

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.

QingDao_ER_LR

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

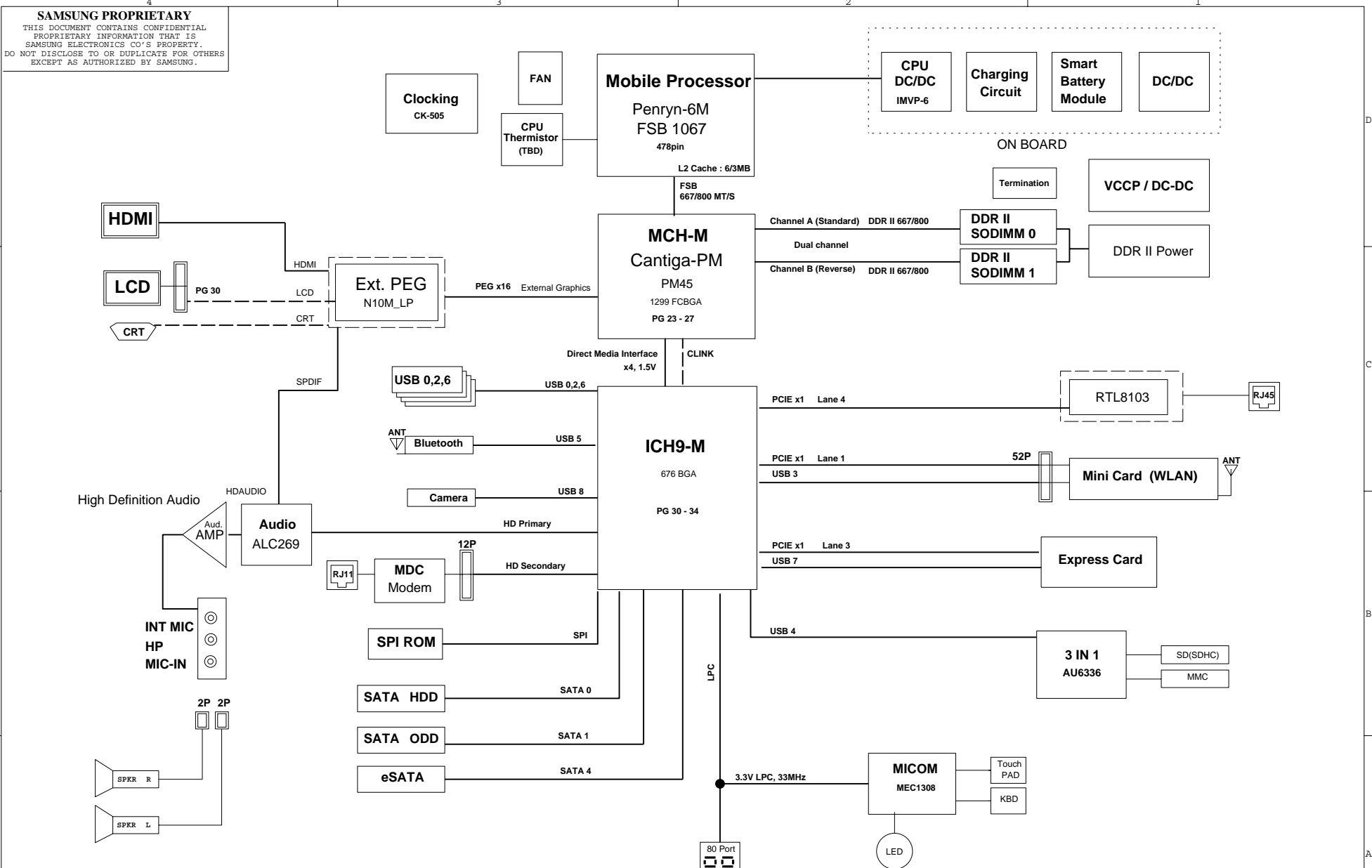
Model Name : QingDao_ER_LR
PBA Name : MAIN
PCB Code : BA41-01129A NANYA
 BA41-01130A HANNST
 BA41-01131A GCE
Dev. Step : M P
Revision : 1.0
T.R. Date : 2009.05.27

Design	CHECK	APPROVAL
SUN XIAO	WU SHIJIANG	BC LEE

■ Owner : SESC Mobile R & D Signature : X

BLOCK DESIGN

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	09/30/2009	TITLE	QINGDAO_ER_LLR MAIN	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0		BLOCK DIAGRAM	PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM	PAGE	2 OF 15

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.

BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails

VDC	Primary DC system power supply (7 to 21V)
CPU_CORE	Core Voltage for CPU
EGFX_CORE	Core Voltage for GPU
P1.05V	VTT for CPU, Cantiga & ICH9-M
P1.1	VTT for N10M_GE1
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
P12.0V_ALW	12.0V 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	Intel LAN

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 0010	D2h	Clock, Unused Clock Output Disable

USB PORT Assign

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

PCI Express Assign

PORT #	ASSIGNED TO
1	Mini Card 1 (WLAN)
2	NC
3	EXPRESS CARD
4	LOM
5	NC
6	NC

LCD Panel Detect (TBD)

Devices	Resolution	PANNEL_DETECT_0(strap0)

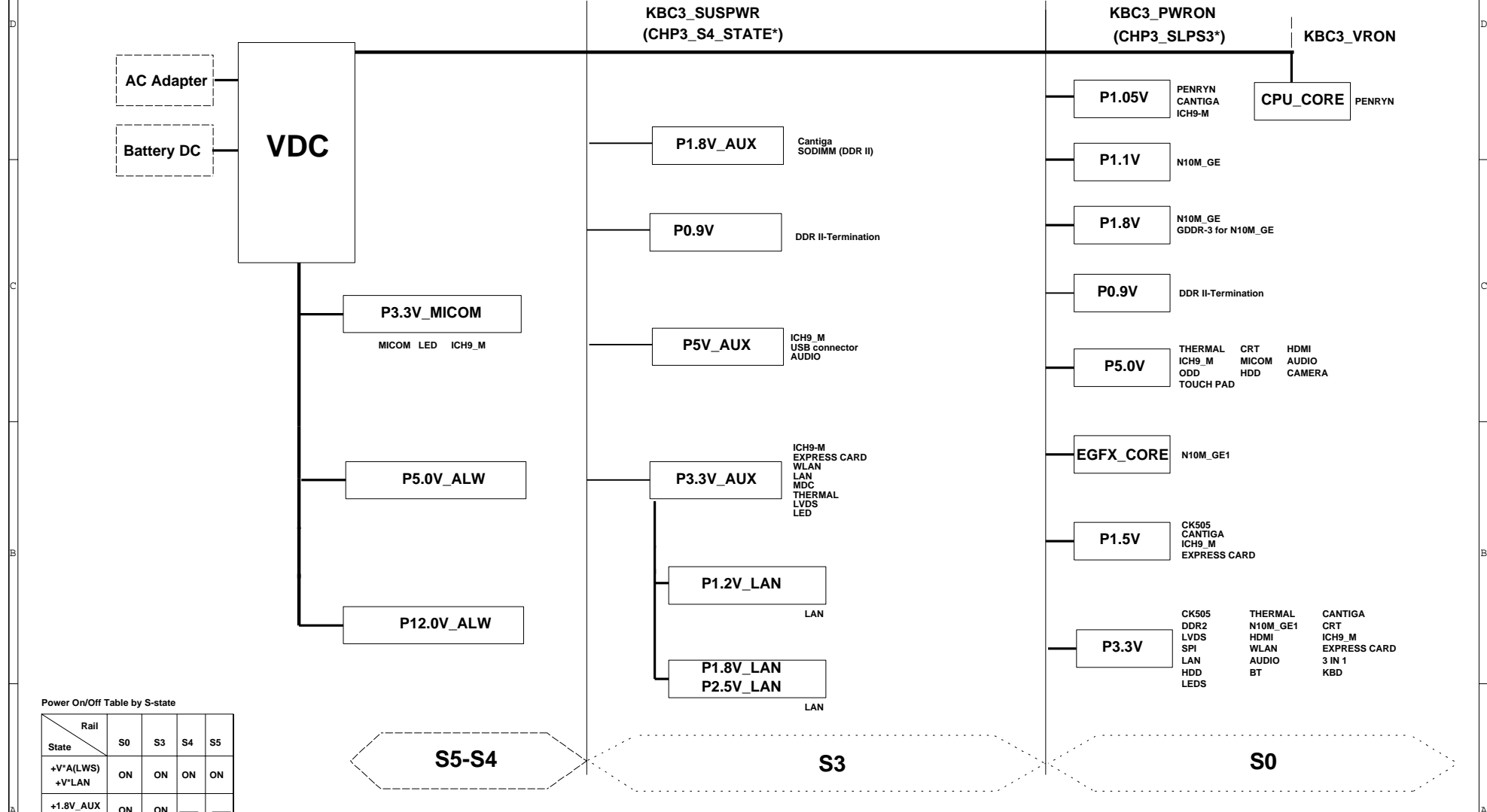
REVISION HISTORY

See rev notes for more information.

DESIGN	DATE	TITLE	SAMSUNG
SUN XIAO	04/30/2009	QINGDAO_ER_LR	ELECTRONICS
WU SHIJIANG	PV	MAIN	
BC LEE	1.0	BOARD INFO	PART NO. BA41-XXXXXX
MODULE CODE	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE 3 OF 15

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

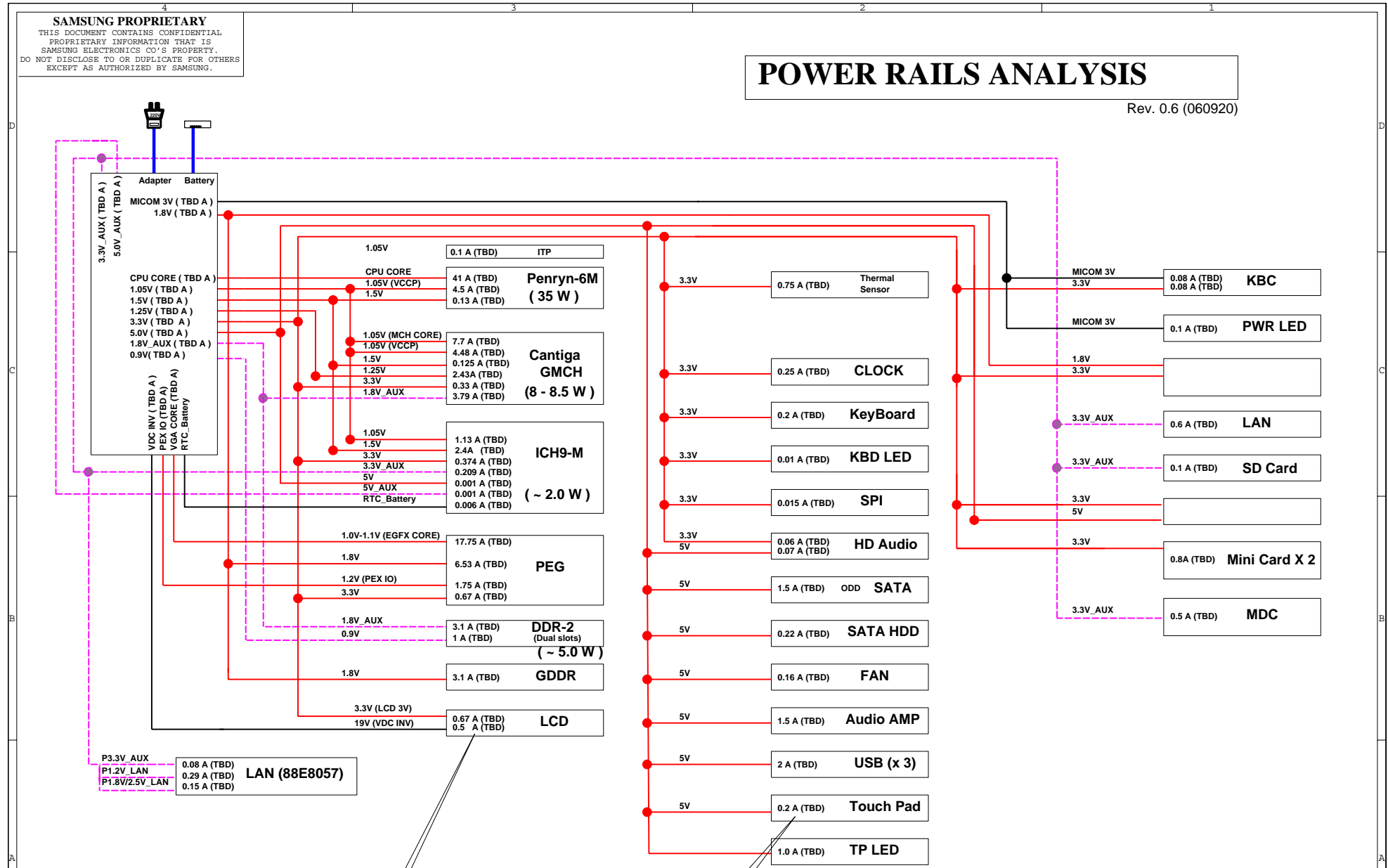
Rail State	S0	S3	S4	S5
+V*(LWS) +V*LAN	ON	ON	ON	ON
+1.8V_AUX +0.9V	ON	ON	---	---
+V*AUX	ON	ON	---	---
+V	ON	---	---	---
+V* (CORE)	ON	---	---	---

DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV		MAIN	
APPROVAL	BC LEE	REV	1.0		POWER DIAGRAM	PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT				

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	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MAIN	BA41-XXXXXX	
APPROVAL	BC LEE	REV	1.0	POWER RAILS		
MODULE CODE		LAST EDIT				

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.

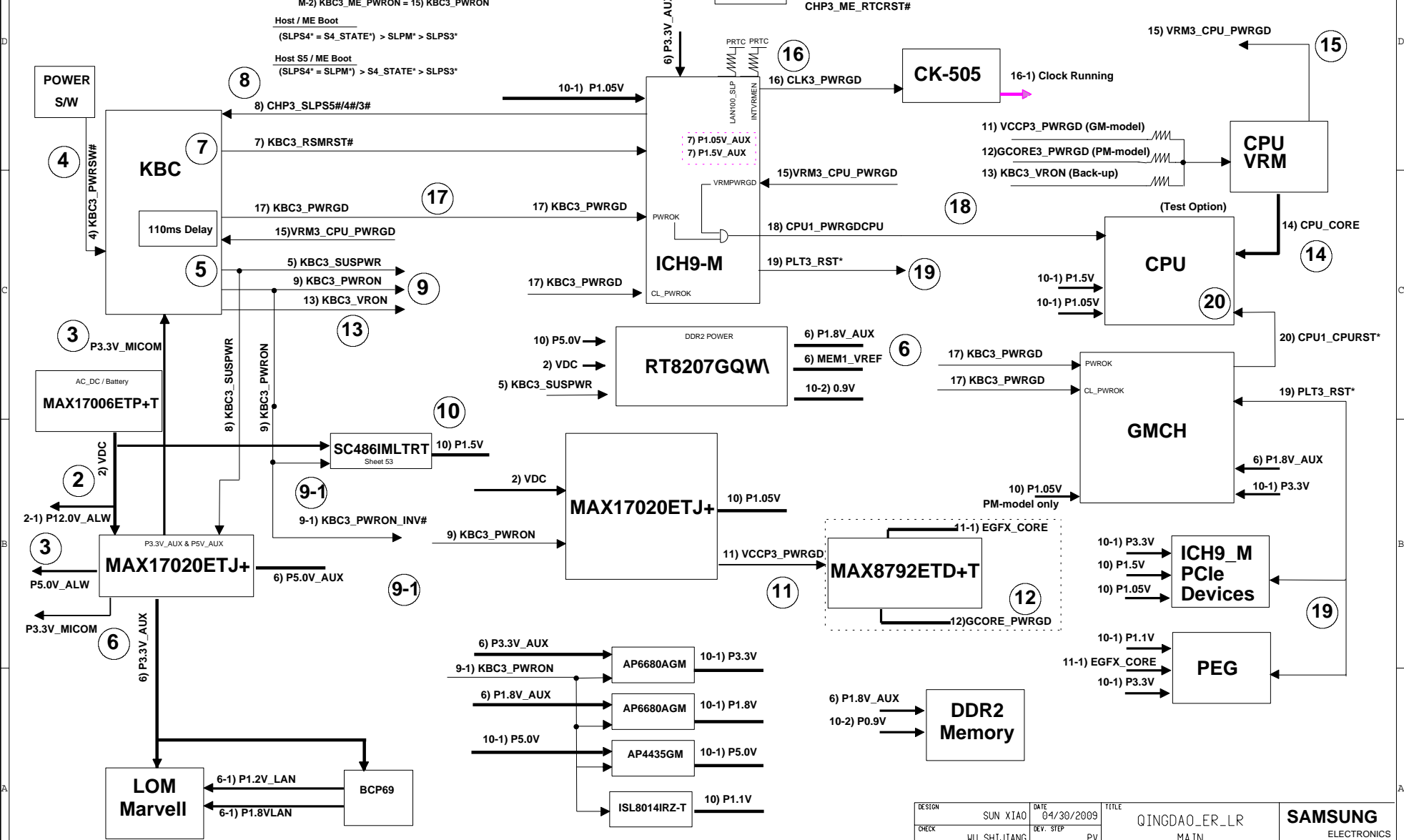
Host Boot / ME Off
 (SLPS4* = S4_STATE*) > (SLPM* = SLPS3*)
 M-1) KBC3_DDR_PWRON (TBD) = 8) KBC3_SUSPWR
 M-2) KBC3_ME_PWRON = 15) KBC3_PWRON

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

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

POWER SEQUENCE

Rev. 0.7

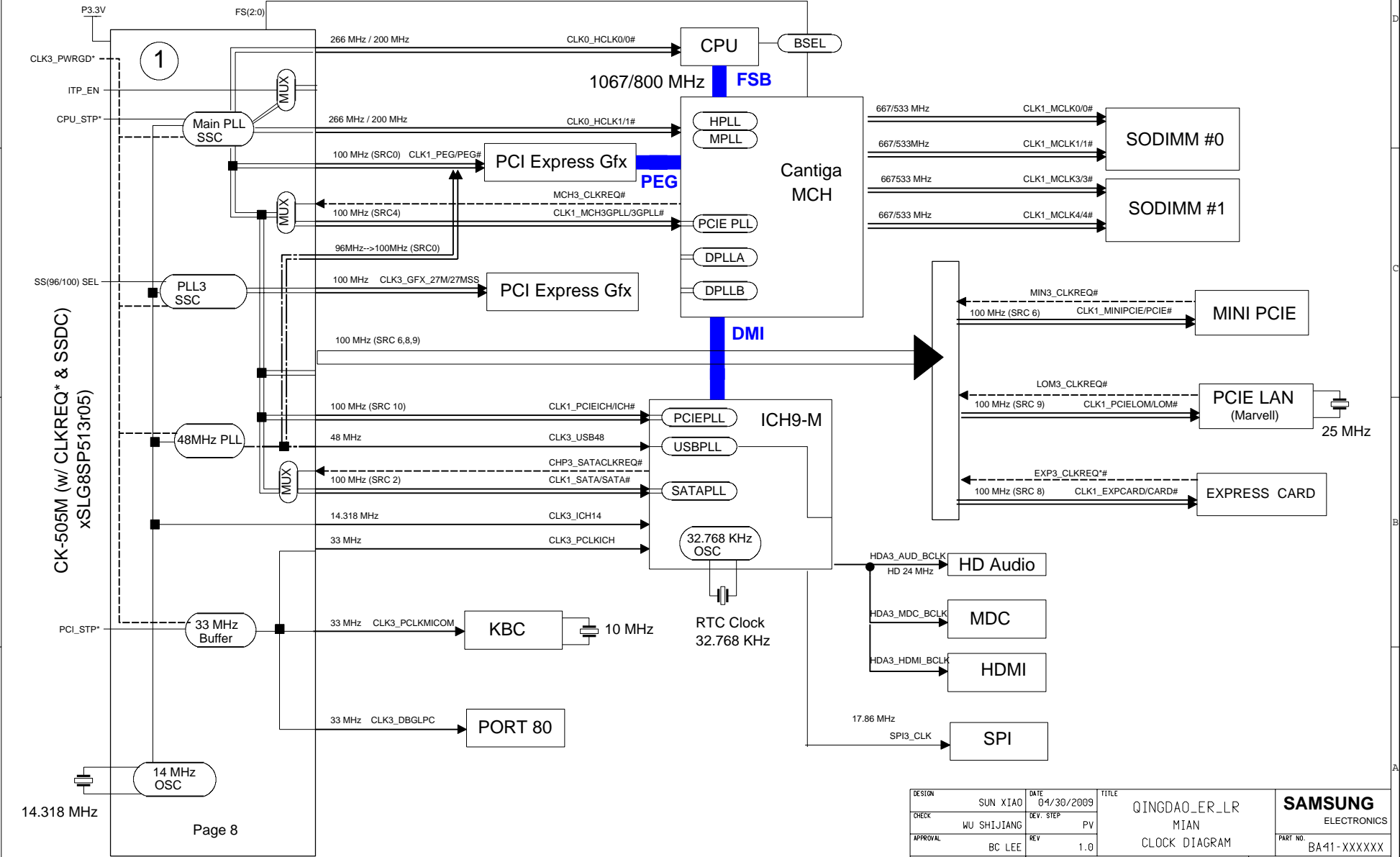


DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR MAIN POWER SEQUENCE	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT				

June 18, 2009 16:06:51 PM PAGE 6 OF 15

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.

