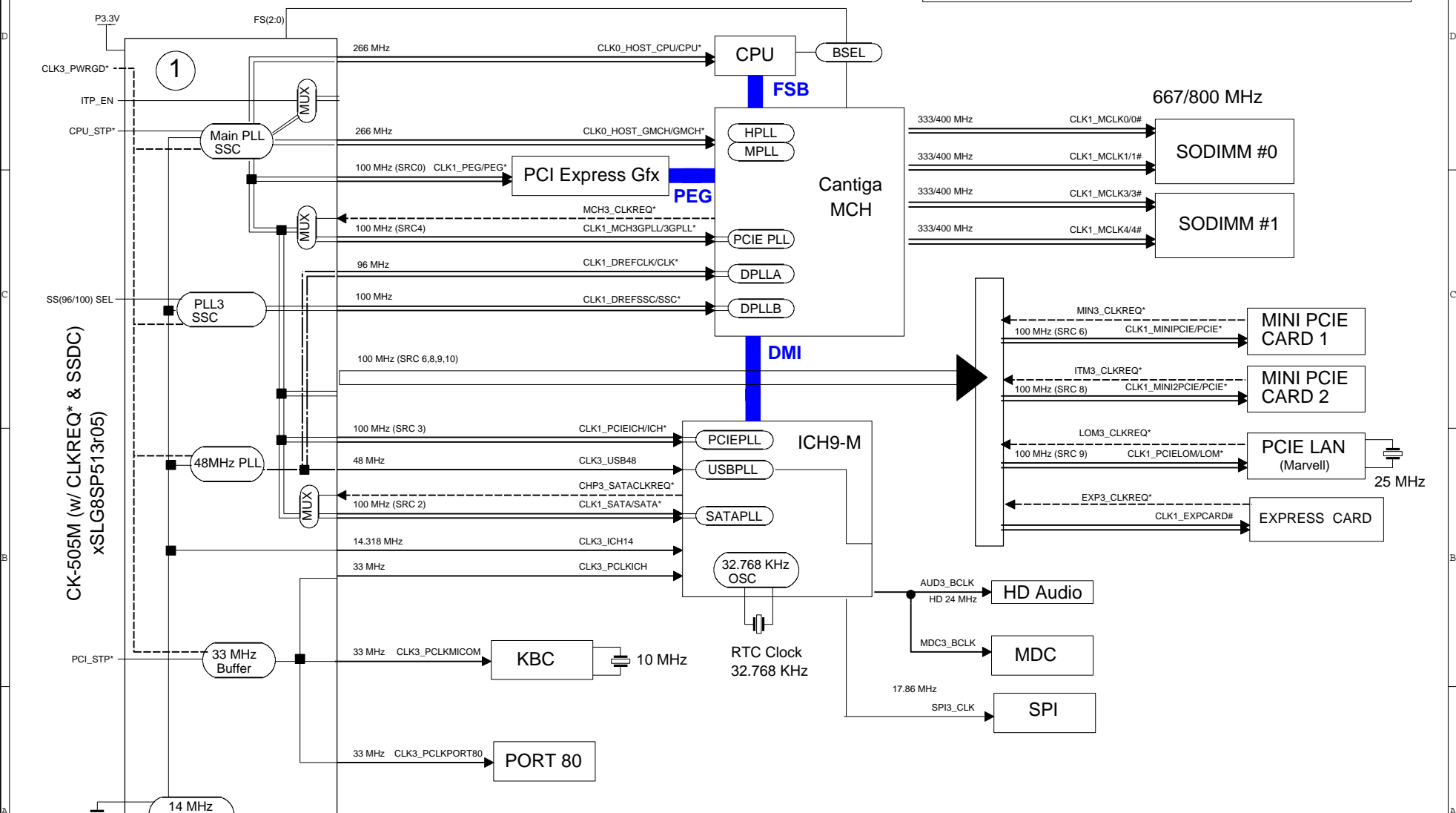
Rev. 0.7



DESIGN	DAI QINGZHU,	DATE	8/16/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	POWER SEQUENCE	PART NO.	BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	6	OF 60

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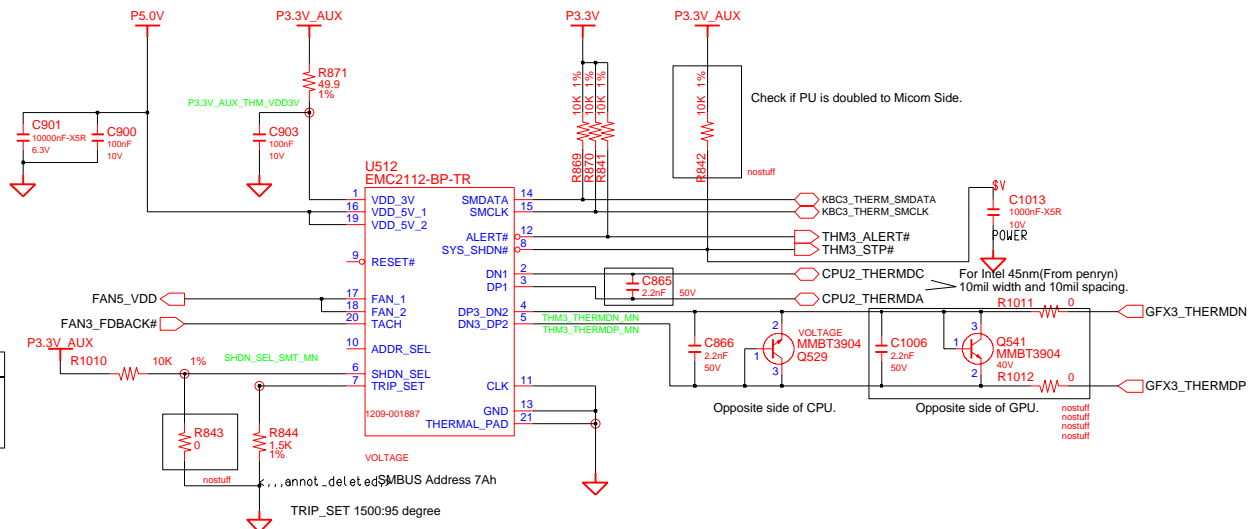
CLOCK DISTRIBUTION Rev. 0.1



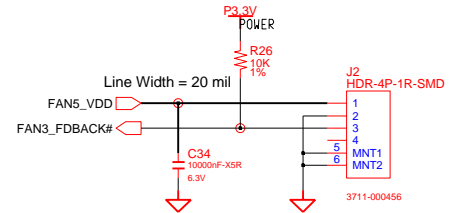
DESIGN	DAI QINGZHU,	DATE	8/16/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	CLOCK DIAGRAM		PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE	7 OF 60

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THERMAL SENSOR & FAN CONTROL

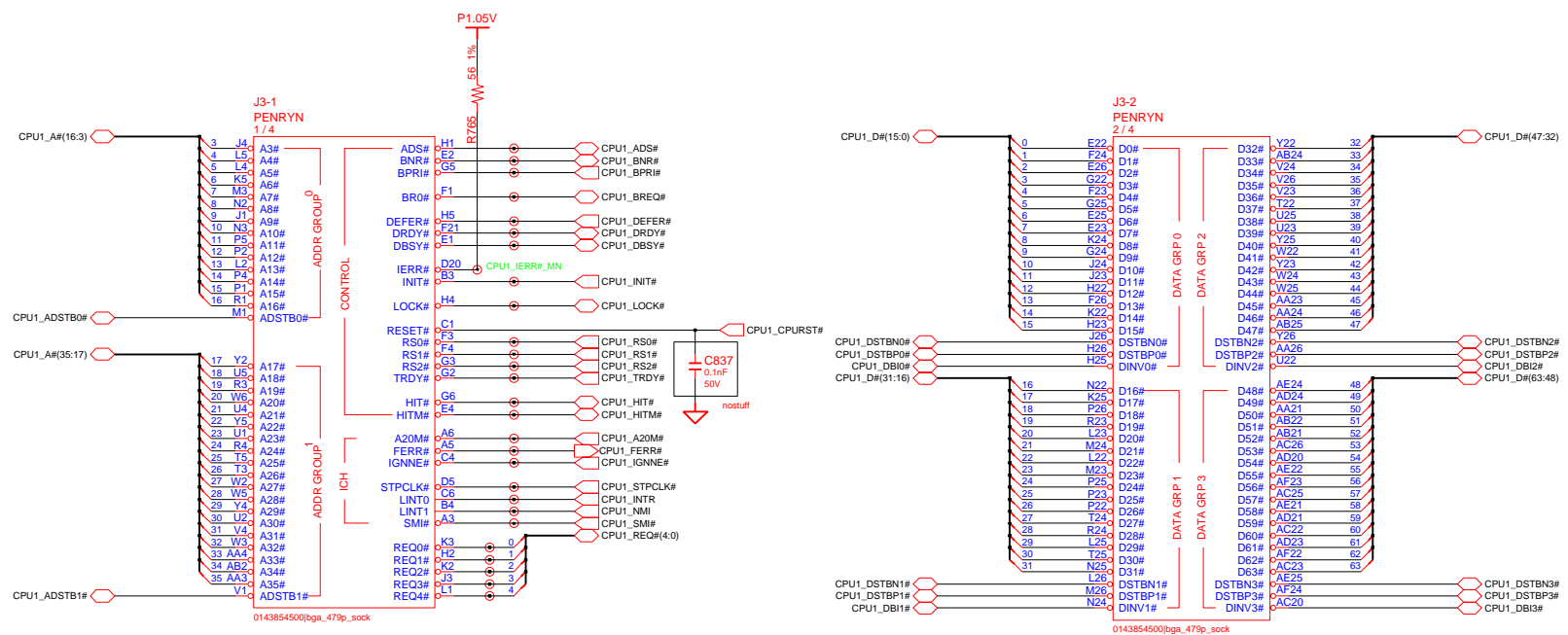


SHDN_SEL MODE	
0	CH1(INTEL MODE)
HIGH Z	CH3(DIODE MODE)
1	N/A (SHDN# NOT USED)

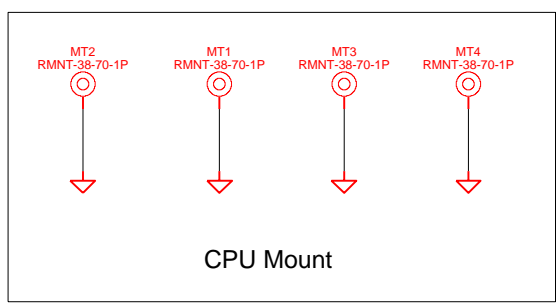


DESIGN	DAI QINGZHU,	DATE	6/17/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	Thermal Sensor EMC2102	PART NO.	
APPROVAL	BC LEE,	REV	1.0			BA41-01335A
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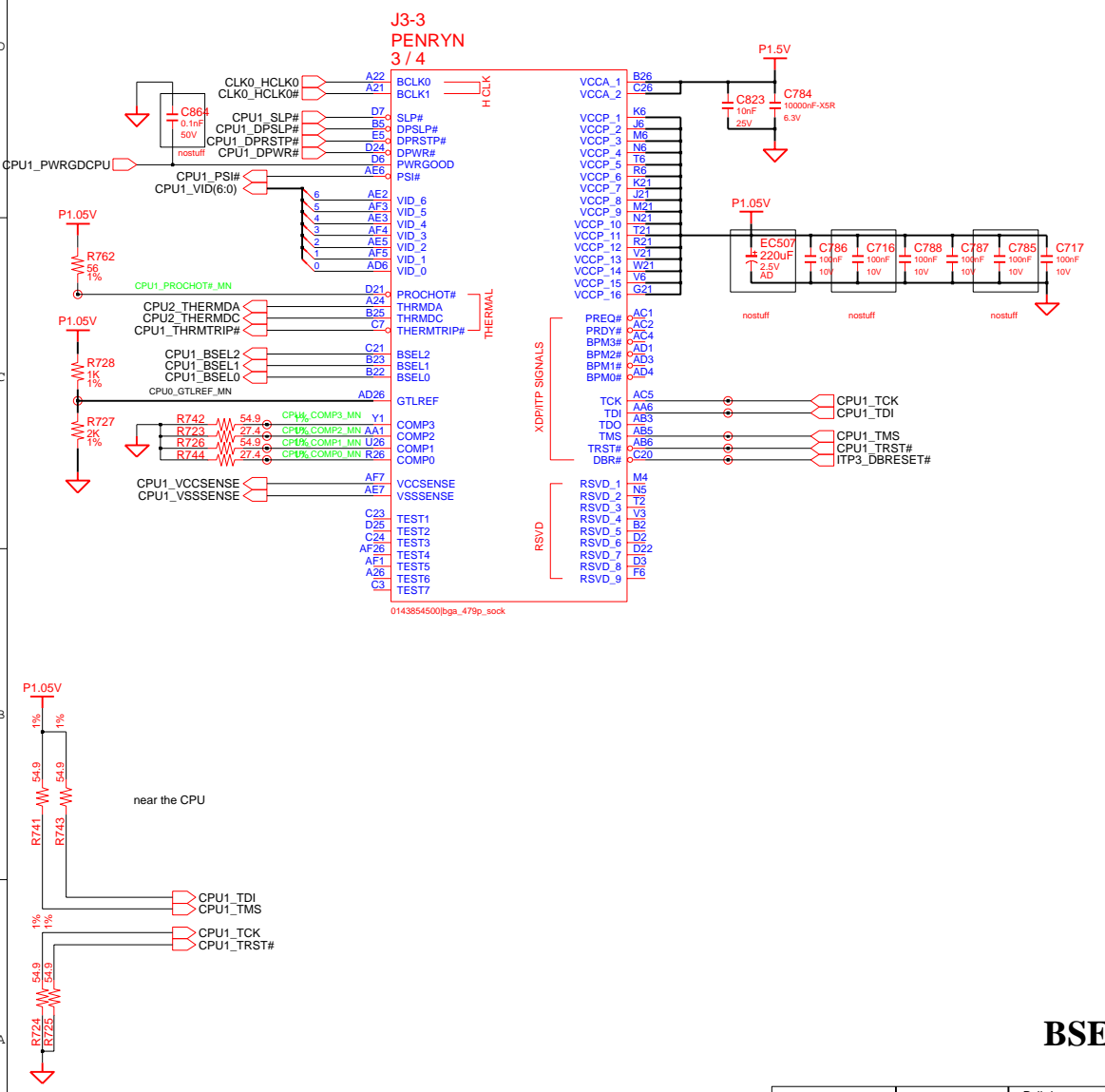
CPU Socket: 3704-001153



CPU Mount

DRAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	CPU		
APPROVAL	BC LEE,	REV	1.0	PENRYN (1/3)		PART NO. BA41-01335A
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	9	OF 60

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CPU Core Voltage Table IMVP-6

Active Mode		Active/Deeper Sleep Dual Mode Region		Deeper Sleep/Extended Deeper Sleep Dual Mode Region	
VID(6:0)	Voltage	VID(6:0)	Voltage	VID(6:0)	Voltage
0 0 0 0 0 0 0	1.5000 V	0 1 0 1 0 0 0	1.0000 V	1 0 1 0 0 0 1	0.4875 V
0 0 0 0 0 0 1	1.4875 V	0 1 0 1 0 0 1	0.9875 V	1 0 1 0 0 1 0	0.4750 V
0 0 0 0 0 1 0	1.4750 V	0 1 0 1 0 1 0	0.9750 V	1 0 1 0 0 1 1	0.4625 V
0 0 0 0 0 1 1	1.4625 V	0 1 0 1 0 1 1	0.9625 V	1 0 1 0 1 0 0	0.4500 V
0 0 0 0 1 0 0	1.4500 V	0 1 0 1 1 0 0	0.9500 V	1 0 1 0 1 0 1	0.4375 V
0 0 0 0 1 0 1	1.4375 V	0 1 0 1 1 0 1	0.9375 V	1 0 1 0 1 1 0	0.4250 V
0 0 0 0 1 1 0	1.4250 V	0 1 0 1 1 1 0	0.9250 V	1 0 1 0 1 1 1	0.4125 V
0 0 0 0 1 1 1	1.4125 V	0 1 1 0 1 1 1	0.9125 V	1 0 1 1 1 0 0	0.4000 V
0 0 0 1 0 0 0	1.4000 V	0 1 1 0 0 0 0	0.9000 V	1 0 1 1 1 0 1	0.3875 V
0 0 0 1 0 0 1	1.3875 V	0 1 1 0 0 0 1	0.8875 V	1 0 1 1 1 0 0	0.3750 V
0 0 0 1 0 1 0	1.3750 V	0 1 1 0 0 1 0	0.8750 V	1 0 1 1 1 0 1	0.3625 V
0 0 0 1 0 1 1	1.3625 V	0 1 1 0 0 1 1	0.8625 V	1 0 1 1 1 1 0	0.3500 V
0 0 0 1 1 0 0	1.3500 V	0 1 1 1 0 1 0	0.8500 V	1 0 1 1 1 1 1	0.3375 V
0 0 0 1 1 0 1	1.3375 V	0 1 1 1 0 1 1	0.8375 V	1 0 1 1 1 1 0	0.3250 V
0 0 0 1 1 1 0	1.3250 V	0 1 1 1 1 0 0	0.8250 V	1 0 1 1 1 1 1	0.3125 V
0 0 0 1 1 1 1	1.3125 V	0 1 1 1 1 0 1	0.8125 V	1 1 0 0 0 0 0	0.3000 V
0 0 1 0 0 0 0	1.3000 V	0 1 1 1 1 0 0	0.8000 V	1 1 0 0 0 0 1	0.2875 V
0 0 1 0 0 0 1	1.2875 V	0 1 1 1 1 0 1	0.7875 V	1 1 0 0 0 1 0	0.2750 V
0 0 1 0 0 1 0	1.2750 V	0 1 1 1 1 0 0	0.7750 V	1 1 0 0 0 1 1	0.2625 V
0 0 1 0 0 1 1	1.2625 V	0 1 1 1 1 0 1	0.7625 V	1 1 0 0 1 0 0	0.2500 V
0 0 1 0 1 0 0	1.2500 V	0 1 1 1 1 1 0	0.7500 V	1 1 0 0 1 0 1	0.2375 V
0 0 1 0 1 0 1	1.2375 V	0 1 1 1 1 1 1	0.7375 V	1 1 0 0 1 1 0	0.2250 V
0 0 1 0 1 1 0	1.2250 V	0 1 1 1 1 1 0	0.7250 V	1 1 0 0 1 1 1	0.2125 V
0 0 1 0 1 1 1	1.2125 V	0 1 1 1 1 1 1	0.7125 V	1 1 0 1 0 0 0	0.2000 V
0 0 1 1 0 0 0	1.2000 V	1 0 0 0 0 0 0	0.7000 V	1 1 0 1 0 0 1	0.1875 V
0 0 1 1 0 0 1	1.1875 V	1 0 0 0 0 0 1	0.6875 V	1 1 0 1 0 1 0	0.1750 V
0 0 1 1 0 1 0	1.1750 V	1 0 0 0 0 1 0	0.6750 V	1 1 0 1 0 1 1	0.1625 V
0 0 1 1 0 1 1	1.1625 V	1 0 0 0 0 1 1	0.6625 V	1 1 0 1 1 0 0	0.1500 V
0 0 1 1 1 0 0	1.1500 V	1 0 0 0 1 0 0	0.6500 V	1 1 0 1 1 0 1	0.1375 V
0 0 1 1 1 0 1	1.1375 V	1 0 0 0 1 0 1	0.6375 V	1 1 0 1 1 1 0	0.1250 V
0 0 1 1 1 1 0	1.1250 V	1 0 0 0 1 1 0	0.6250 V	1 1 0 1 1 1 1	0.1125 V
0 0 1 1 1 1 1	1.1125 V	1 0 0 0 1 1 1	0.6125 V	1 1 1 0 0 0 0	0.1000 V
0 1 0 0 0 0 0	1.1000 V	1 0 0 0 1 0 0	0.6000 V	1 1 1 0 0 0 1	0.0875 V
0 1 0 0 0 0 1	1.0875 V	1 0 0 0 1 0 1	0.5875 V	1 1 1 0 0 1 0	0.0750 V
0 1 0 0 0 1 0	1.0750 V	1 0 0 0 1 0 0	0.5750 V	1 1 1 0 0 1 1	0.0625 V
0 1 0 0 0 1 1	1.0625 V	1 0 0 0 1 0 1	0.5625 V	1 1 1 0 1 0 0	0.0500 V
0 1 0 0 1 0 0	1.0500 V	1 0 0 0 1 1 0	0.5500 V	1 1 1 0 1 0 1	0.0375 V
0 1 0 0 1 0 1	1.0375 V	1 0 0 0 1 1 0	0.5375 V	1 1 1 0 1 1 0	0.0250 V
0 1 0 0 1 1 0	1.0250 V	1 0 0 0 1 1 1	0.5250 V	1 1 1 0 1 1 1	0.0125 V
0 1 0 0 1 1 1	1.0125 V	1 0 0 0 1 1 1	0.5125 V	1 1 1 1 0 0 0	0.0000 V
0 1 0 0 1 1 1	1.0125 V	1 0 0 0 1 1 1	0.5000 V	1 1 1 1 0 0 1	0.0000 V
		1 0 0 0 1 1 1	0.5000 V	1 1 1 1 0 1 0	0.0000 V
				1 1 1 1 0 1 1	0.0000 V
				1 1 1 1 1 0 0	0.0000 V
				1 1 1 1 1 0 1	0.0000 V
				1 1 1 1 1 1 0	0.0000 V
				1 1 1 1 1 1 1	0.0000 V

Active: DPRSLPVR 0, DPRSTP* 1, PS12* 0 or 1
 Deeper Slip: DPRSLPVR 1, DPRSTP* 0, PS12* 0 or 1

**11111111*: 0V power good asserted.

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

GTLREF : Keep the Voltage divider within 0.5" of the first GTLREF0 pin with Zo=50ohm trace. Minimize coupling of any switching signals to this net.

COMP0.2(COMP1.3) should be connected with Zo=27.4ohm(50ohm) trace shorter than 1/2" to their respective Banias socket pins.

