

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.

# 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

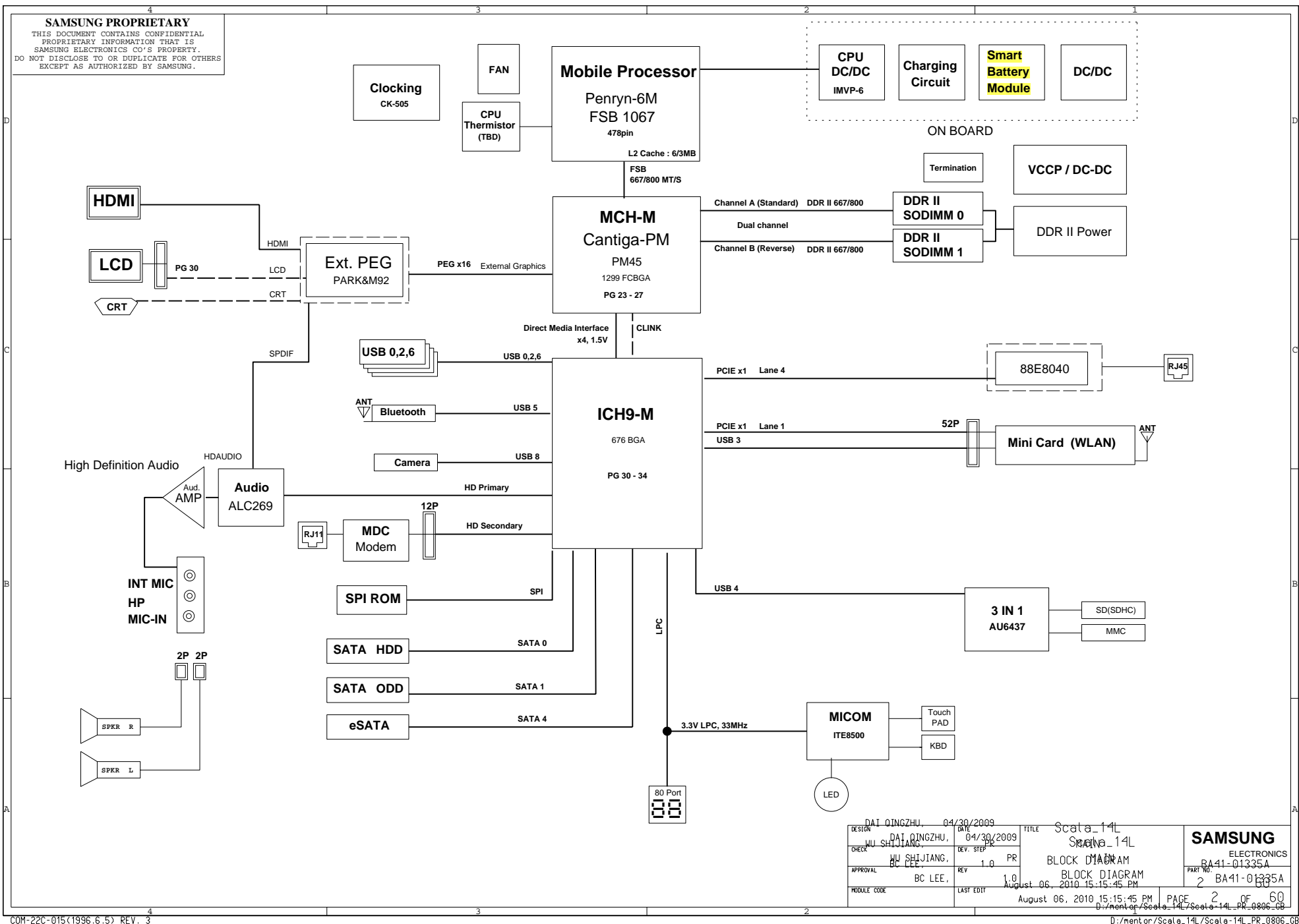
Dev. Step : PR

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



## 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/IDE/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

#### I<sup>2</sup>C / 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		

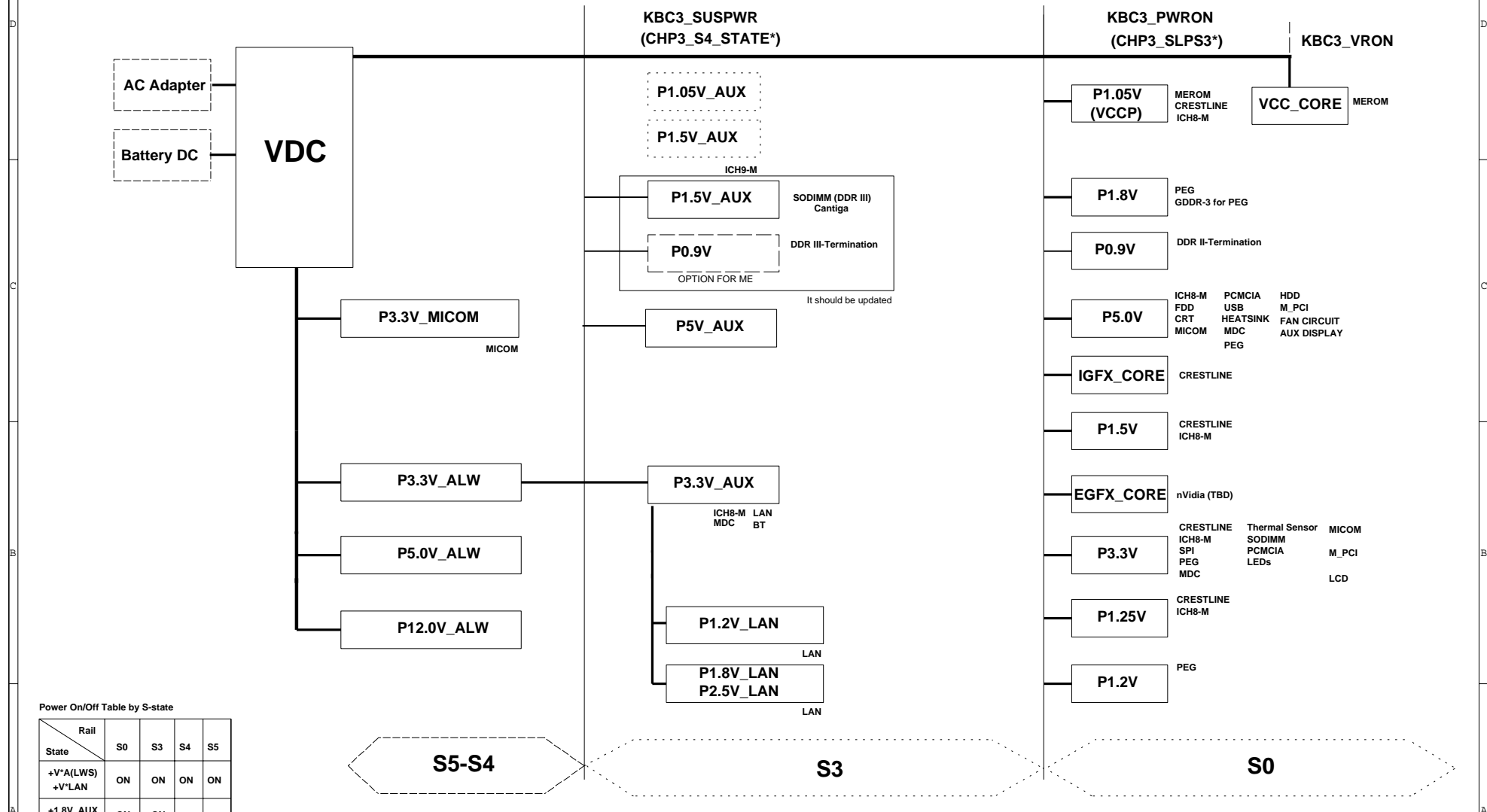
(This table will be update.)

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

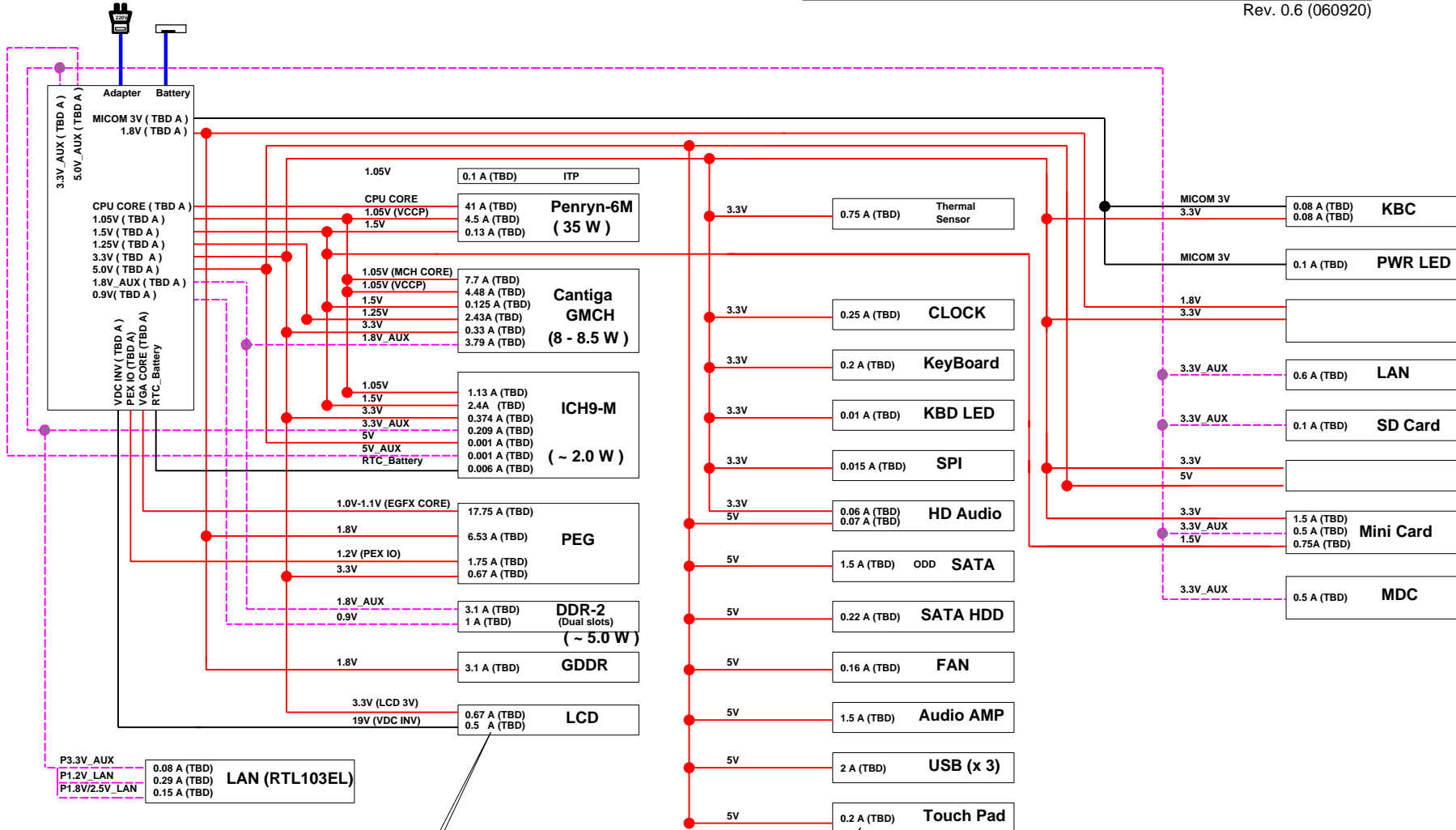
Rail	S0	S3	S4	S5
State	S0	S3	S4	S5
+V*(LWS)	ON	ON	ON	ON
+V*LAN	ON	ON	ON	ON
+1.8V_AUX	ON	ON	ON	ON
+0.9V	ON	ON	ON	ON
+V*AUX	ON	ON	ON	ON
+V	ON	ON	ON	ON
+V* (CORE)	ON	ON	ON	ON

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	
MODULE CODE		LAST EDIT	August 06, 2010 15:45 PM	PAGE	4 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 RAILS ANALYSIS

Rev. 0.6 (060920)



Value by Datasheet/Application notes (Value by measurement)

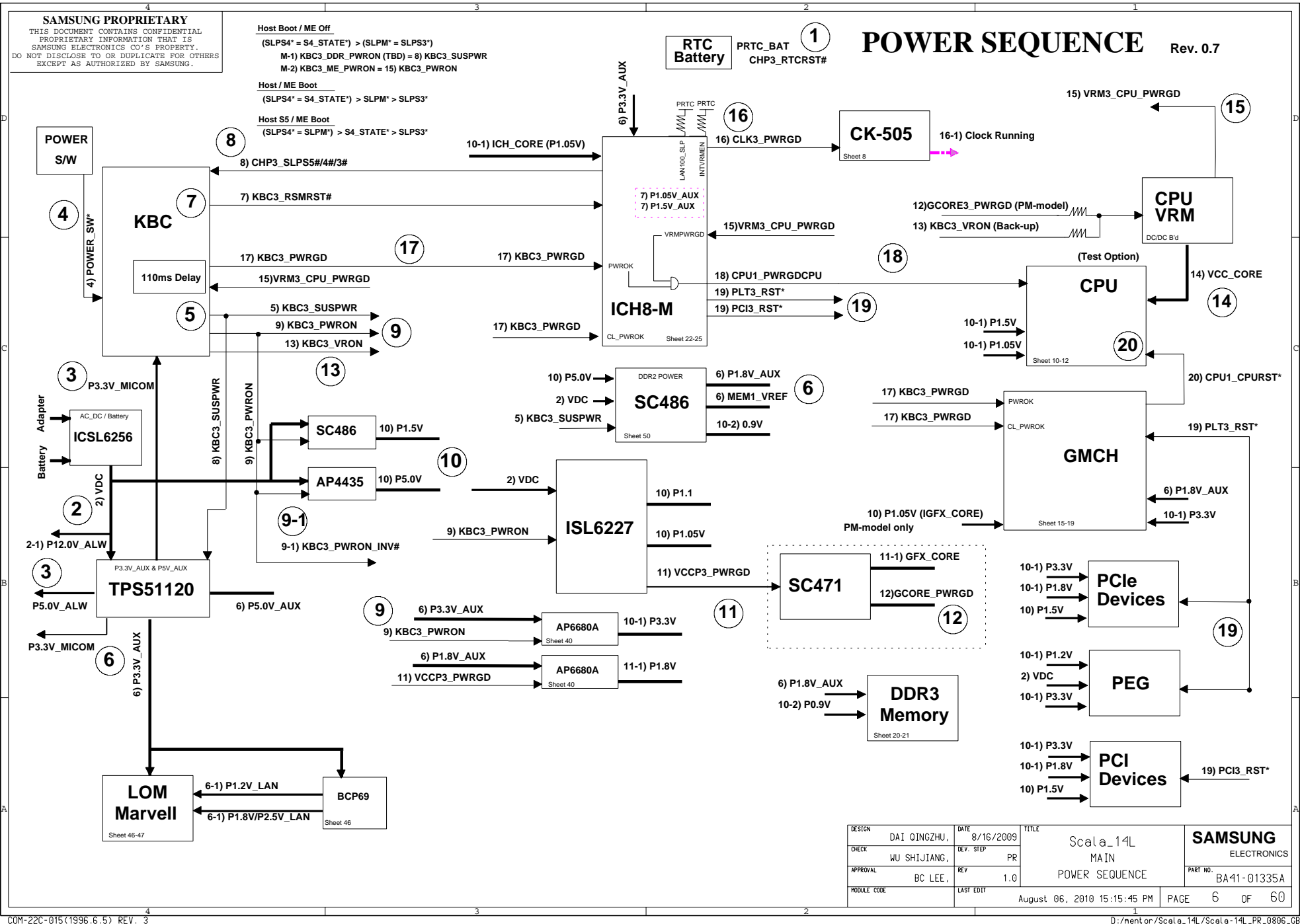
DESIGN	DAI QINGZHU,	DATE	8/16/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	POWER RAILS		
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM			
PAGE 5 OF 60						PART NO. BA41-01335A