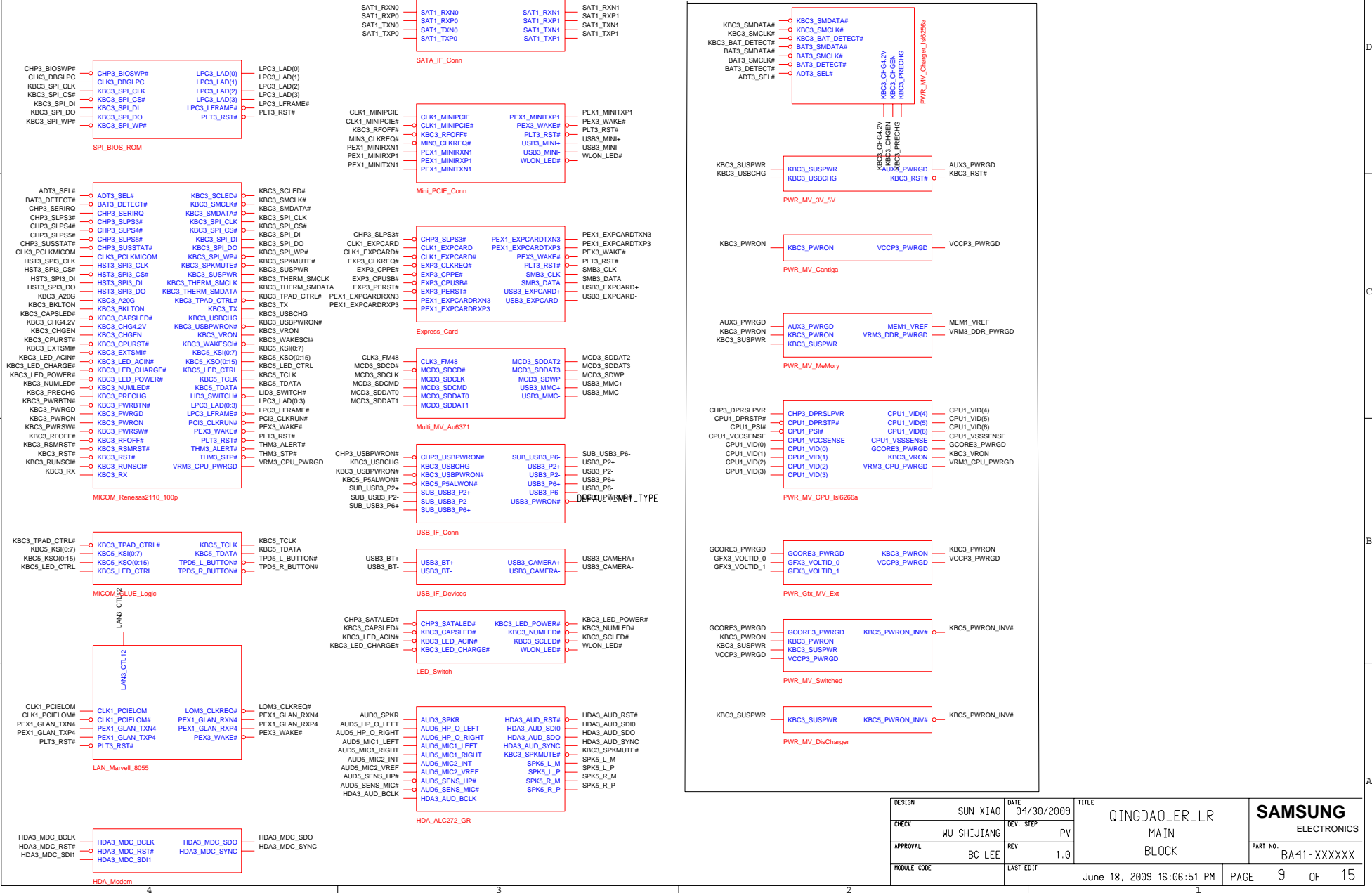
CLOCK DISTRIBUTION Rev. 0.1



14.318 MHz
 Page 8

DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV		MIAN	
APPROVAL	BC LEE	REV	1.0		CLOCK DIAGRAM	PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	7 OF 15

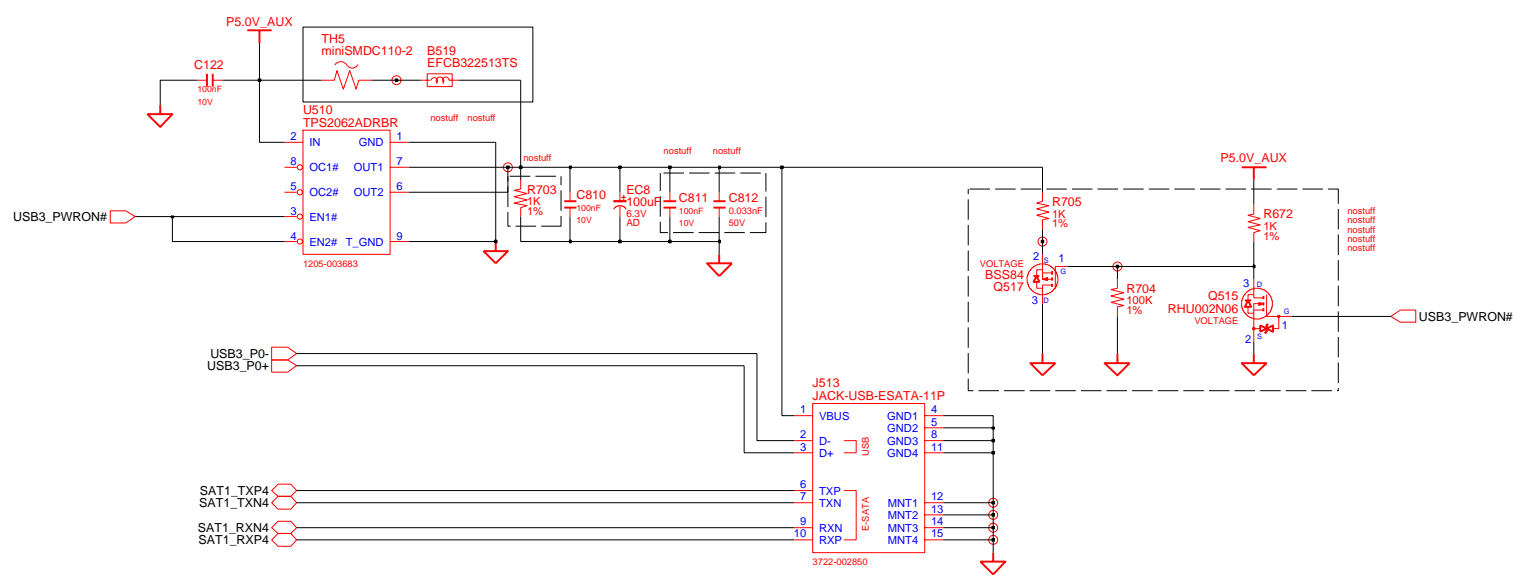
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.



DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MAIN BLOCK	PART NO.	
APPROVAL	BC LEE	REV	1.0		BA41-XXXXXX	
MODULE CODE		LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	9	OF 15

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

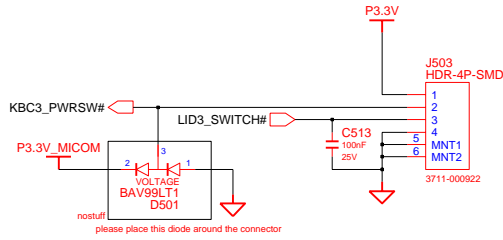


DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS PART NO. BA41-XXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV		MAIN	
APPROVAL	BC LEE	REV	1.0		eSATA	
MODULE CODE		LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	10 OF 15

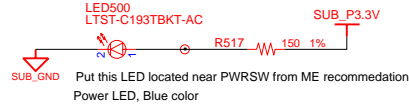
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

SUB Board

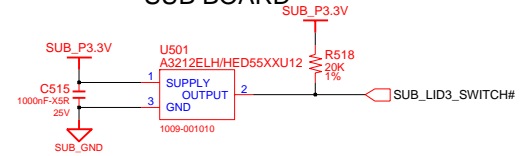
MAIN BOARD



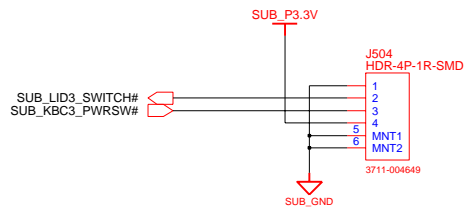
Power LED SUB BOARD



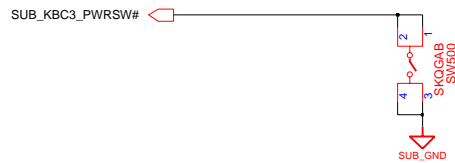
LID_SWITCH SUB BOARD



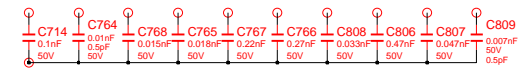
SUB BOARD



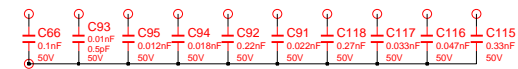
Power Switch SUB BOARD



500- side



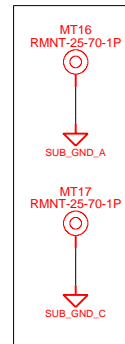
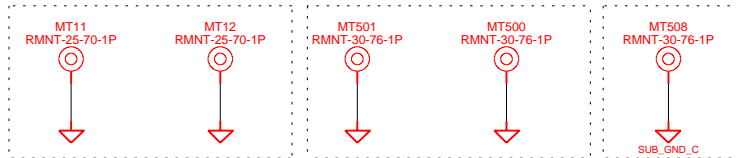
1-499 side



PCB & BOTTOM

KBD & BOTTOM

USB_SUB & BOTTOM



REV1
1 O
2O O3

PCB REVISION CONTROL (ICT)				
NO	CONNECTION	DATE(Y/M/D)	REVISION	STEP
1	N.C.			
2	1-2			
3	2-3			
4	3-1			
5	1-2-3			
6	N.C.			
7	1-2			
8	2-3			
9	3-1			
10	1-2-3			

DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MAIN		
APPROVAL	BC LEE	REV	1.0	PWR SW SUB		PART NO.
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM		BA41-XXXXXX
				PAGE	11	OF 15

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.

- CPU1_NMI
- CPU1_TCK
- CPU1_TDI
- CPU1_TMS
- FANS_VDD
- SMB3_CLK
- ADT3_SEL#
- CLK3_FM48
- CPU1_ADS#
- CPU1_BNR#
- CPU1_HIT#
- CPU1_INTR
- CPU1_PSI#
- CPU1_SMI#
- GFX3_HCLK
- KBC3_A20G
- KBC3_VRON
- KBC3_TCLK
- LCD3_BRIT
- MCD3_SDWP
- MEM1_VREF
- PLT3_RST#
- SMB3_DATA
- THM3_STP#
- WOLON_LED#
- AUX3_PWRGD
- CLK3_ICH14
- CLK3_PWRGD
- CLK3_USB48
- CPU1_A20M#
- CPU1_BPR#
- CPU1_BREQ#
- CPU1_DBSY#
- CPU1_DPWR#
- CPU1_DRDY#
- CPU1_FERR#
- CPU1_INIT#
- CPU1_LOCK#
- CPU1_TRDY#
- CPU1_TRST#
- CRT3_HSYNC
- CRT3_VSYNC
- CRT5_HSYNC
- CRT5_VSYNC
- DRAM_RSTA#
- EXP3_CPPE#
- GFX3_HDATA
- GFX3_ROMS1
- GFX3_ROMS0
- KBC3_CHGEN
- KBC3_PWRGD
- KBC3_PWRON
- KBC3_TDATA
- MCD3_SDCC#
- MCD3_SDCLK
- MCD3_SDCMD
- MCH1_HVREF
- PCI3_INTA#
- PCI3_INTB#
- PCI3_INTC#
- PCI3_INTD#
- PCI3_IRDY#
- PCI3_PERR#
- PCI3_SERR#
- PCI3_STOP#
- PCI3_TRDY#
- PEX3_WAKE#
- BAT3_SMCLK#
- CHP3_GPIC18
- CHP3_GPIC20
- CHP3_SERIRQ
- CHP3_SLP4#
- CHP3_SLP5#
- CLK3_DBGLPC
- CPU1_DPSLP#
- CPU1_IGNNE#
- CPU1_VID(0)
- CPU1_VID(1)
- CPU1_VID(2)
- CPU1_VID(3)
- CPU1_VID(4)
- CPU1_VID(5)
- CPU1_VID(6)
- CRT3_DDCCLK
- CRT5_DDCCLK
- EXP3_CPUSB#
- EXP3_PERST#
- GFX3_STRAP2
- KBC3_BKLTON
- KBC3_PRECHG
- KBC3_PWRSW#
- KBC3_RF0FF#
- KBC3_SCLE#
- KBC3_SMCLK#
- KBC3_SUSPWR
- LCD3_BKLTON
- LPC3_LAD(0)
- LPC3_LAD(1)
- LPC3_LAD(2)
- LPC3_LAD(3)
- MCD3_SDDAT1
- MCD3_SDDAT2
- MCD3_SDDAT3
- PCI3_FRAME#
- PCI3_FLOCK#
- PEG3_BKLTEN
- SMB3_ALERT#
- THM3_ALERT#
- USBS3_PWRON#
- VCCP3_PWRGD
- BAT3_DETECT#
- BAT3_SMDATA#
- CHP3_BIOSWIP#
- CHP3_CPUSTP#
- CHP3_PCISTP#
- CLK3_GFX_27M
- CLK3_PCLKICH
- CPU1_THRMTRIP#
- CPU1_DSTBNO#
- CPU2_THERMDA
- CPU2_THERMDC
- CRT3_DDCDATA
- CRT5_DDCDATA
- EXP3_CLKREQ#
- FAN3_FDBACK#
- GORE3_PWRGD
- GFX3_ROMSCLK
- GFX3_THERMDN
- GFX3_THERMDP
- HDA3_MDC_SDO
- KBC3_CHG4_2V
- KBC3_CPURST#
- KBC3_EXTSMI#
- KBC3_NUMLED#
- KBC3_PWRBTN#
- KBC3_RSMRST#
- KBC3_RUNSCI#
- KBC3_SMDATA#
- KBC3_SPKMUTE#
- LID3_SWITCH#
- LOW3_CLKREQ#
- LPC3_LFRAME#
- MCH1_HXSWING
- MCH3_CLKREQ#
- MCH3_EXITTS#
- MCH3_EXITTS1#
- MIN3_CLKREQ#
- PCI3_CLKRUN#
- PCI3_DEVSEL#
- CHP3_CL_CLK_0
- CHP3_DPRSLPVR
- CHP3_PM_SYNC#
- CHP3_SATALED#
- CHP3_SUSTAT#
- CPU1_PWRGDCPU
- CPU1_VCCSENSE
- CPU1_VSSSENSE
- GFX3_VOLTID_0
- GFX3_VOLTID_1
- HDA3_MDC_BCLK
- HDA3_MDC_RST#
- HDA3_MDC_SD1
- HDA3_MDC_SYNC
- KBC3_CAPLE#
- KBC3_LED_CTRL
- KBC3_WAKESCI#
- KBC5_P5ALWON#
- LCD3_EDID_CLK
- MCH3_ICHSYNC#
- PEG3_HDMI_CLK
- PEG3_HPD_HDMI
- PEG3_LCDVDDON
- PEG5_HDMI_CLK
- CHP3_BIOS_CR#
- CHP3_CL_DATA_0
- CHP3_CL_RST_DM
- CHP3_INTRUDER#
- CHP3_USBPWRON#
- CLK3_PCLKMICOM
- CPU1_THRMTRIP#
- CPU3_THRMTRIP#
- ITP3_DBRRESET#
- KBC3_LED_ACIN#
- KBC3_USBPWRON#
- LCD3_EDID_DATA
- PEG3_HDMI_DATA
- PEG5_HDMI_DATA
- TPD5_L_BUTTON#
- TPD5_R_BUTTON#
- VRM3_CPU_PWRGD
- VRM3_DDR_PWRGD
- CHP3_ME_RTCSRST#
- CLK3_GFX_27M_SS
- KBC5_PWRON_INV#
- CHP3_SATACLKREQ#
- KBC3_LED_CHARGE#
- KBC3_THERM_SMCLK
- SUB_LID3_SWITCH#
- KBC3_THERM_SMDATA
- P3.3V_MICOM
- SUB_GND
- SUB_GND_A
- SUB_GND_C
- SUB_P3.3V
- P5.0V_AUX

DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV	MAIN		
APPROVAL	BC LEE	REV	1.0	TP		
MODULE CODE		LAST EDIT	June 18, 2009 16:06:51 PM			
					PAGE	12 OF 15

4

3

2

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.