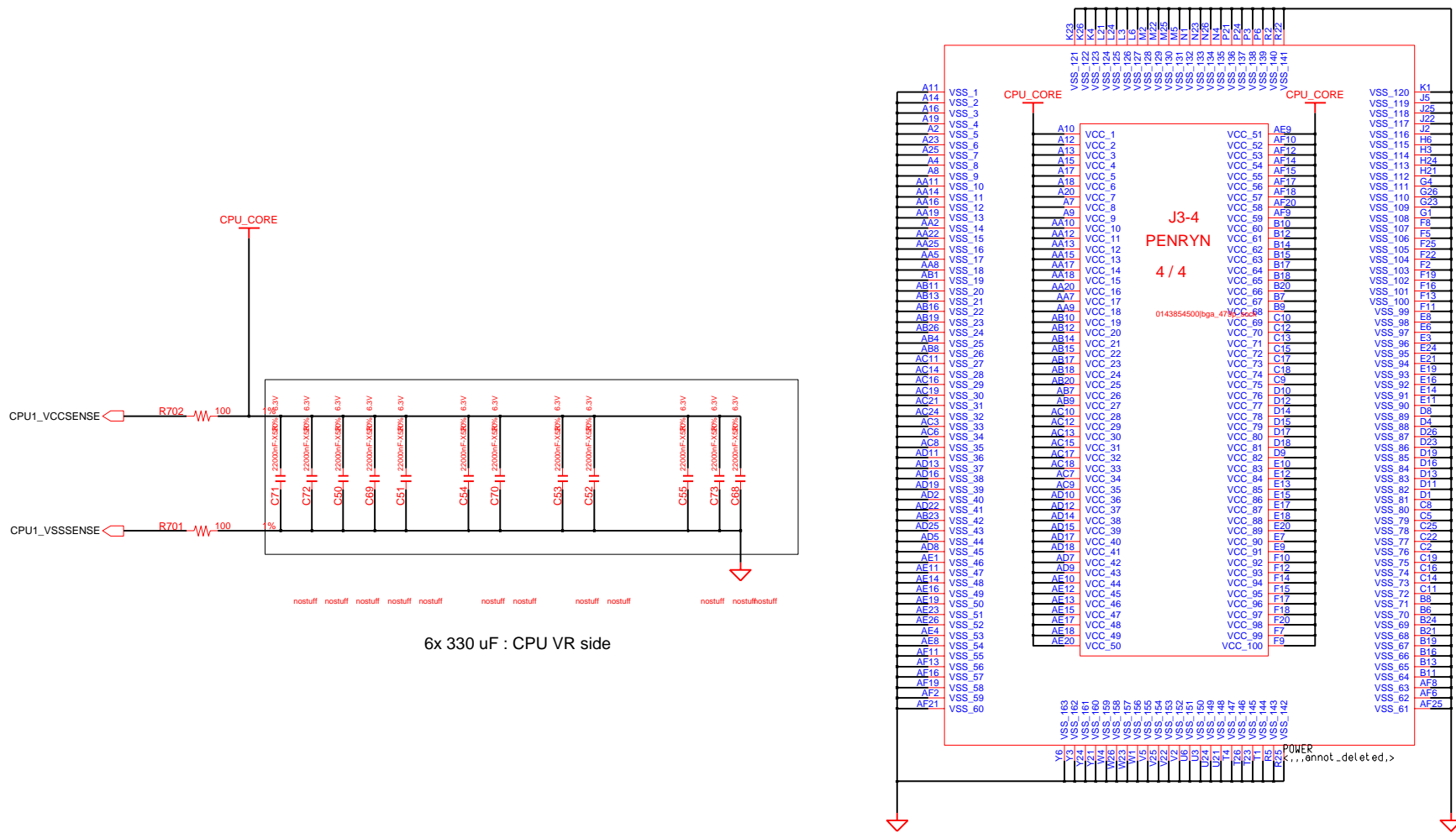
GND test points within 100mil of the VCC/VSSsense at the end of the line. Route the VCC/VSSsense as a Zo=50ohm traces with equal length. Observe 3:1 spacing b/w VCC/VSSsense lines and 25mil away (preferred 50mil) from any other signal. And GND via 100mil away from each of the VCC/VSS test point vias.

BSEL

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

DRAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		CPU	
APPROVAL	BC LEE,	REV	1.0		PENRYN (2/3)	PART NO.
MODULE CODE	undef ined	LAST EDIT	August 06, 2010 15:45 PM			BA41-01335A
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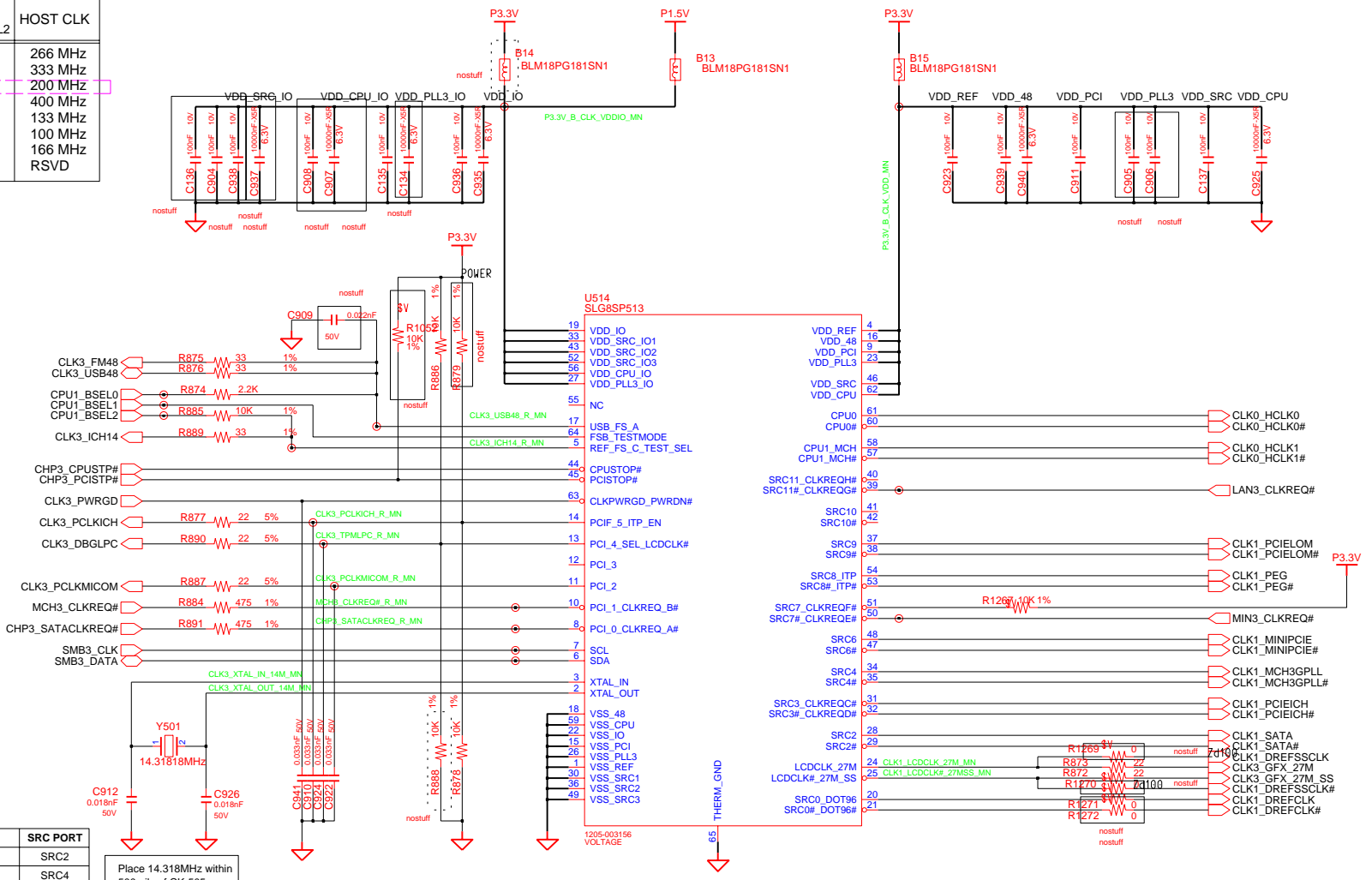
6x 330 uF : CPU VR side

DRAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		CPU	
APPROVAL	BC LEE,	REV	1.0		PENRYN (3/3)	PART NO. BA41-01335A
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM			PAGE 11 OF 60

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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

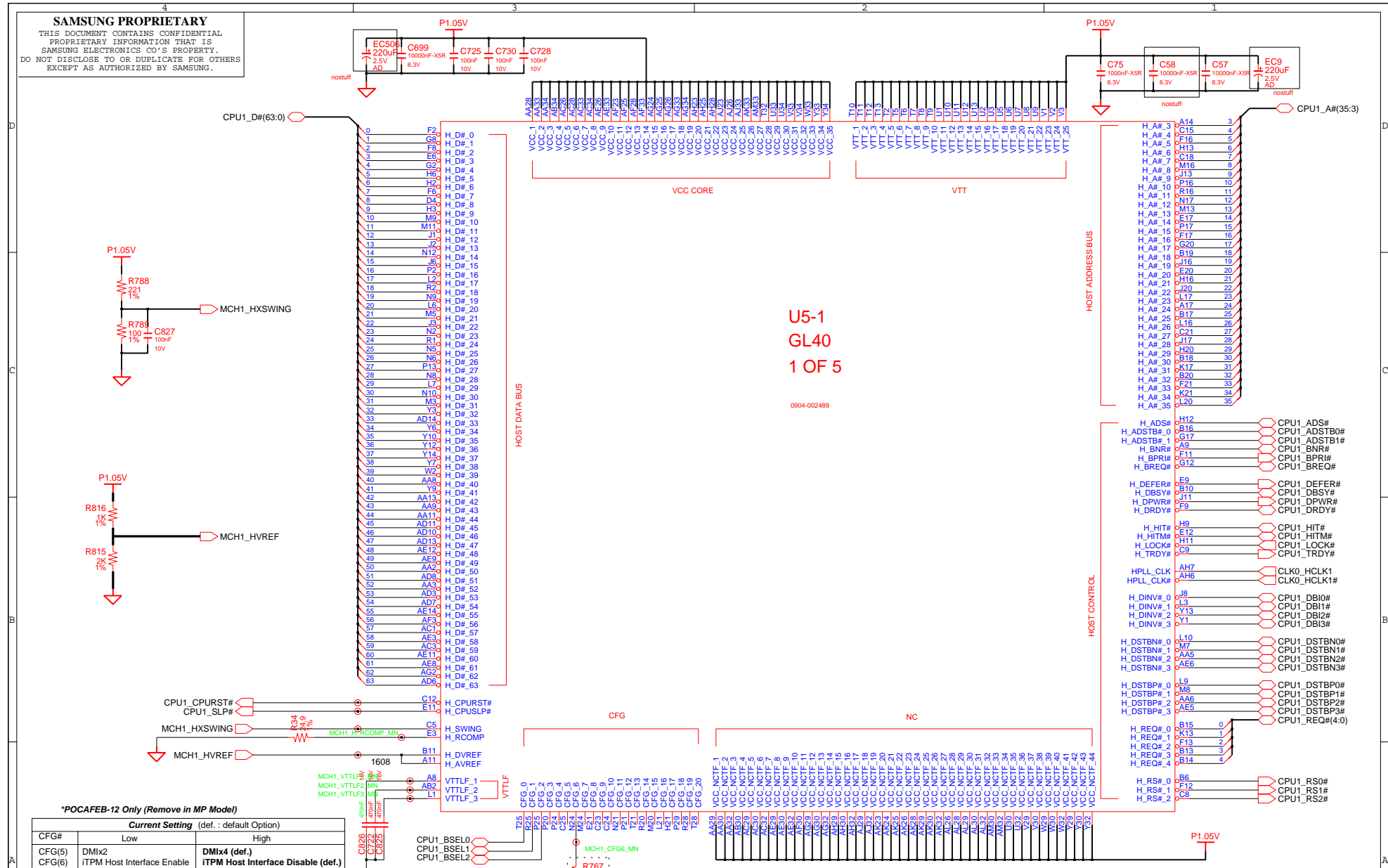
Place 14.318MHz within 500mils of CK-505

This part is 64pin QFN package.

IDT: 1205-003159
 SL: 1205-003533

DRAW	DATE	TITLE	SAMSUNG ELECTRONICS
DAI QINGZHU,	8/12/2006	Scala_14L	
CHECK	DEV. STEP	Main_Clock_Circuit	PART NO. BA41-01335A
WU SHIJIANG,	PR	CK_Clock_505M	
APPROVAL	REV	1.0	PAGE 12 OF 60
BC LEE,			
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U5-1
 GL40
 1 OF 5

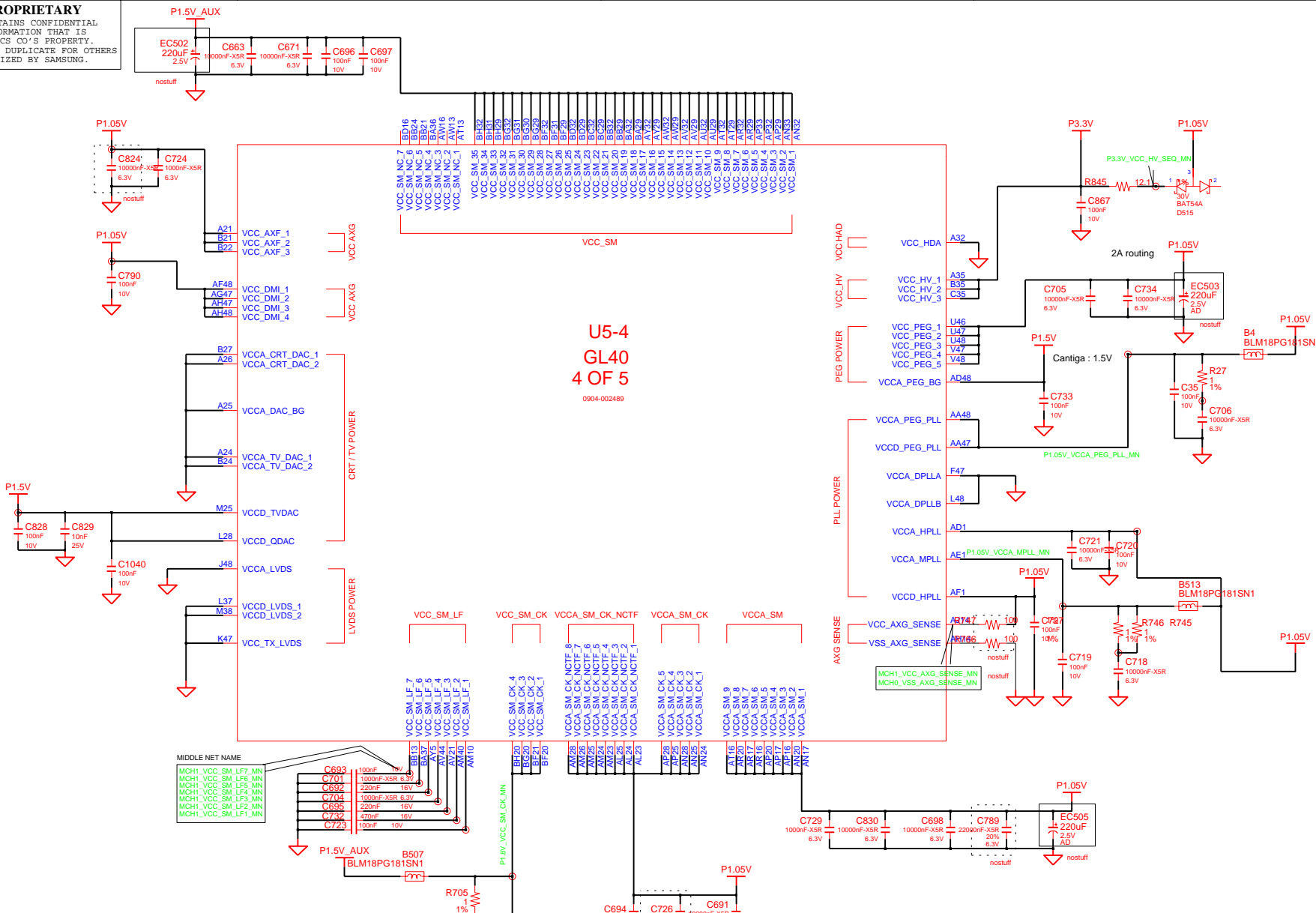
0904-002489

***POCAFEB-12 Only (Remove in MP Model)**

CFG#	Low	High
CFG(5)	DMix2	DMix4 (def.)
CFG(6)	iTPM Host Interface Enable	iTPM Host Interface Disable (def.)
CFG(7)	ME Crypto no confidentiality	ME Crypto confidentiality (def.)
CFG(9)	PEG Reversal (def.)	Normal
CFG(10)	PCIe Loop Back Enable	PCIe Loop Back Disable(def)
CFG(16)	Dynamic ODT Disabled	Dynamic ODT Enabled (def.)
CFG(19)	DMI Lane Normal (def.)	DMI Lane Reversal
CFG(20)	SDVO or PCIe X1 Only(def.)	SDVO and PCIe X1 Simultaneously

<table border="0"> <tr> <td>DAW</td> <td>DAI QINGZHU,</td> <td>DATE</td> <td>11/8/2006</td> <td>TITLE</td> <td>Scala_14L</td> </tr> <tr> <td>CHECK</td> <td>WU SHIJIANG,</td> <td>DEV. STEP</td> <td>PR</td> <td>MCH_CANTIGA_PM_DDR3</td> <td></td> </tr> <tr> <td>APPROVAL</td> <td>BC LEE,</td> <td>REV</td> <td>1.0</td> <td>CANTIGA (1/5)</td> <td></td> </tr> <tr> <td>MODULE CODE</td> <td>undefined</td> <td>LAST EDIT</td> <td>August 06, 2010 15:15:45 PM</td> <td>PAGE</td> <td>13 OF 60</td> </tr> </table>	DAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L	CHECK	WU SHIJIANG,	DEV. STEP	PR	MCH_CANTIGA_PM_DDR3		APPROVAL	BC LEE,	REV	1.0	CANTIGA (1/5)		MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	13 OF 60	<table border="0"> <tr> <td>SAMSUNG</td> </tr> <tr> <td>ELECTRONICS</td> </tr> <tr> <td>PART NO.</td> <td>BA41-01335A</td> </tr> </table>	SAMSUNG	ELECTRONICS	PART NO.	BA41-01335A
DAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L																								
CHECK	WU SHIJIANG,	DEV. STEP	PR	MCH_CANTIGA_PM_DDR3																									
APPROVAL	BC LEE,	REV	1.0	CANTIGA (1/5)																									
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	13 OF 60																								
SAMSUNG																													
ELECTRONICS																													
PART NO.	BA41-01335A																												

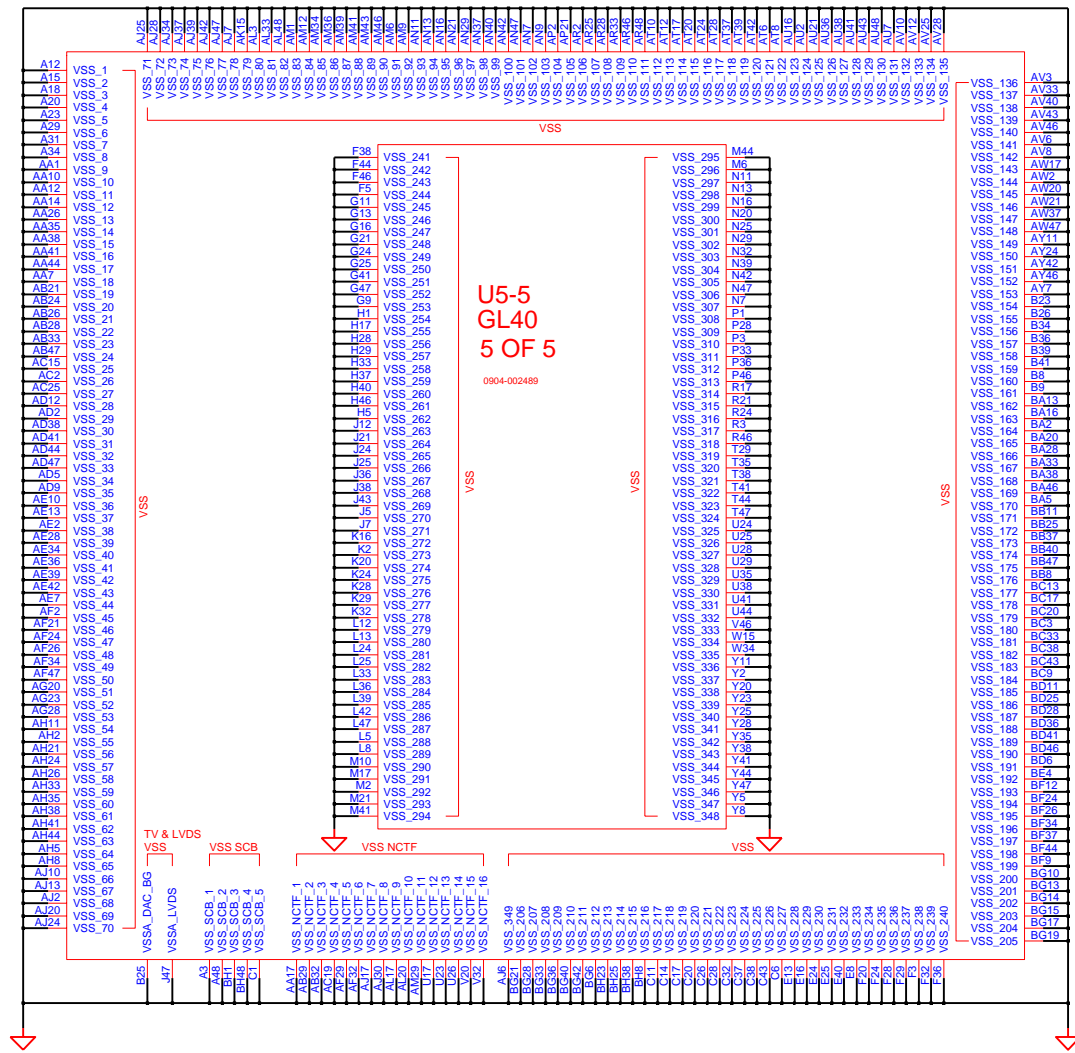
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U5-4
GL40
4 OF 5
 0904-002489

DRAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MCH_CANTIGA_PM_DDR3	CANTIGA (4/5)	
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM			PAGE 16 OF 60

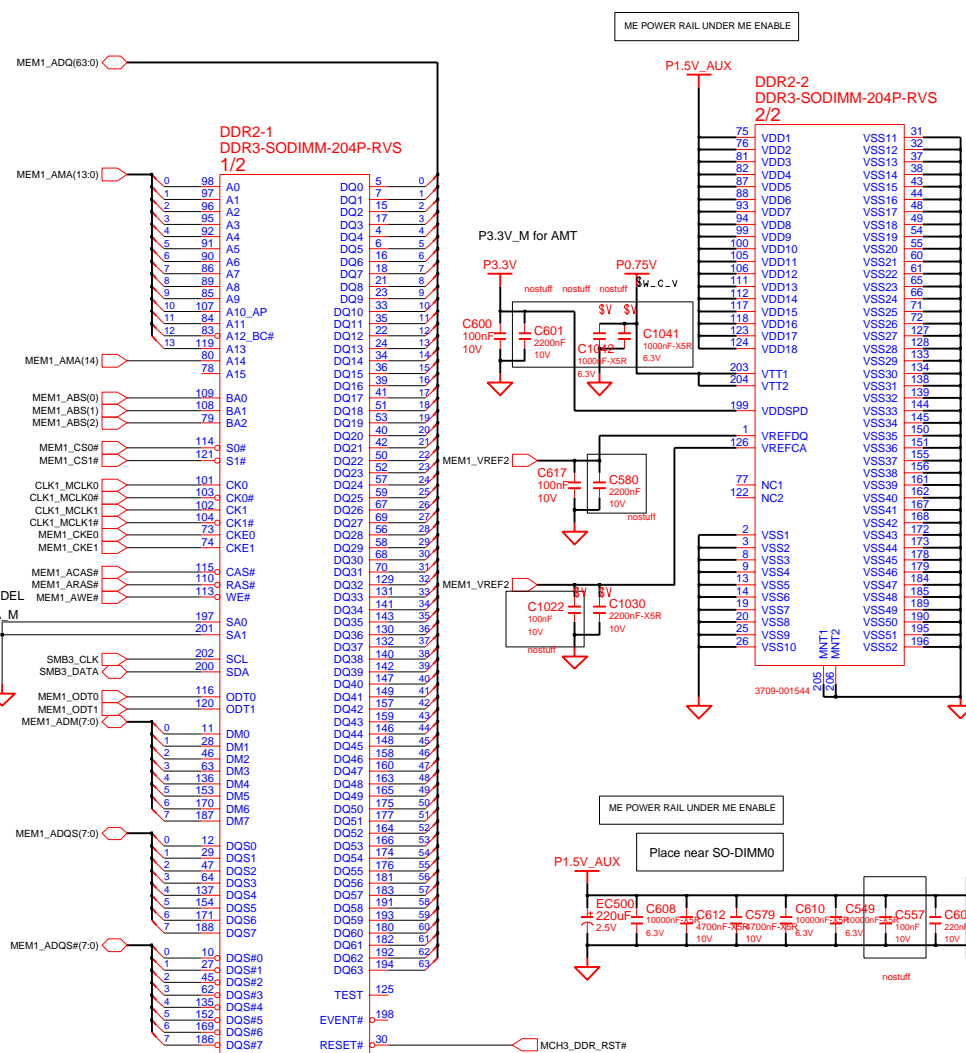
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DRAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MCH_CANTIGA_PM_DDR3	CANTIGA (5/5)	
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE 17	OF 60

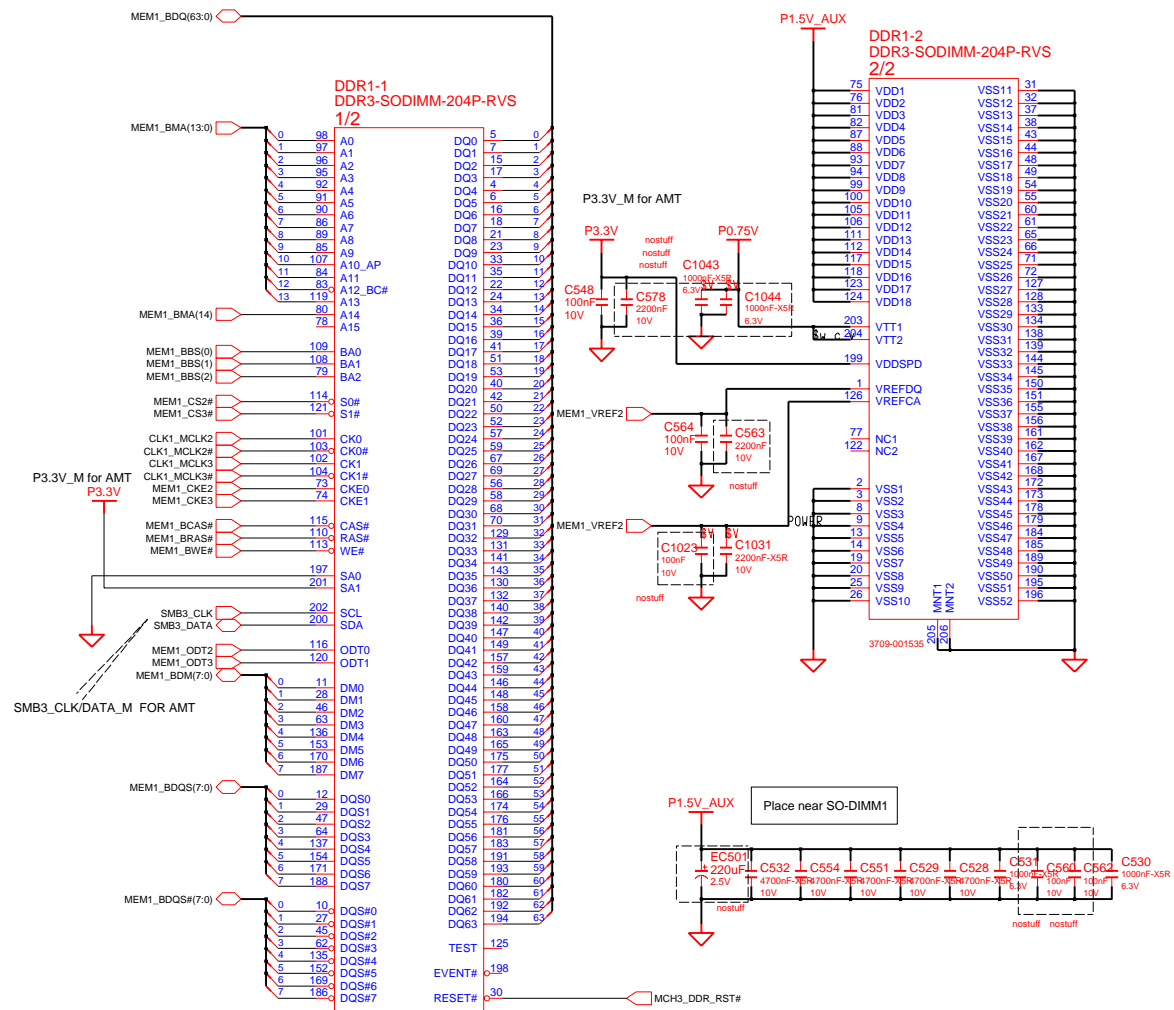
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DDR SO-DIMM #0



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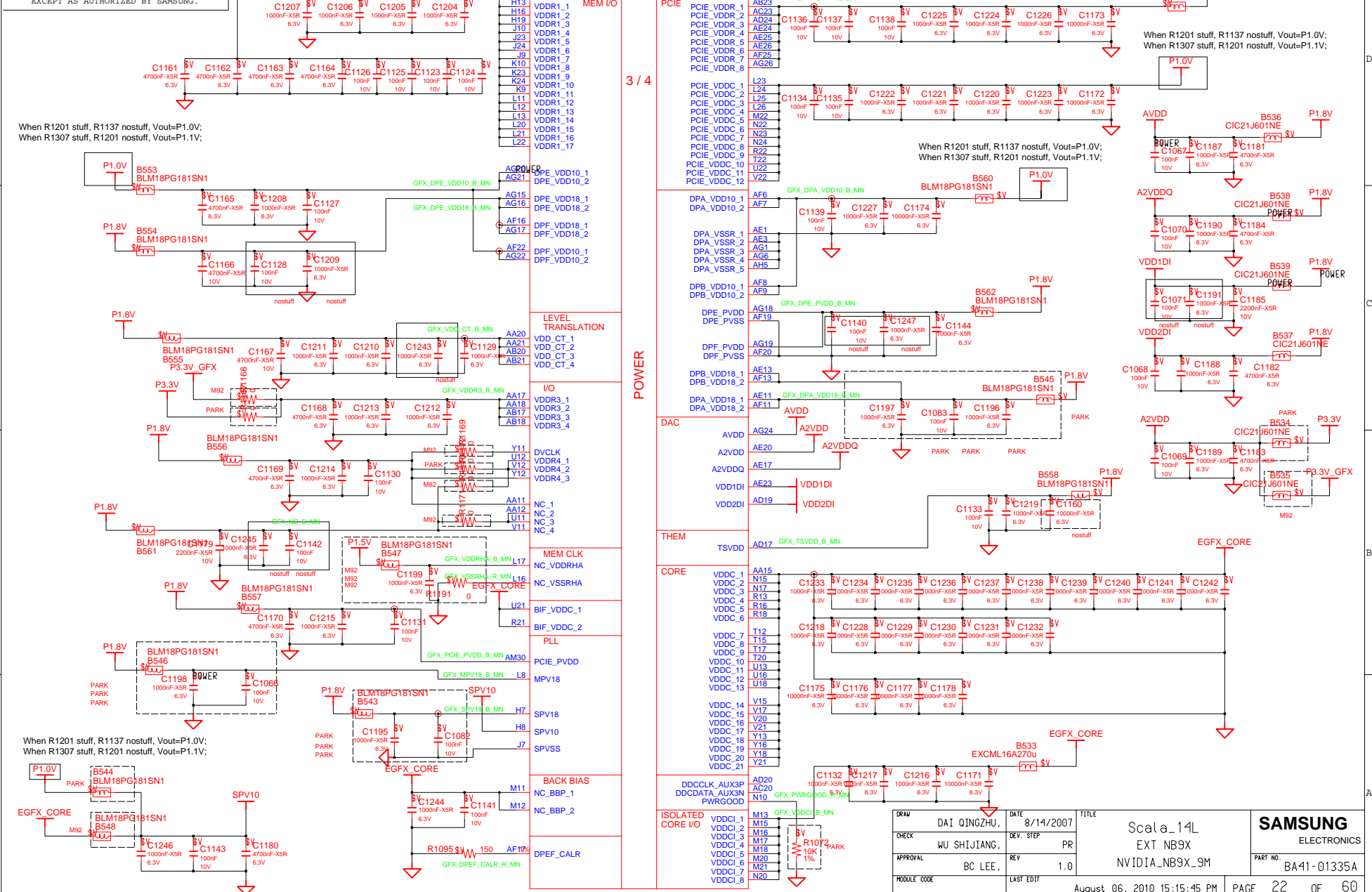
DDR SO-DIMM #1



DRAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	SODIMM_REV		
APPROVAL	BC LEE,	REV	1.0	DDR3 CH B		PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE 19	OF 60

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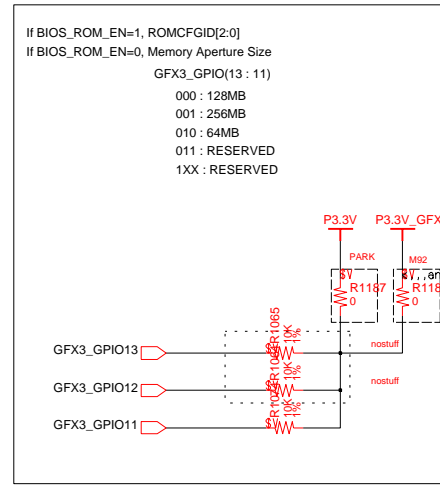
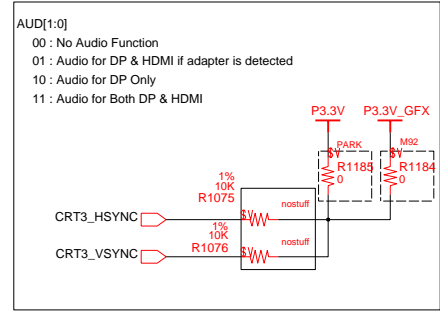
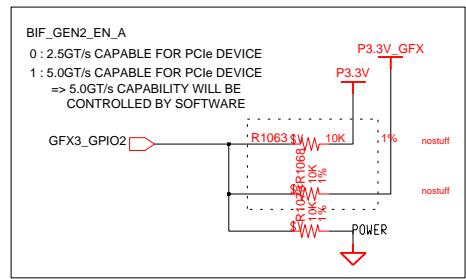
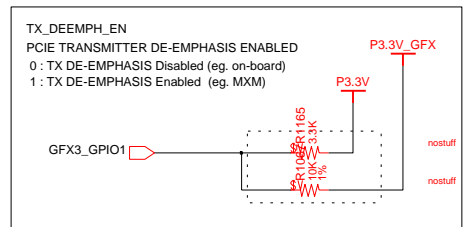
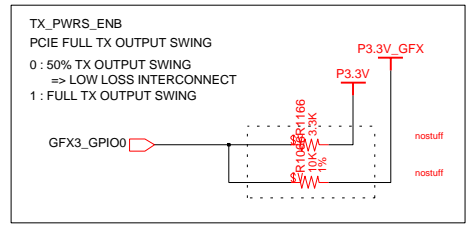
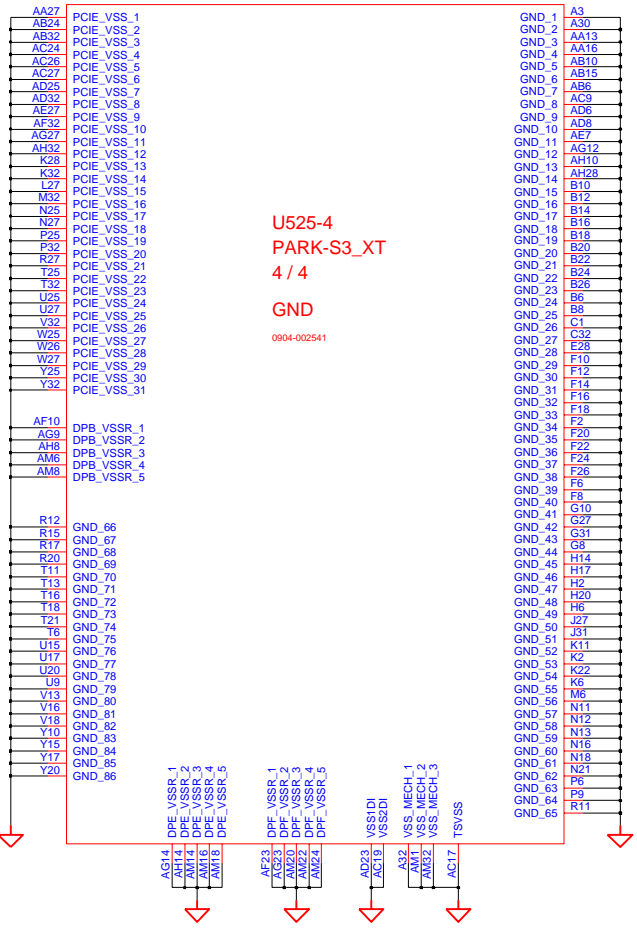
U525-3
PARK-S3_XT



DATE	8/14/2007	TITLE	Scala_14L	SAMSUNG ELECTRONICS
DEV. STEP	PR	EXT NB9X	NVIDIA-NB9X_9M	
APPROVAL	BC LEE, 1.0	REV	1.0	PART NO.
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	BA41-01335A
			PAGE	22 OF 60

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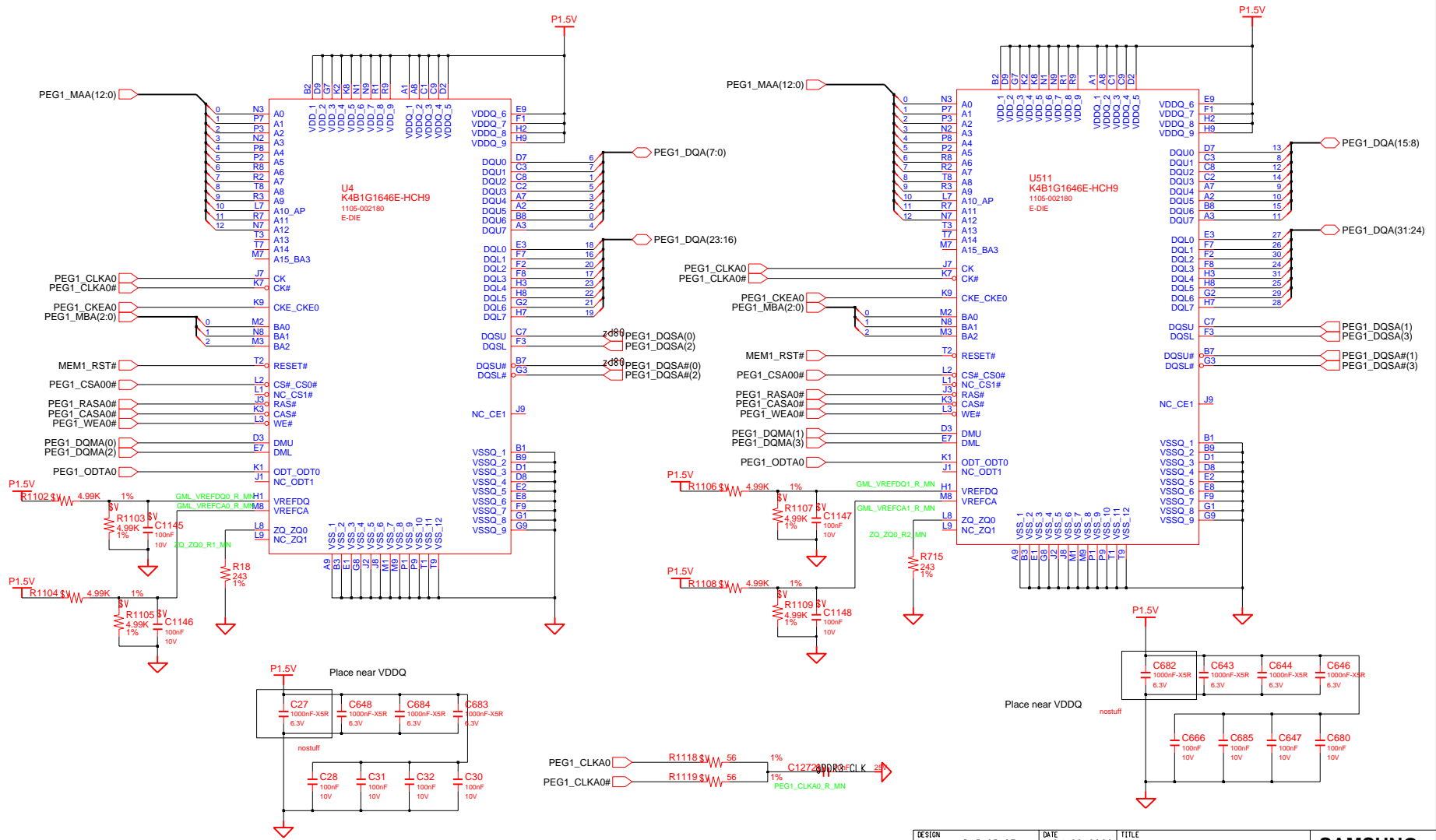
PARK & M92 Straps



DRAW	DAI QINGZHU,	DATE	8/14/2007	TITLE	Scala_14L EXT NB9X	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0		NVIDIA_NB9X_9M	PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	23	OF 60

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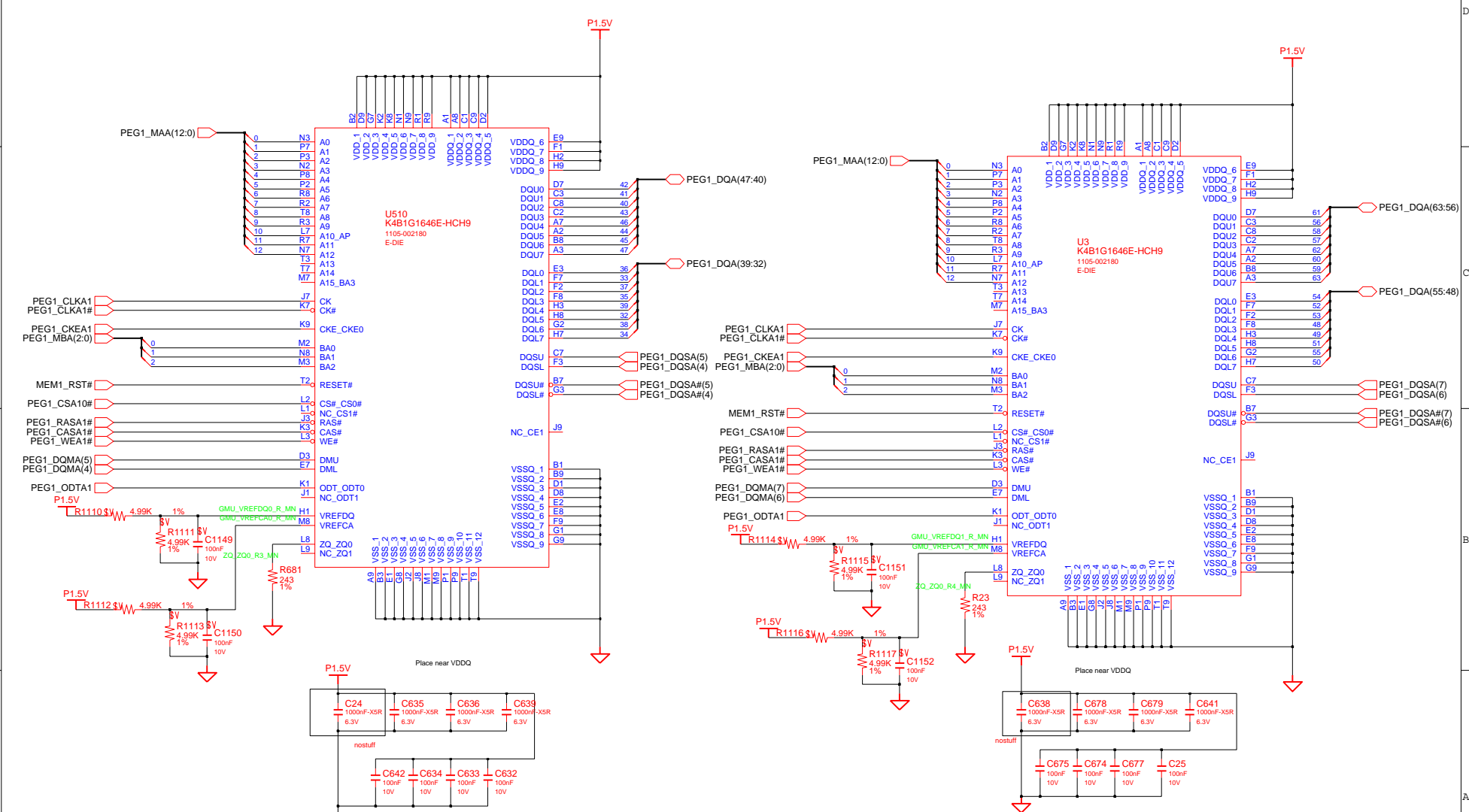
A-channel Lower Data