**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

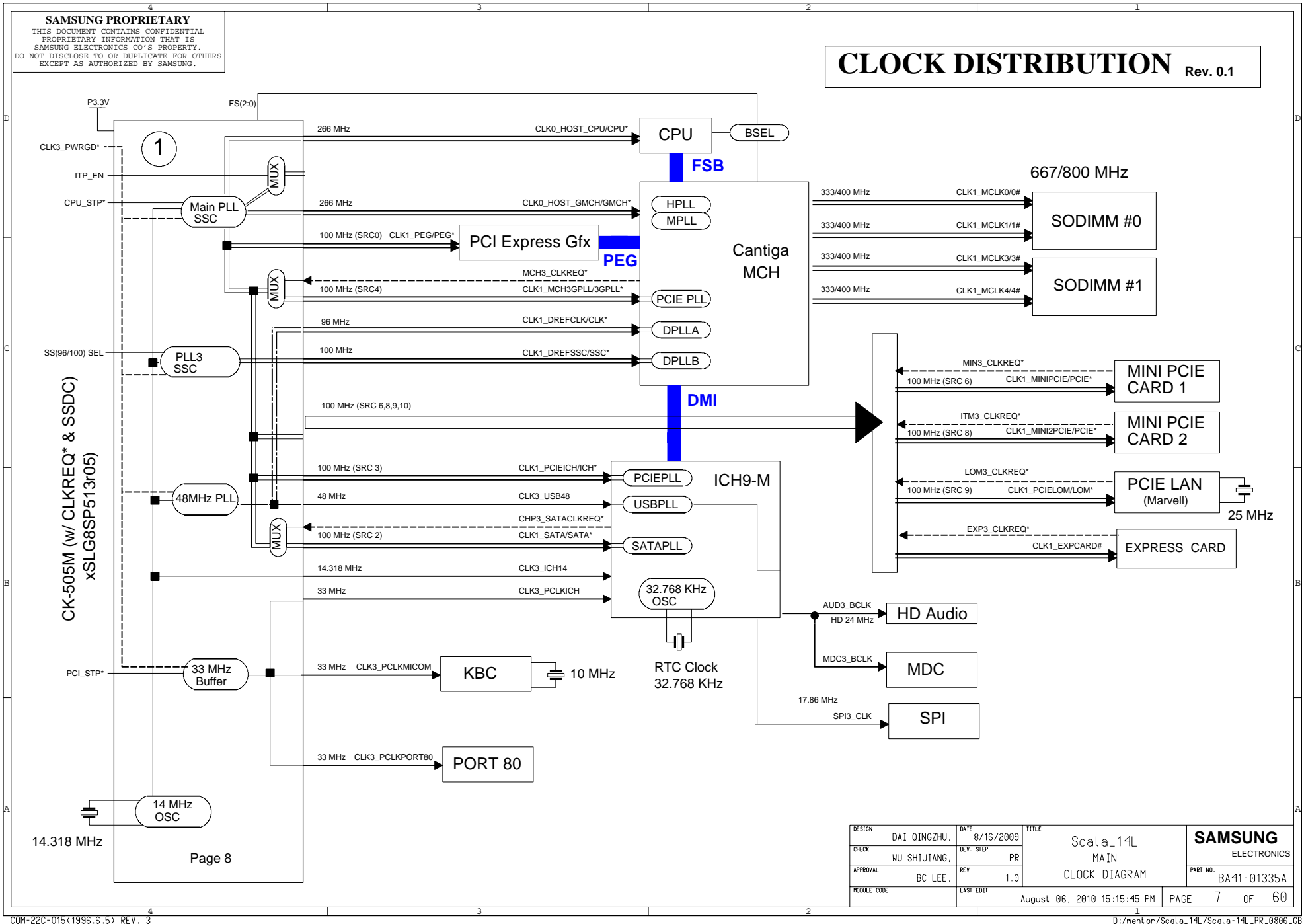
**Host / ME Boot**  
(SLPS4\* = S4\_STATE\*) > SLPM\* > SLPS3\*

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



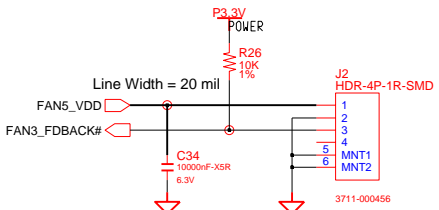
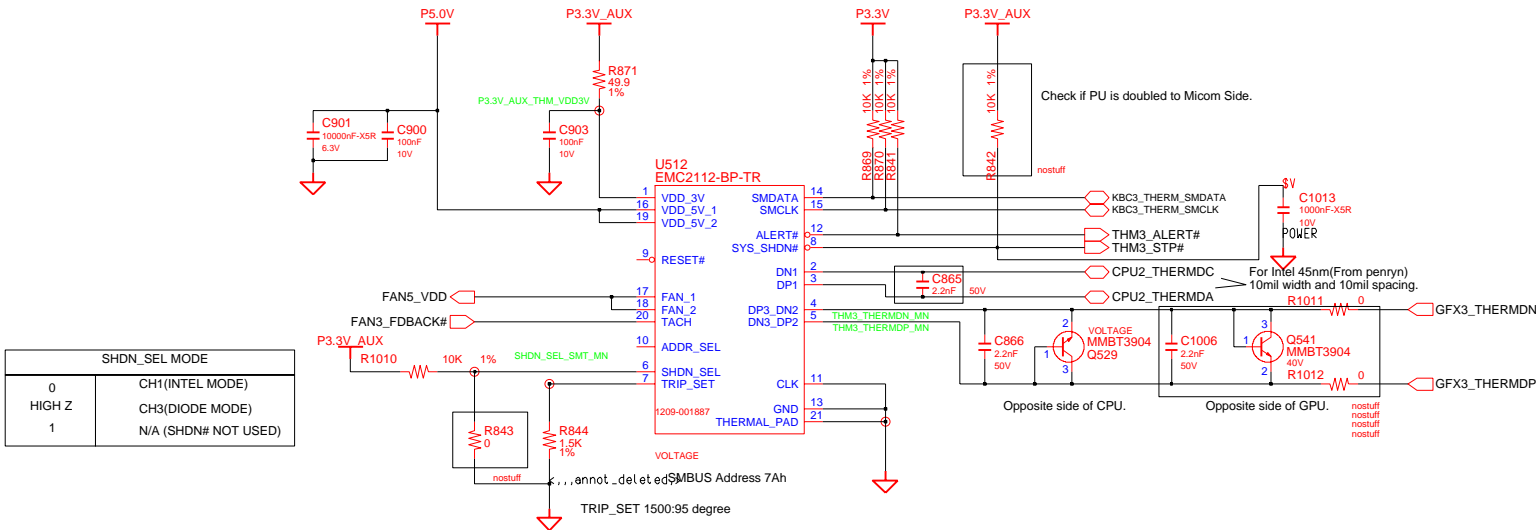
SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

# CLOCK DISTRIBUTION Rev. 0.1



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.

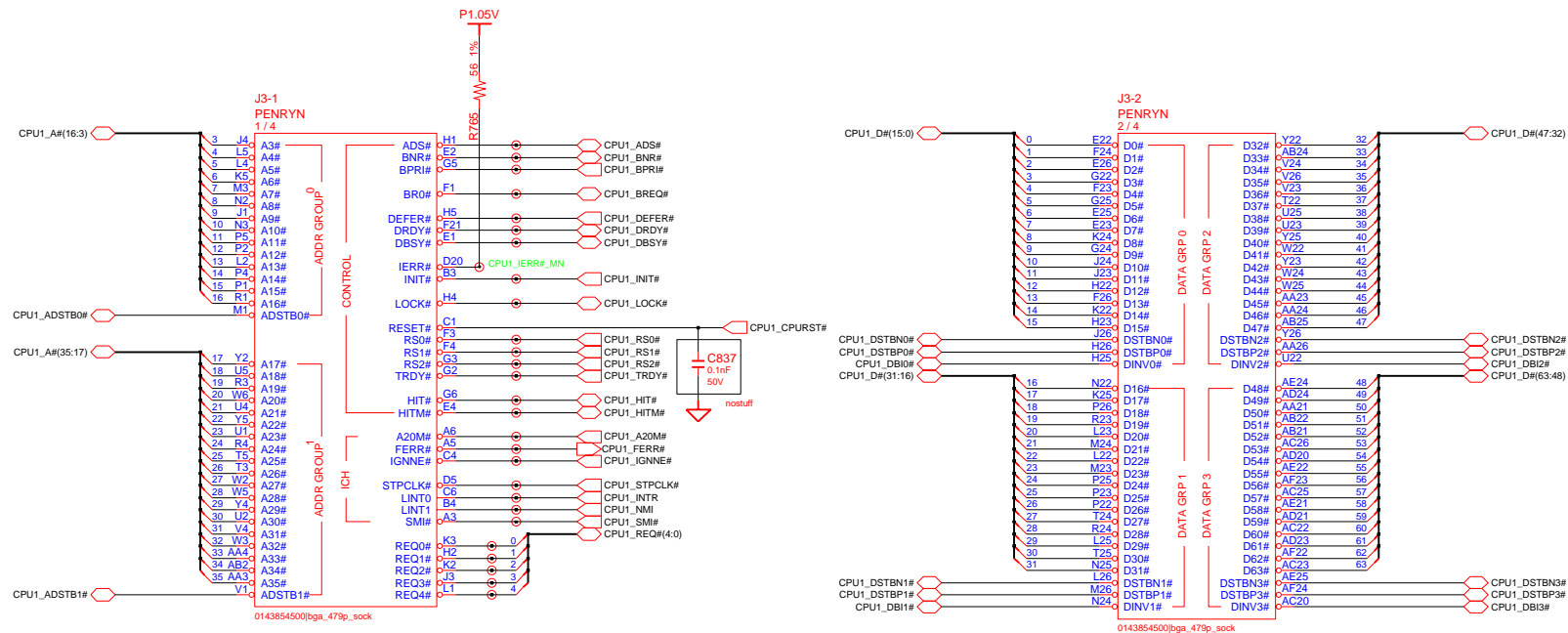
# THERMAL SENSOR & FAN CONTROL



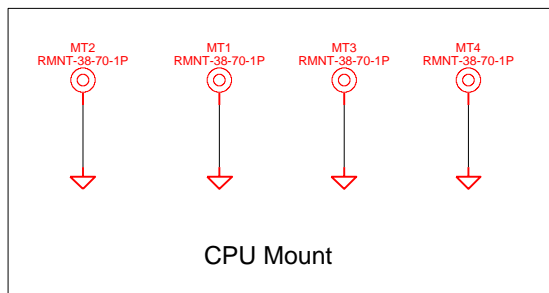
DESIGN	DAI QINGZHU,	DATE	6/17/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		Thermal Sensor EMC2102	
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT				
				August 06, 2010 15:15:45 PM	PAGE 8 OF 60	PART NO. BA41-01335A



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.



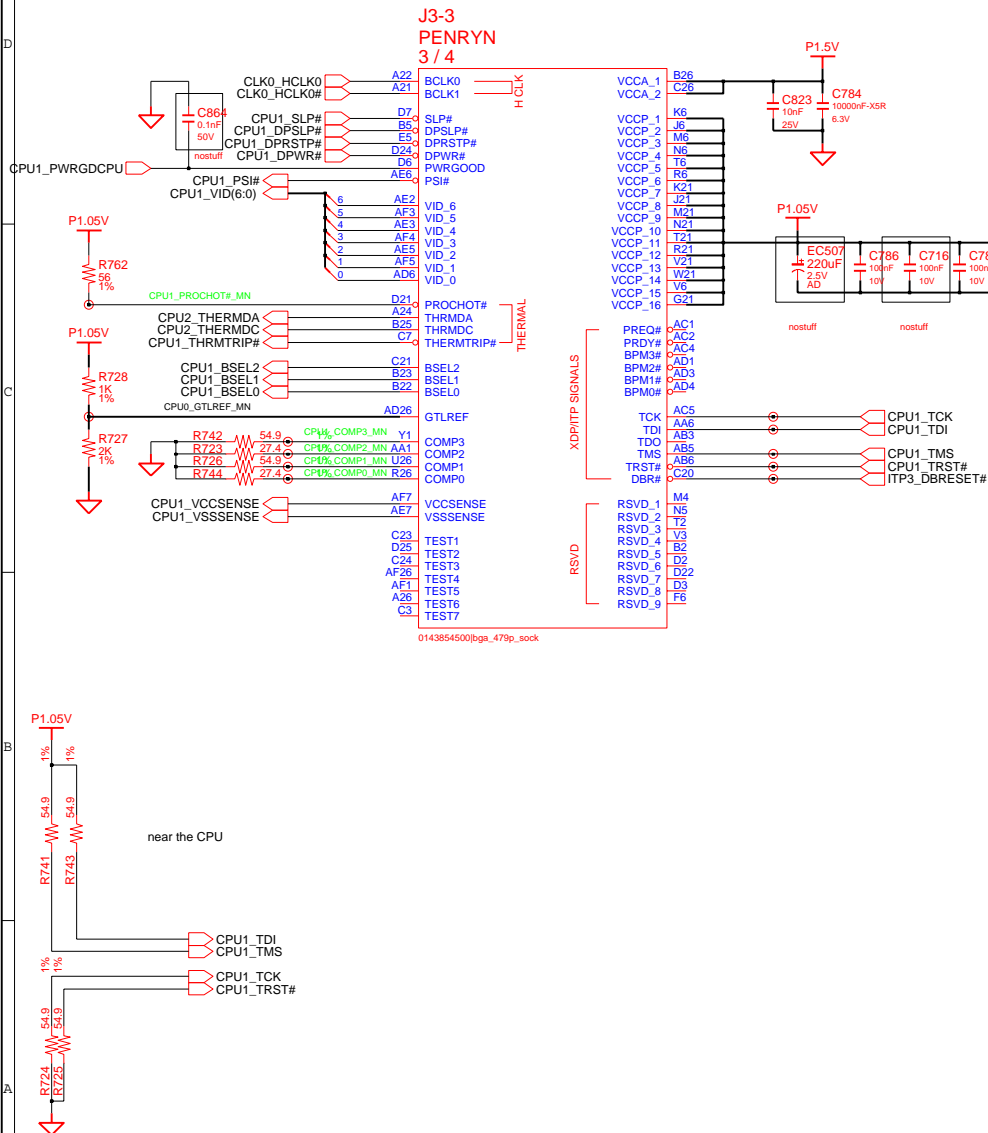
CPU Socket: 3704-001153



DRAW	DAI QINGZHU,	DATE	11/8/2006	TITLE	Scala_14L
CHECK	WU SHIJIANG,	DEV. STEP	PR	CPU	
APPROVAL	BC LEE,	REV	1.0	PENRYN (1/3)	
MODULE CODE	undefined	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	9 OF 60

<b>SAMSUNG</b> ELECTRONICS
PART NO. BA41-01335A

**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(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 0 1 1 1 1	0.9125 V	1 0 1 1 0 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 0 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 0 1 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 0 1 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 0 0	0.3500 V
0 0 0 1 1 0 0	1.3500 V	0 1 1 0 1 0 0	0.8500 V	1 0 1 1 1 0 1	0.3375 V
0 0 0 1 1 0 1	1.3375 V	0 1 1 0 1 0 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 0 1 1 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 0 0 0	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 0 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 0 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 0 1 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 0 1 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 0 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 0 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 1 0 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 1 0 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 1 0 1 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 1 0 1 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 1 1 0 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 1 1 0 1	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 1 1 1 0	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 1 1 1 1	0.5125 V	1 1 1 1 0 0 0	0.0000 V
		1 0 1 0 0 0 0	0.5000 V	1 1 1 1 0 0 1	0.0000 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
				**11111111 : OV power good asserted.	
Active		Deeper Slp			
DPRSLPVR	0	DPRSLPVR	1		
DPRSTP*	1	DPRSTP*	0		
PSI2*	0 or 1	PSI2*	0 or 1		

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

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

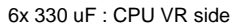
COMP0.2(COMP1.3) should be connected with Zo=27.4ohm(55ohm)  
trace shorter than 1/2" to their respective Banias socket pins.