- AUD5_MIC2_INT
- HDA3_AUD_SDO
- CPU1_BSEL0
- CPU1_BSEL1
- CPU1_BSEL2
- CPU1_HITM#

- GFX3_THERM#
- KBC3_SPL_DI
- KBC3_SPL_DO
- KBC3_USBCHG
- CPU1_STPCLK#

- HST3_SPI3_DI
- HST3_SPI3_DO
- KBC3_SPI_CLK
- KBC3_SPI_CS#
- KBC3_SPL_WP#

D

D

C

C

B

B

A

A

4

3

2

1

4

3

2

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.

- HDA3_AUD_BCLK
- HDA3_AUD_SDI0
- HDA3_AUD_SYNC
- HST3_SPI3_CLK
- HST3_SPI3_CS#
- VGA5_HDMI_HPD
- AUD5_HP_O_LEFT
- AUD5_MIC1_LEFT
- AUD5_HP_O_RIGHT
- AUD5_MIC1_RIGHT
- KBC3_TPAD_CTRL#

D

D

C

C

B

B

A

A

4

3

2

1

4

3

2

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.

D

D

C

C

B

B

A

A

4

3

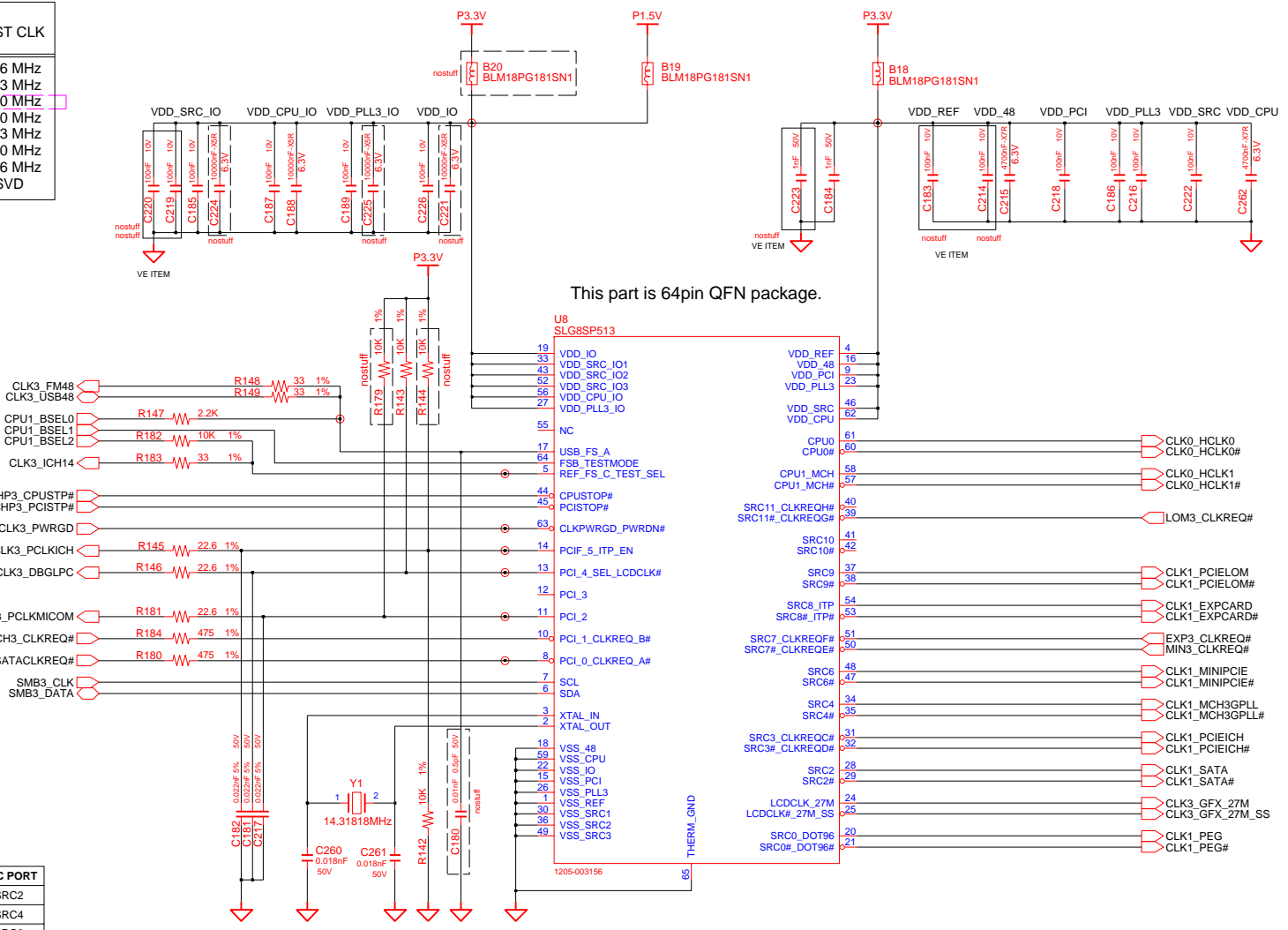
2

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.

CK505M

FSA	FSB	FSC	HOST CLK
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.

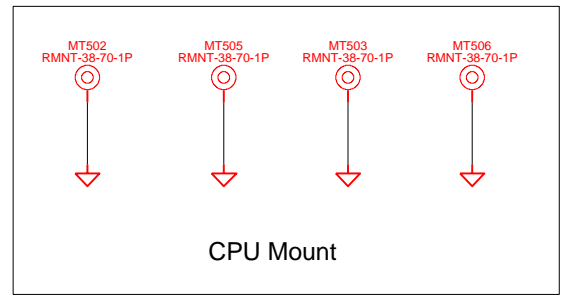
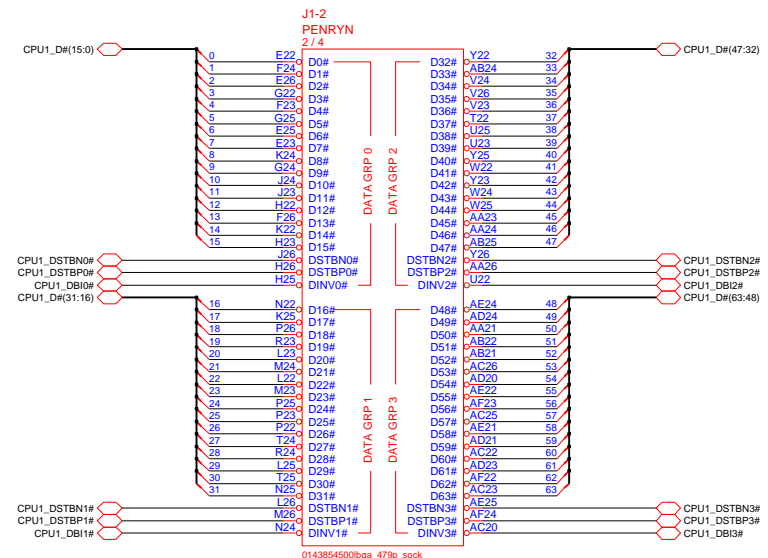
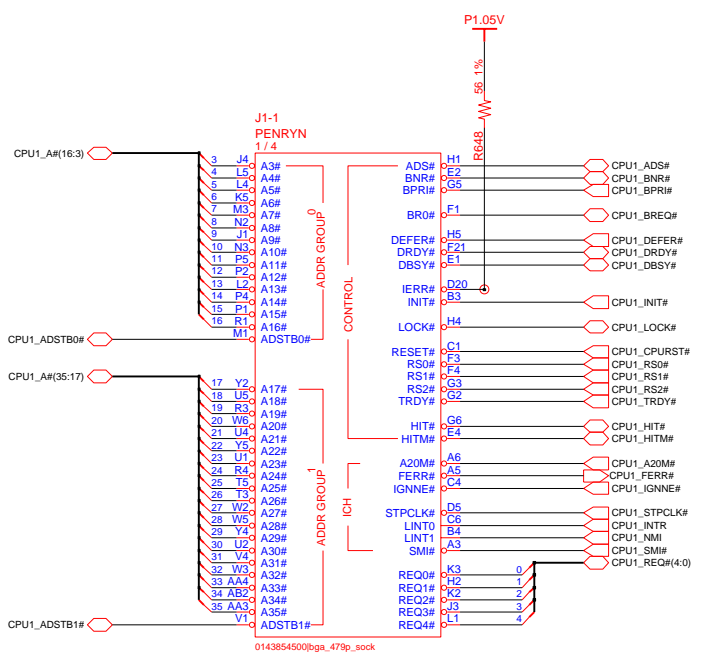
CLK REQ	DEVICE	SRC PORT
CLK REQ A	SATA	SRC2
CLK REQ B	GMCH	SRC4
CLK REQ E	MINI CARD	SRC6
CLK REQ F	EXP3_CLKREQ#	SRC8

SEL_LCDCLK*	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

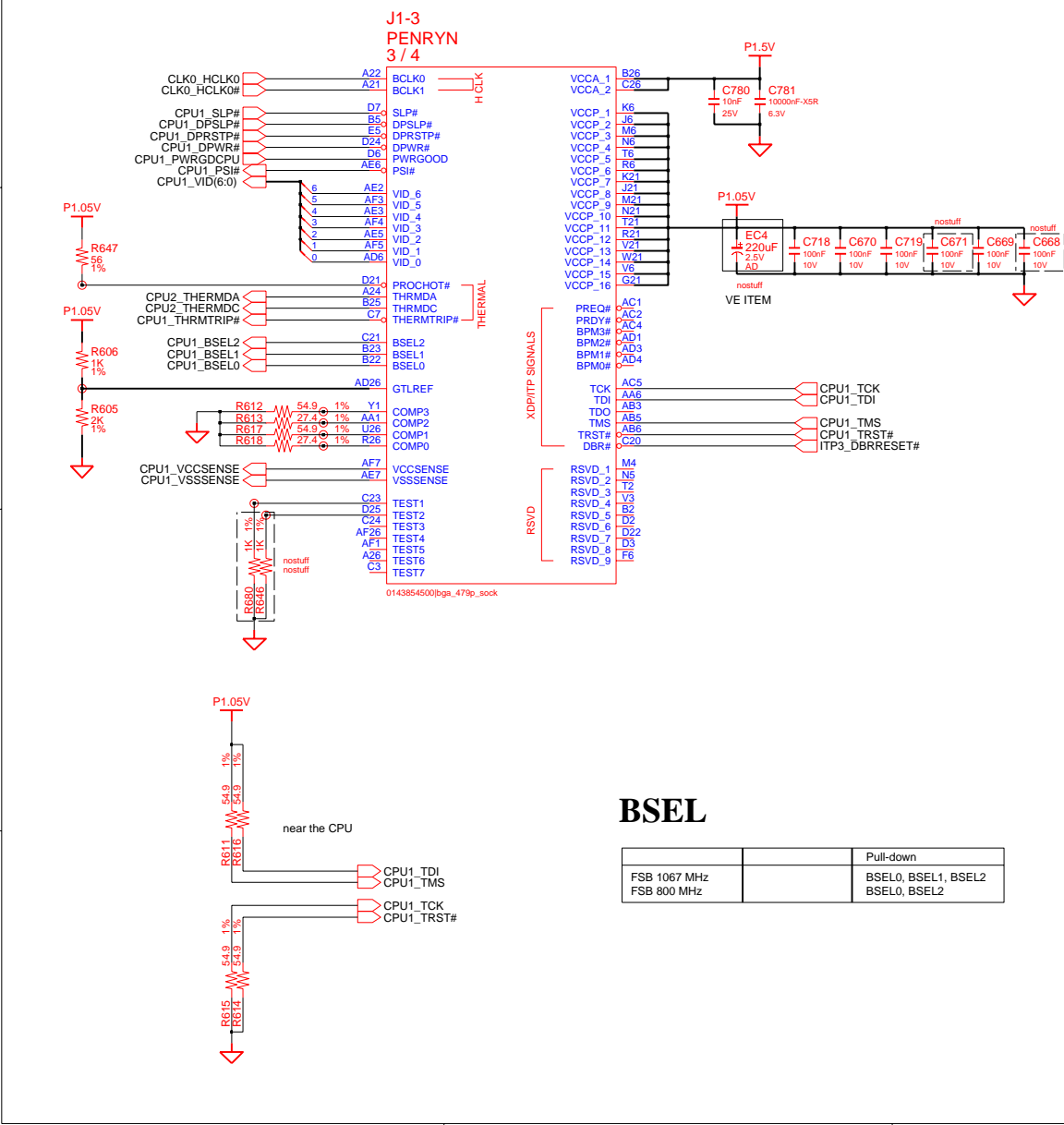
DRAWN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	Main_Clock_Circuit		
APPROVAL	BC LEE	REV	1.0	CK_Clock_505M		PART NO. BA41-XXXXXX
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1	OF 1

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.



DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	REV. STEP	PV	CPU	BA41-XXXXXX	
APPROVAL	BC LEE	REV	1.0	PENRYN (1/3)	PART NO.	
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1	OF 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.



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 1 0 0	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 1	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 1 0	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 1 0 1 0 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 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 1 0 0	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 1	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 1 0	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 0 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 0 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 0 0 1	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 0	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 1	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 1 0	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 1	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 1	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 1	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 1 0	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 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 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 1 0 0 0	0.5125 V	1 1 1 1 0 0 0	0.0000 V
0 1 0 1 0 0 0	1.0000 V	1 0 0 1 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

Active: DPRSLPVR 0, DPRSTP* 1, PSI2* 0 or 1
 Deeper Slp: DPRSLPVR 1, DPRSTP* 0, PSI2* 0 or 1

**1111111*: 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=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.

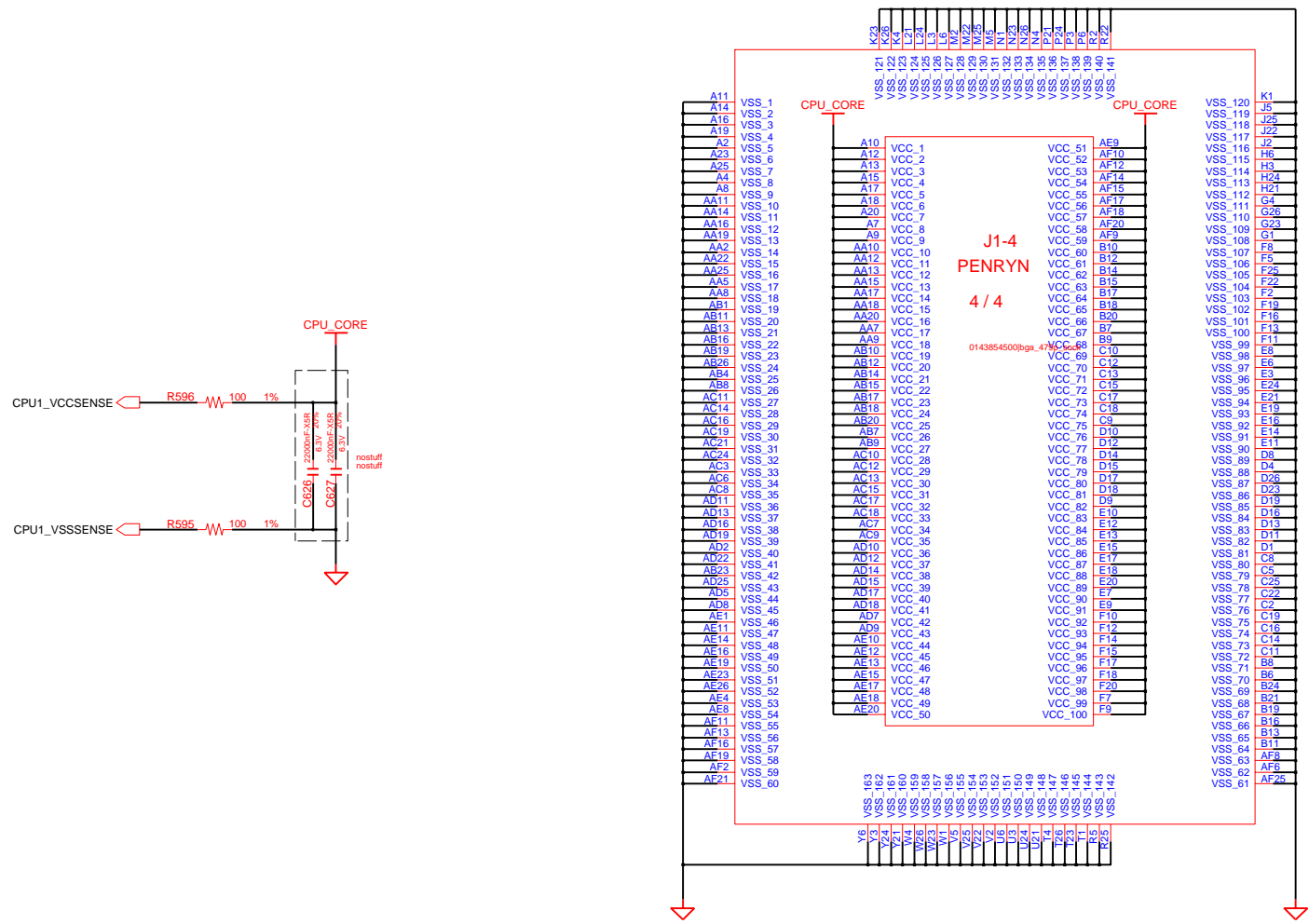
GND test points within 100mil of the VCC/VSSsense at the end of the line. Route the VCC/VSSsense as a Zo=55ohm traces with equal length. Observe 3:1 spacing b/w VCC/VSSsense lines and 25mil away (preferred 50mil) from any other signal. And GND via 100mil away from each of the VCC/VSS test point vias.

BSEL

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

DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJANG	DEV. STEP	PV		CPU	
APPROVAL	BC LEE	REV	1.0		PENRYN (2/3)	PART NO. BA41-XXXXXX
MODULE CODE	undef ined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	2	OF 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.