DESIGN	DAI QINGZHU,	DATE	04/29/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	GRAPHIC_MEM_1Gb A#0	PART NO.	
APPROVAL	BC LEE,	REV	1.0	gDDR3-1Gb	BA41-01335A	PAGE 26 OF 60
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM			

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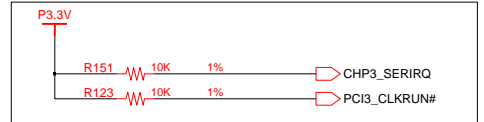
A-channel Upper Data



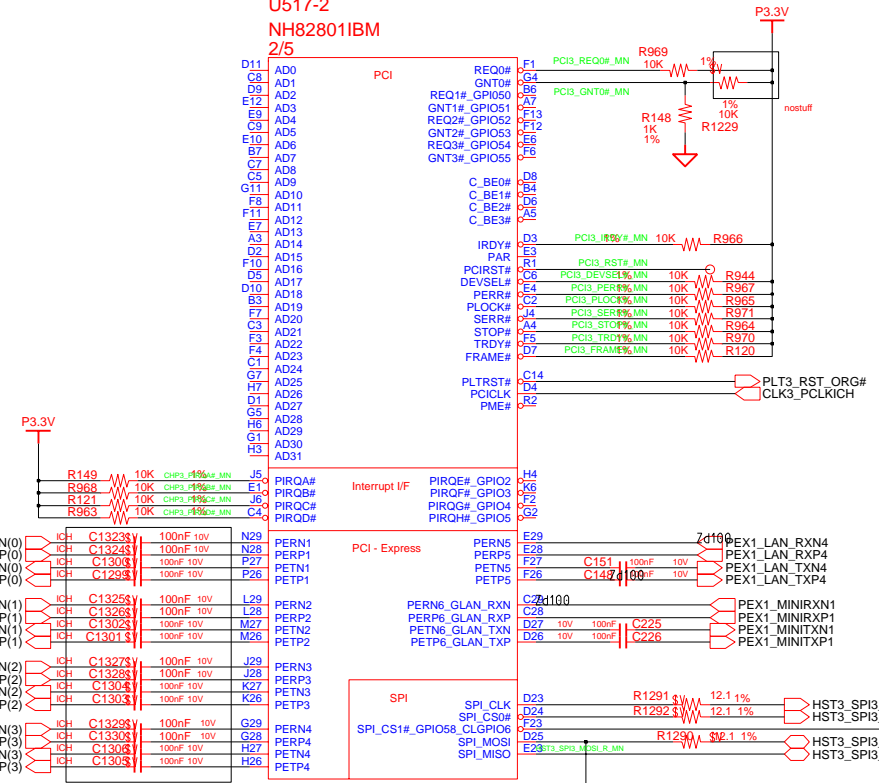
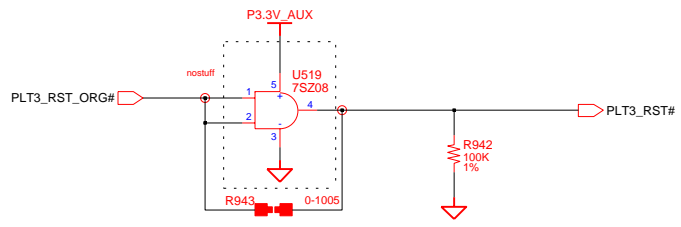
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CHECK	WU SHIJIANG,	DEV. STEP	GRAPHIC_MEM_1Gb A#1	
APPROVAL	BC LEE,	REV	gDDR3_1Gb	
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE 27 OF 60

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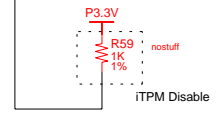
**U517-2
 NH82801IBM
 2/5**



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

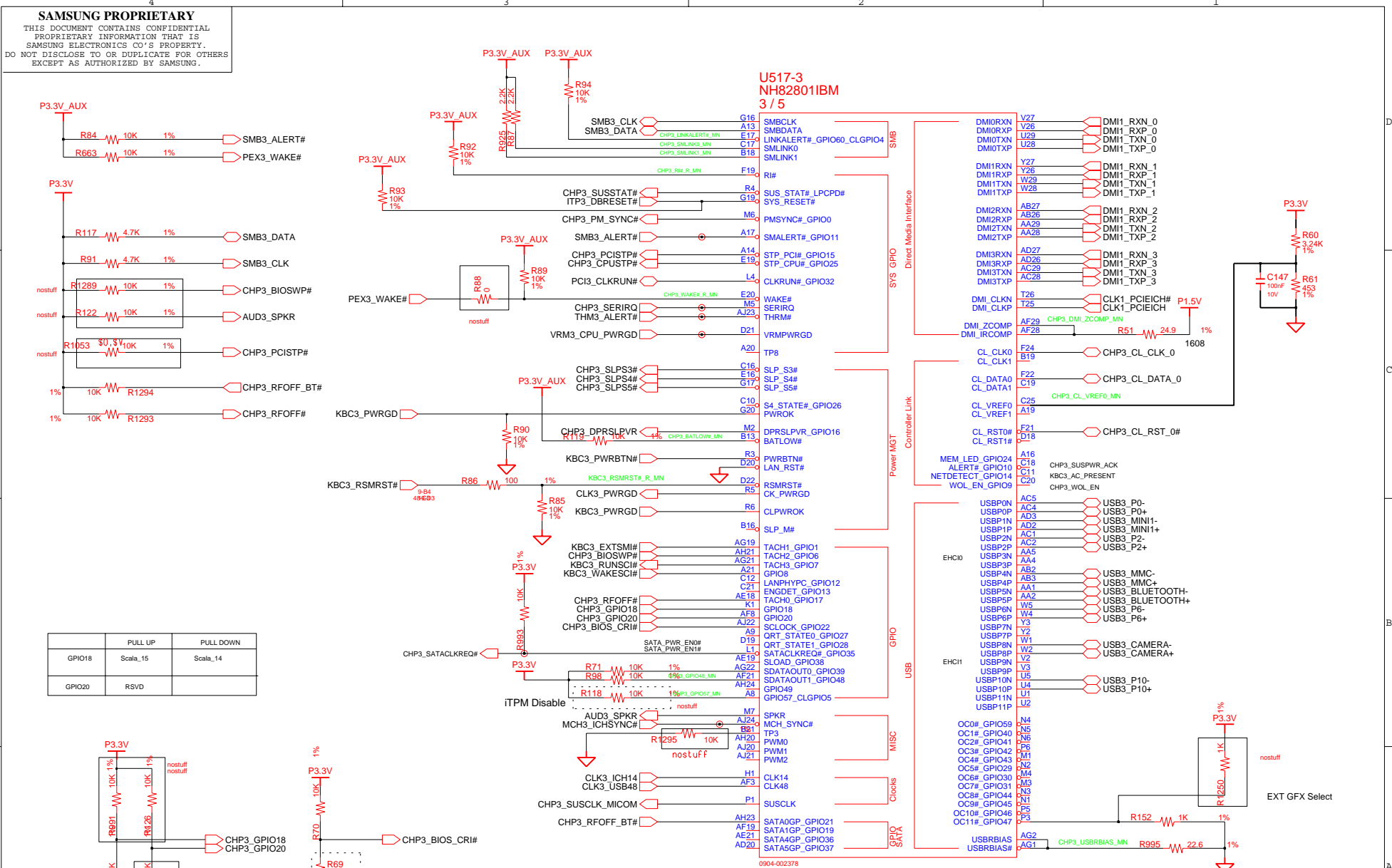


Boot BIOS Select

BIOS	PCI3_GNT0#	SPI3_CS1#
LPC	HIGH	HIGH
SPI	LOW	HIGH
PCI	HIGH	LOW

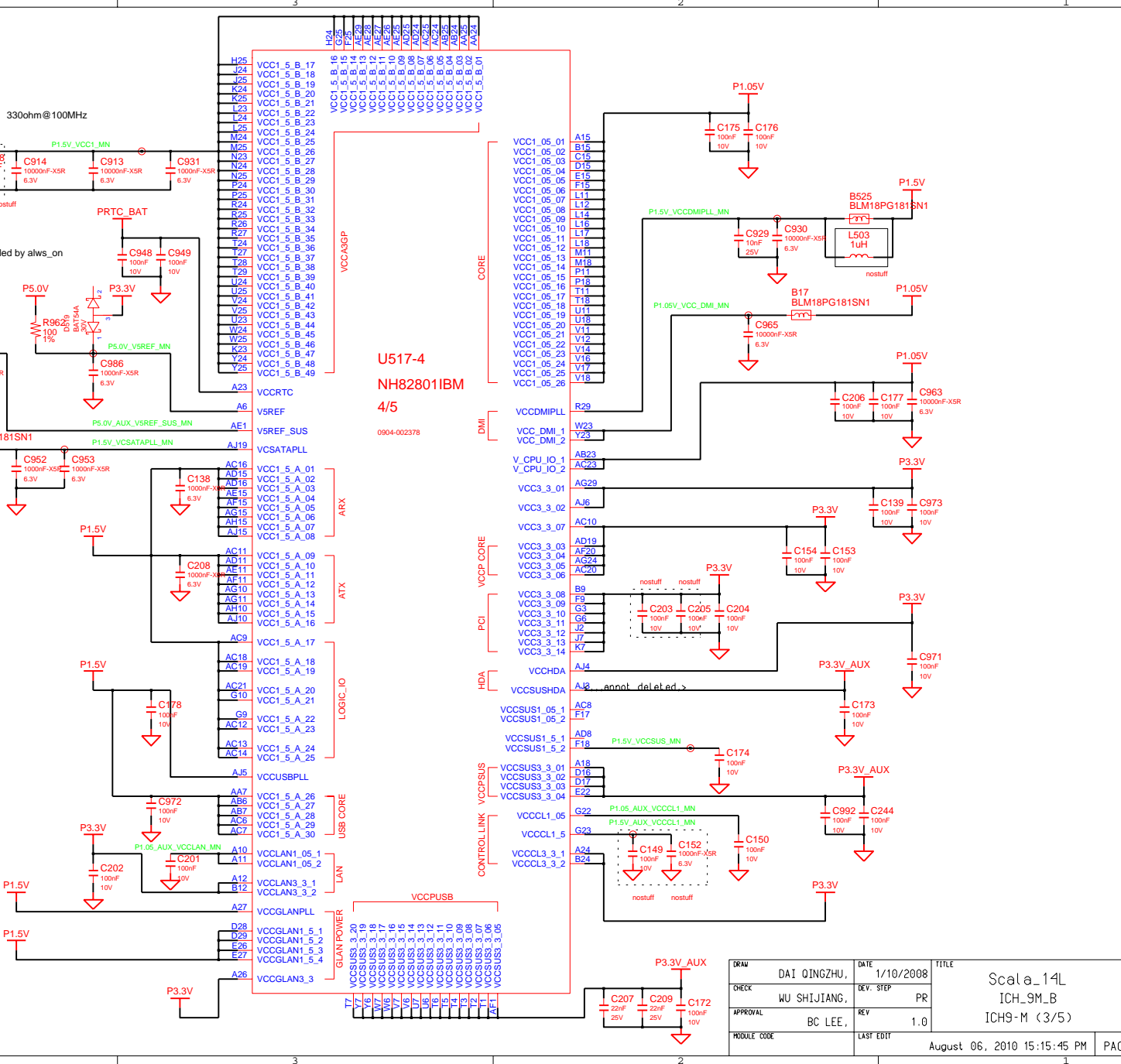
DRAW	DAI QINGZHU,	DATE	1/10/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS	
CHECK	WU SHIJIANG,	DEV. STEP	PR		ICH9M_B		
APPROVAL	BC LEE,	REV	1.0		ICH9-M (2/5)	PART NO.	
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	30	OF	60

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DRAW	DAI QINGZHU,	DATE	1/10/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		ICH_9M_B	
APPROVAL	BC LEE,	REV	1.0		ICH9-M (3/5)	PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE 31 OF 60	

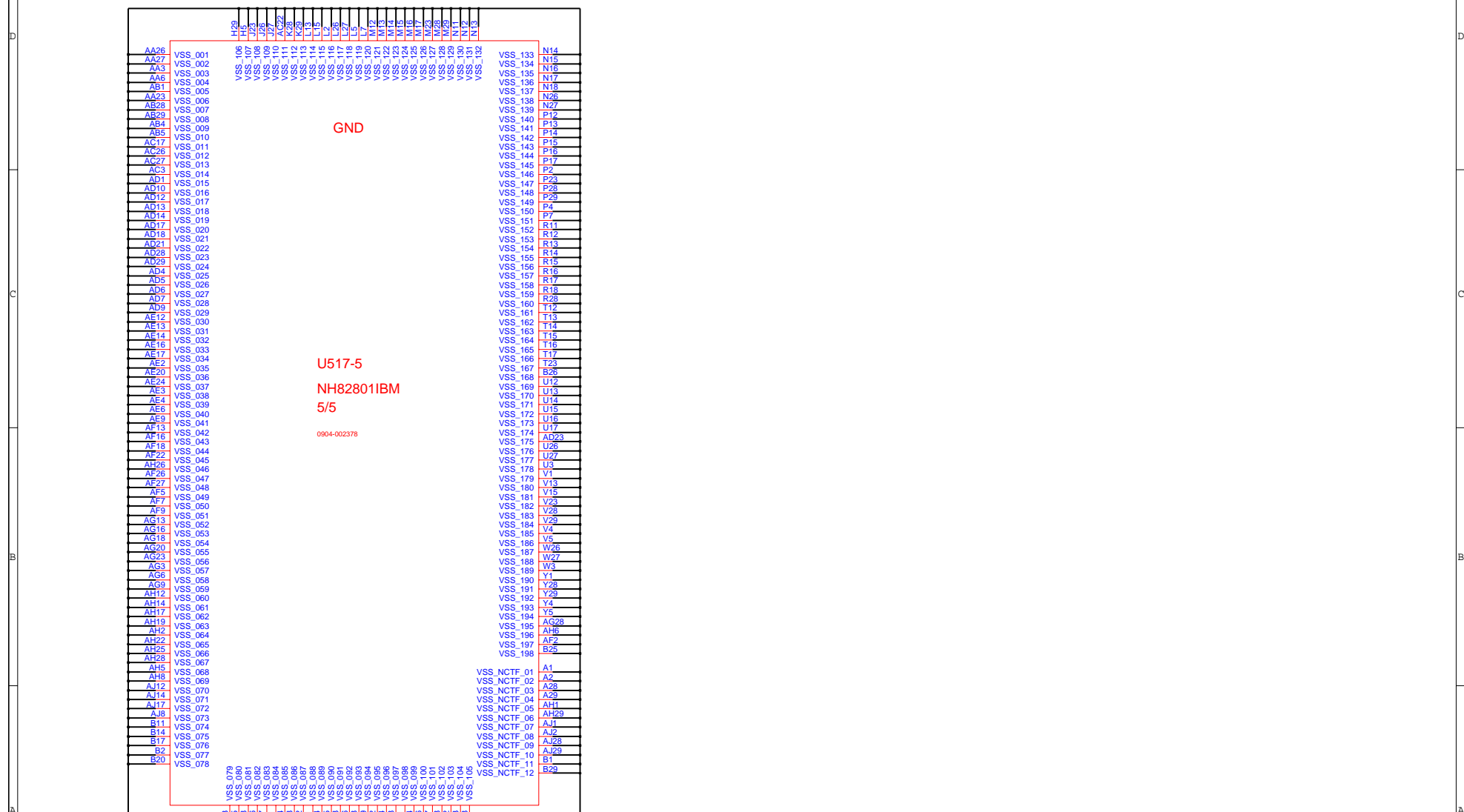
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SAMSUNG
 ELECTRONICS
 PART NO. BA41-01335A

DRAW	DAI QINGZHU,	DATE	1/10/2008	TITLE	Scala_14L
CHECK	WU SHIJIANG,	DEV. STEP	PR		ICH_9M_B
APPROVAL	BC LEE,	REV	1.0		ICH9-M (3/5)
MODULE CODE		LAST EDIT			

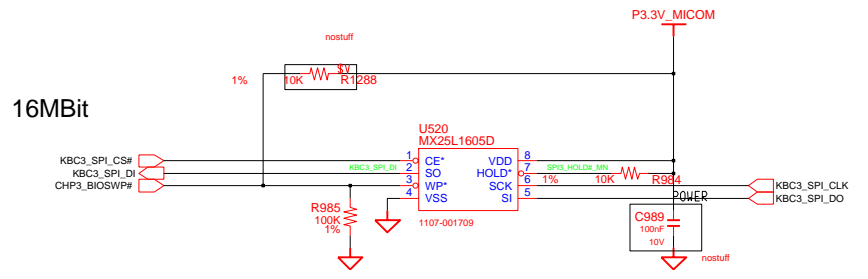
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DRAW	DAI QINGZHU,	DATE	1/10/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		ICH_9M_B	
APPROVAL	BC LEE,	REV	1.0		ICH9-M (5/5)	PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM		PAGE 33 OF 60

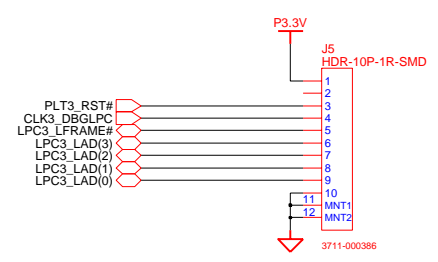
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SPI_BIOS_ROM

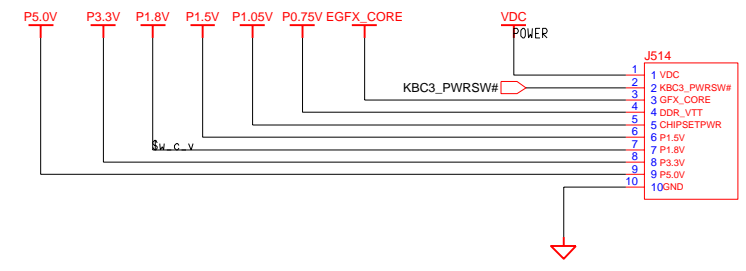


02	VERIFY REAL MODE	66	CONFIGURE ADVANCE CACHE REG.
03	DISABLE NMI	6A	DISPLAY EXTERNAL CACHE SIZE
04	GET CPU TYPE	6C	DISPLAY SHADOW MESSAGE
06	INIT. SYSTEM HW	6E	DISPLAY NON-DISPOSABLE SEGMENT
08	INIT. CHIPSET REG.	70	DISPLAY ERROR MESSAGE
09	SET IN POST FLAG	72	CHECK FOR CONFIGURATION ERROR
0A	INIT CPU REG	74	TEST REAL-TIME CLOCK
0B	CPU CACHE ON	76	CHECK FOR KEYBOARD ERROR
0C	INIT CACHE TO POST	7C	SETUP HARDWARE INTERRUPT VECTOR
0E	INIT. I/O VALUE	7E	TEST COPROCESSER IF PRESENT
0F	ENABLE THE L-BUS IDE	80	DISABLE ON-BOARD I/O PORT
11	INIT. POWER MANAGER	82	DETECT AND INSTALL EXT RS232C
11	LOAD ALTERNATE REG.	84	DETECT AND INSTALL EXT PARALLEL
13	PCI BUS MASTER RESET	86	RE-INIT. ON-BOARD I/O PORT
		88	INIT. BIOS DATA ROM
		8A	INIT. EXTENDED BIOS DATA AREA
14	WITH INITIAL POST VALUE	8C	INIT. FDD CONTROLLER
14	INIT. KEYBOARD CONTROLLER	9A	SHADOW OPTION ROMS
16	CHECK CHECKSUM	9C	SETUP POWER MANAGEMENT
18	8254 TIMER INIT.	9E	ENABLE HW INTERRUPT
1A	8237 DMA CONTROLLER INIT.	A0	SET TIME OF DAY
1C	RESET INTERRUPT CONTROLLER	A4	INIT. TYPEMATIC RATE
20	TEST DRAM REFRESH	A8	ERASE F2 PROMPT
22	TEST 8742 KEYBOARD CONTROLLER	AA	SCAN FOR F2 KEY STROKE
24	SET ES SEGMENT REG. TO 4GB	AC	ENTER SETUP
26	ENABLE A20	AE	CLEAR IN POST FLAG
28	AUTO SIZING DRAM	B0	CHECK FOR ERRORS
32	COMPUTE THE CPU SPEED	B2	POST DONE-PREPARE TO BOOT O/S
34	TEST CMOS RAM	B4	ONE BEEP
38	SHADOW SYSTEM BIOS ROM	B6	CHECK PASSWORD (OPTION)
3A	AUTO SIZING CACHE	B7	ACPI INIT
3C	CONFIGURE ADVANCED CHIPSET REG.	BA	DMI INIT
3D	LOAD ALTERNATE REG. WITH CMOS VALUE	BE	CLEAR SCREEN
42	INIT. INTERRUPT VECTOR	C0	TRY BOOT WITH INT19
44	INIT. BIOS INTERRUPT	D0	INTERRUPT HANDLER ERROR
46	CHECK ROM COPYRIGHT NOTICE	D2	UNKNOWN INTERRUPT ERROR
47	INIT. I20 SUPPORT IF INSTALLED	D4	PENDING INTERRUPT ERROR
48	CHECK VIDEO CONFIGURE AGAINST CMOS	D6	SHUTDOWN 5
49	INIT. PCI BUS AND DEVICE	D8	SHUTDOWN ERROR
4A	INIT. ALL VIDEO BIOS ROM	DA	EXTENDED BLOCK MOVE
4C	SHADOW VIDEO BIOS ROM	DC	SHUTDOWN 10
50	DISPLAY CPU TYPE AND SPEED	89	ENABLE NMI
52	TEST KEYBOARD	90	INIT. HDD CONTROLLER
54	SET KEYCLICK IF ENABLED	91	INIT. LOCAL BUS HDD CONTROLLER
54	ENABLE KEYBOARD	92	JUMP TO USER PATCH 1
56	TEST FOR UNEXPECTED INTERRUPTS	94	DISABLE A20 ADDRESS LINE
58	DISPLAY PRESS. SETUP	96	CLEAR HUGE ES SEGMENT REG.
5C	TEST RAM BETWEEN 512K AND 640K	98	SEARCH FOR OPTION ROMS
60	TEST EXTENDED MEMORY		
62	TEST EXTENDED MEMORY ADDRESS LINE		
64	JUMP TO USER PATCH 1		