GND test points within 100mil of the VCC/VSSense at the end of the line.  
Route the VCC/VSSense as a Zo=55ohm traces with equal length.  
Observe 3:1 spacing b/w VCC/VSSense 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

DAI QINGZHU	11/8/2006	Scala_14L	SAMSUNG ELECTRONICS
WU SHIJIANG	PR	CPU	
BC LEE	1.0	PENRYN (2/3)	
MODULE CODE	undefined	August 06, 2010 15:15:45 PM	PAGE 10 OF 60

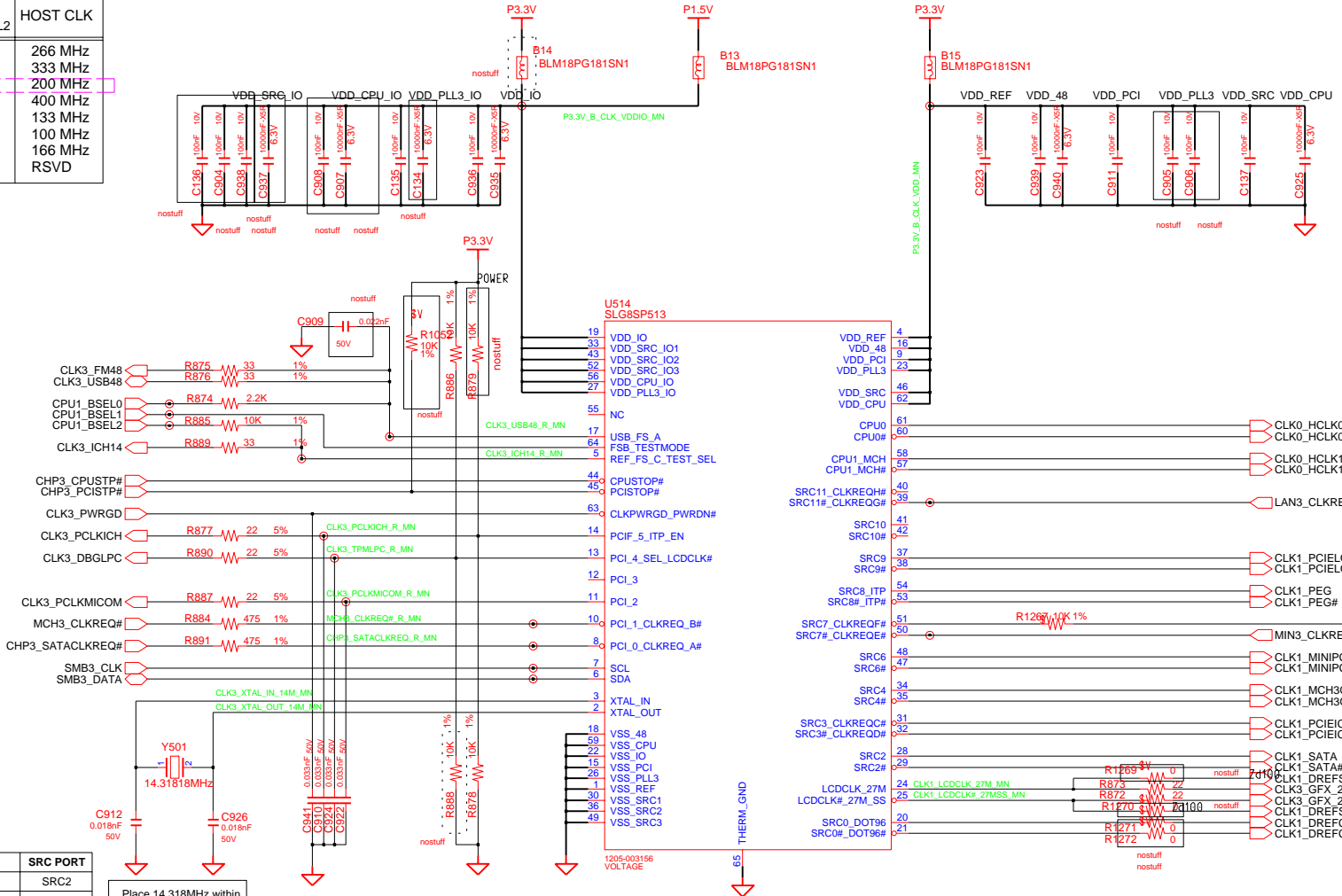


COM-22C-015(1996.6.5) REV. 3

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.

# 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



This part is 64pin QFN package.

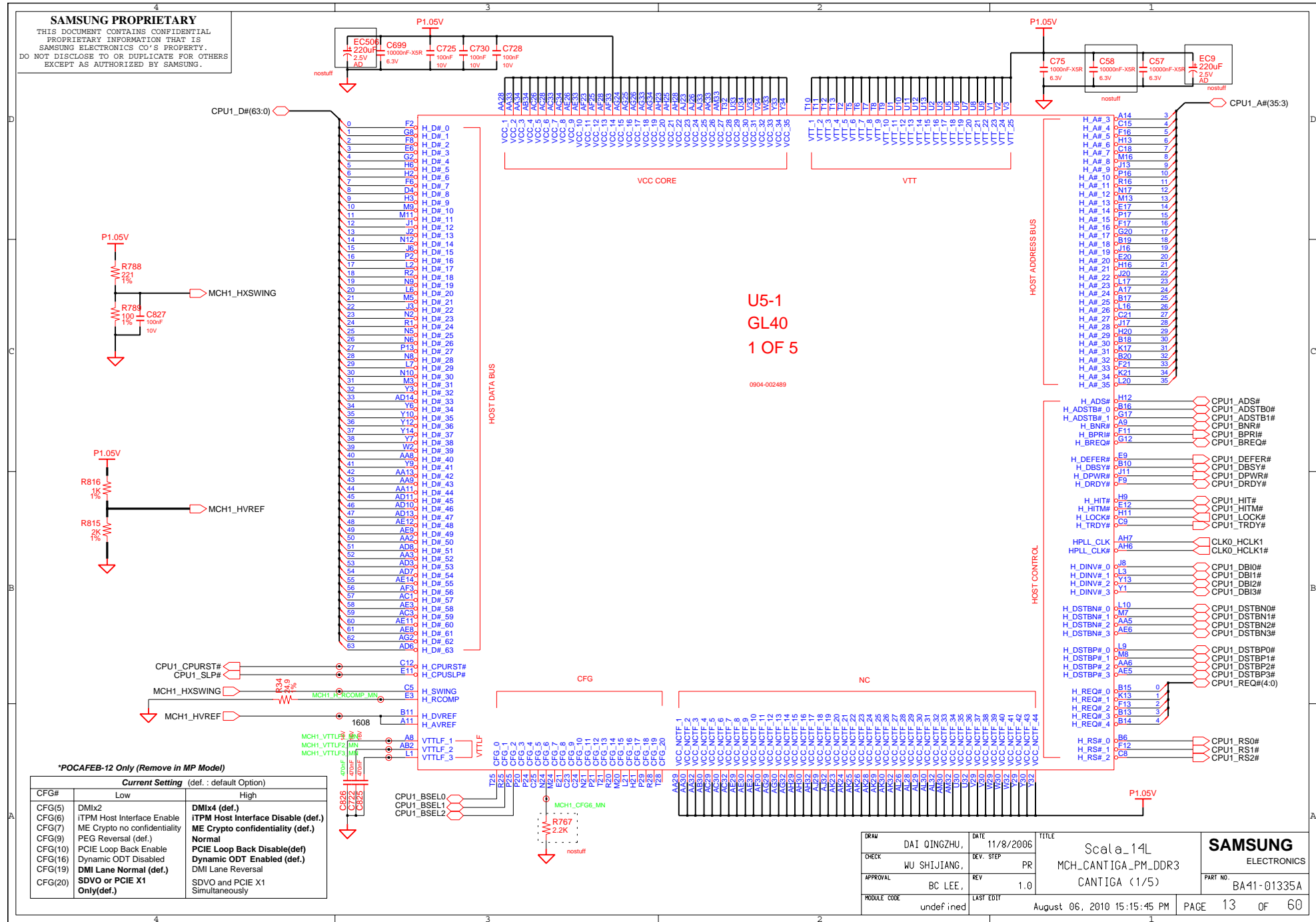
IDT: 1205-003159  
SL: 1205-003533

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

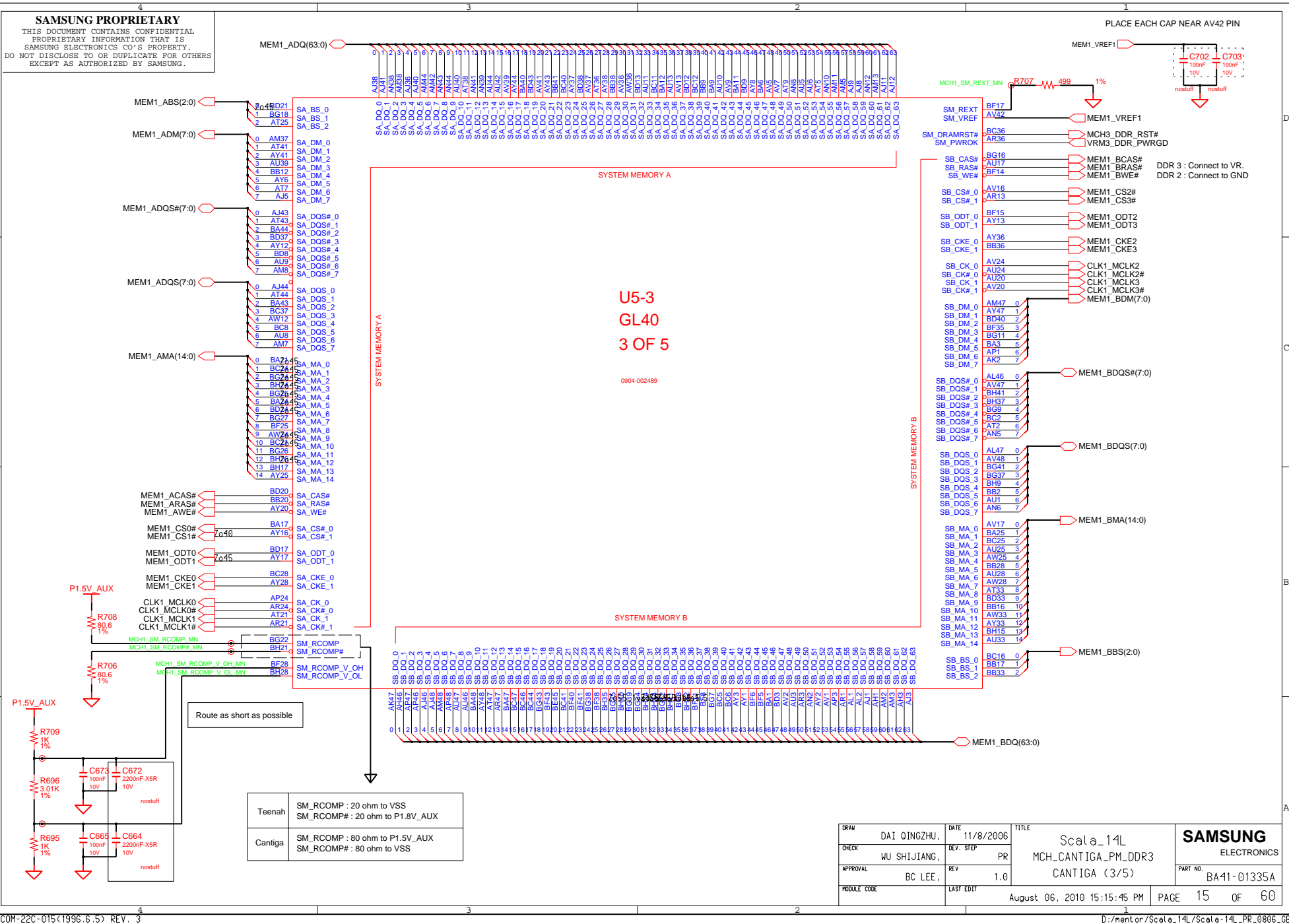
DAI QINGZHU,	8/12/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
WU SHIJIANG,	PR	Main_Clock_Circuit		
BC LEE,	REV	1.0	CK_Clock_505M	PART NO. BA41-01335A
undefined	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE 12 OF 60	

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.



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.