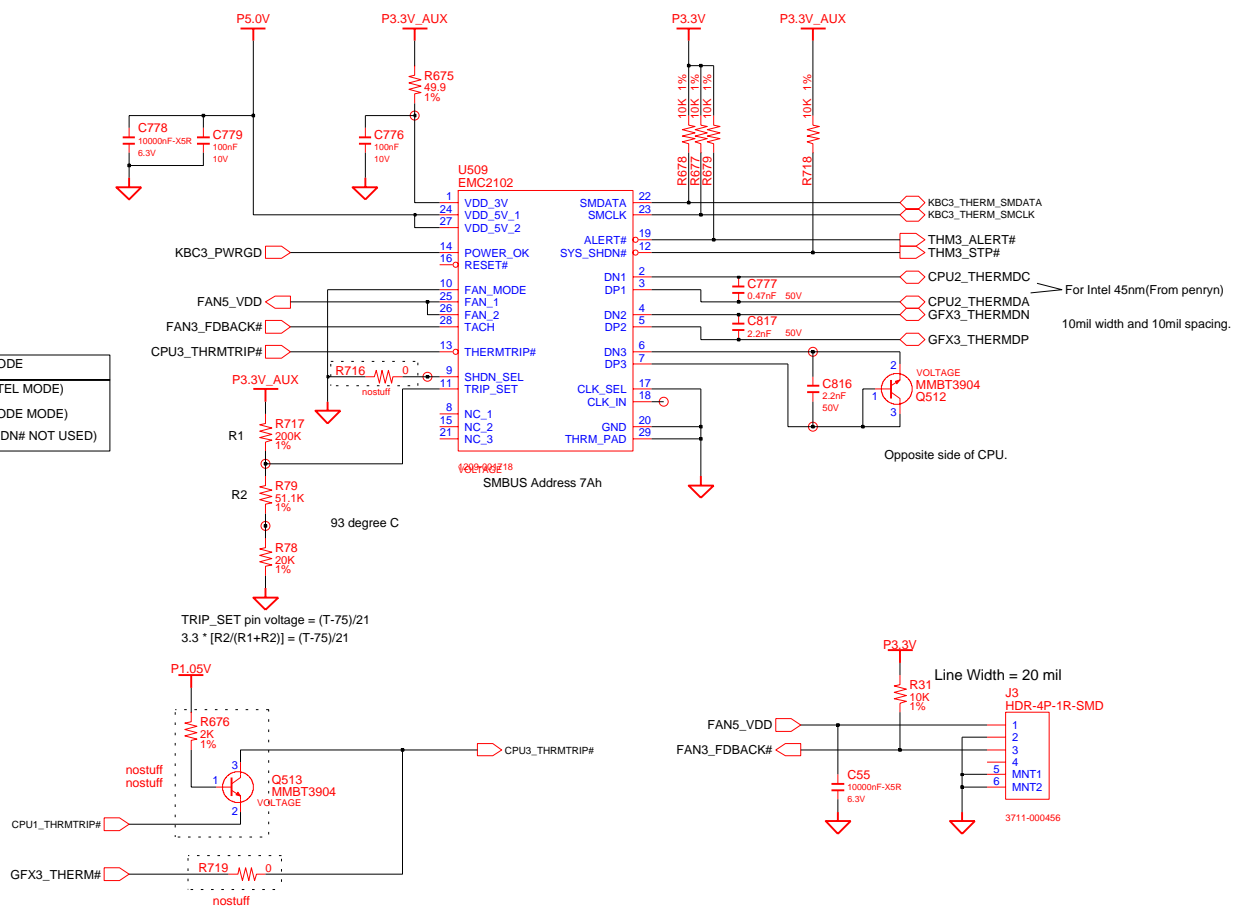


DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV		CPU	
APPROVAL	BC LEE	REV	1.0		PENRYN (3/3)	
MODULE CODE	undef ined	LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE 3 OF 3	

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.

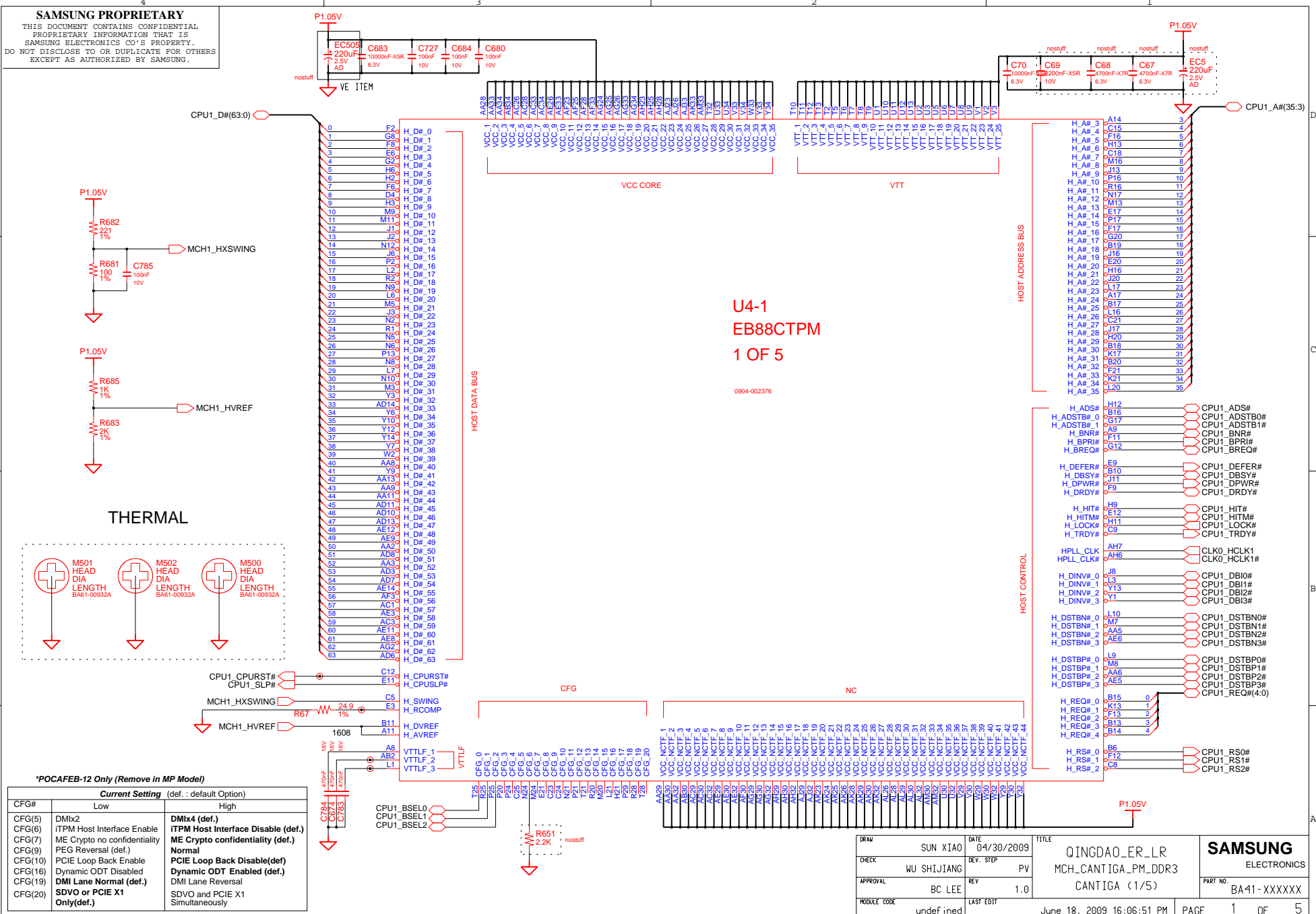
THERMAL SENSOR & FAN CONTROL

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



DESIGN	XIAOHONG, ZHANG	DATE	12/3/2008	TITLE	QingDao_Ext	SAMSUNG ELECTRONICS
CHECK	RUJIN, ZHENG	DEV. STEP	ADV1	THERMAL SENSOR EMC2102		
APPROVAL	BC, LEE	REV	1.0			PART NO. BA41-xxxxxA
MODULE CODE		LAST EDIT	December, 3, 2008 12:55:11 PM	PAGE	1	OF 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.

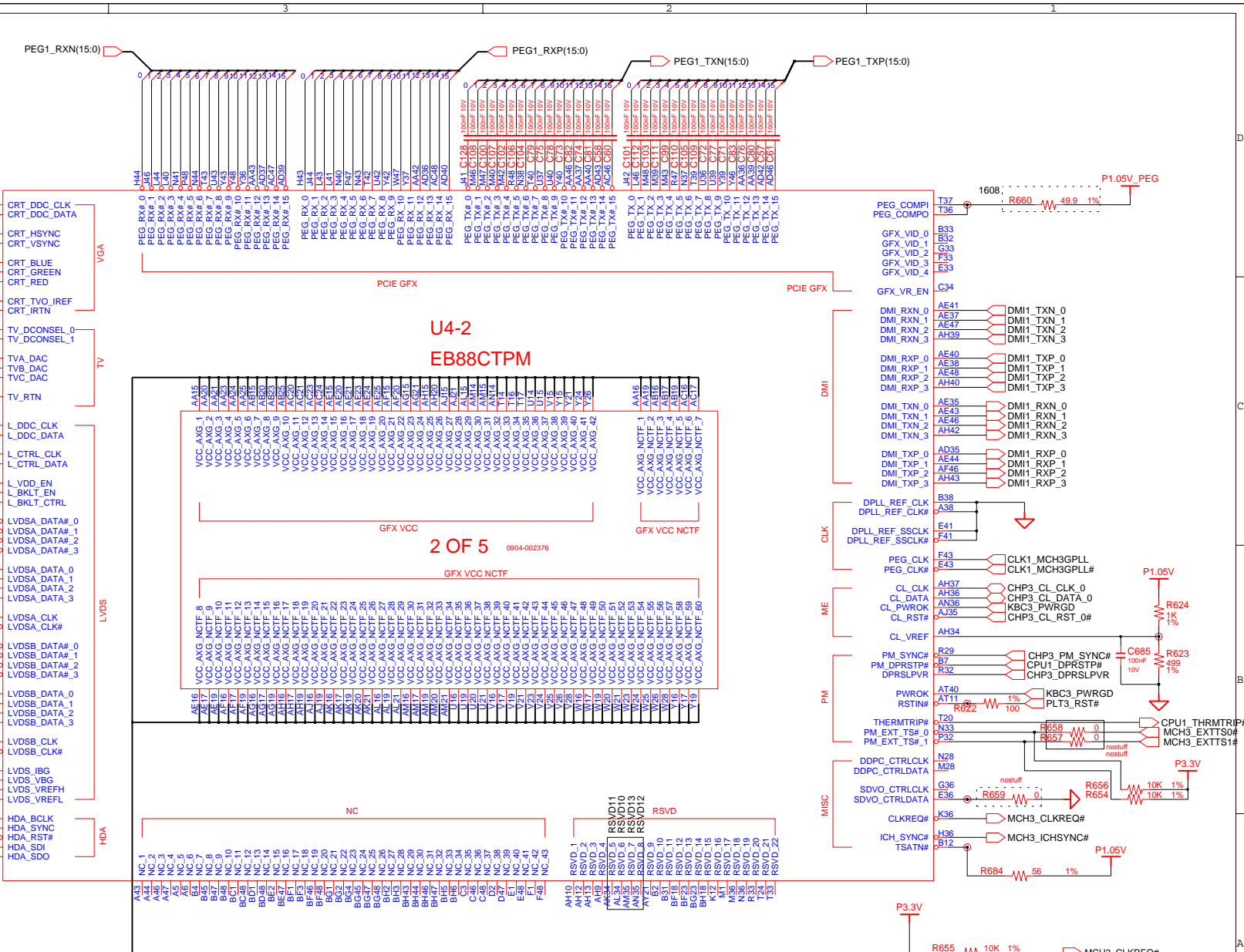


***POCAFE12 Only (Remove in MP Model)**

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

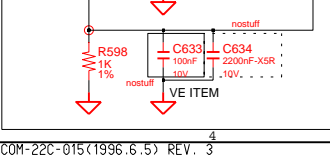
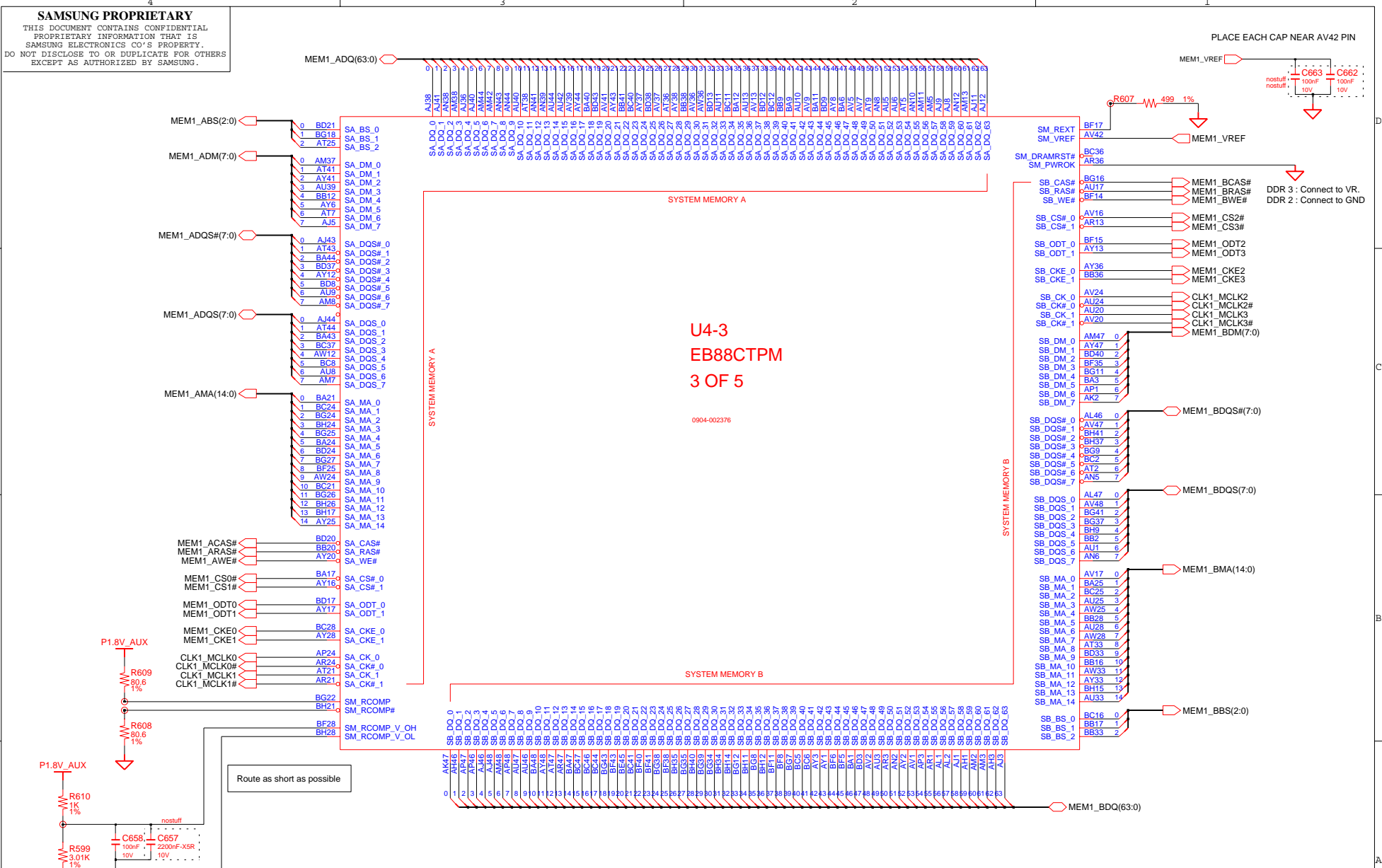
DATE	SUN XIAO	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MCH_CANTIGA_PM_DDR3	
APPROVAL	BC LEE	REV	1.0	CANTIGA (1/5)	PART NO.
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1 OF 5

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.



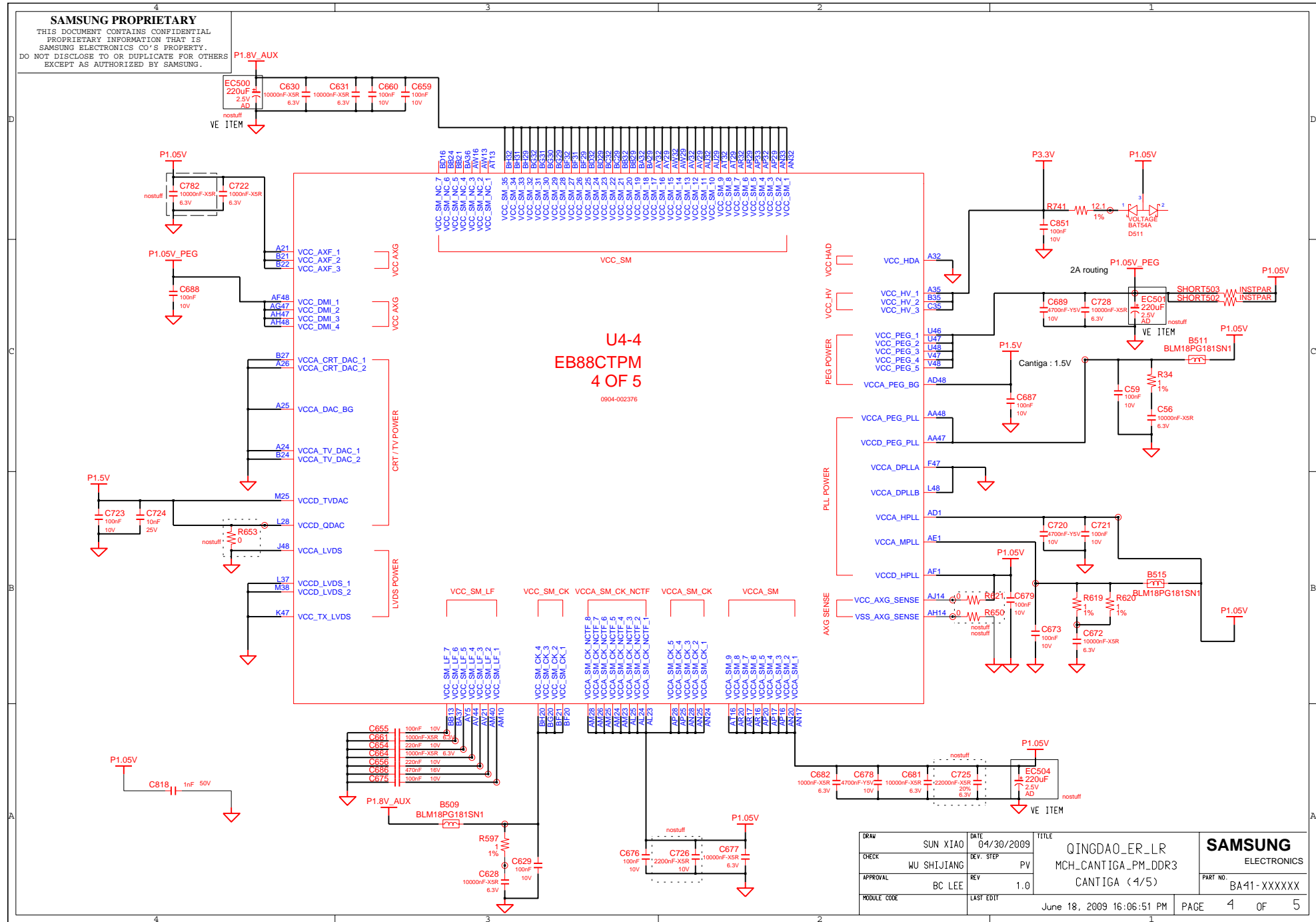
DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MCH_CANTIGA_PM_DDR3	CANTIGA (2/5)	
APPROVAL	BC LEE	REV	1.0			PART NO. BA41-XXXXXX
MODULE CODE	undef ined	LAST EDIT		June 18, 2009 16:06:51 PM	PAGE	2 OF 5

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.