80H DECODER CONNECTOR



ICT PORT

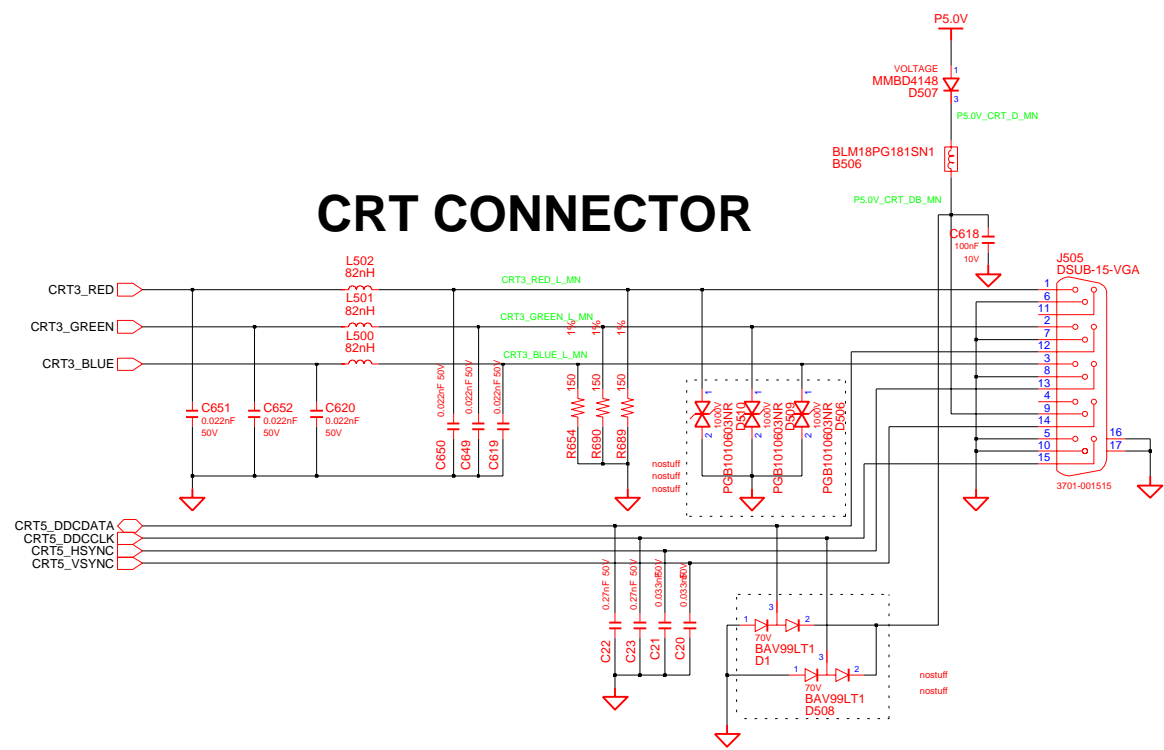
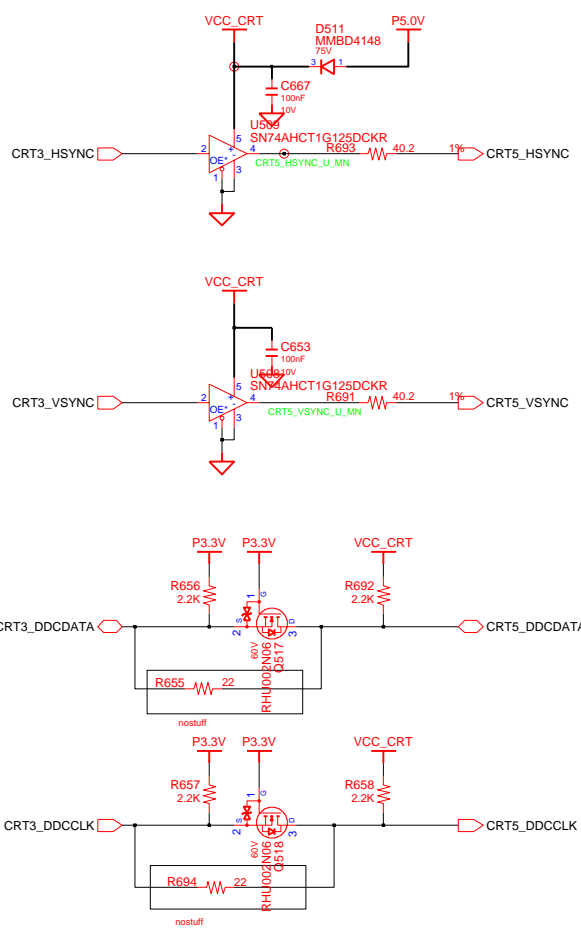


DRAW	DAI QINGZHU,	DATE	8/12/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS PART NO. BA41-01335A
CHECK	WU SHIJIANG,	DEV. STEP	PR	SPI_BIOS_ROM		
APPROVAL	BC LEE,	REV	1.0	SPI_BIOS_ROM		
MODULE CODE		LAST EDIT				
				August 06, 2010 15:15:45 PM	PAGE 34	OF 60

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CRT

CRT CONNECTOR



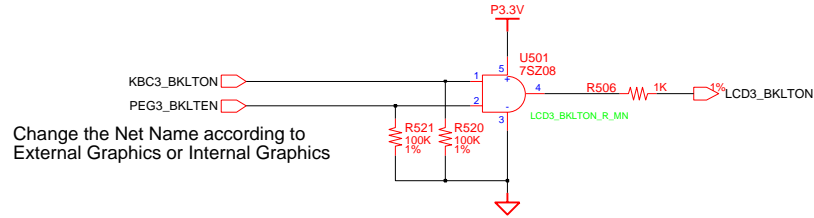
Check "CRT3_DDCCLK/DATA" Voltage Level
 2N06 Can be replaced with SM6K2

DESIGN	DAI QINGZHU,	DATE	01/08/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	Scala_14L GRAPHICS_IF	PART NO.	
APPROVAL	BC LEE,	REV	1.0	CRT	BA41-01335A	PAGE 35 OF 60
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM		

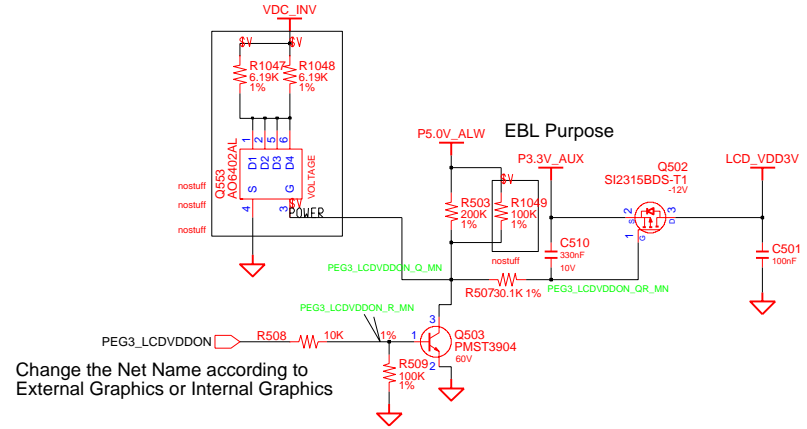
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LVDS

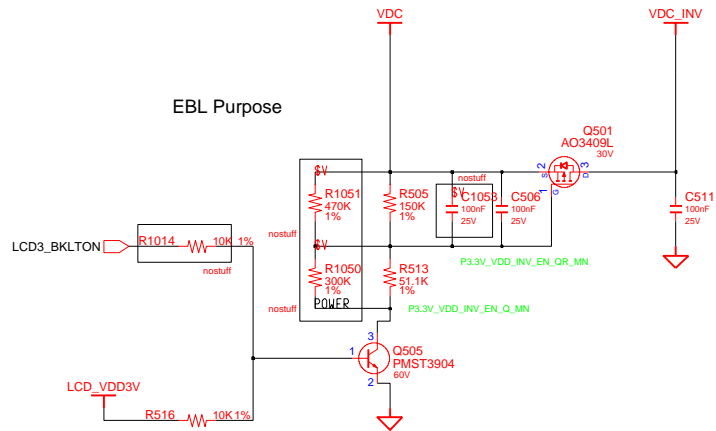
Backlight On



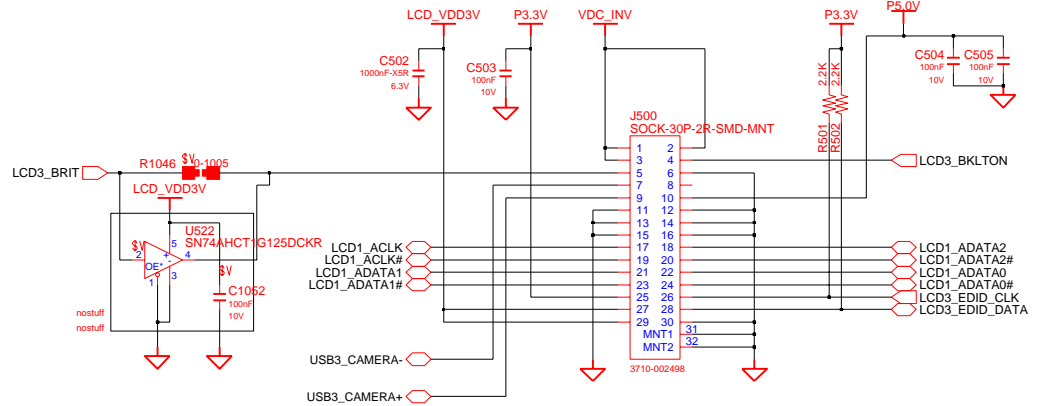
LCD Power



Inverter Power



1Ch. LCD Connector



DESIGN	DAI QINGZHU,	DATE	01/08/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	GRAPHICS_IF		
APPROVAL	BC LEE,	REV	1.0	LVDS		PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE 36	OF 60

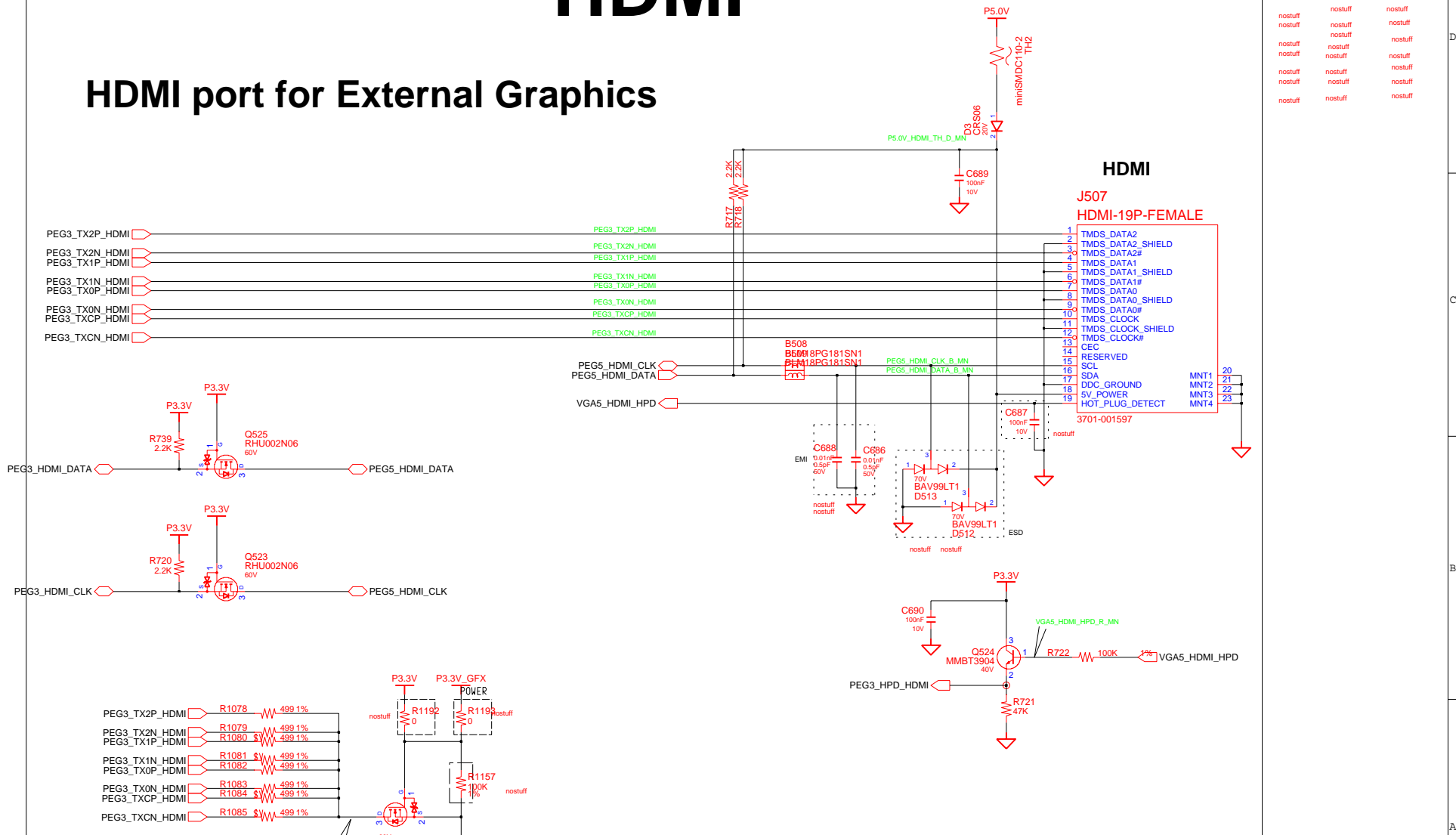
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HDMI

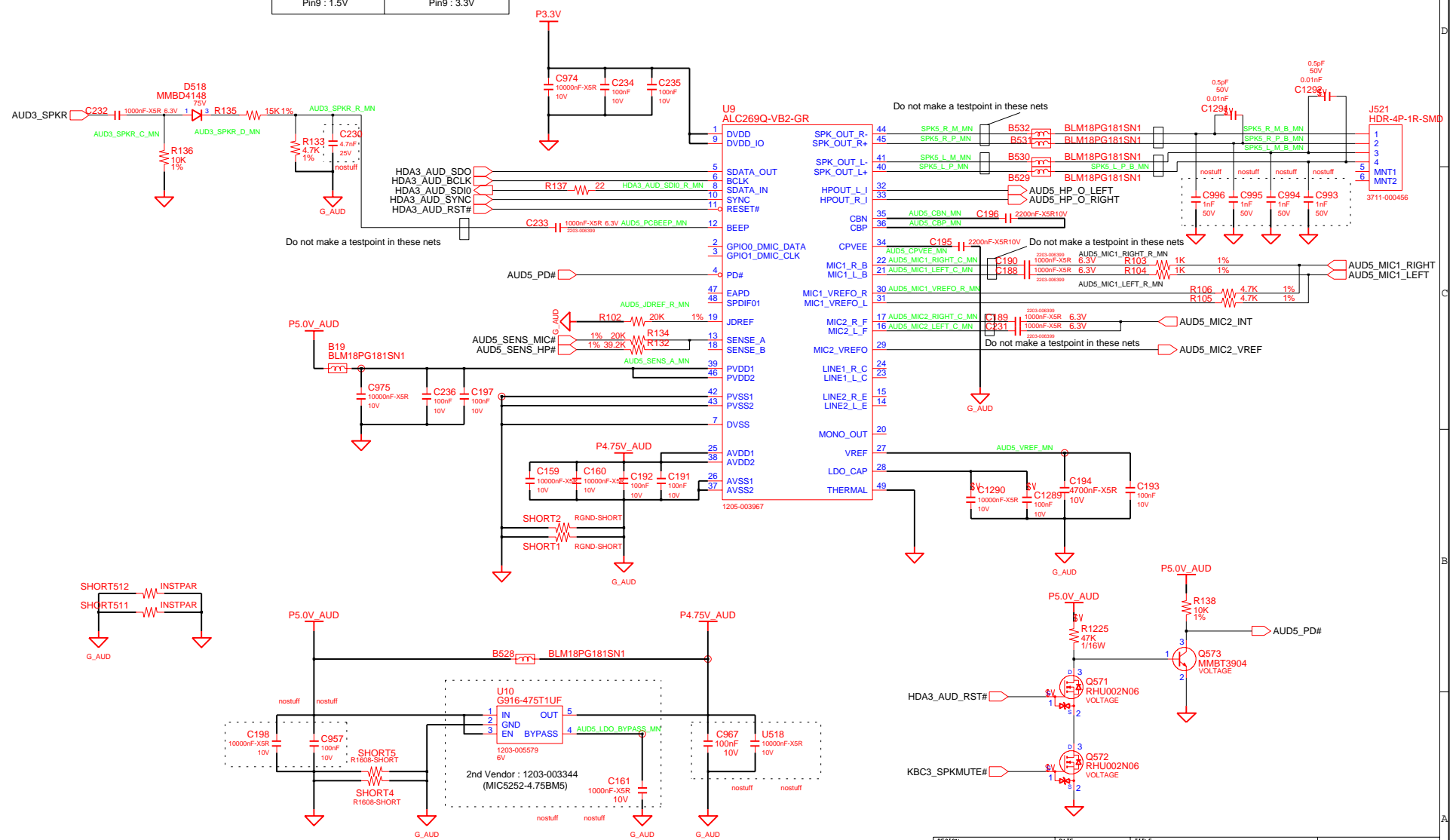
HDMI port for External Graphics



DESIGN	DAI QINGZHU,	DATE	01/08/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS PART NO. BA41-01335A
CHECK	WU SHIJIANG,	REV.	PR	GRAPHICS_IF		
APPROVAL	BC LEE,	REV.	1.0	HDMI		
MODULE CODE		LAST EDIT				
				August 06, 2010 15:15:45 PM	PAGE	37 OF 60

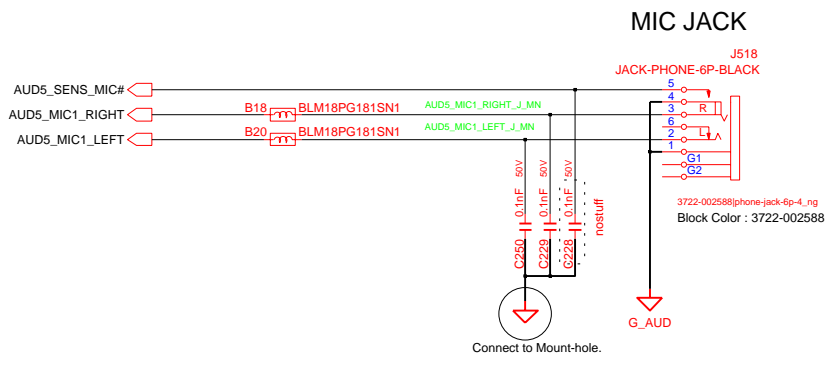
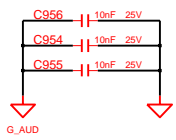
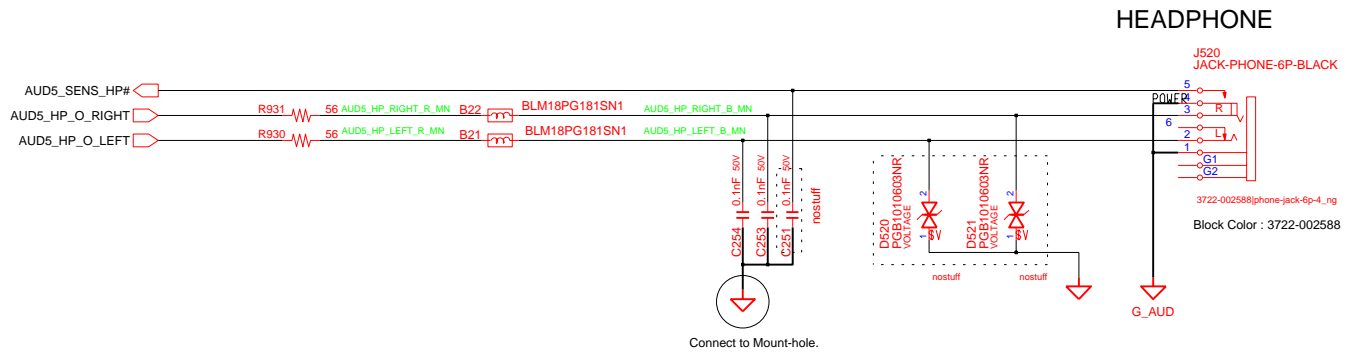
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Codec Pin9 Setting	
S/B with Low Voltage IO	S/B without Low Voltage IO
Pin9 : 1.5V	Pin9 : 3.3V