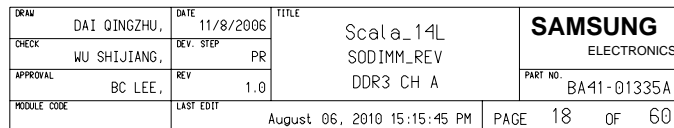






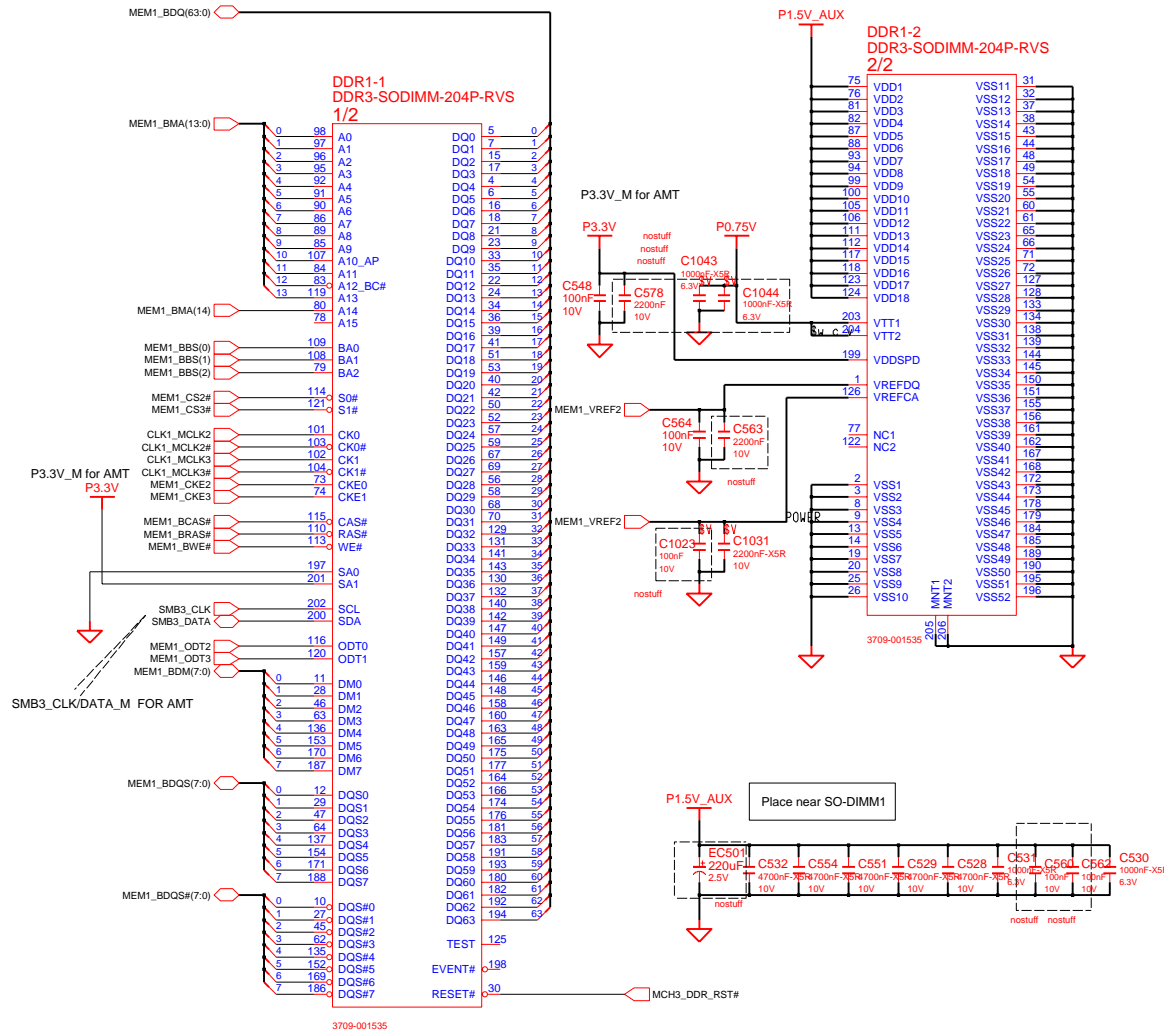
COM-22C-015(1996.6.5) REV. 3

## DDR SO-DIMM #0

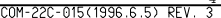


SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

## DDR SO-DIMM #1

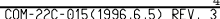


When R1201 stuff, R1137 nostuff,  $V_{out}=P1.0V$ ;  
When R1137 stuff, R1201 nostuff,  $V_{out}=P1.1V$ ;





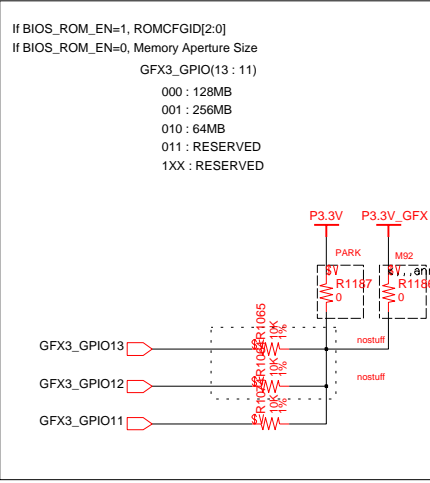
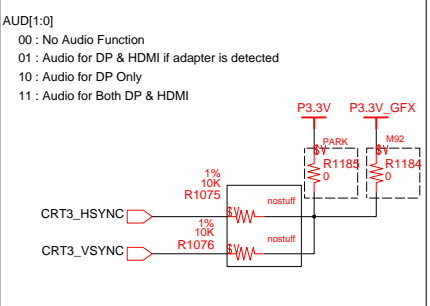
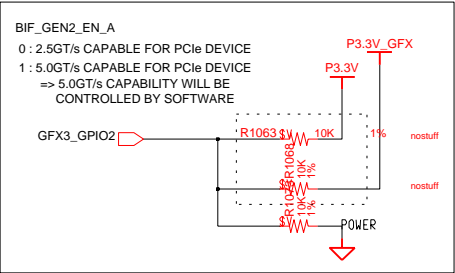
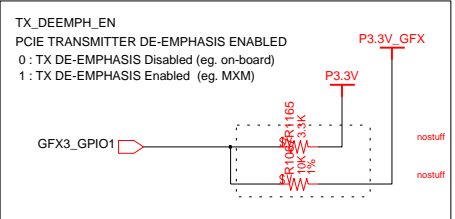
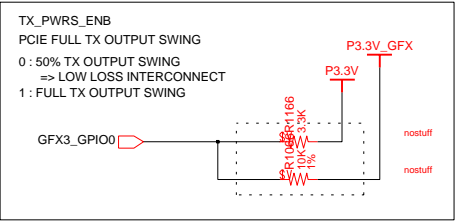
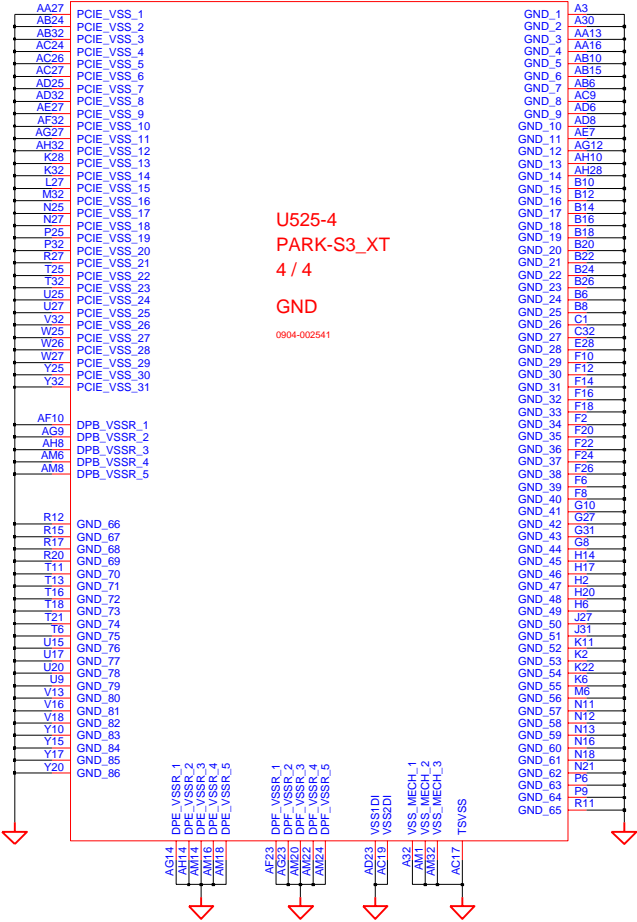
When R1201 stuff, R1137 nostuff, Vout=P1.0V;  
When R1307 stuff, R1201 nostuff, Vout=P1.1V;



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.

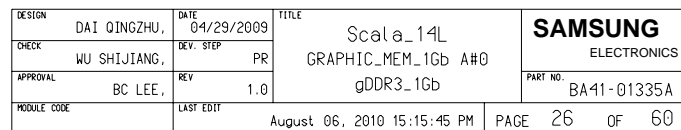
# PARK & M92 Straps

U525-4  
PARK-S3\_XT  
4 / 4  
GND  
0904-002541



DAWG	DAI QINGZHU,	DATE	8/14/2007	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		EXT NB9X	
APPROVAL	BC LEE,	REV	1.0		NVIDIA-NB9X_9M	PART NO.
MODULE CODE		LAST EDIT				BA41-01335A
				August 06, 2010 15:15:45 PM	PAGE	23 OF 60

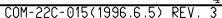
## A-channel Lower Data





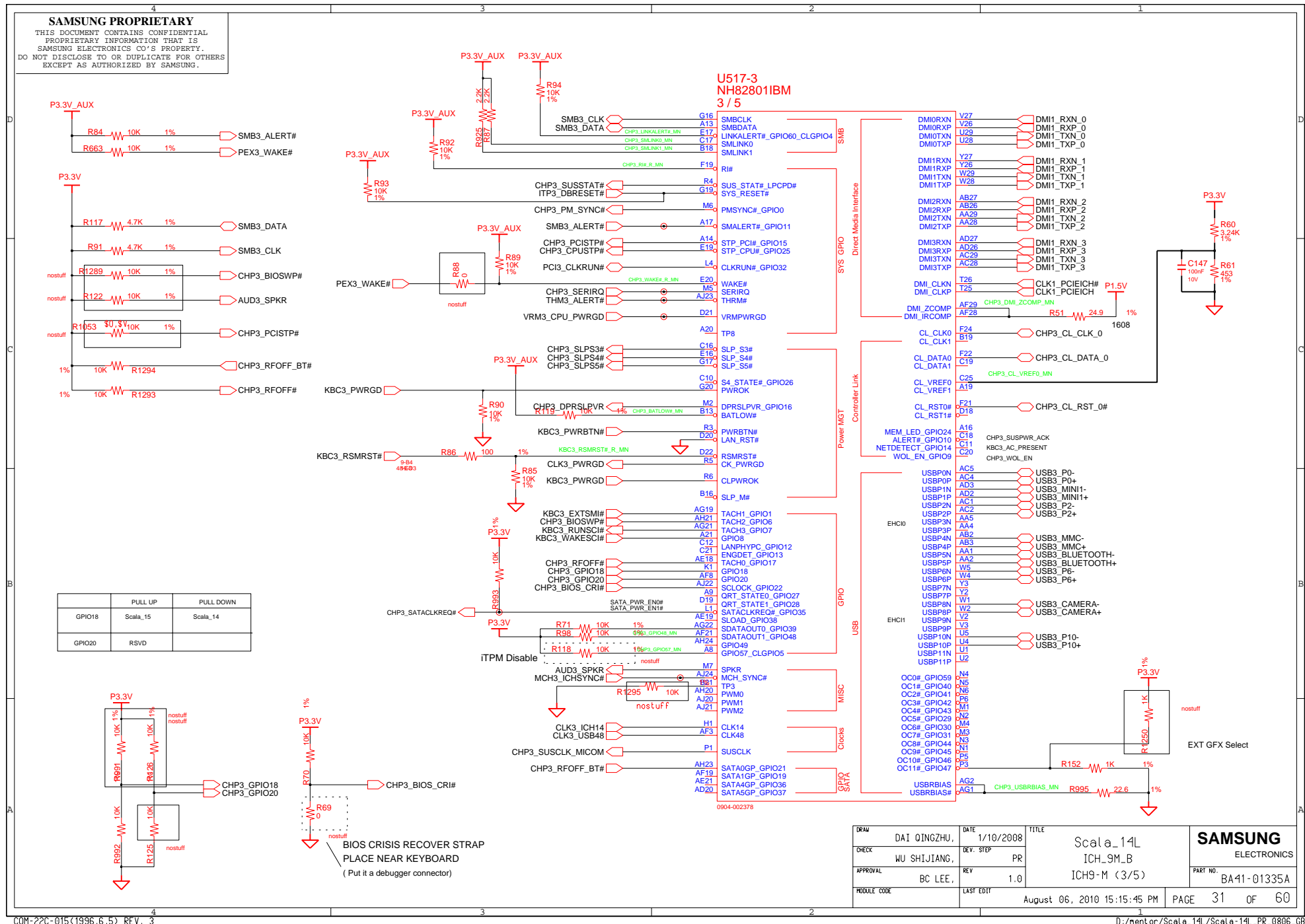


Internal VR Strap
INTVRMEN      Pull up VccSus1_05, VccSus1_5, VccCL1_5 VccLAN1_05, VccCL1_05



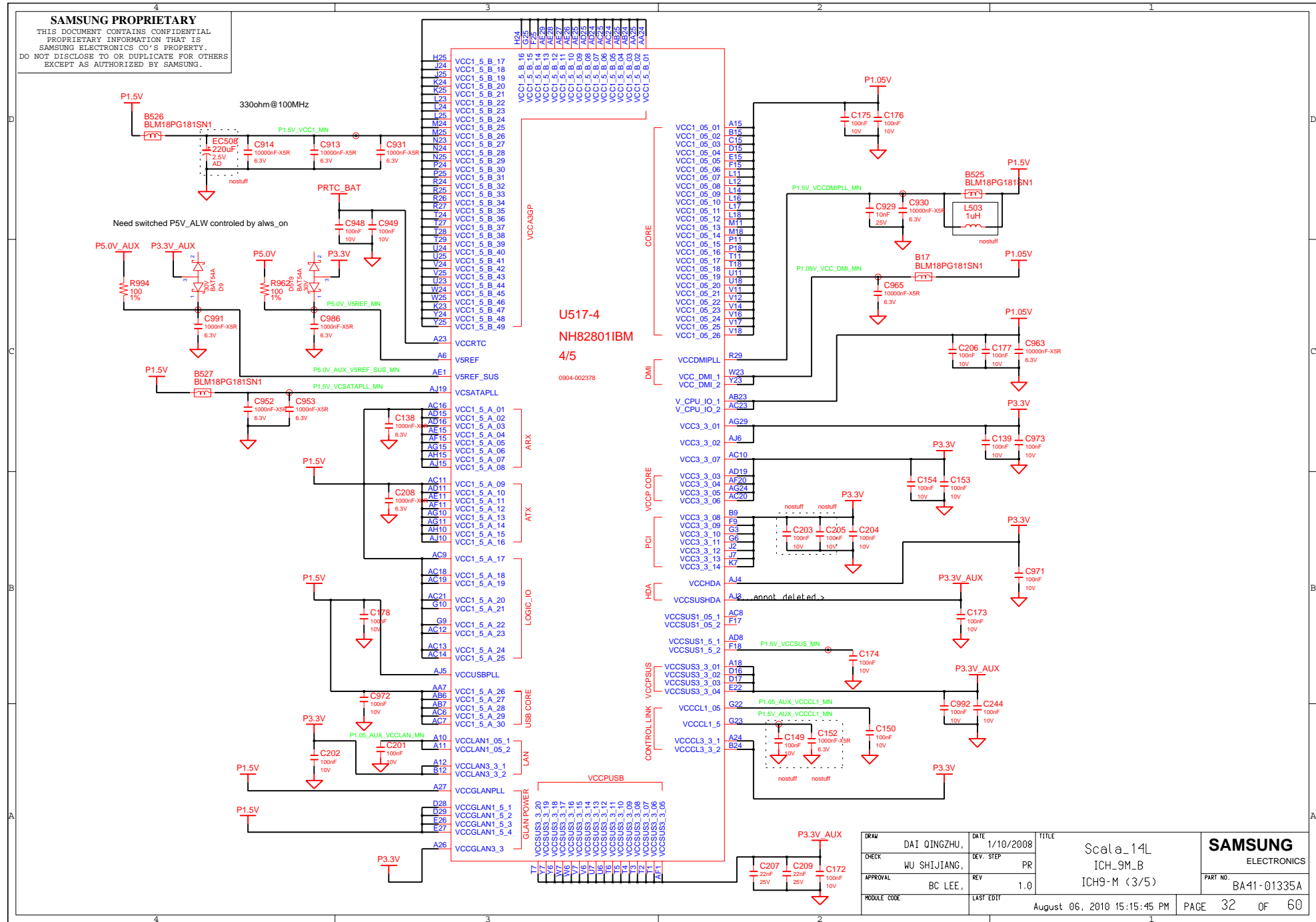


THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.