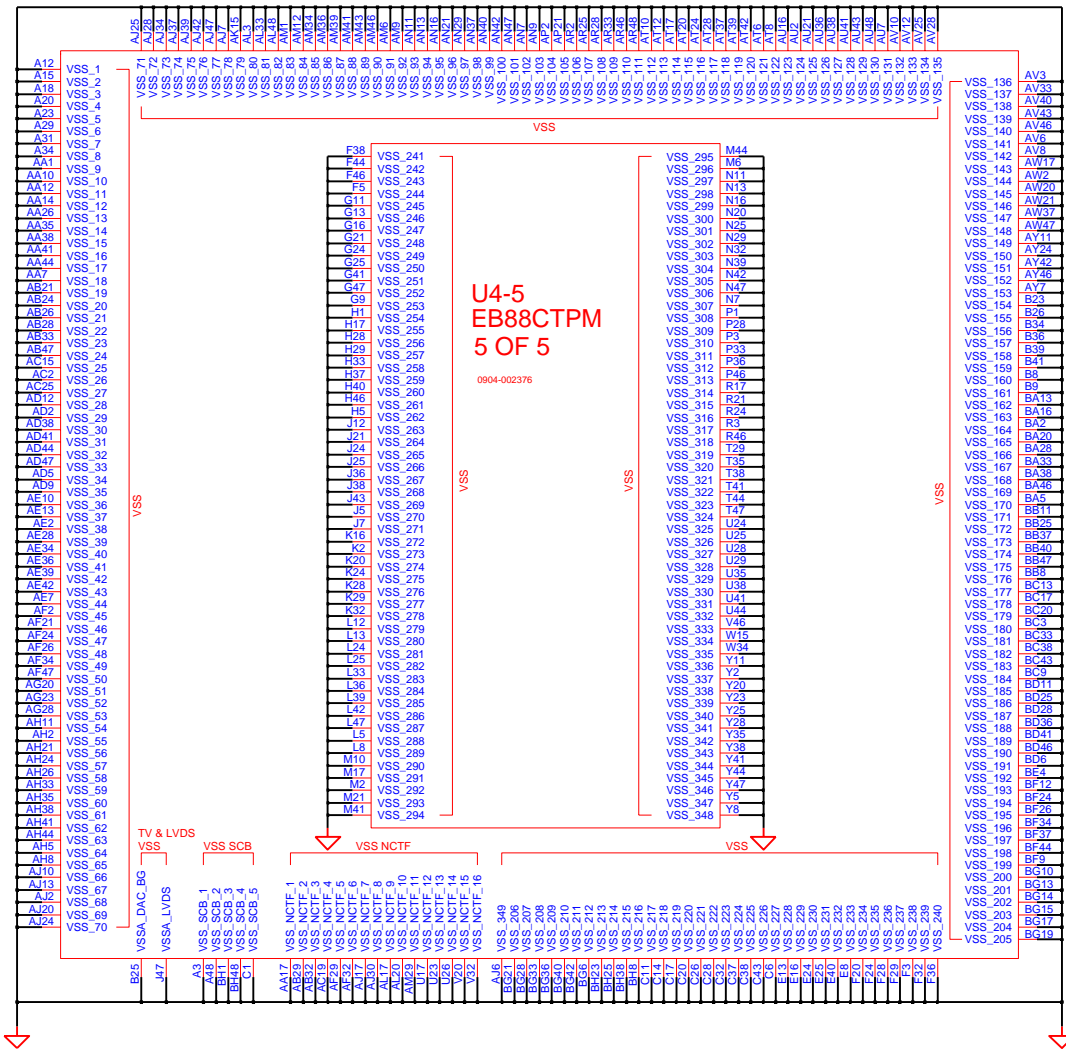
DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MCH_CANTIGA_PM_DDR3	PART NO.	
APPROVAL	BC LEE	REV	1.0	CANTIGA (3/5)	BA41-XXXXXX	
MODULE CODE		LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	3 OF 5	

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	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MCH_CANTIGA_PM_DDR3	PART NO.	
APPROVAL	BC LEE	REV	1.0	CANTIGA (4/5)		
MODULE CODE		LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	4 OF 5

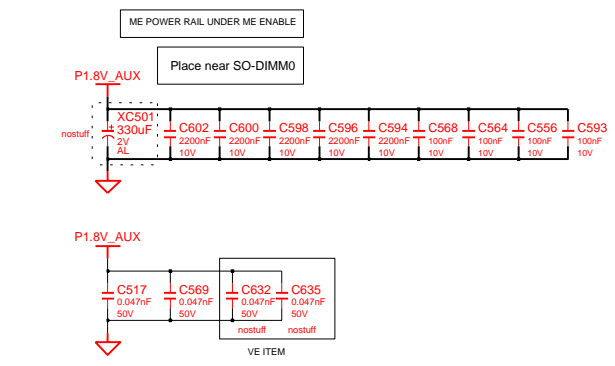
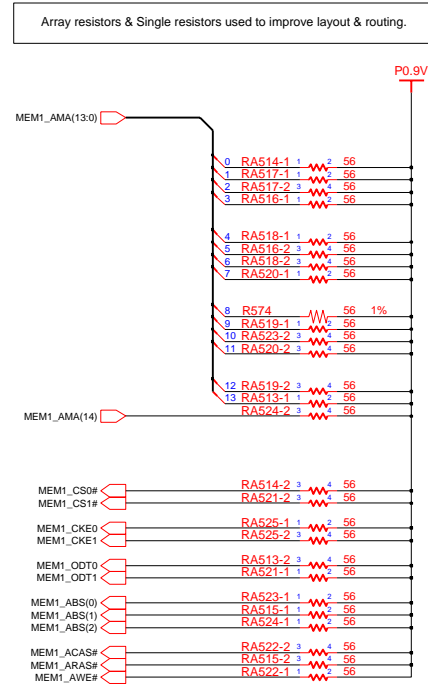
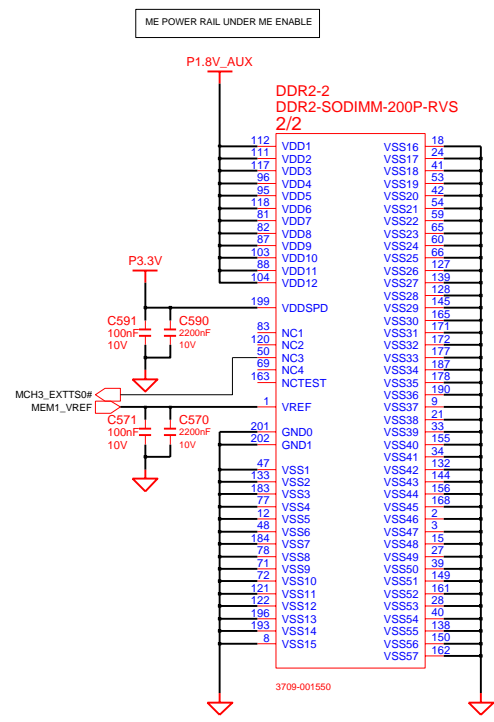
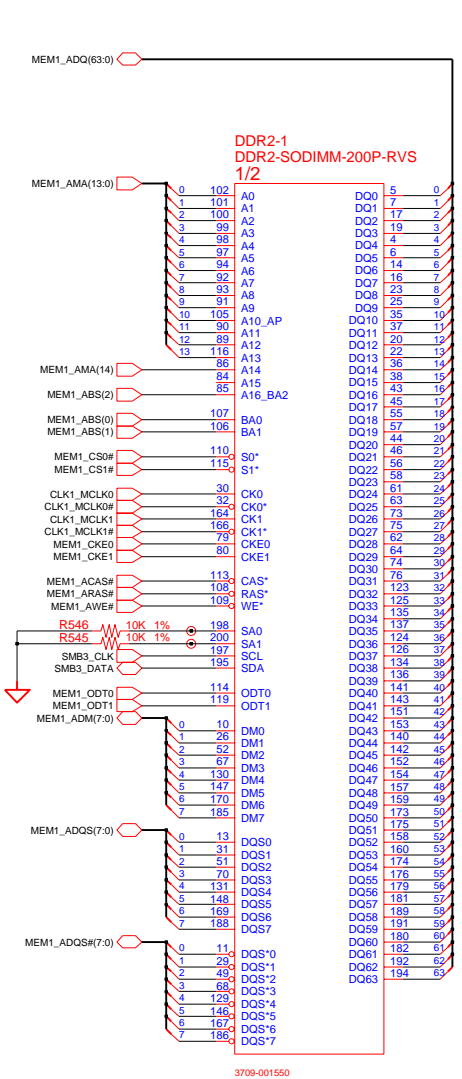
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.



DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MCH_CANTIGA_PM_DDR3	CANTIGA (5/5)	
APPROVAL	BC LEE	REV	1.0			PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM	PAGE	5 OF 5

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.

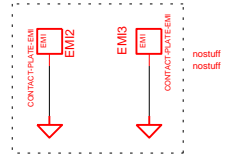
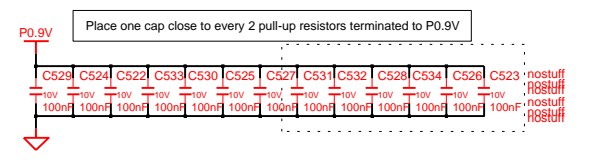
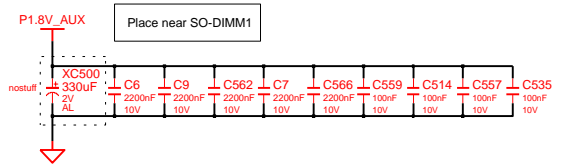
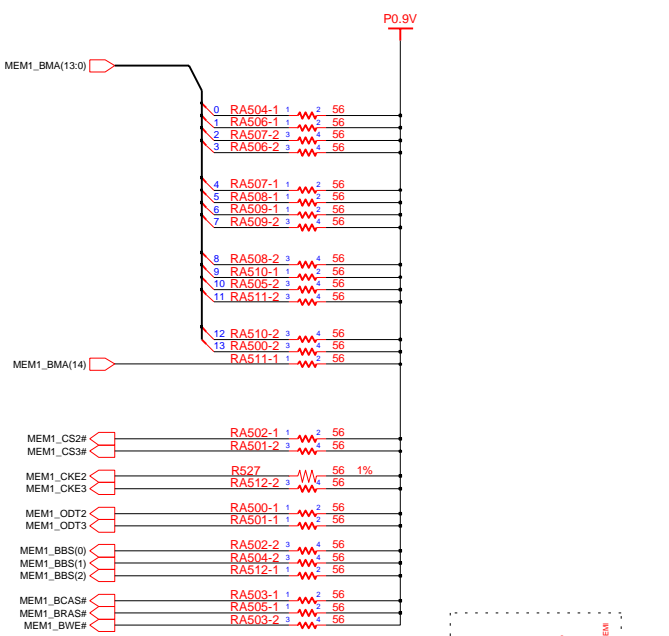
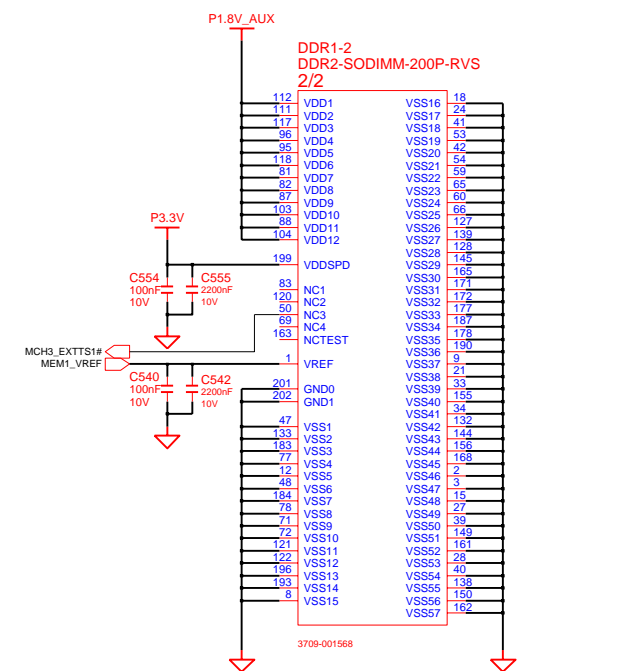
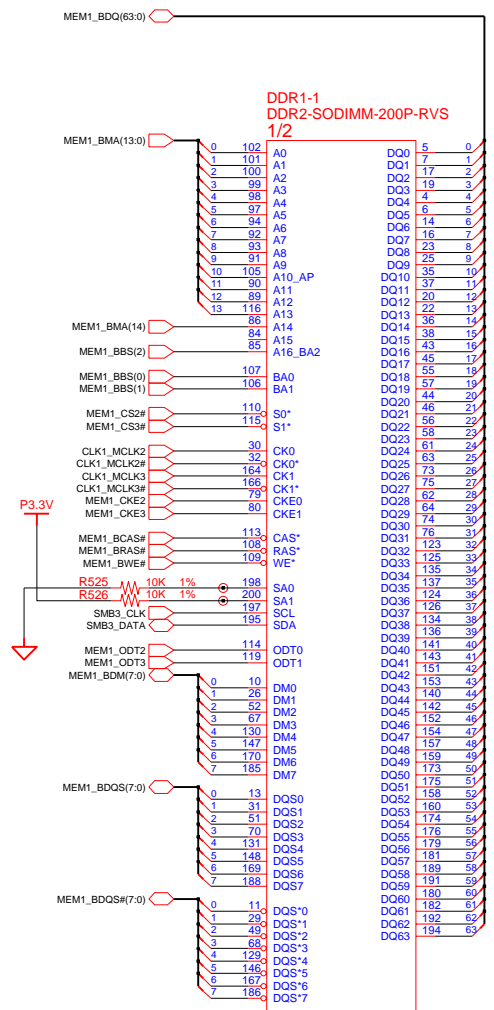
DDR SO-DIMM #0



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.

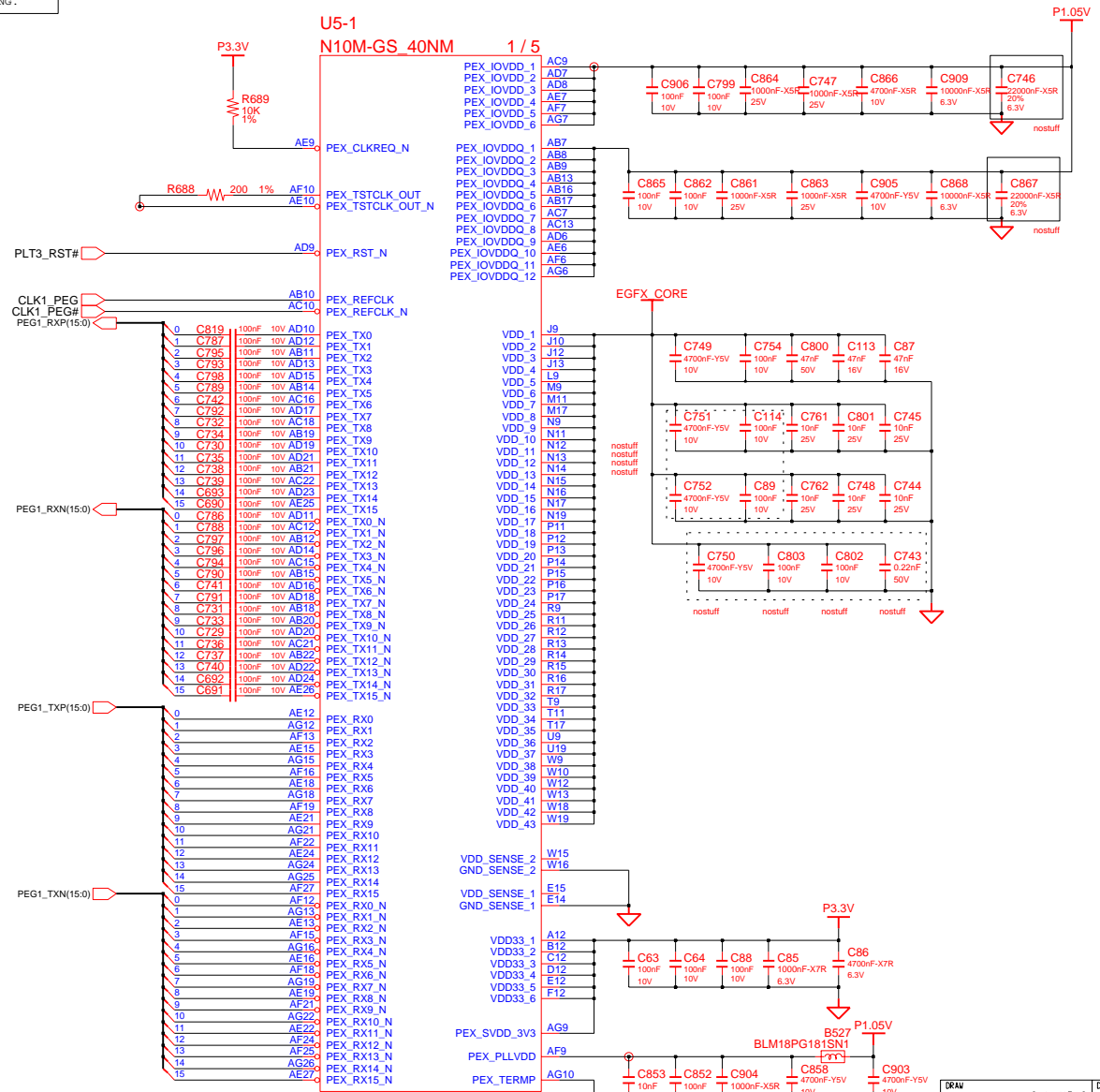
DDR SO-DIMM #1

Array resistors & Single resistors used to improve layout & routing.