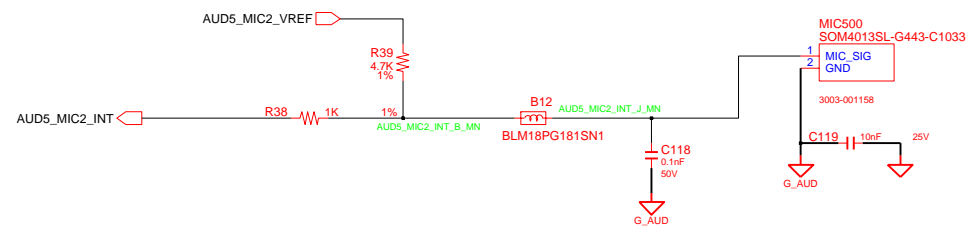
DESIGN	DAI QINGZHU,	DATE	3/13/2009	TITLE	Scal_a_14L	SAMSUNG ELECTRONICS PART NO. BA41-01335A
CHECK	WU SHIJIANG,	DEV. STEP	PR		HDA_ALC269_GR	
APPROVAL	BC LEE,	REV	1.0		AUDIO CODEC	
MODULE CODE		LAST EDIT				
				August 06, 2010 15:15:45 PM	PAGE 38 OF 60	

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Analog mono Mic Ass'y : Place inside Audio Analog Plane

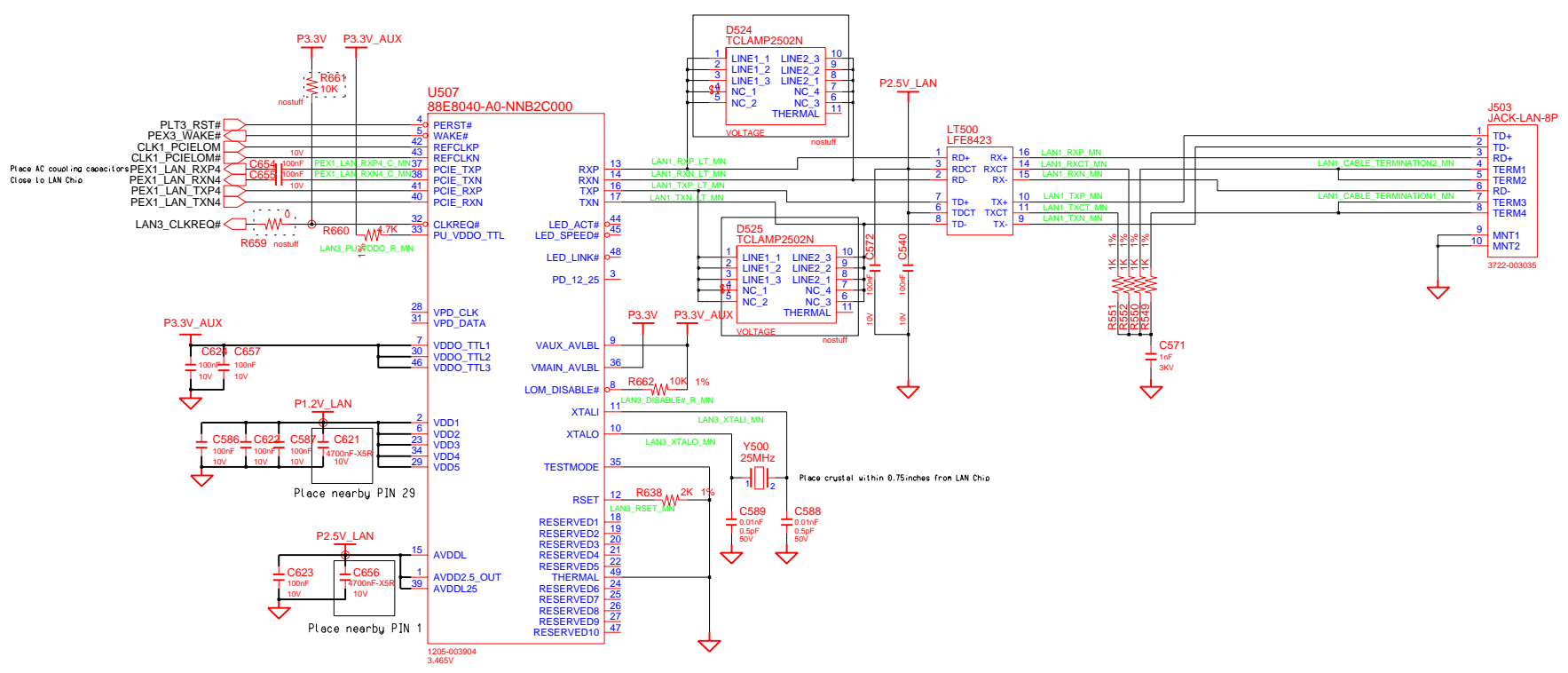
SMD MIC



DESIGN	DAI QINGZHU,	DATE	3/13/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	HDA_ALC269_GR	AUDIO INPUT/OUTPUT	
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	39	OF 60

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MARVELL 88E8040T



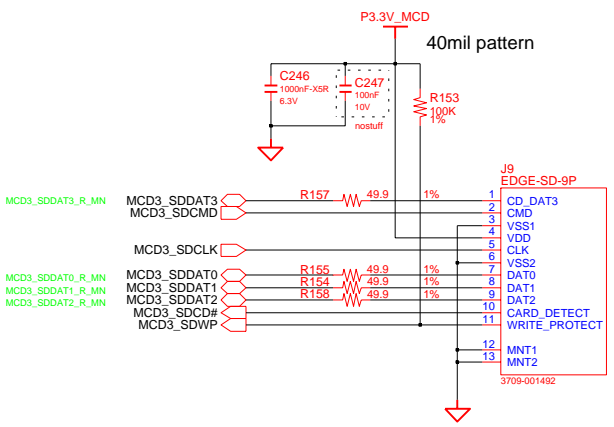
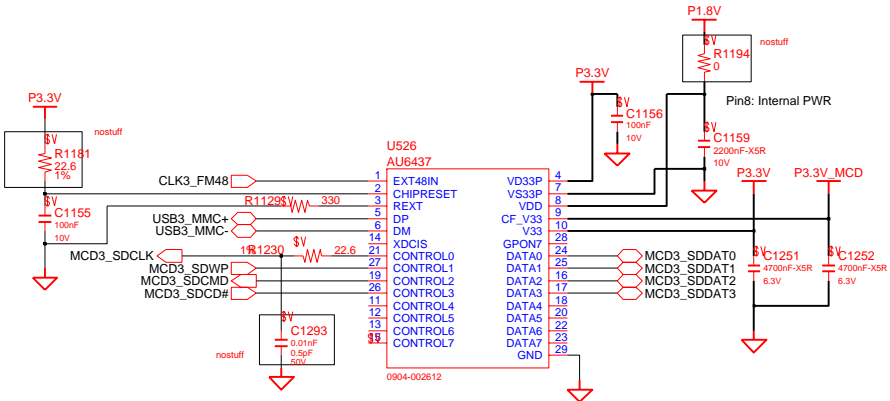
1205-003904
3.465V

DESIGN	DAI QINGZHU,	DATE	3/17/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE	40 OF 60

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3 IN 1

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

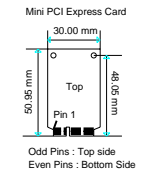
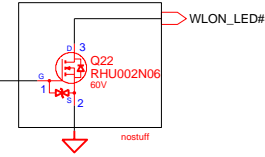
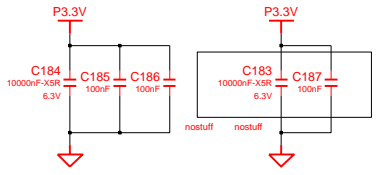
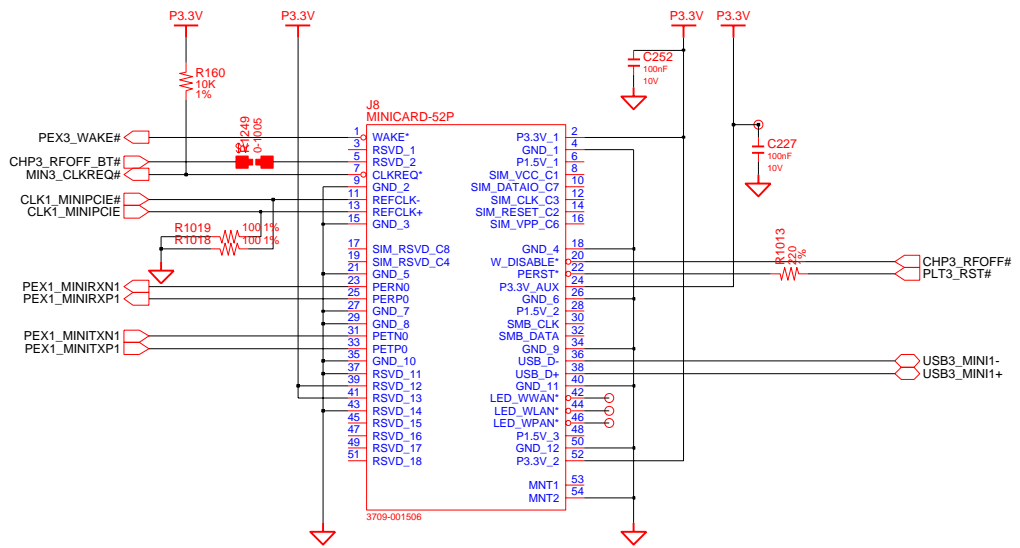


40 mil trace for medica card socket ground

DESIGN	DAI QINGZHU,	DATE	4/29/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	41	OF 60

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WLAN, 7mm



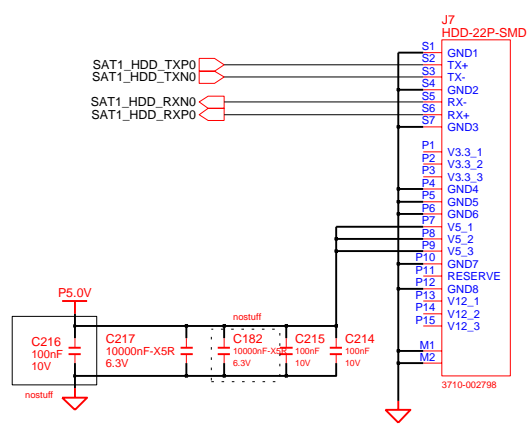
To fix Shirley Peak EMI issue
 Place it at the old rubber area

DESIGN	DAI QINGZHU,	DATE	6/6/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MINI_PCIE_CONN	PART NO.	
APPROVAL	BC LEE,	REV	1.0		BA41-01335A	
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	42	OF 60

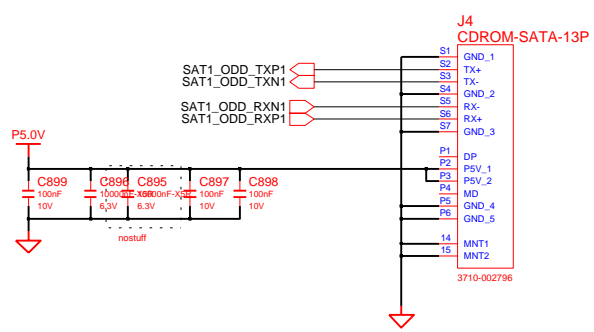
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SATA I/F CONN

SATA HDD CONN



SATA ODD CONN

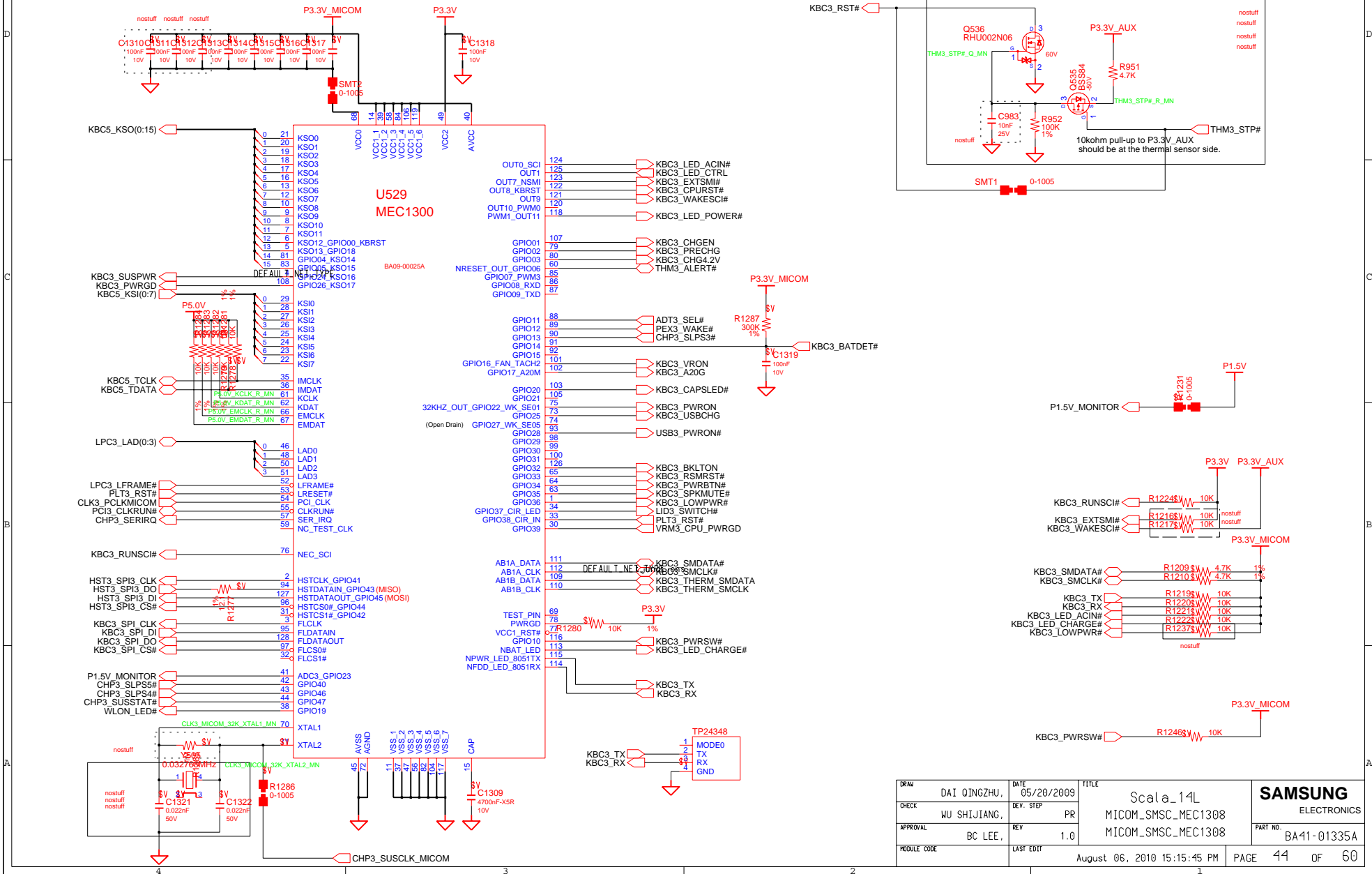


DESIGN	DAI QINGZHU,	DATE	6/6/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	Scala_DEVICES	PART NO.	
APPROVAL	BC LEE,	REV	1.0		BA41-01335A	
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	43	OF 60

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MAIN BOARD (MICOM)

MICOM POWER RESET

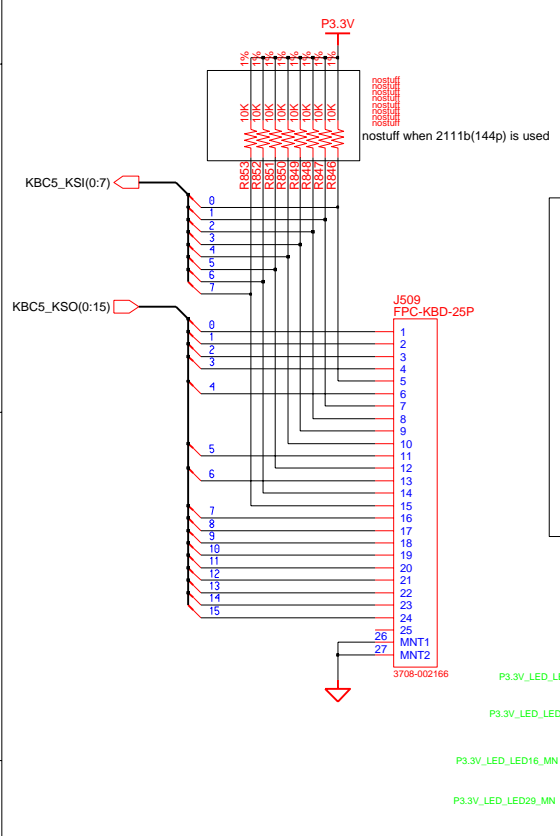


DRAW	DAI QINGZHU,	DATE	05/20/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MICOM_SMSC_MEC1308	PART NO.	
APPROVAL	BC LEE,	REV	1.0	MICOM_SMSC_MEC1308		
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM		PAGE	44 OF 60

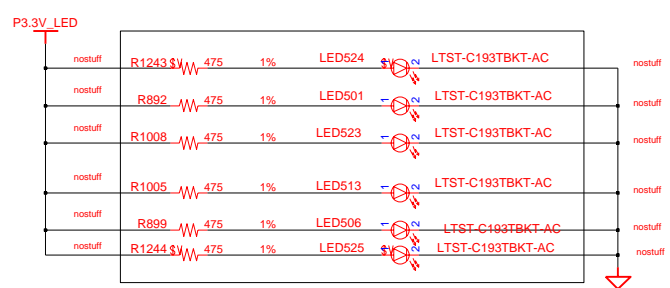
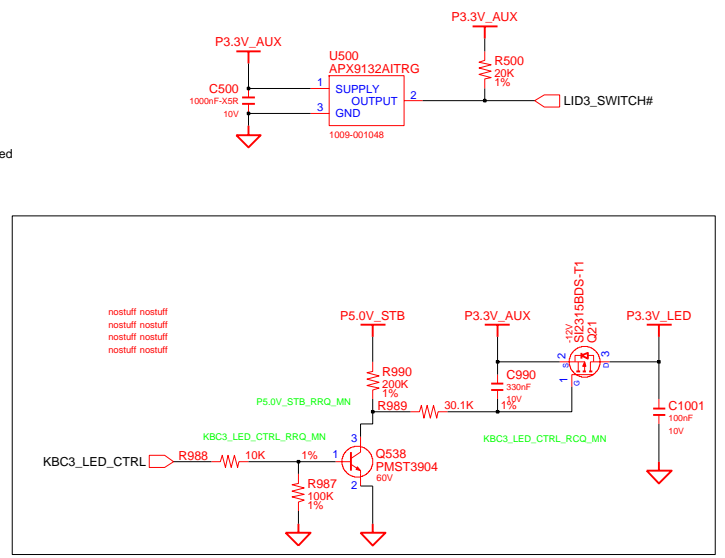
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Micom Glue Logic

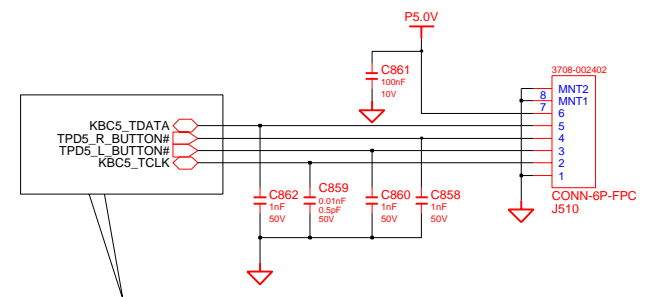
KEYBOARD



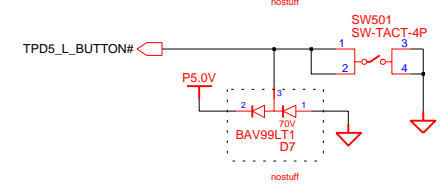
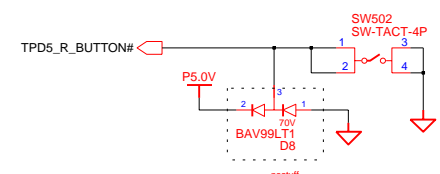
LID_SWITCH



TOUCHPAD



Confirm that there are PU on Touch PAD module side & micom.