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

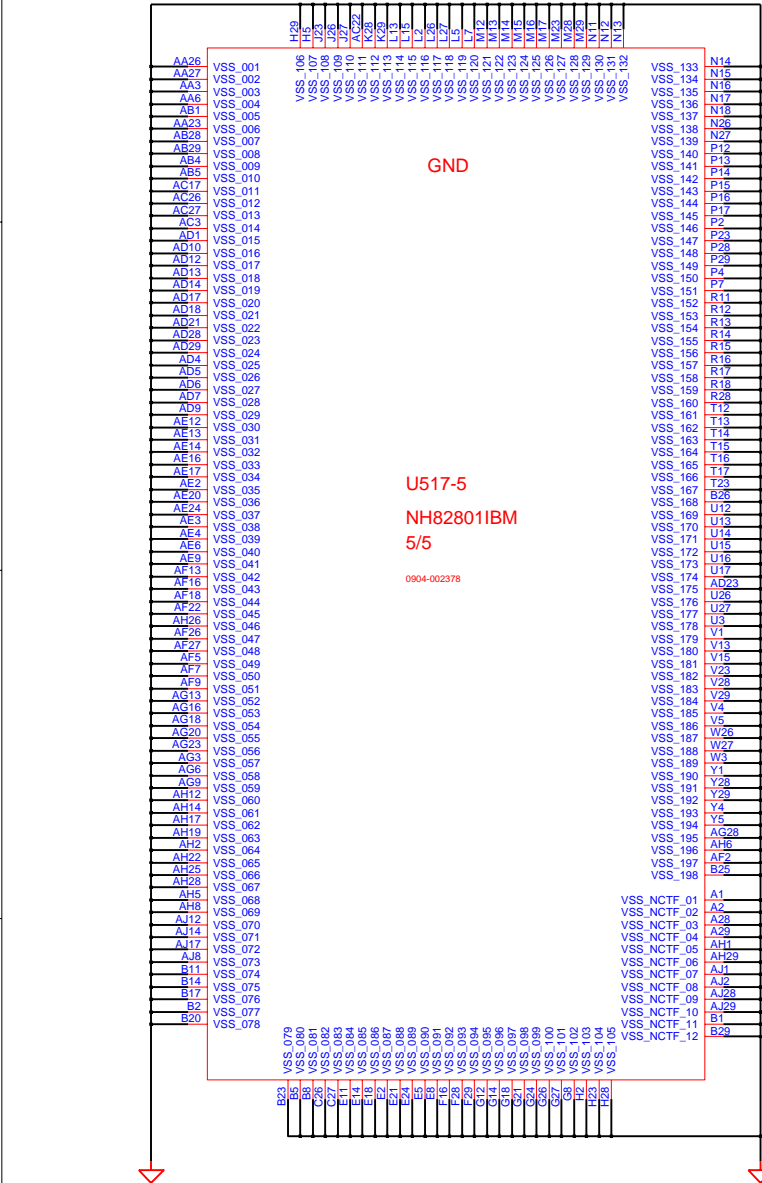
**SAMSUNG PROPRIETARY**  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.



DAI QINGZHU,	DATE 1/10/2008	TITLE	Scale_14L	SAMSUNG ELECTRONICS	PART NO. BA41-01335A
WU SHIJIANG,	DEV. STEP PR	ICH9M_B	ICH9-M (3/5)		
BC LEE,	REV 1.0	LAST EDIT	August 06, 2010 15:15:45 PM	PAGE 32	OF 60

4

**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.

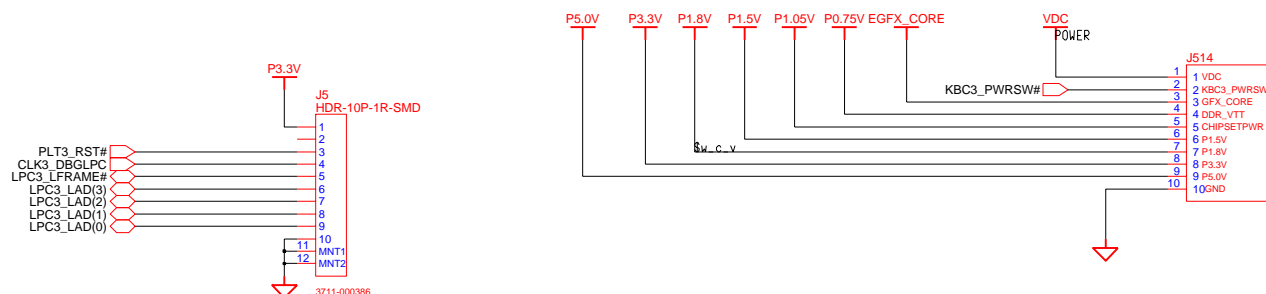


DRAW	DAI QINGZHU,	DATE	1/10/2008	TITLE	Scal_a_14L	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-01335A
CHECK	WU SHIJIANG,	DEV. STEP	PR		ICH_9M_B	
APPROVAL	BC LEE,	REV	1.0		ICH9-M (5/5)	
MODULE CODE		LAST EDIT		August 06, 2010 15:15:45 PM	PAGE 33 OF 60	

# SPI\_BIOS\_ROM



## ICT PORT

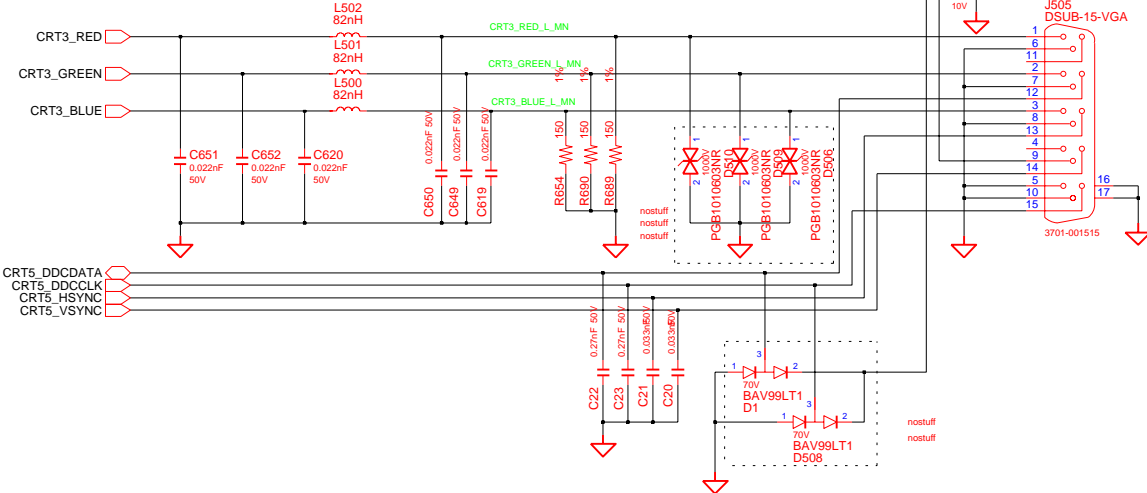
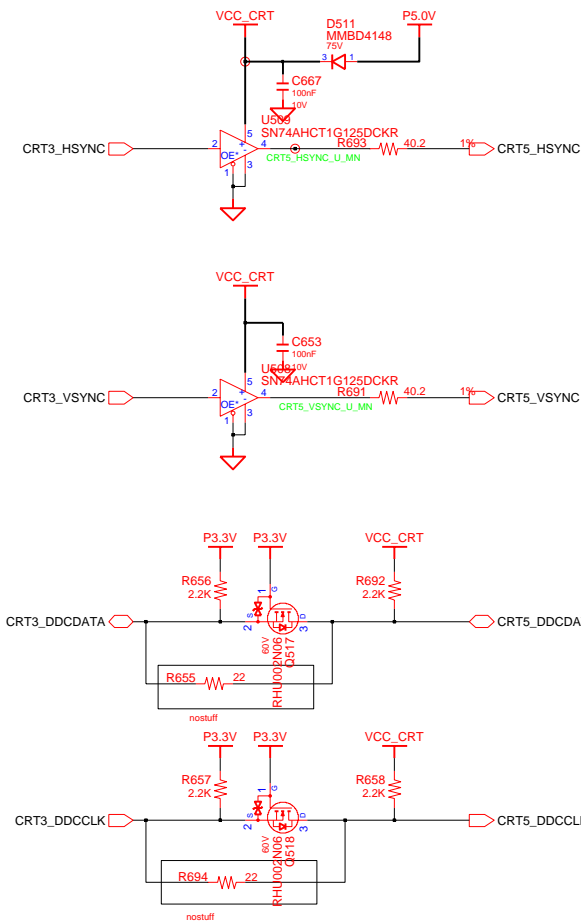


COM-22C-015(1996.6.5) REV. 3

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.

# CRT

## CRT CONNECTOR



Check "CRT3\_DDCCLK/DATA" Voltage Level  
2N06 Can be replaced with SM6K2

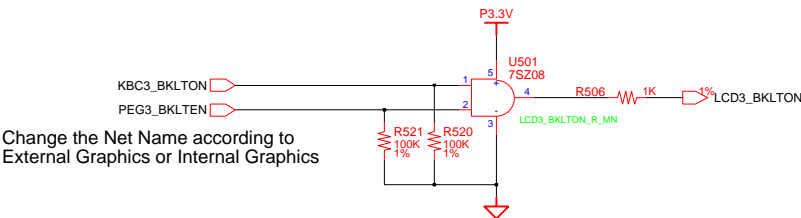
DESIGN	DAI QINGZHU,	DATE	01/08/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		GRAPHICS_IF	
APPROVAL	BC LEE,	REV	1.0		CRT	PART NO.
MODULE CODE		LAST EDIT				BA41-01335A
				August 06, 2010 15:15:45 PM	PAGE	35 OF 60



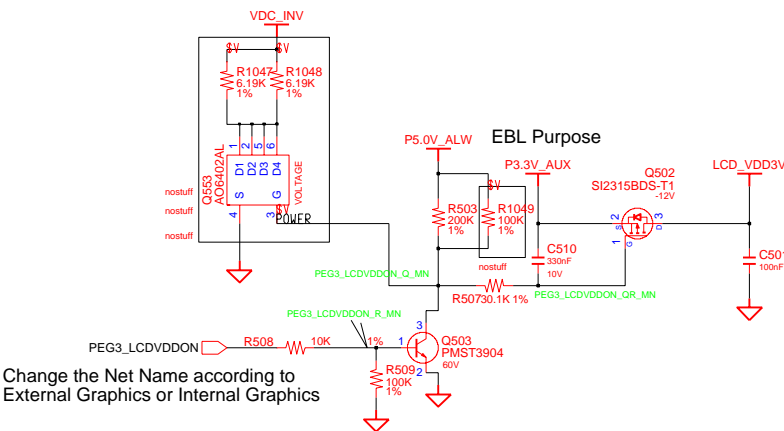
SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

# LVDS

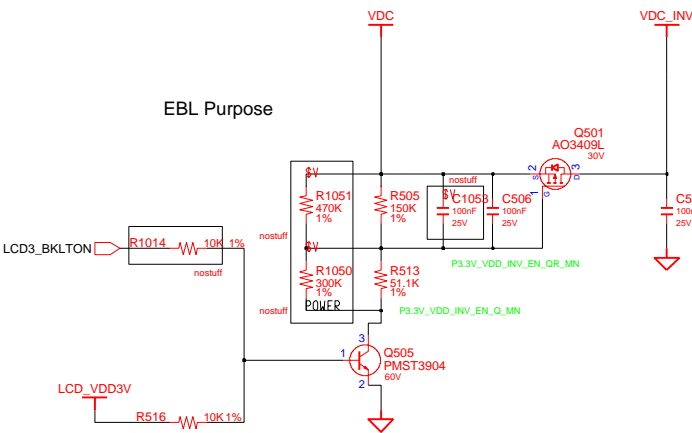
## Backlight On



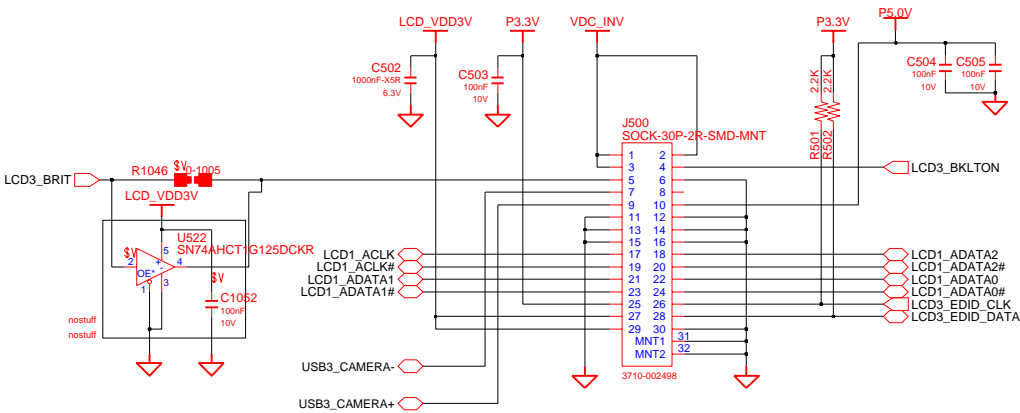
## LCD Power



## Inverter Power




## 1Ch. LCD Connector



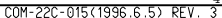
DESIGN	DAI QINGZHU,	DATE	01/08/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR	GRAPHICS_IF		
APPROVAL	BC LEE,	REV	1.0	LVDS		PART NO. BA41-01335A
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	36	OF 60