DRAW	XiaoHong Zheng	DATE	12/03/2008	TITLE	QingDao_Ext	SAMSUNG ELECTRONICS
CHECK	RuJin Zheng	REV. STEP	ADV1	SODIMM_DDR2		
APPROVAL	BC LEE	REV	1.0	SODIMM_DDR2 #2		PART NO.
MODULE CODE		LAST EDIT	December 03, 2008 20:55:25 PM	PAGE		2 OF 2

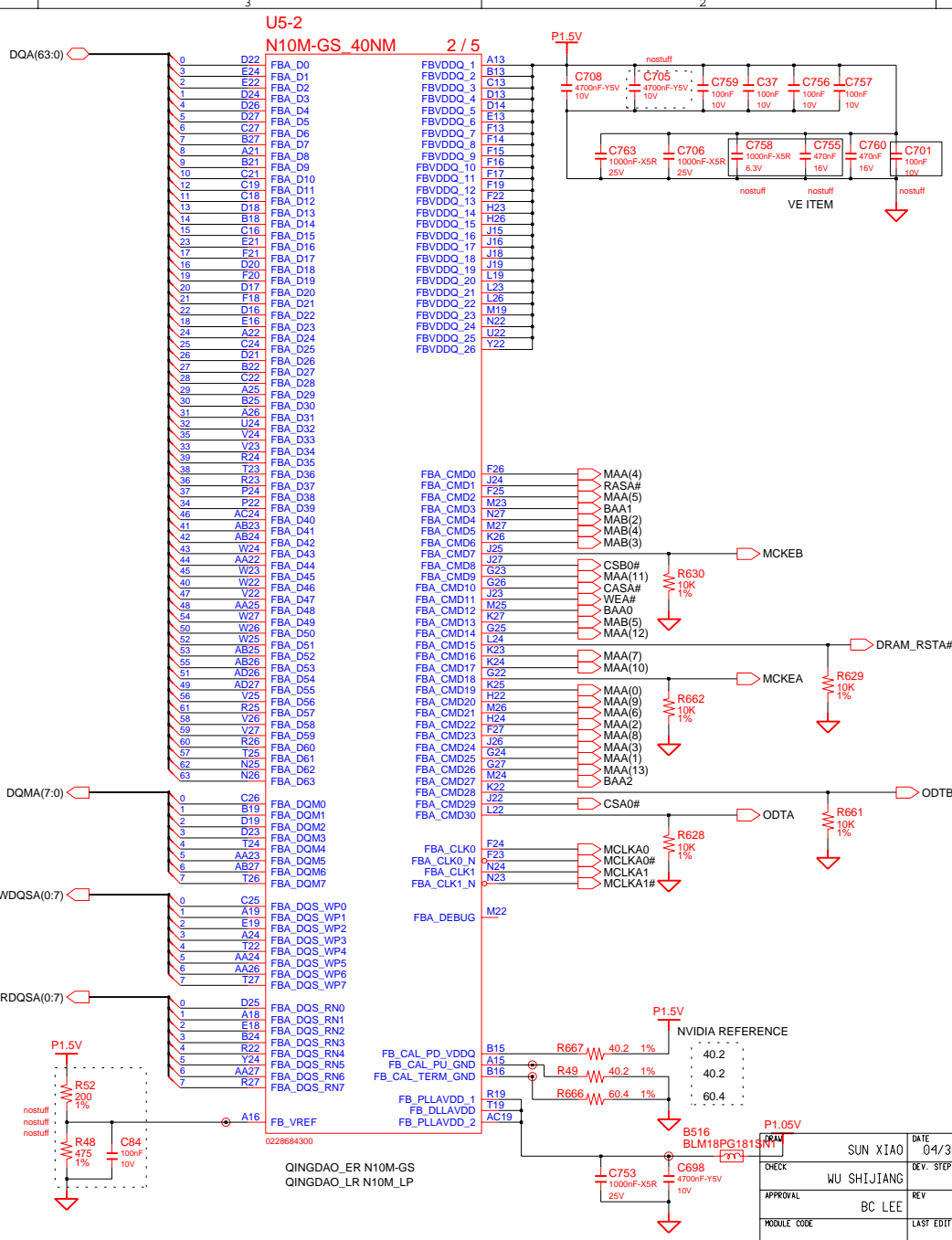
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.



QINGDAO_ER N10M-GS
 QINGDAO_LR N10M-LP

DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV		EXT NB9X	
APPROVAL	BC LEE	REV	1.0		NVIDIA_NB9X_9M	PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT				

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.

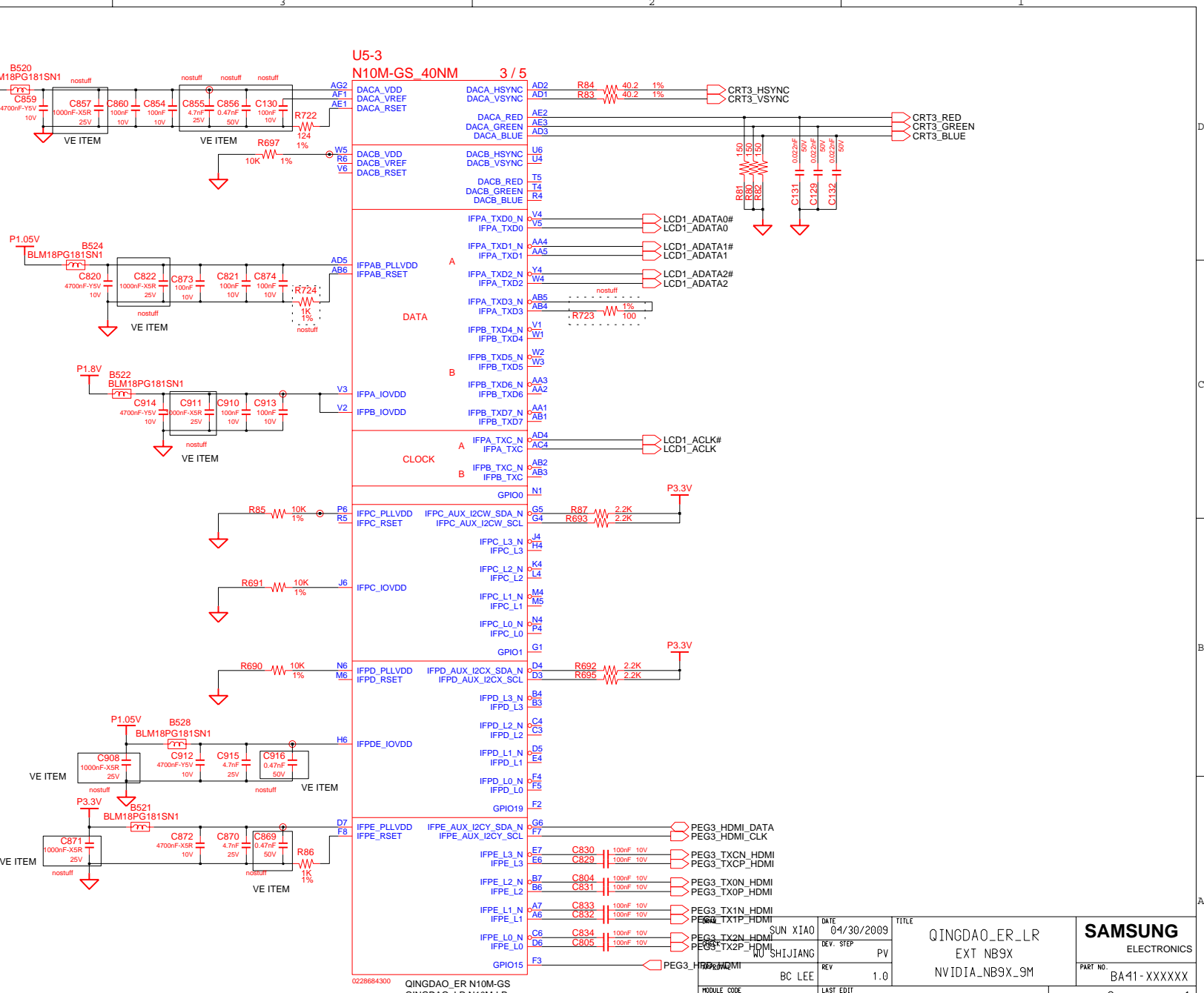


QINGDAO_ER_N10M-GS
 QINGDAO_LR_N10M_LP

DATE	04/30/2009	TITLE	QINGDAO_ER_LR EXT NB9X NVIDIA_NB9X_9M
DEV. STEP	PV	REV	1.0
CHECK	WU SHIJIANG	APPROVAL	BC LEE
MODULE CODE		LAST EDIT	

SAMSUNG
 ELECTRONICS
 PART NO. BA41-XXXXXX

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.



DATE	04/30/2009	TITLE	QINGDAO_ER_LR EXT NB9X NVIDIA_NB9X_9M	SAMSUNG ELECTRONICS
DEV. STEP	PV	REV	1.0	
DESIGNER	SUN XIAO	DATE	04/30/2009	PART NO. BA41-XXXXXX
DESIGNER	WU SHIJIANG	REV	1.0	
MODULE CODE	BC LEE	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE 3 OF 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.

Pin	Description	Activate
GPIO(0)	General Purpose	NC
GPIO(1)	HPD-C	NC
GPIO(2)	LCD0_BL_PWM	High
GPIO(3)	LCD0_VDD	High
GPIO(4)	LCD0_BL_EN	High
GPIO(5)	GPU VID0	00 0.8V
GPIO(6)	GPU VID1	10 0.85V
GPIO(7)	GPU VID2	NC
GPIO(8)	OVERT	LOW
GPIO(9)	ALERT	NC
GPIO(10)	MEM_VREF	NC
GPIO(11)	SLI_SYNC	NC
GPIO(12)	PWR_LEVEL	NC
GPIO(13)	MEM_VID	NC
GPIO(14)	PWR_CTRL1	NC
GPIO(15)	HPD-E	High
GPIO(16)	FAN_PWM	NC
GPIO(17)	Reserved	NC
GPIO(18)	Reserved	NC
GPIO(19)	HPD-D	NC

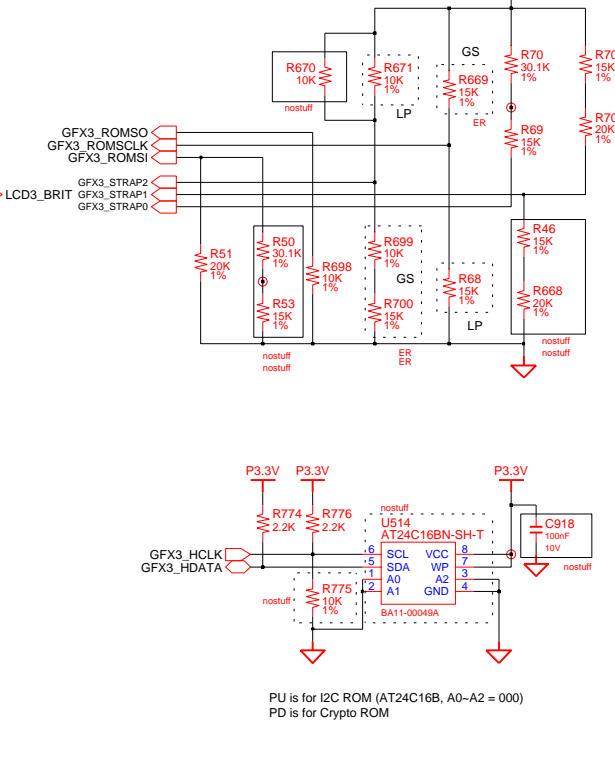
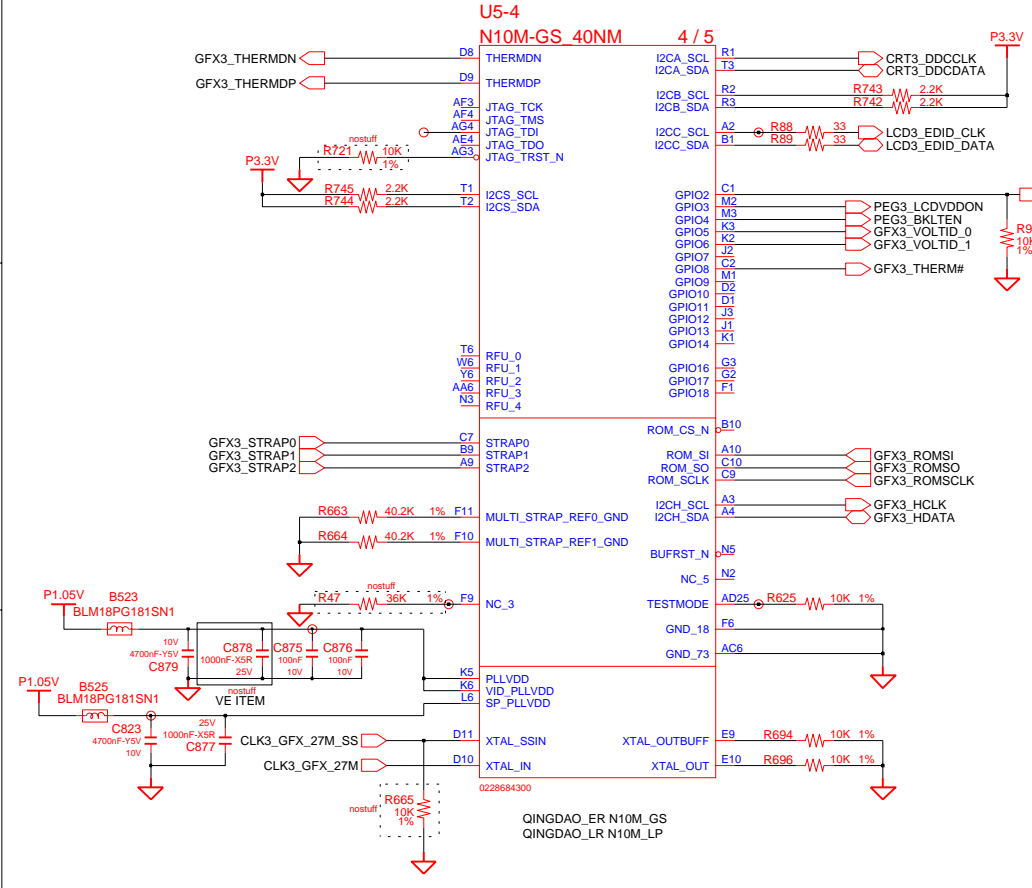
Strap option	Bit 3	Bit 2	Bit 1	Bit 0
ROM_SO	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE
ROM_SCLK	DEVID[4]	VENID	CLK_CFG	PLL_TERM
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	DEVID[3]	DEVID[2]	DEVID[1]	DEVID[0]
STRAP1	PADCFG[3]	PADCFG[2]	PADCFG[1]	PADCFG[0]
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]

Resistor value	PU to VDD	PD to GND	XCLK417 = 0 27MHz
5K ohm	1000	0000	RAM CFG (SEC)
10 Kohm	1001	0001	0011 512Mbit 0111 1Gbit
15K ohm	1010	0010	USER[3:0]=1111 for EDID
20K ohm	1011	0011	PADCFG[3:0]=0110 for NB
25K ohm	1100	0100	N10M-GS:0x0A74
30K ohm	1101	0101	N10M-GE:0x0A68
35K ohm	1110	0110	N10M-LP:0x0A69
45K ohm	1111	0111	N10M-NS:0x0A6C
			N10M-NE:0x0A6A
			N10M-GLM:0x0A7C

	Bit3	Bit2	Bit1	Bit0	
ROMSO	0	0	0	1	27M
SCLK	0	0	1	0	GFX TPYE
SI	0	1	1	1	1Gb
Strap2	1	0	0	1	N10M-LP DEVICE ID
Strap1	0	1	1	0	For NB
Strap0	1	1	1	1	EDID_EN

U5-5
 N10M-GS 40NM
 5 / 5

- B2 GND_1
- B5 GND_2
- B8 GND_3
- B11 GND_4
- B14 GND_5
- B17 GND_6
- B20 GND_7
- B23 GND_8
- B26 GND_9
- E2 GND_10
- E5 GND_11
- E8 GND_12
- E11 GND_13
- E17 GND_14
- E20 GND_15
- E23 GND_16
- E26 GND_17
- H2 GND_18
- H5 GND_19
- J11 GND_20
- J14 GND_21
- J17 GND_22
- K9 GND_23
- K19 GND_24
- L2 GND_25
- L5 GND_26
- L11 GND_27
- L12 GND_28
- L13 GND_29
- L14 GND_30
- L15 GND_31
- L19 GND_32
- L17 GND_33
- M12 GND_34
- M13 GND_35
- M14 GND_36
- M15 GND_37
- M16 GND_38
- P2 GND_39
- P5 GND_40
- P9 GND_41
- P19 GND_42
- P23 GND_43
- P26 GND_44
- T12 GND_45
- T13 GND_46
- T14 GND_47
- T15 GND_48
- T16 GND_49
- U2 GND_50
- U5 GND_51
- U11 GND_52
- U12 GND_53
- U13 GND_54
- U14 GND_55
- U15 GND_56
- U16 GND_57
- U17 GND_58
- U23 GND_59
- U26 GND_60
- GND_61
- V9 GND_62
- W19 GND_63
- W14 GND_64
- W17 GND_65
- Y2 GND_66
- Y5 GND_67
- Y23 GND_68
- Y26 GND_69
- Y28 GND_70
- AC2 GND_71
- AC5 GND_72
- AC8 GND_73
- AC11 GND_74
- AC14 GND_75
- AC17 GND_76
- AC20 GND_77
- AC23 GND_78
- AC26 GND_79
- AF2 GND_80
- AF5 GND_81
- AF8 GND_82
- AF11 GND_83
- AF14 GND_84
- AF17 GND_85
- AF20 GND_86
- AF23 GND_87
- AF26 GND_88
- AF28 GND_89