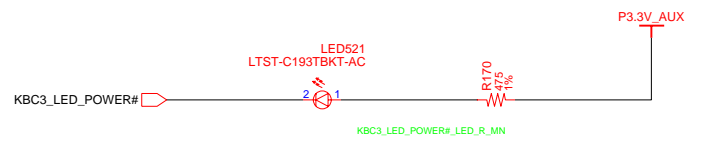
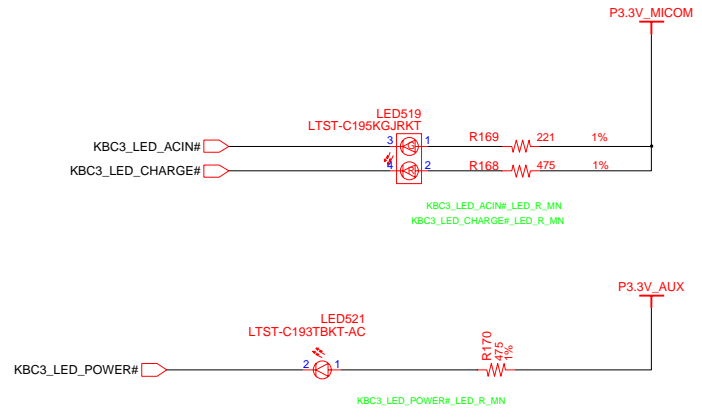
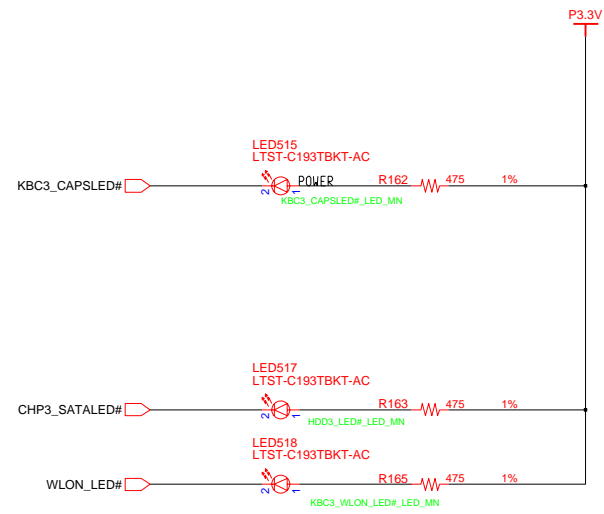


DESIGN	DAI QINGZHU,	DATE	6/27/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01335A
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE 45 OF 60	

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LED SWITCH LOGIC

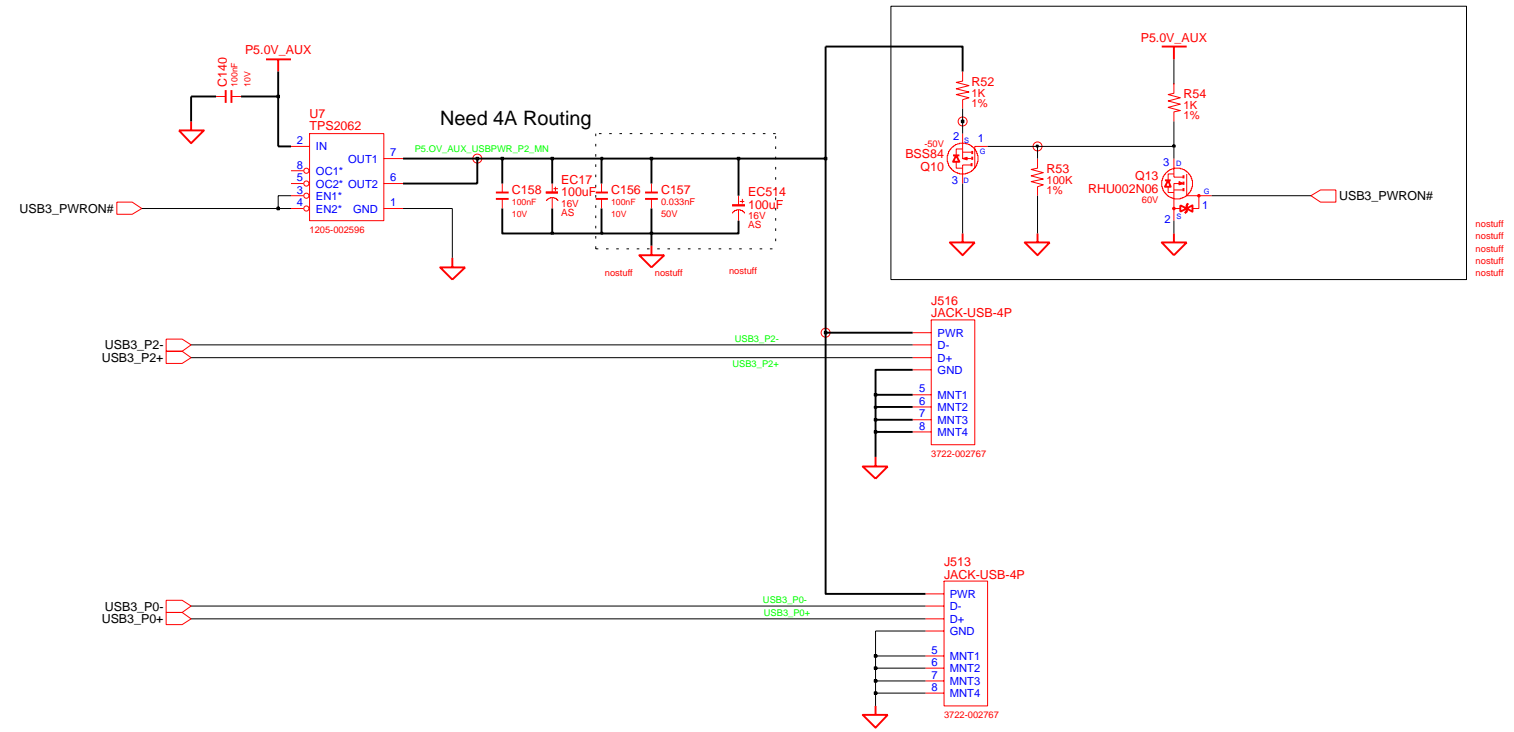
Function Key LEDs



DRAWN	DAI QINGZHU,	DATE	8/12/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHUIJANG,	REV. STEP	PR	LED_Switch	PART NO.	
APPROVAL	BC LEE,	REV.	1.0	LED_Switch	BA41-01335A	
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	46	OF 60

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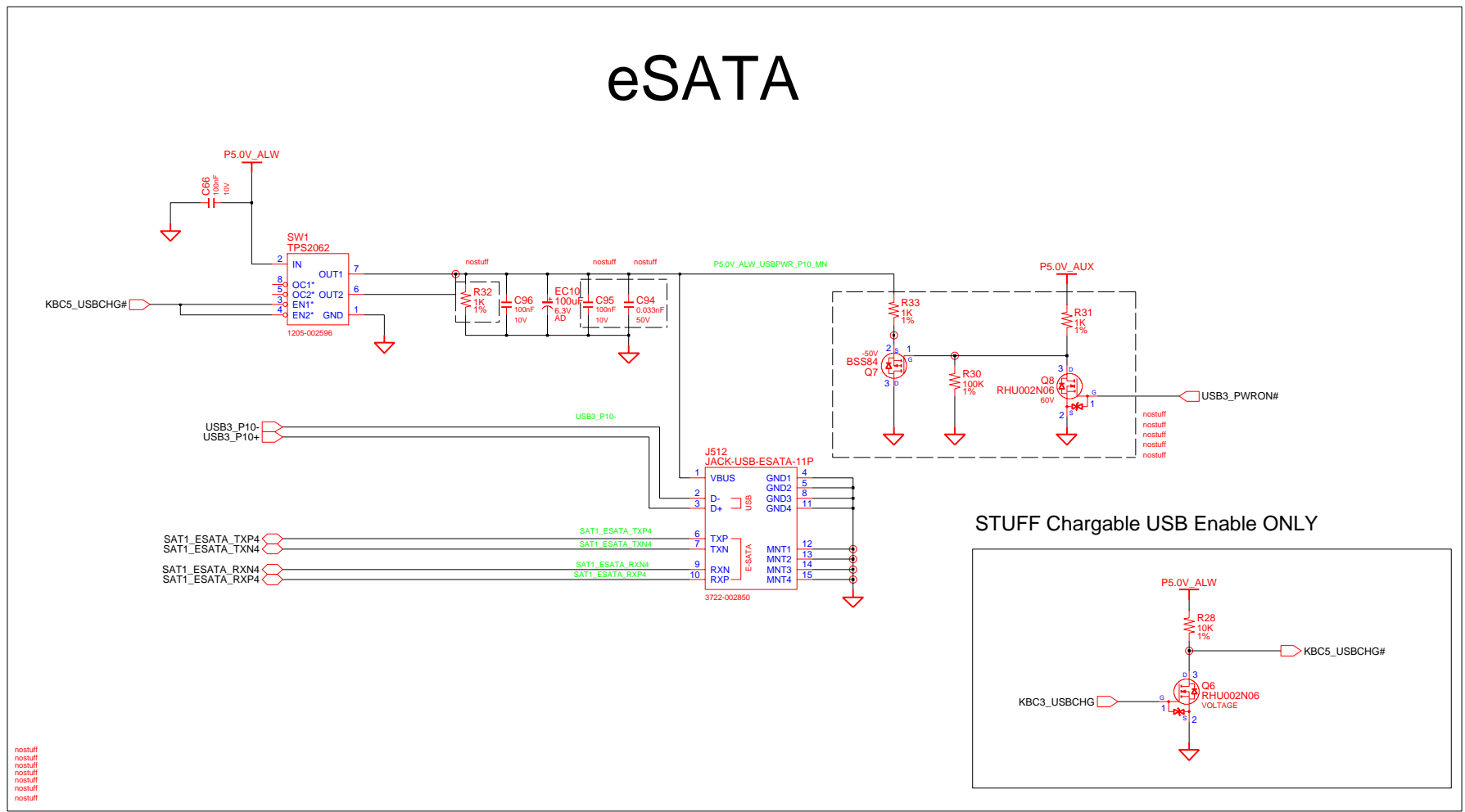
1/2 PORT USB CONNECTOR



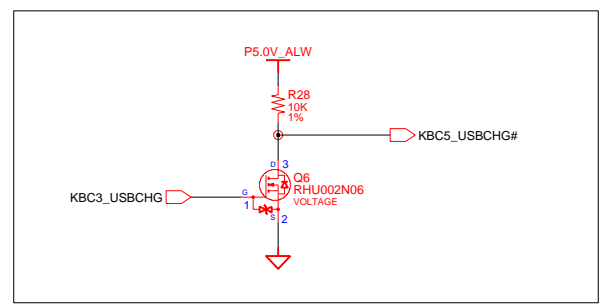
DESIGN	DAI QINGZHU,	DATE	6/6/2008	TITLE	Scala_14L USB_CONN	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0		PART NO.	BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	47	OF 60

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eSATA



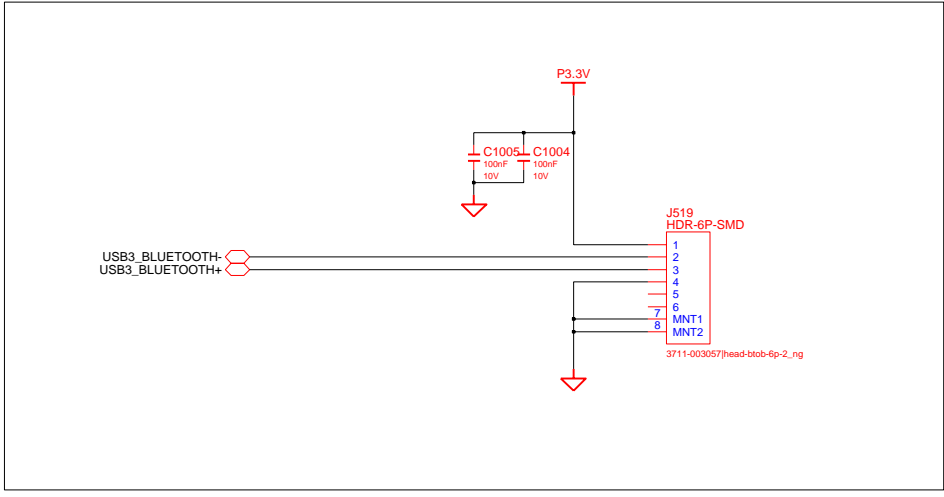
STUFF Chargeable USB Enable ONLY



DESIGN	DAI QINGZHU,	DATE	8/18/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	ESATA		PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	48	OF 60

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Bluetooth Interface

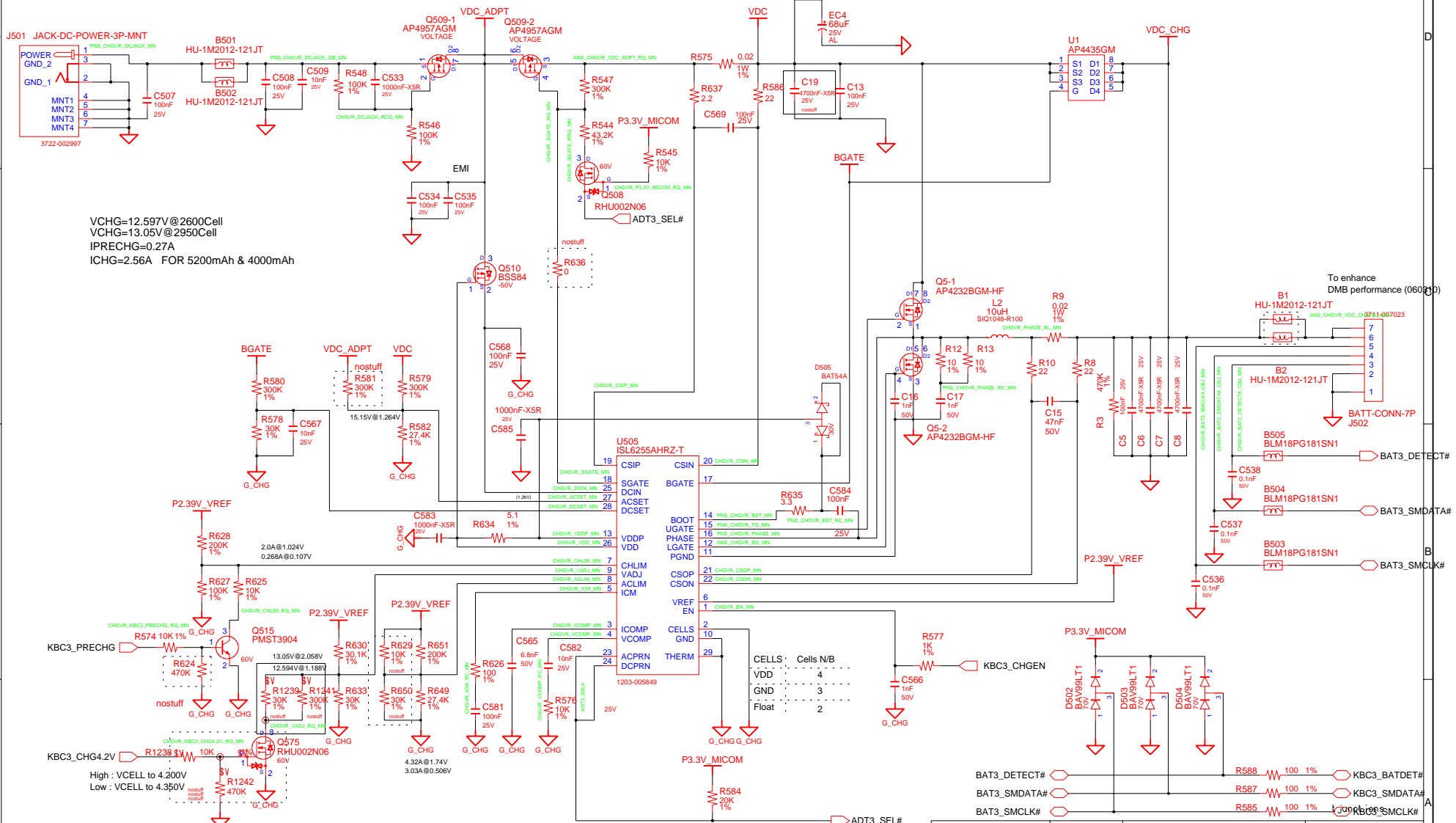


nostuff nostuff nostuff

DESIGN	DAI QINGZHU,	DATE	6/6/2008	TITLE	Scala_14L USB_DEVICES	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0		PART NO.	BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	50	OF 60

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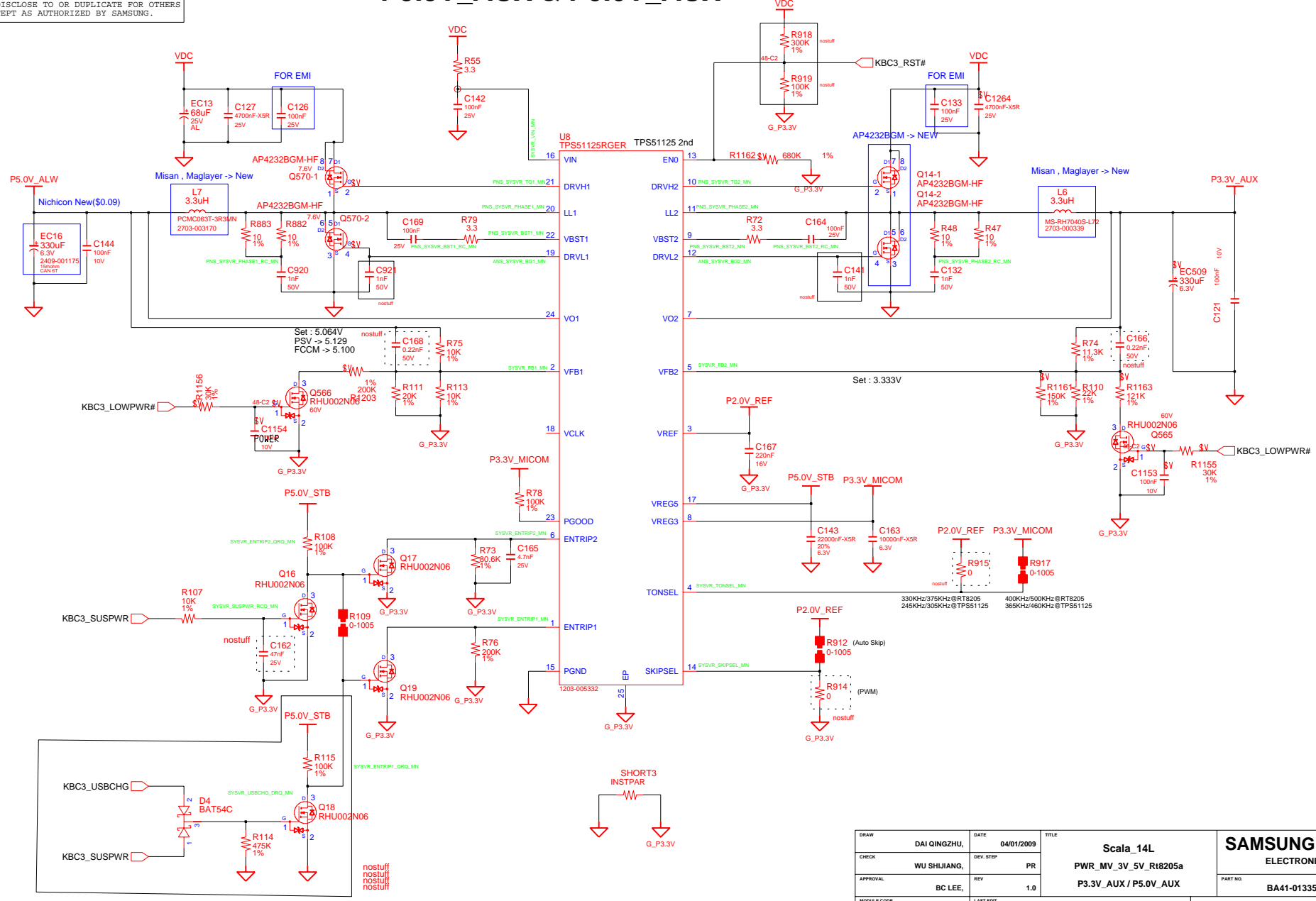
CHARGER & POWER MANAGEMENT



DRAW	DAI QINGZHU,	DATE	03/11/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHUJIANG,	DEV. STEP	PR	PWR_MV_Charger_Isl6256a	PART NO.	
APPROVAL	BC LEE,	REV	1.0	CHARGER (ISL6256A)	BA41-01335A	
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:45 PM	PAGE	51	OF 60

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P3.3V_AUX & P5.0V_AUX

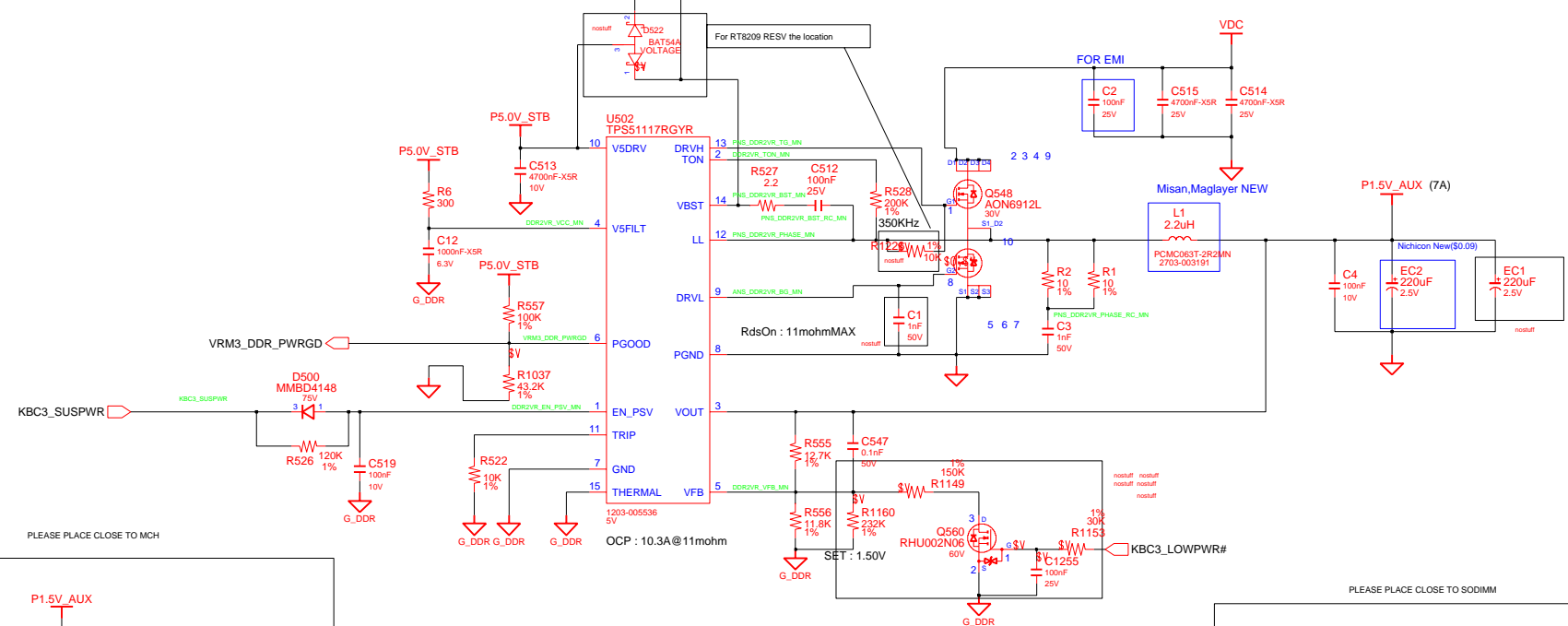


DRAW	DAI QINGZHU,	DATE	04/01/2009	TITLE	Scala_14L
CHECK	WU SHUJIANG,	REV. STEP	PR		PWR_MV_3V_5V_Rt8205a
APPROVAL	BC LEE,	REV	1.0		P3.3V_AUX / P5.0V_AUX
MODULE CODE	undefined	LAST EDIT			August 06, 2010 15:15:45 PM
					PAGE 52 OF 60