# HDMI

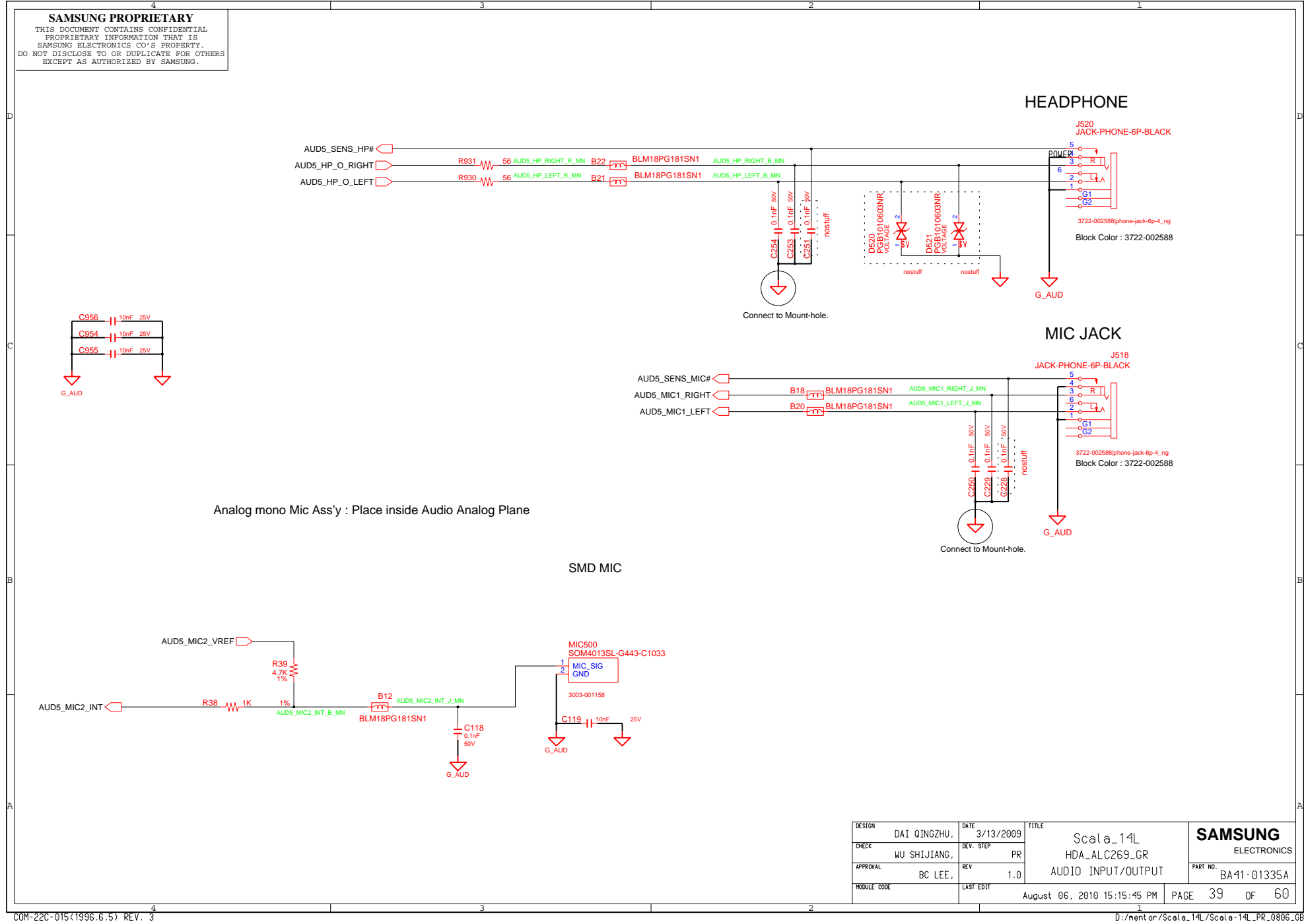
## HDMI

DESIGN	DAI QINGZHU,	DATE	01/08/2009	TITLE	Scala_14	
CHECK	WU SHIJIANG,	REV.	STEP	PR	GRAPHICS_1F	
APPROVAL	BC LEE,	REV		1.0	HDMI	
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM			
						PART NO. BA41-01335A PAGE 37 OF 60

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.

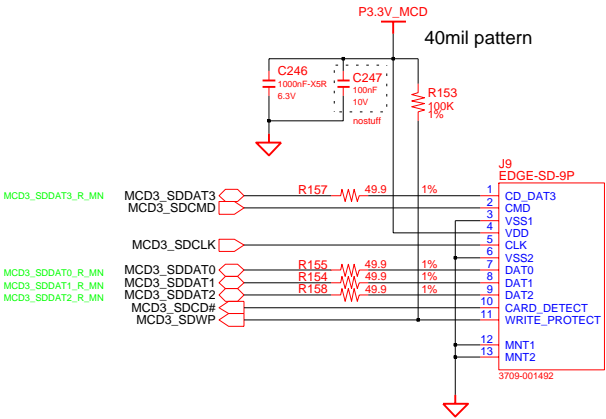
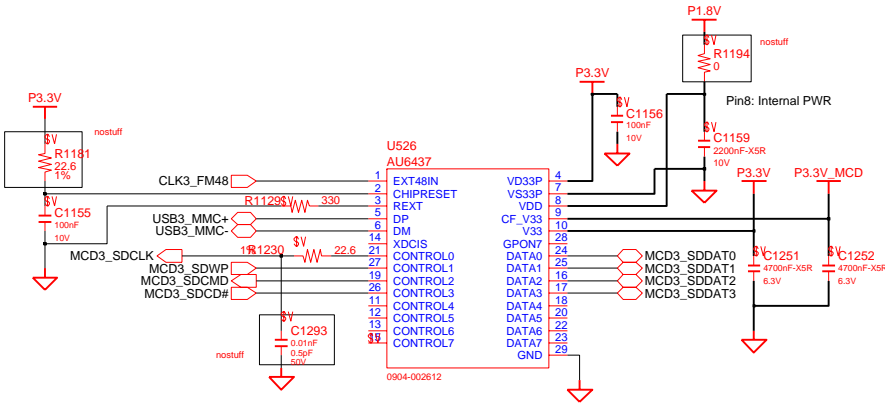




SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

3 IN 1

P3.3V\_MCD distance between R5U880 and socket should be less than 2 inches

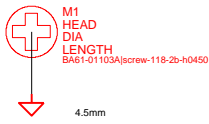
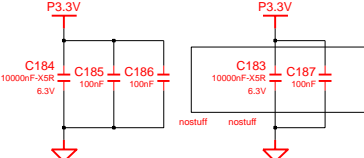
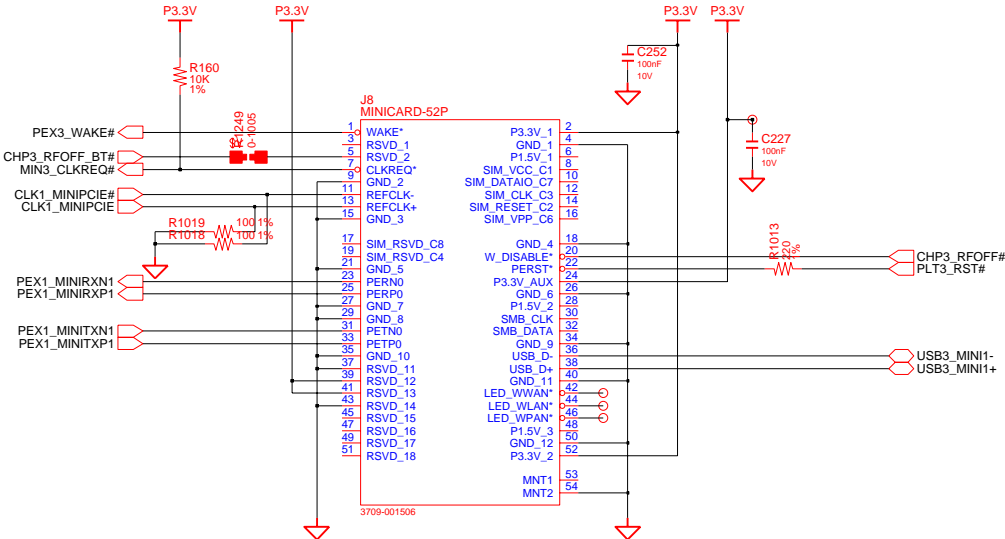


40 mil trace for medica card socket ground

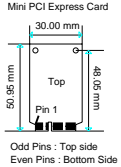
DESIGN	DAI QINGZHU,	DATE	4/29/2009	TITLE	Scala_14L	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-01335A
CHECK	WU SHIJIANG,	DEV. STEP	PR			
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT				
August 06, 2010 15:15:45 PM						PAGE 41 OF 60

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

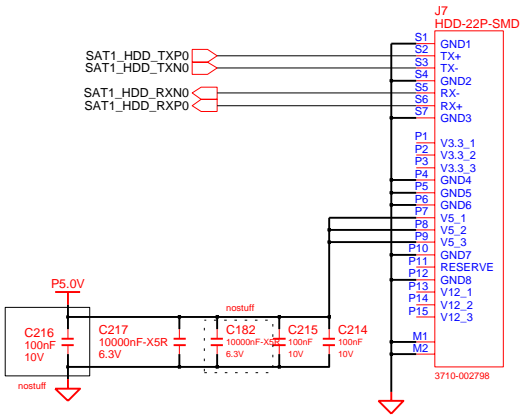


DESIGN	DAI QINGZHU,	DATE	6/6/2008	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP	PR		MINI_PCIE_CONN	
APPROVAL	BC LEE,	REV	1.0			
MODULE CODE		LAST EDIT				
August 06, 2010 15:15:45 PM						PAGE 42 OF 60

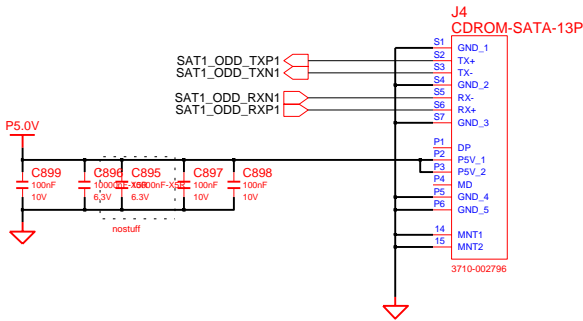
SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

# SATA I/F CONN

SATA HDD CONN



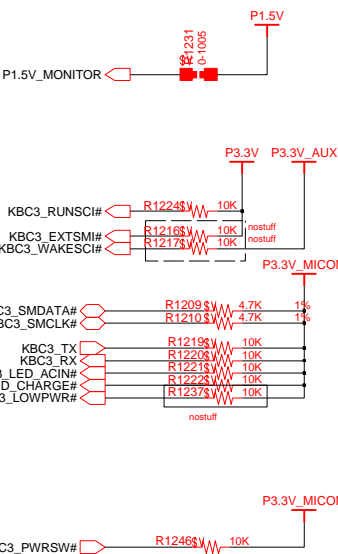
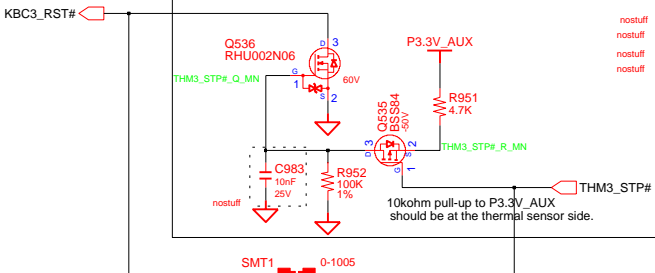
SATA ODD CONN



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



## MAIN BOARD (MICOM)

[illegible]

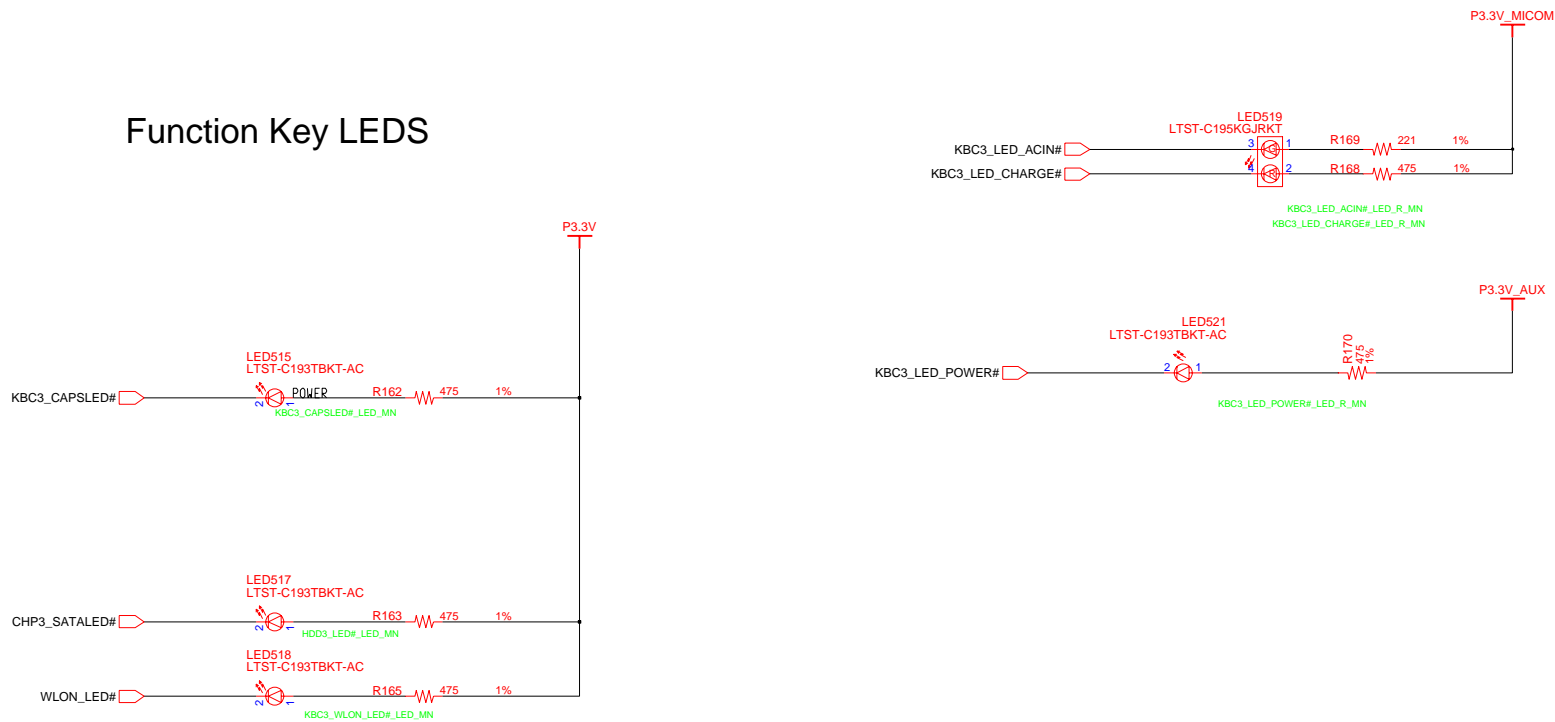
DATE	DAI QINGZHU,	05/20/2009	TITLE  Scala_14L  MICOM_SMSC_MEC1308  MICOM_SMSC_MEC1308	<b>SAMSUNG</b>  ELECTRONICS
CHECK	WU SHIJIANG,	DEV. STEP PR		
APPROVAL	BC LEE,	REV 1.0		
MODULE CODE	LAST EDIT			
			August 06, 2010 15:15:45 PM	PAGE 44 OF 60



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.