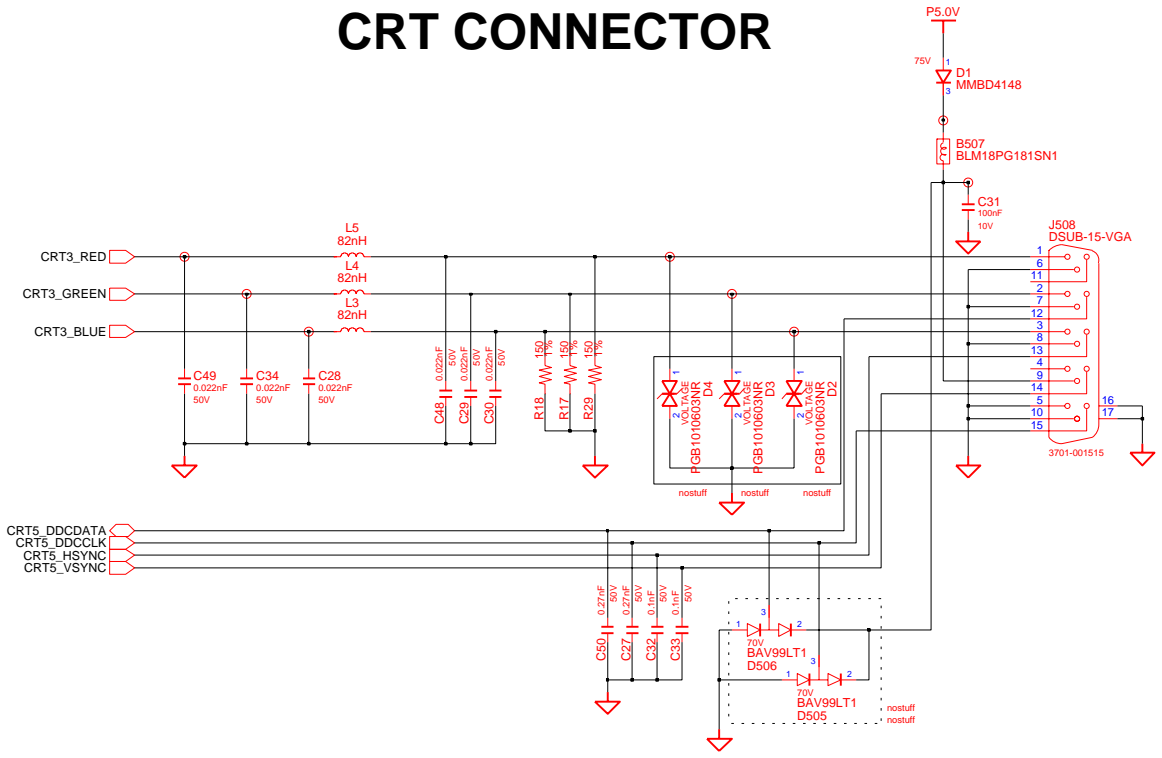
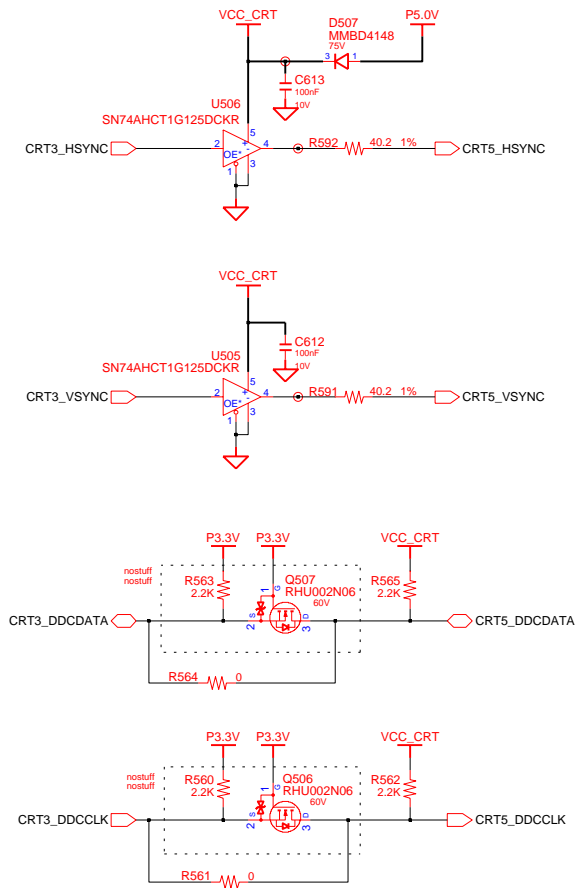
DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV	EXT NB9X		
APPROVAL	BC LEE	REV	1.0	NVIDIA-NB9X_9M		
MODULE CODE		LAST EDIT				

June 18, 2009 16:06:51 PM PAGE 4 OF 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.

CRT

CRT CONNECTOR



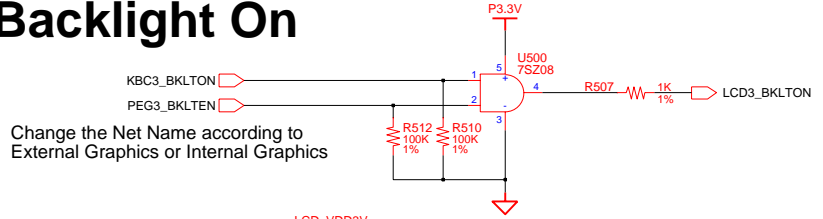
Check "CRT3_DDCCLK/DATA" Voltage Level
 2N06 Can be replaced with SM6K2

DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	GRAPHICS_IF		
APPROVAL	BC LEE	REV	1.0	CRT		PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM		PAGE undefined

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.

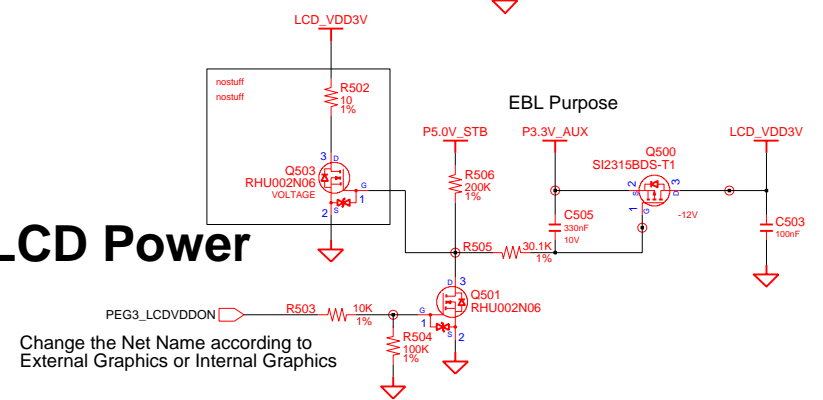
LVDS

Backlight On



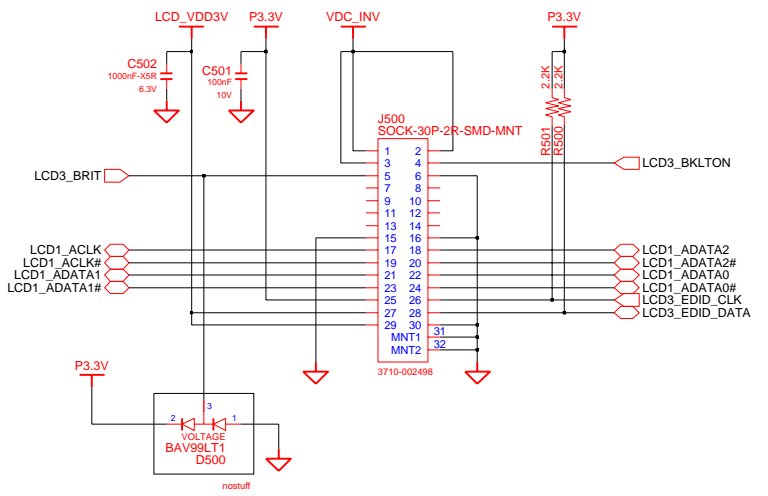
Change the Net Name according to
 External Graphics or Internal Graphics

LCD Power

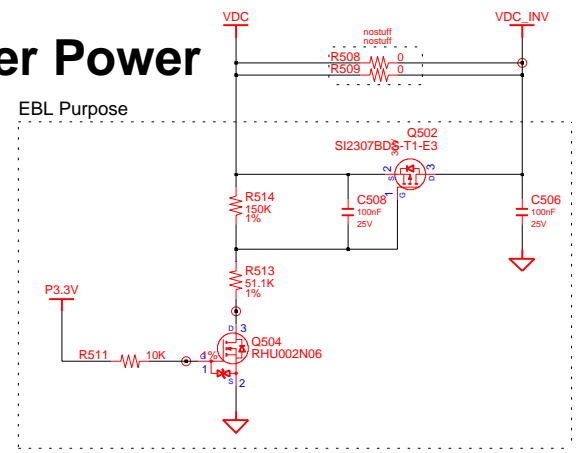


Change the Net Name according to
 External Graphics or Internal Graphics

1Ch. LCD Connector



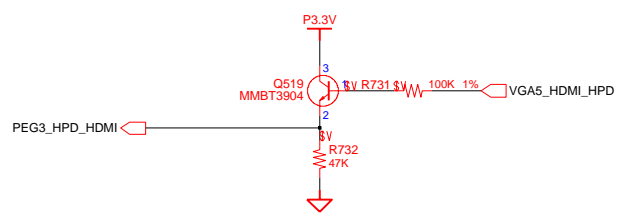
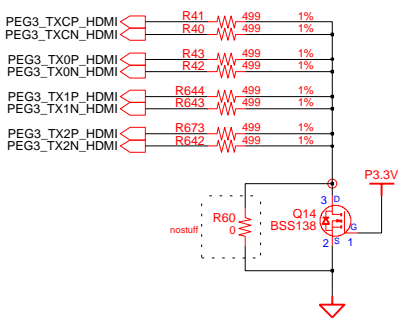
Inverter Power



EBL Purpose

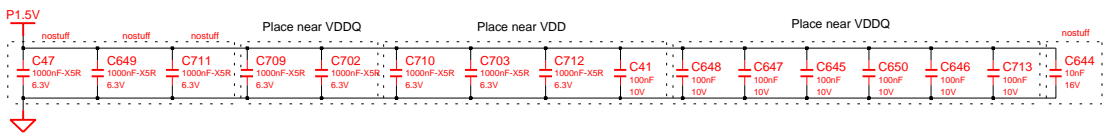
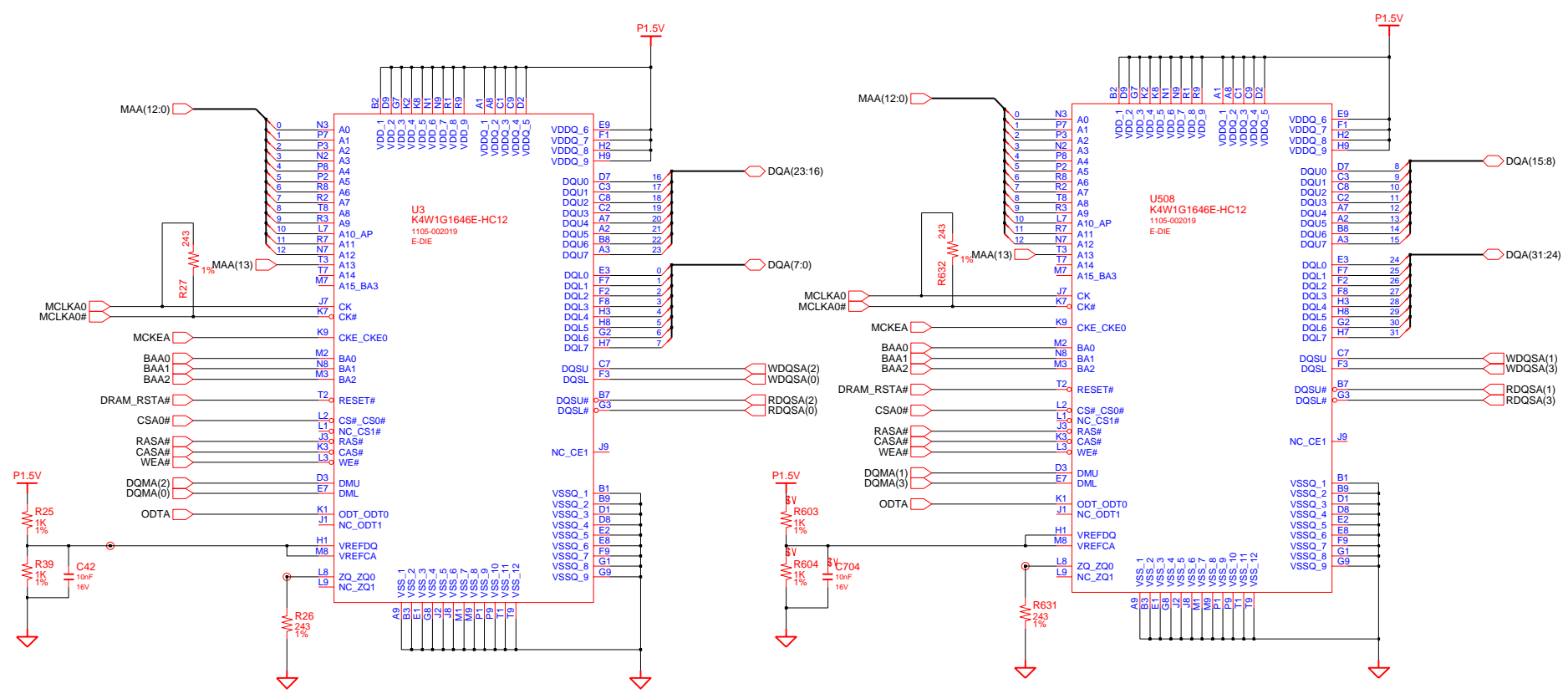
DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	GRAPHICS_IF	PART NO.	
APPROVAL	BC LEE	REV	1.0	LCD	BA41-XXXXXX	
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM	PAGE	2 of 1

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.



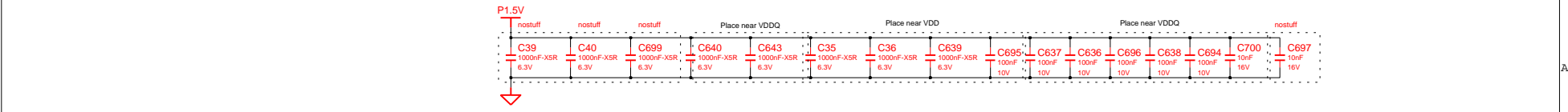
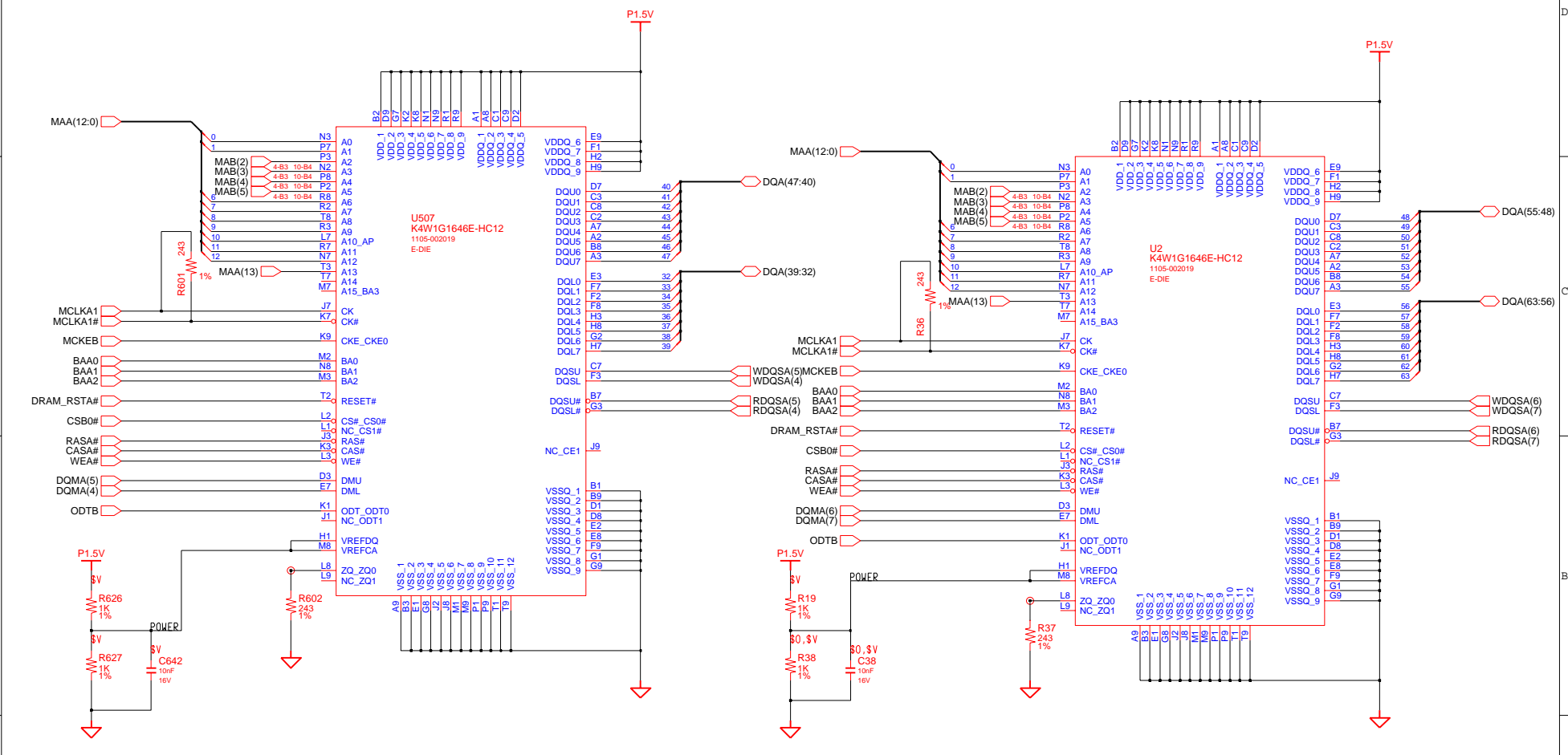
DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR GRAPHICS_IF HDMI LEVEL SHIFTER	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT	June 18, 2009 16:06:51 PM			
PAGE 4 of 10						

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	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	Graphics_Memory		
APPROVAL	BC LEE	REV	1.0	Graphics_Memory_Nvidia_64b		PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM	PAGE	1 OF 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.



4

3

2

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.