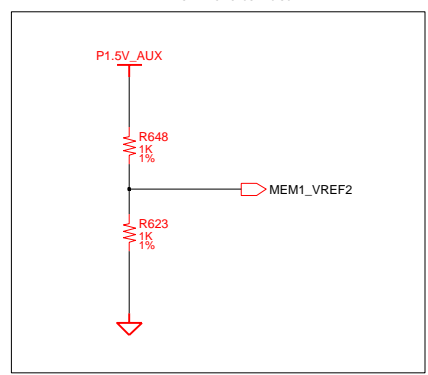
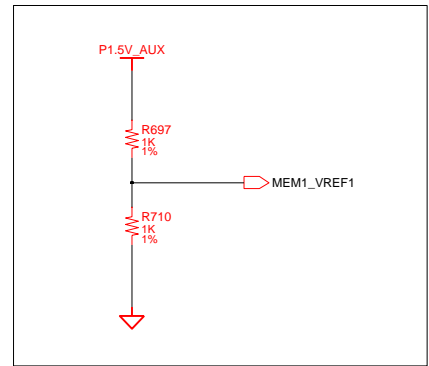
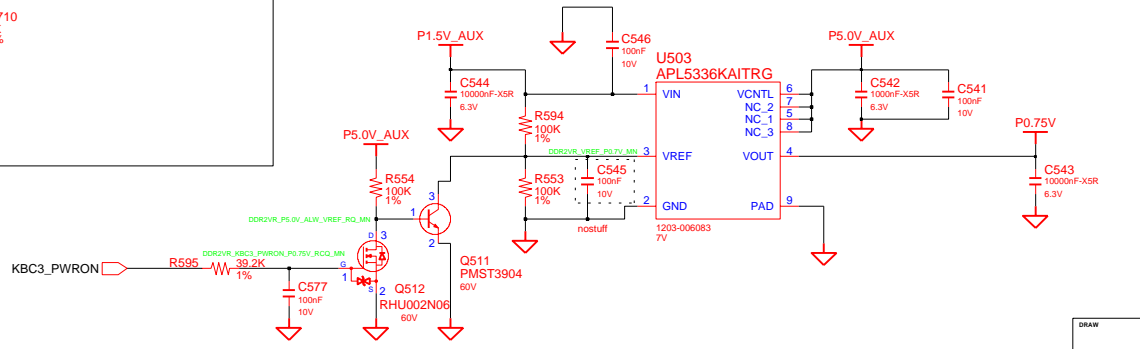
SAMSUNG
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 PART NO. BA41-01335A

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DDR3 Power



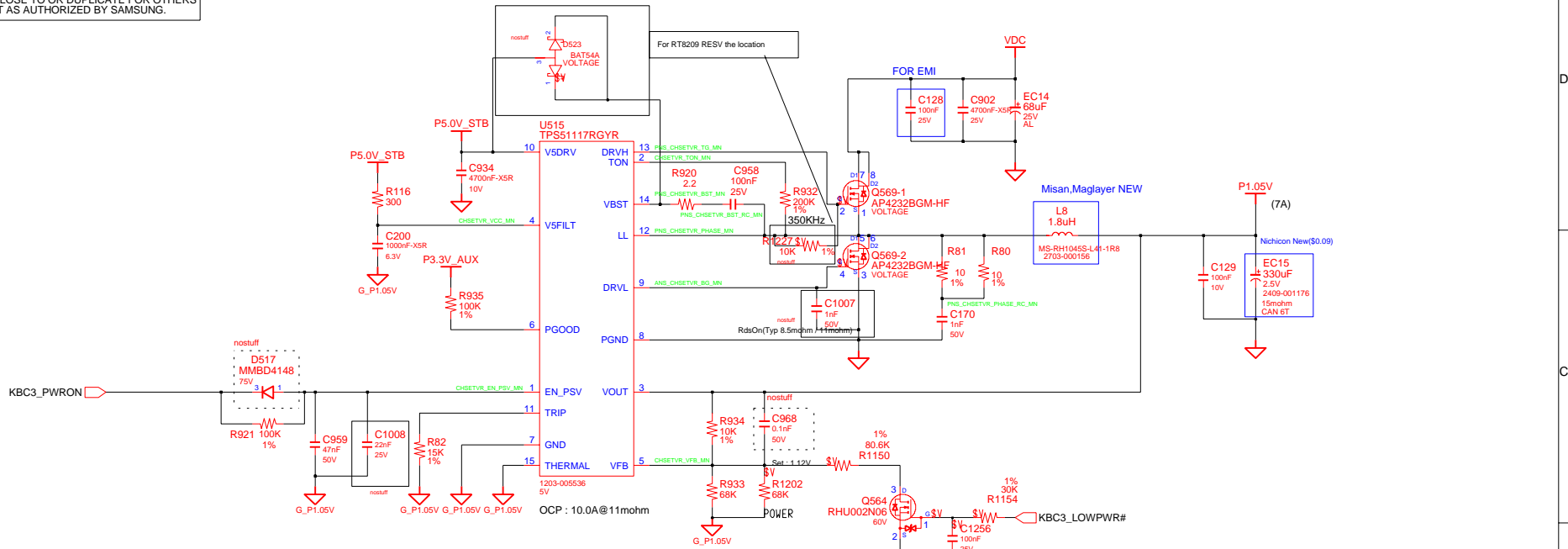
DDR3 VTT(0.75V)



DRAW	DAI QINGZHU,	DATE	03/13/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHUJIANG,	REV. STEP	PR	PWR_MV_Memory_Rt8207	PART NO.	
APPROVAL	BC LEE,	REV	1.0	DDR3 POWER (P1.5V_AUX)	BA41-01335A	PAGE 53 OF 60
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM			

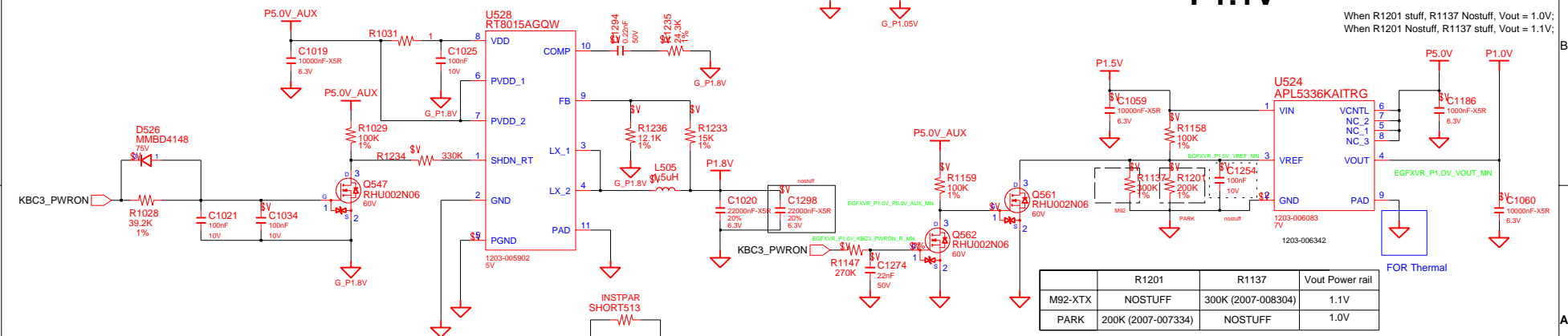
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CHIPSET POWER (P1.05V)



P1.8V

P1.1V



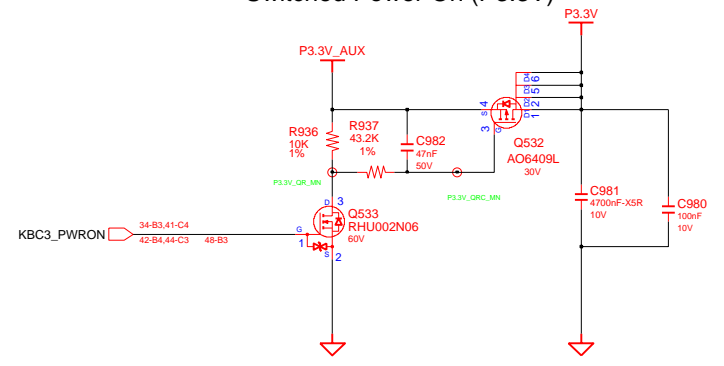
R1201	R1137	Vout Power rail
M92-TX	NOSTUFF	300K (2007-008304)
PARK	200K (2007-007334)	NOSTUFF
		1.1V
		1.0V

DRAW	DAI QINGZHU,	DATE	03/11/2009	TITLE	Scale_14L	SAMSUNG ELECTRONICS	
CHECK	WU SHUJIANG,	DEV. STEP	PR		PWR_MV_Cantiga		
APPROVAL	BC LEE,	REV	1.0		Chipset Power (P1.05V_M,P1.2V)	PART NO.	
MODULE CODE	undefined	LAST EDIT				BA41-01335A	
August 06, 2010 15:15:45 PM						PAGE	54 OF 60

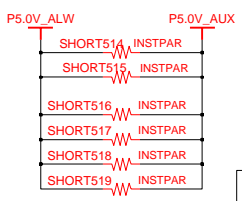
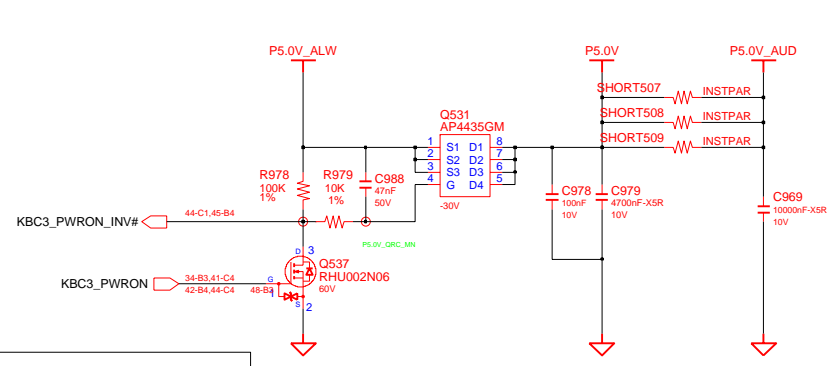
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Switched Power

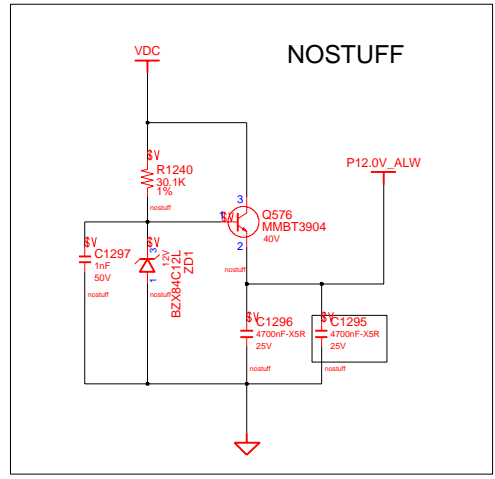
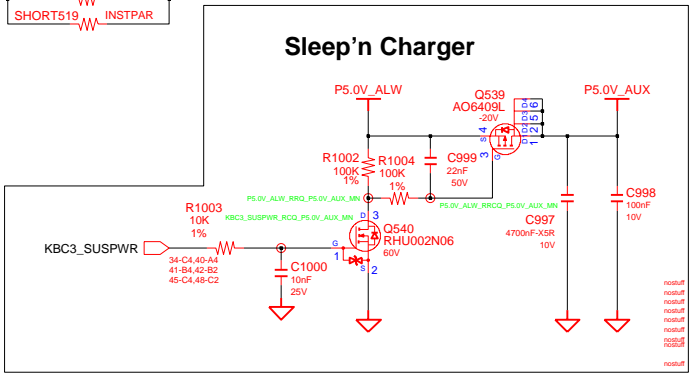
Switched Power On (P3.3V)



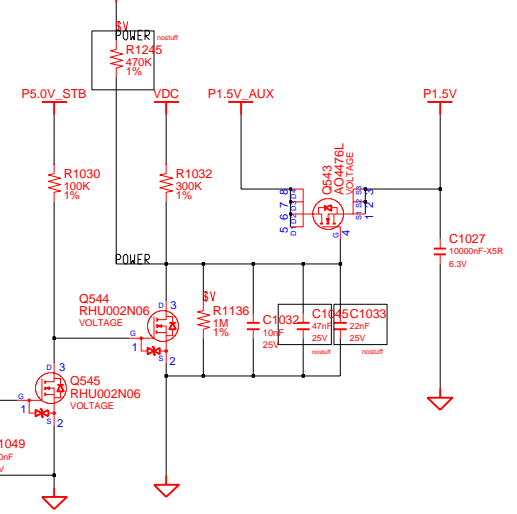
Switched Power On (P5.0V)



Sleep'n Charger



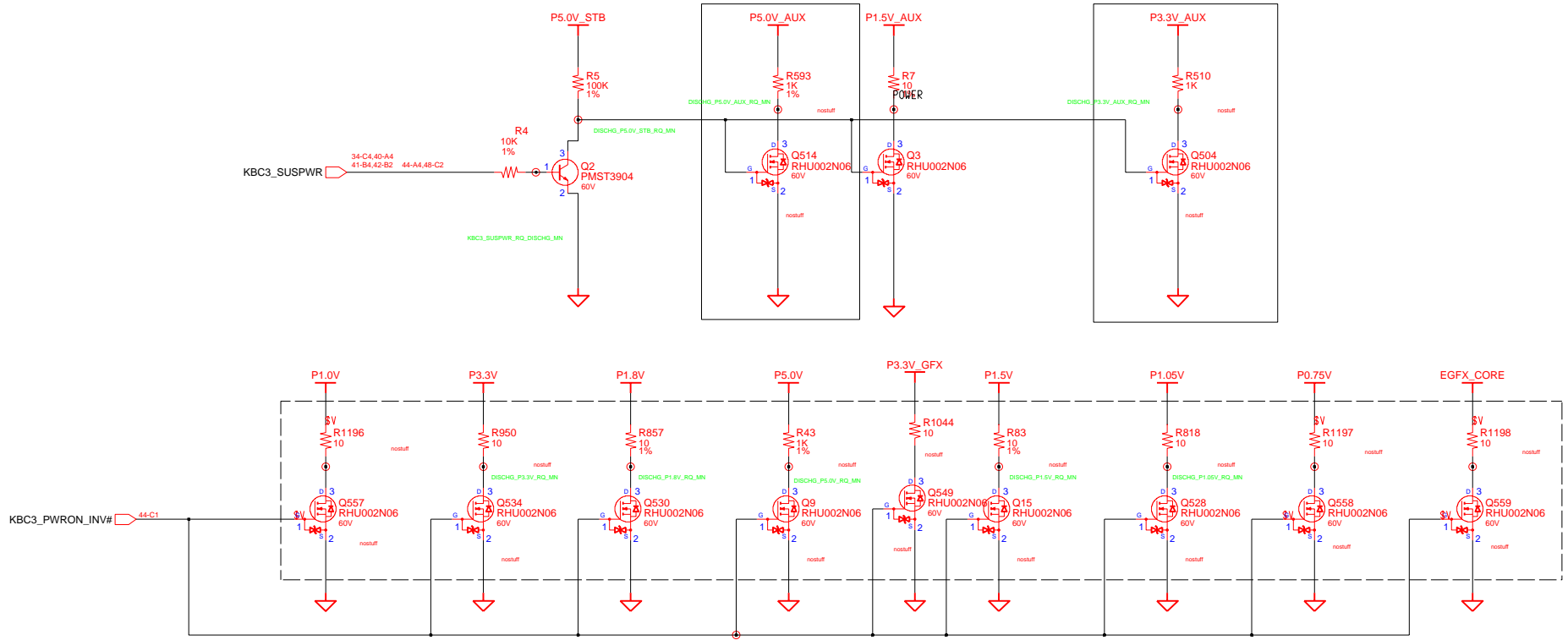
P12.0V_ALW



DRAW	DAI QINGZHU,	DATE	03/11/2009	TITLE	Scala_14L
CHECK	WU SHUJIANG,	REV. STEP	PR	PWR_MV_Switched	SAMSUNG ELECTRONICS
APPROVAL	BC LEE,	REV	1.0	SWITCHED POWER	PART NO.
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	BA41-01335A
				PAGE	57 OF 60

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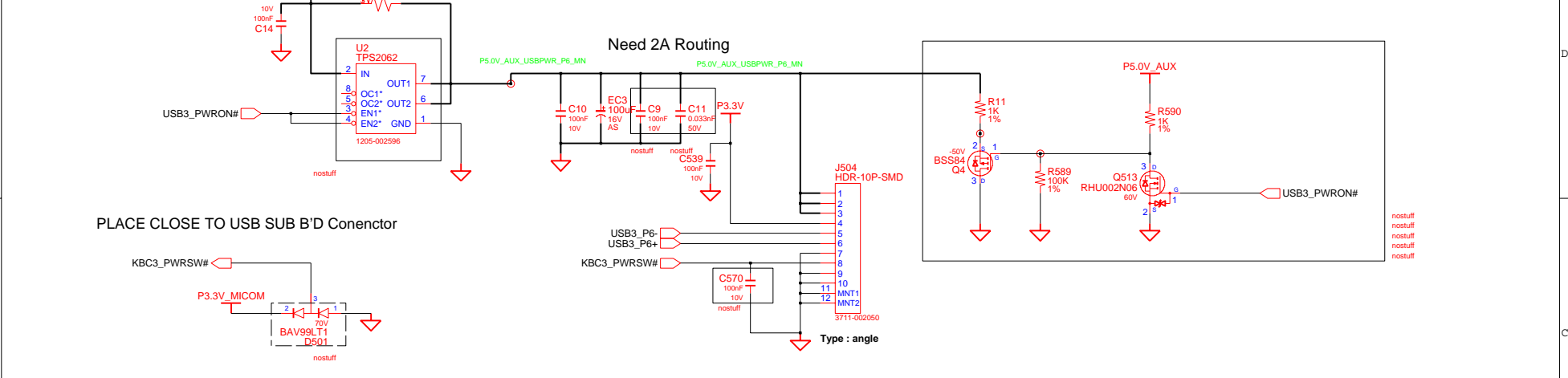
POWER DISCHARGER



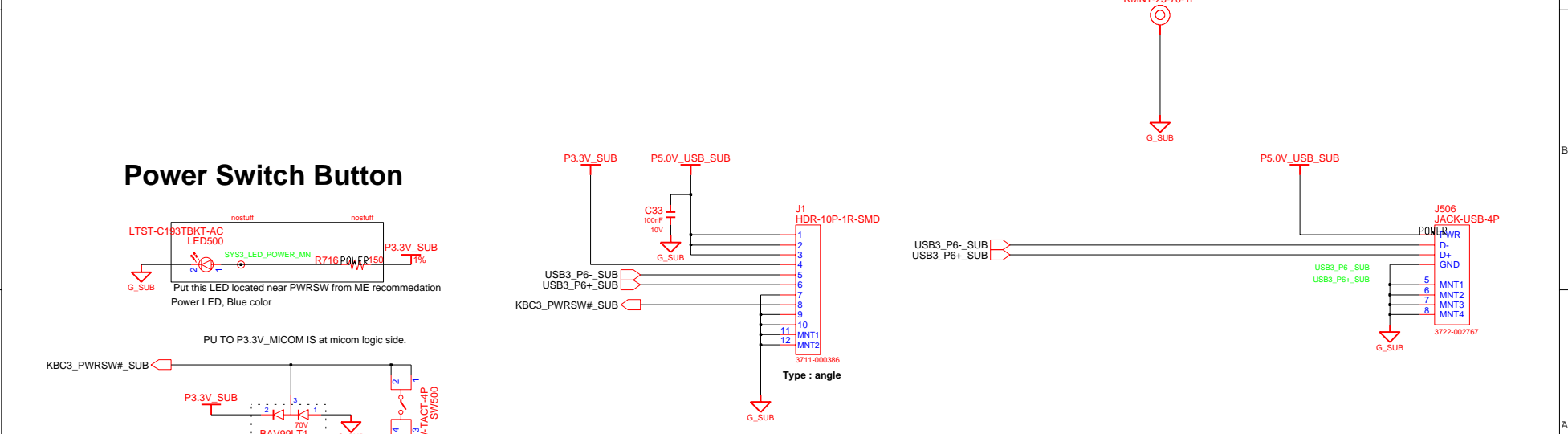
DRAW	DAI QINGZHU,	DATE	03/11/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHUIJANG,	REV. STEP	PR	PWR_MV_DisCharger	PART NO.	
APPROVAL	BC LEE,	REV	1.0	DISCHARGING LOGIC	BA41-01335A	
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	58	OF 60

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Main Board

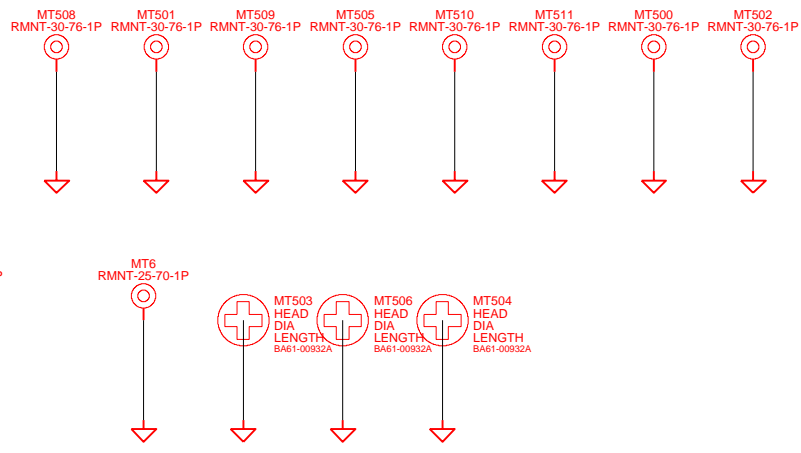


SUB Board



DESIGN	DAI QINGZHU,	DATE	8/18/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	SUB BOARD		PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	59	OF 60

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DESIGN	DAI QINGZHU,	DATE	9/9/2009	TITLE	Scala_14L MAIN ME	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	60	OF 60