# LED SWITCH LOGIC

## Function Key LEDs

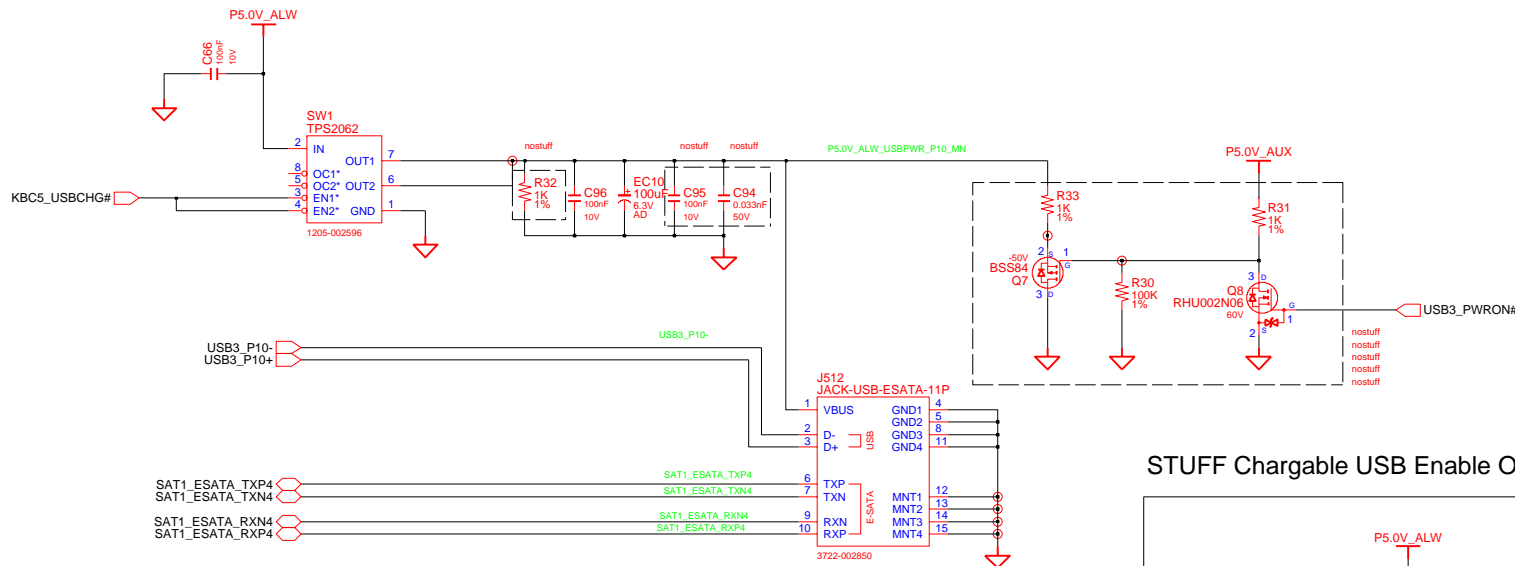


DRAWN	DAI QINGZHU,	DATE	8/12/2006	TITLE	Scala_14L	SAMSUNG ELECTRONICS
CHECK	WU SHUIJANG,	REV. STEP	PR	LED_Switch		
APPROVAL	BC LEE,	REV	1.0	LED_Switch		
MODULE CODE		LAST EDIT				PART NO. BA41-01335A
				August 06, 2010 15:15:45 PM	PAGE	46 OF 60

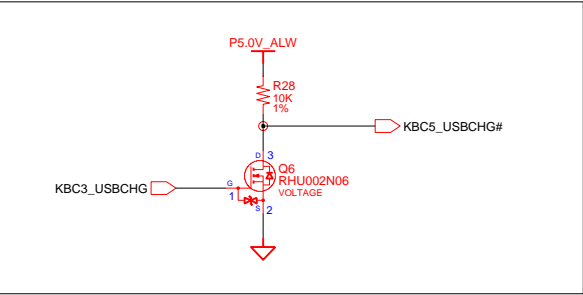


SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

# eSATA



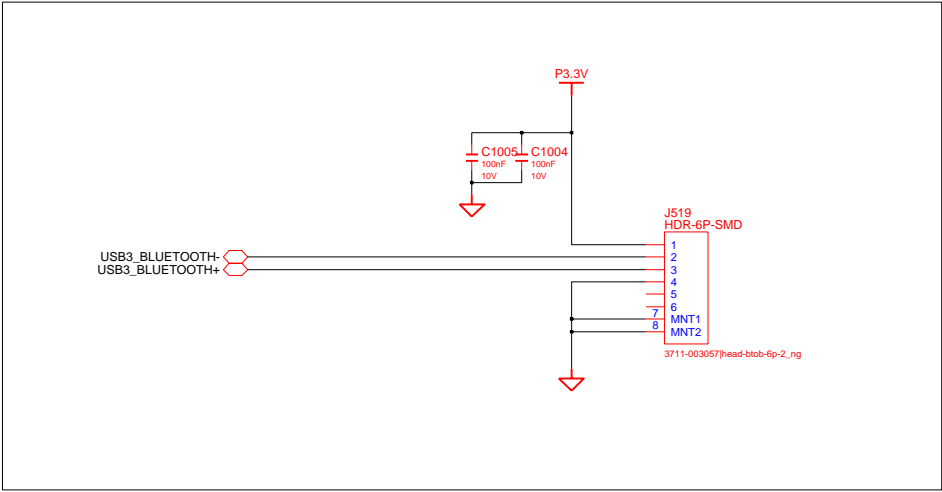
## STUFF Chargeable USB Enable ONLY



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

# Bluetooth Interface



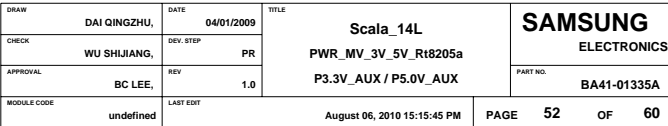
nostuff nostuff nostuff

DESIGN	DAI QINGZHU,	DATE	6/6/2008	TITLE	Scala_14L USB_DEVICES	<b>SAMSUNG</b> 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	

## CHARGER & POWER MANAGEMENT



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

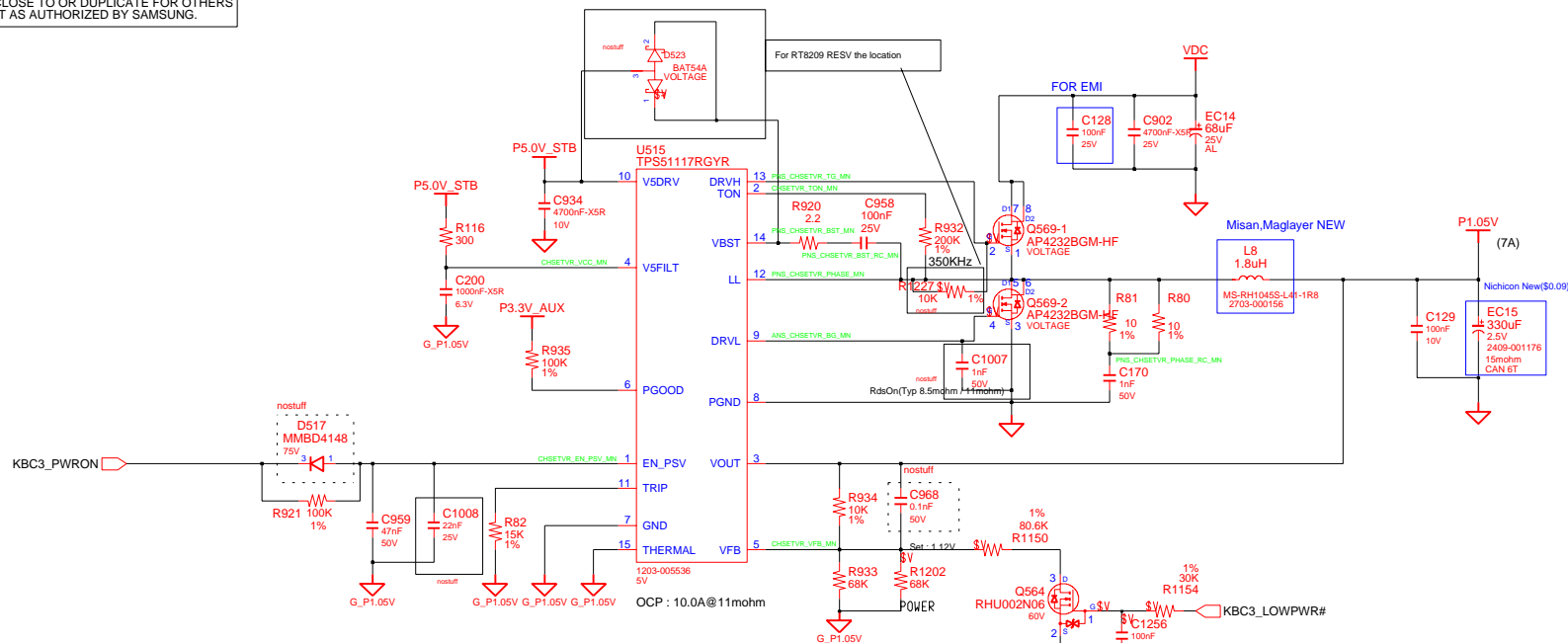




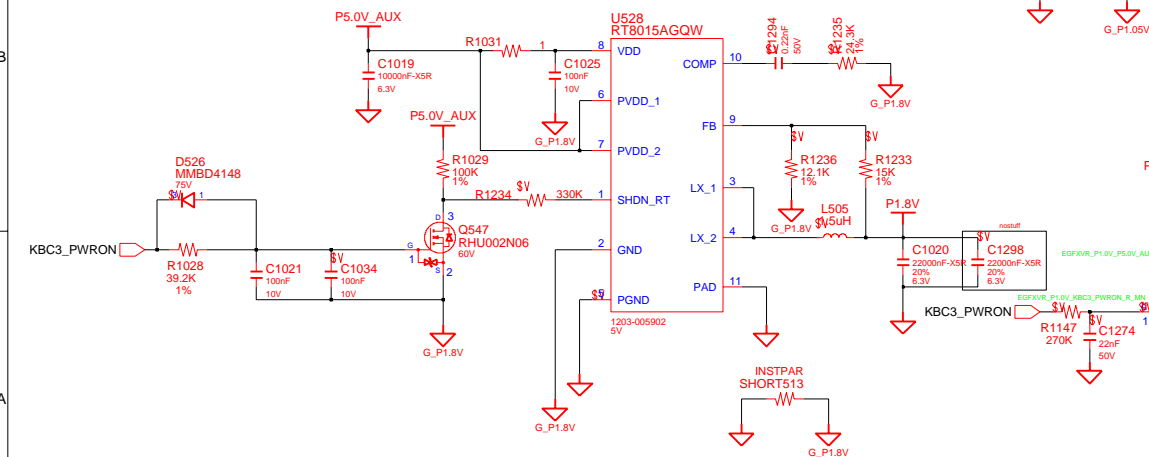


SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

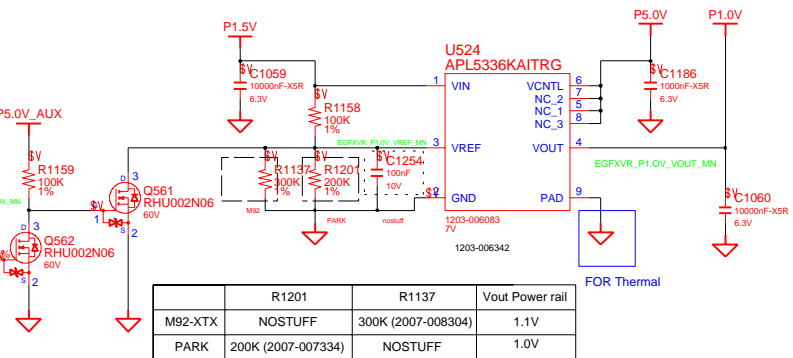
## CHIPSET POWER (P1.05V)



## P1.8V



## P1.1V



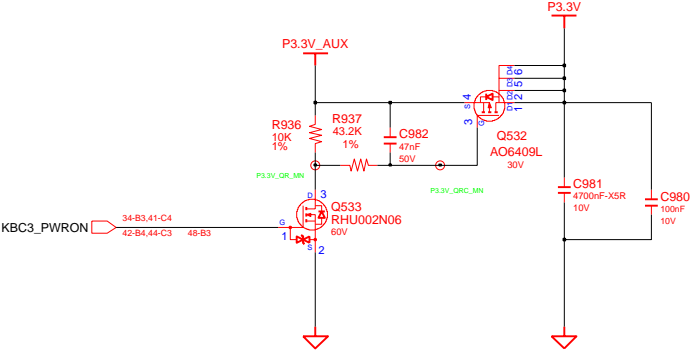




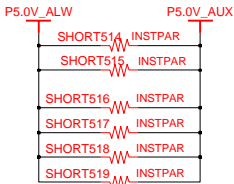
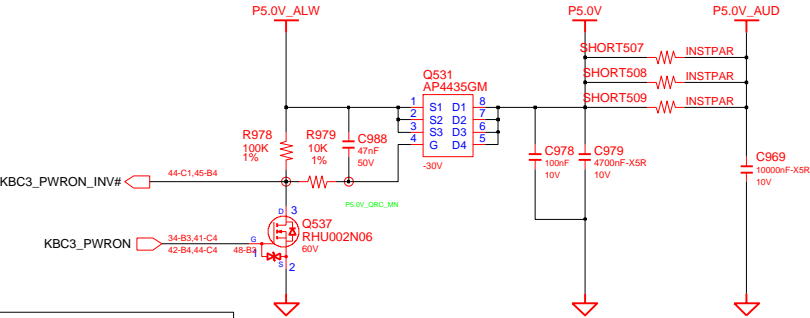
SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

# Switched Power

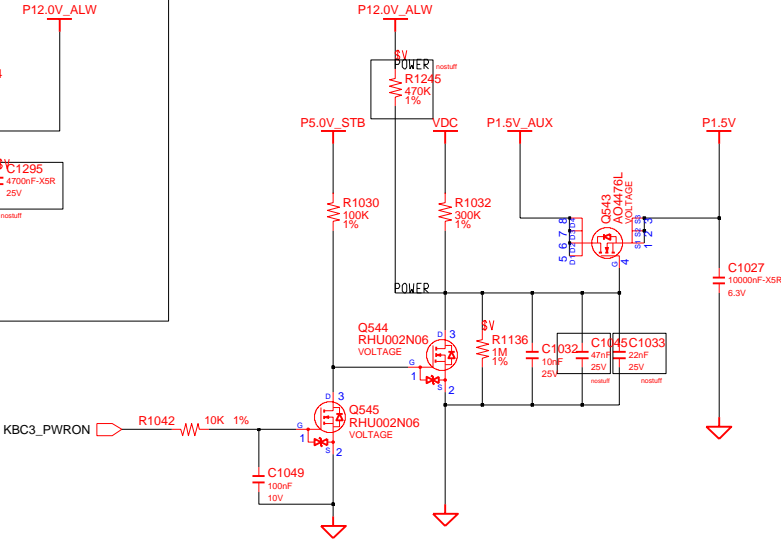
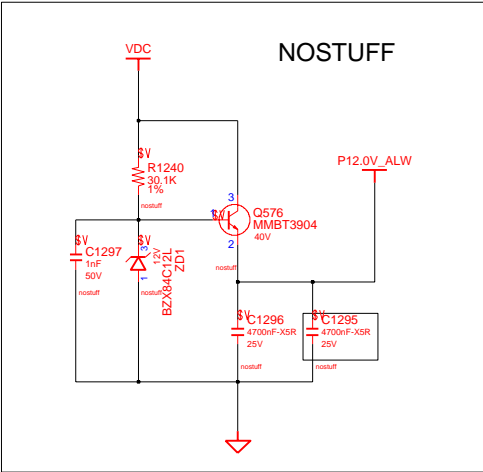
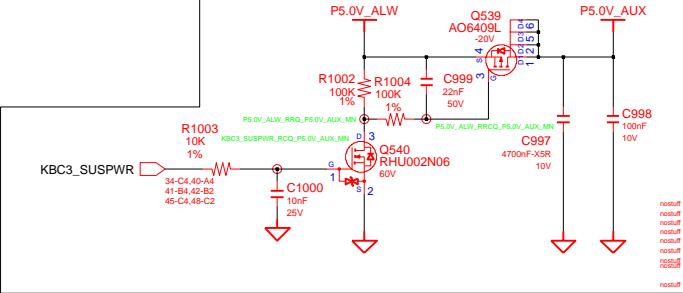
## Switched Power On (P3.3V)



## Switched Power On (P5.0V)



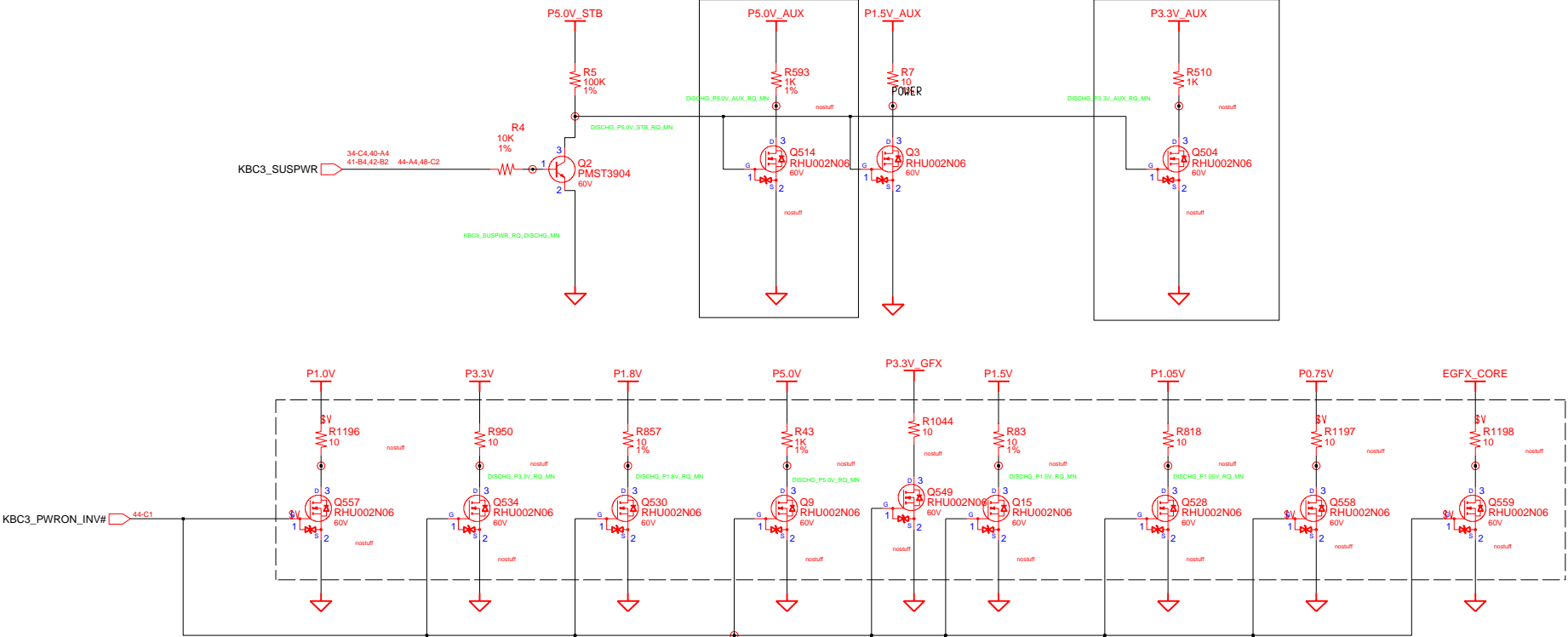
## Sleep'n Charger



DRAW	DAI QINGZHU,	DATE	03/11/2009	TITLE	Scala_14L	SAMSUNG
CHECK	WU SHUIJANG,	REV. STEP	PR	PWR_MV_Switched		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

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.

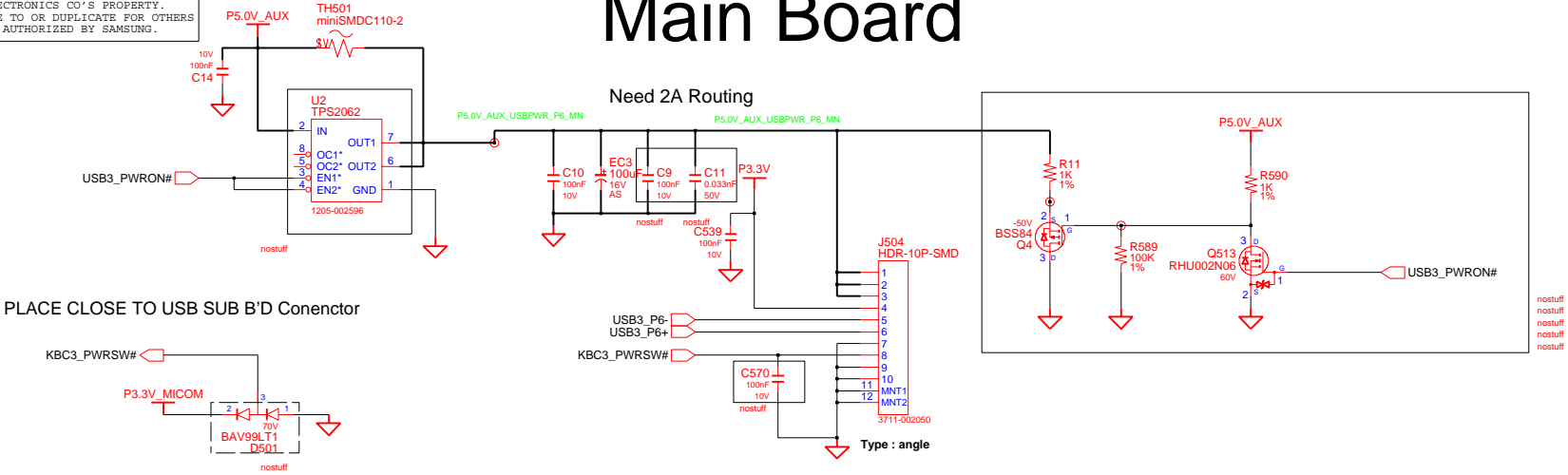
# POWER DISCHARGER



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

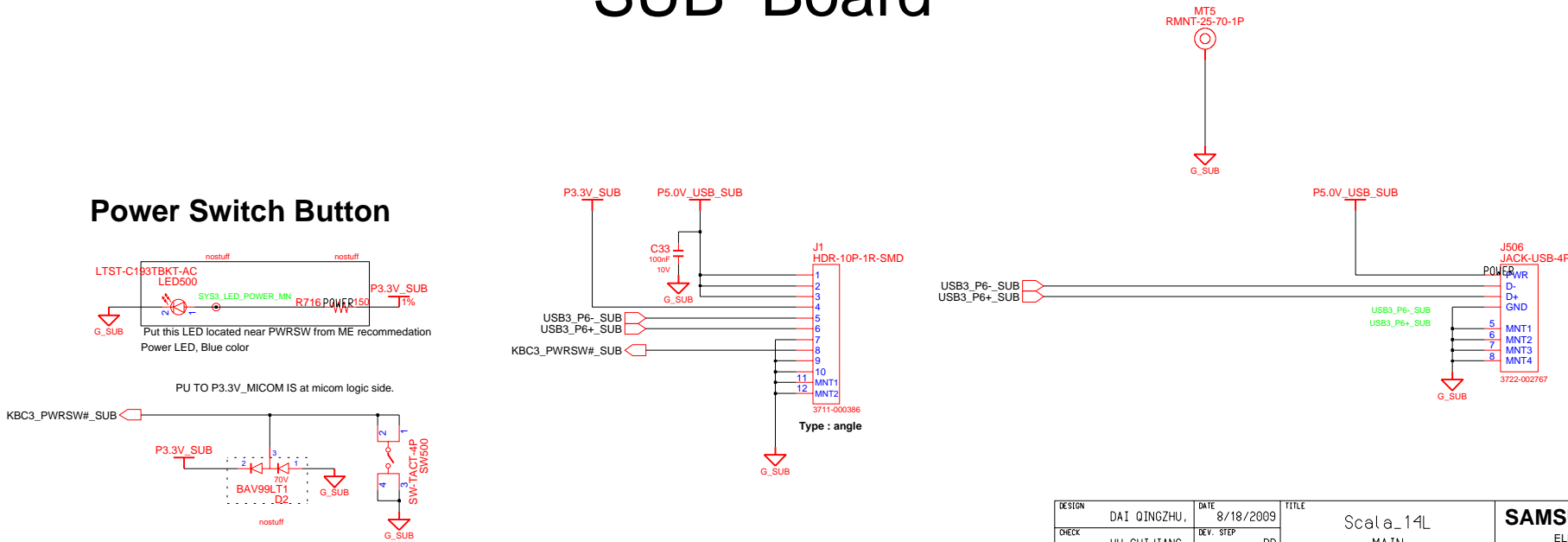
SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO.'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

# Main Board



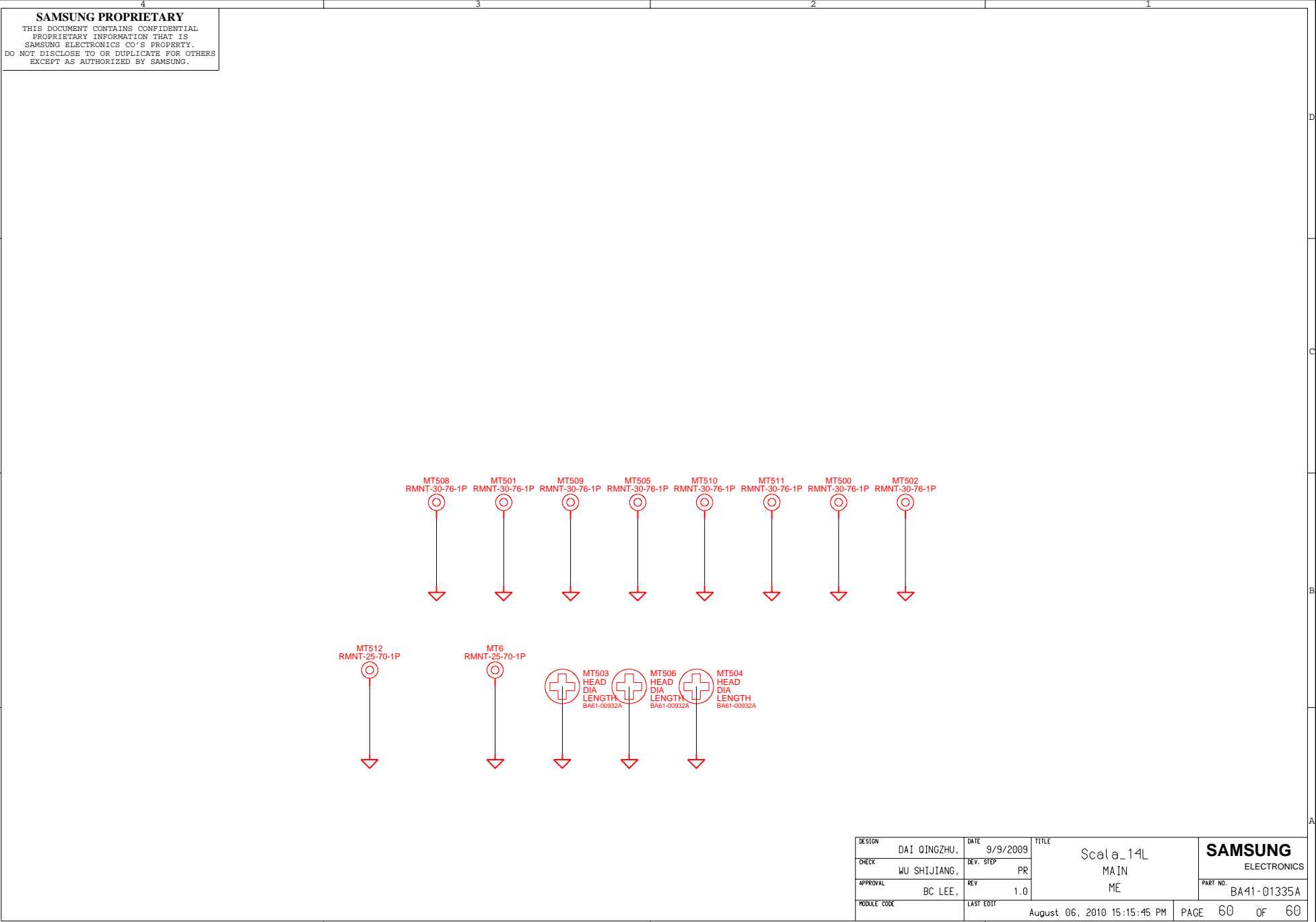
# SUB Board

## Power Switch Button



DESIGN	DAI QINGZHU,	DATE	8/18/2009	TITLE	Scala_14L	SAMSUNG ELECTRONICS PART NO. BA41-01335A
CHECK	WU SHIJIANG,	DEV. STEP	PR	MAIN		
APPROVAL	BC LEE,	REV	1.0	SUB BOARD		
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE 59 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	DAI QINGZHU,	DATE	9/9/2009	TITLE	Scala_14L	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-01335A
CHECK	WU SHIJIANG,	DEV. STEP	PR		MAIN	
APPROVAL	BC LEE,	REV	1.0		ME	
MODULE CODE		LAST EDIT	August 06, 2010 15:15:45 PM	PAGE	60 OF 60	