D

D

C

C

B

B

A

A

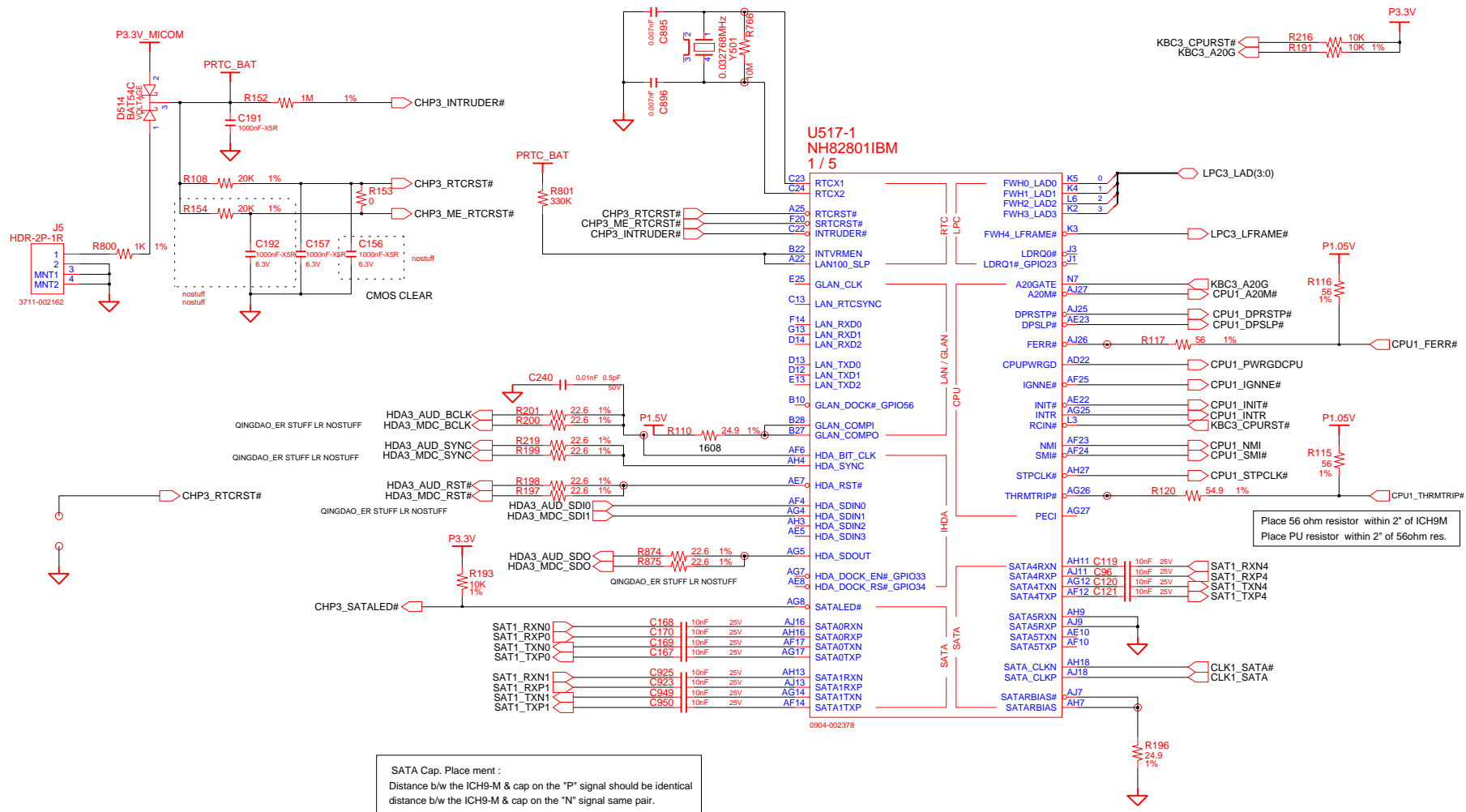
4

3

2

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.



SATA Cap. Place ment :
 Distance b/w the ICH9-M & cap on the "P" signal should be identical
 distance b/w the ICH9-M & cap on the "N" signal same pair.

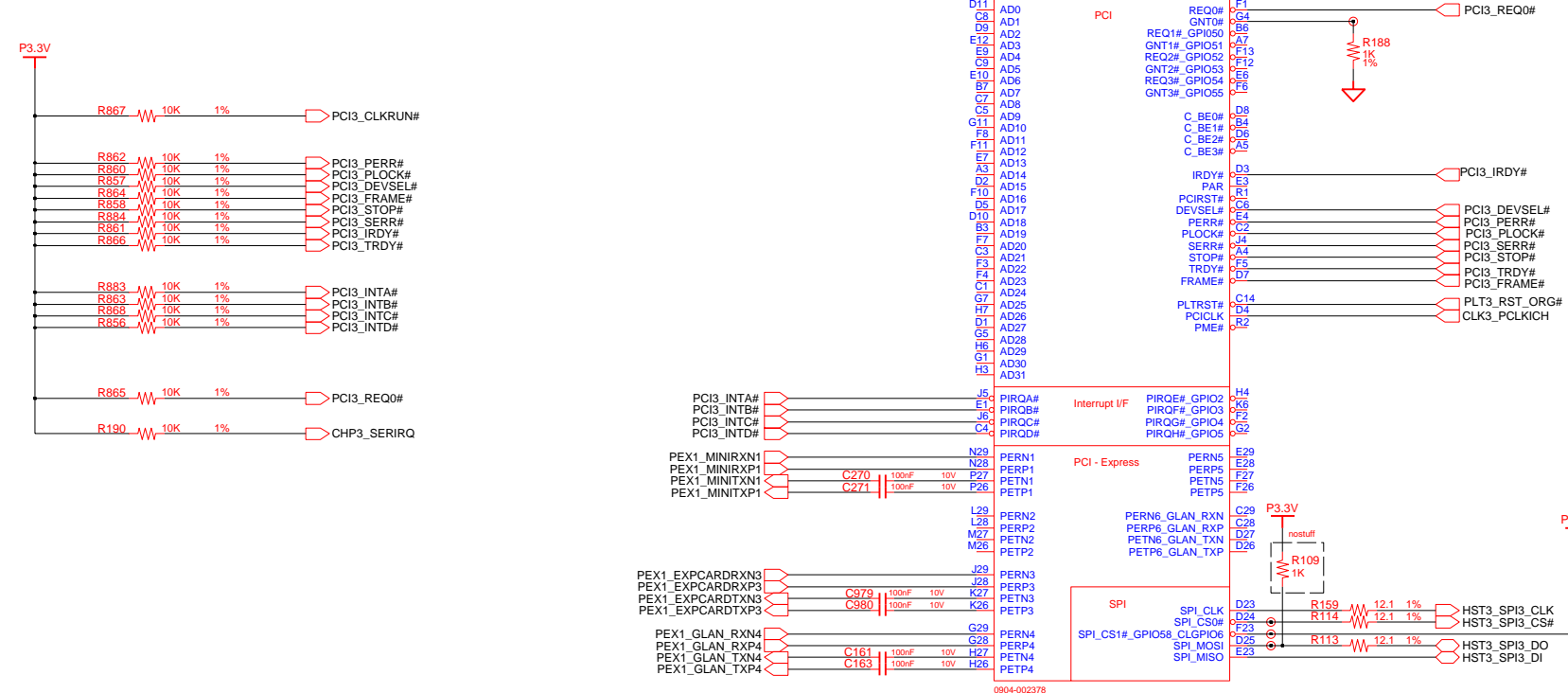
Place 56 ohm resistor within 2" of ICH9M
 Place PU resistor within 2" of 56ohm res.

0904-002378

DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR ICH9M_B	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV		ICH9-M (1/5)	
APPROVAL	BC LEE	REV	1.0			PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM	PAGE	1 OF 5

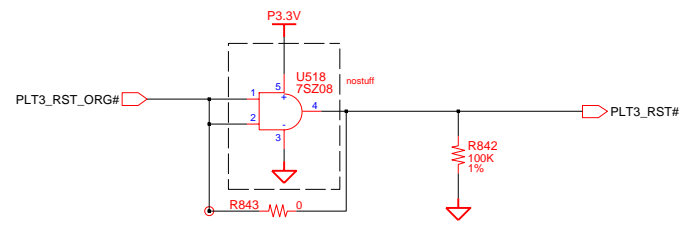
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

U517-2
NH82801IBM
2/5



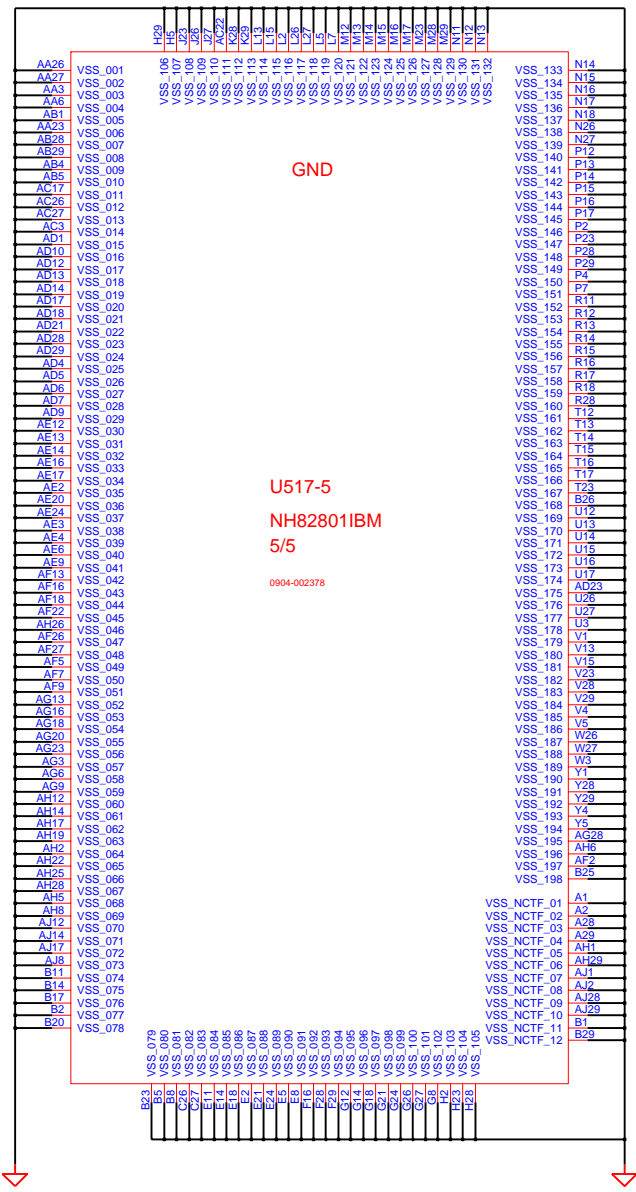
- PCI3_INTA#
- PCI3_INTB#
- PCI3_INTC#
- PCI3_INTD#
- PEX1_MINIRXN1
- PEX1_MINIRXP1
- PEX1_MINITXN1
- PEX1_MINITXP1
- PEX1_EXPCARDRXN3
- PEX1_EXPCARDRXP3
- PEX1_EXPCARDTXN3
- PEX1_EXPCARDTXP3
- PEX1_GLAN_RXN4
- PEX1_GLAN_RXP4
- PEX1_GLAN_TXN4
- PEX1_GLAN_TXP4

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



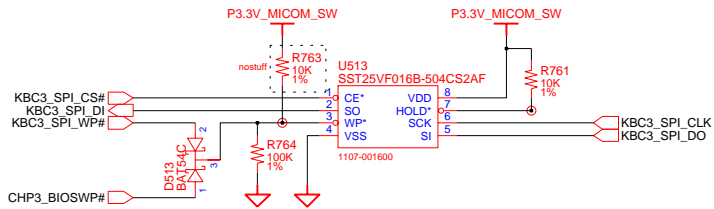
DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV	ICH9M_B		
APPROVAL	BC LEE	REV	1.0	ICH9-M (2/5)		
MODULE CODE	undef ined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	2 OF 5	

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.

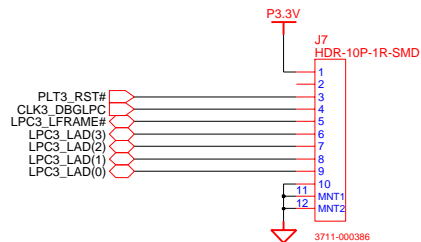


DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR ICH9M_B	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV		ICH9-M (3/5)	
APPROVAL	BC LEE	REV	1.0			PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM	PAGE 4 OF 5	

SPI_BIOS_ROM



80H DECODER CONNECTOR

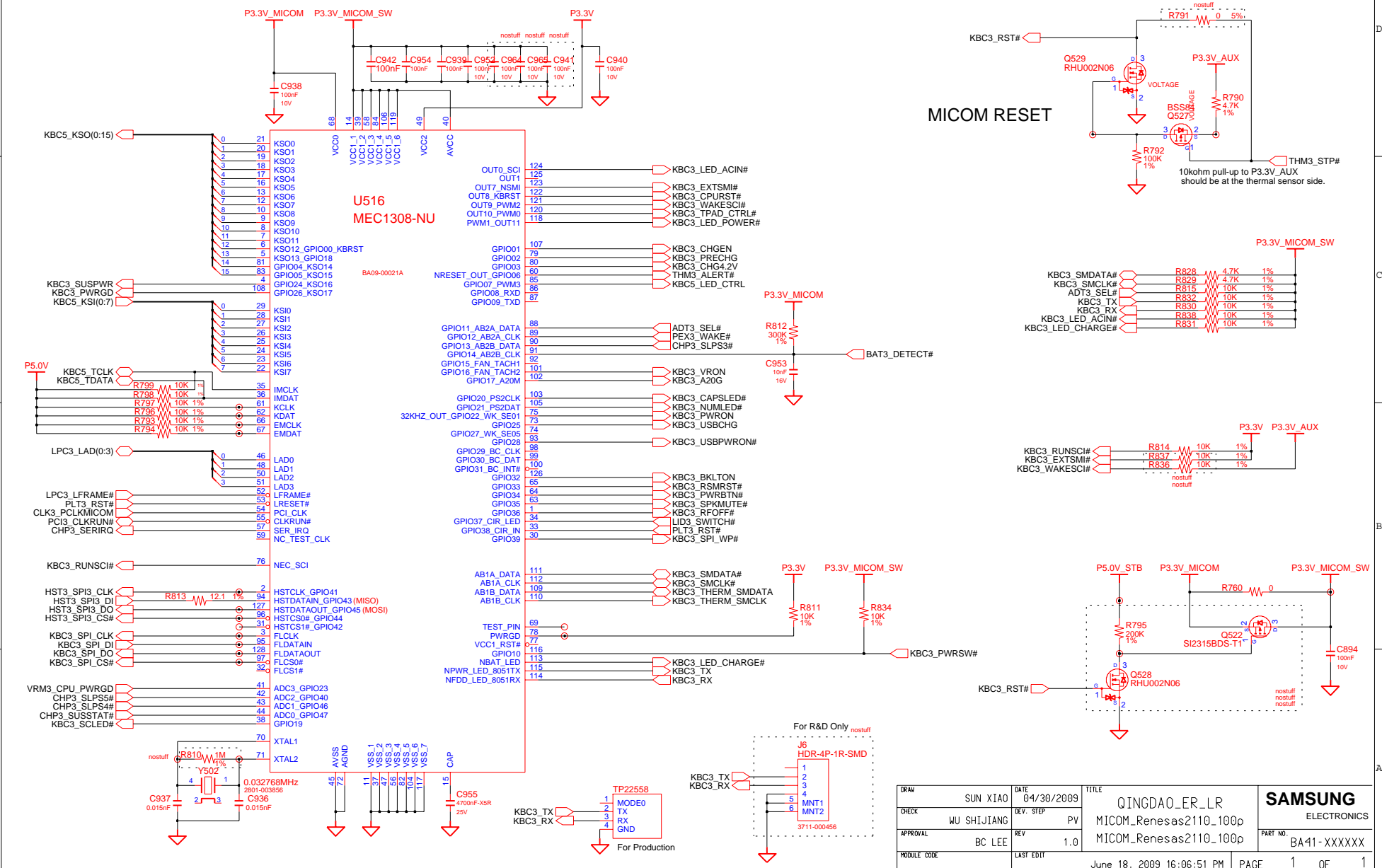


02	VERIFY REAL MODE	66	CONFIGURE ADVANCE CACHE REG.
03	DISABLE NMI	6A	DISPLAY EXTERNAL CACHE SIZE
04	GET CPU TYPE	6C	DISPLAY SHADOW MESSAGE
06	INIT. SYSTEM H/W	6E	DISPLAY NON-DISPOSABLE SEGMENT
08	INIT. CHIPSET REG.	70	DISPLAY ERROR MESSAGE
09	SET IN POST FLAG	72	CHECK FOR CONFIGURATION ERROR
0A	INIT 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
10	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
	WITH INITIAL POST VALUE	8A	INIT. EXTENDED BIOS DATA AREA
14	INIT. KEYBOARD CONTROLLER	8C	INIT. FDD CONTROLLER
16	CHECK CHECKSUM	8E	SHADOW OPTION ROMS
18	8254 TIMER INIT.	9A	SETUP POWER MANAGEMENT
1A	8237 DMA CONTROLLER INIT.	9E	ENABLE H/W INTERRUPT
1C	RESET INTERRUPT CONTROLLER	9F	SET TIME OF DAY
20	TEST DRAM REFRESH	A4	INIT. TYPEMATIC RATE
22	TEST 8742 KEYBOARD CONTROLLER	A8	ERASE F2 PROMPT
24	SET ES SEGMENT REG. TO 4GB	AA	SCAN FOR F2 KEY STROKE
26	ENABLE A20	AC	ENTER SETUP
28	AUTO SIZING DRAM	AE	CLEAR IN POST FLAG
32	COMPUTE THE CPU SPEED	B0	CHECK FOR ERRORS
34	TEST CMOS RAM	B2	POST DONE-PREPARE TO BOOT O/S
38	SHADOW SYSTEM BIOS ROM	B4	ONE BEEP
3A	AUTO SIZING CACHE	B6	CHECK PASSWORD (OPTION)
3C	CONFIGURE ADVANCED CHIPSET REG.	B7	ACPI INIT
3D	LOAD ALTER REG. WITH CMOS VALUE	BA	DMI INIT
42	INIT. INTERRUPT VECTOR	BE	CLEAR SCREEN
44	INIT. BIOS INTERRUPT	C0	TRY BOOT WITH INT19
46	CHECK ROM COPYRIGHT NOTICE	D0	INTERRUPT HANDLER ERROR
47	INIT. I20 SUPPORT IF INSTALLED	D2	UNKNOWN INTERRUPT ERROR
48	CHECK VIDEO CONFIGURE AGAINST CMOS	D4	PENDING INTERRUPT ERROR
49	INIT. PCI BUS AND DEVICE	D6	SHUTDOWN 9
4A	INIT. ALL VIDEO BIOS ROM	D8	SHUTDOWN ERROR
4C	SHADOW VIDEO BIOS ROM	DA	EXTENDED BLOCK MOVE
50	DISPLAY CPU TYPE AND SPEED	DC	SHUTDOWN 10
52	TEST KEYBOARD	89	ENABLE NMI
54	SET KEYCLICK IF ENABLED	90	INIT. HDD CONTROLLER
56	ENABLE KEYBOARD	91	INIT. LOCAL BUS HDD CONTROLLER
58	TEST FOR UNEXPECTED INTERRUPTS	92	JUMP TO USER PATCH 2
5A	DISPLAY * PRESS * SETUP	94	DISABLE A20 ADDRESS LINE
5C	TEST RAM BETWEEN 512K AND 640K	96	CLEAR HUGE ES SEGMENT REG.
60	TEST EXTENDED MEMORY	98	SEARCH FOR OPTION ROMS
62	TEST EXTENDED MEMORY ADDRESS LINE		
64	JUMP TO USER PATCH 1		

DRAW	XiaoHong Zhang	DATE	12/03/2008	TITLE	QingDao_Ext SPI_BIOS_ROM SPI_BIOS_ROM	SAMSUNG ELECTRONICS PART NO. BA41-xxxxxA
CHECK	RuJin Zheng	DEV. STEP	ADV1			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT	December 03, 2008 20:56:20 PM	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.

MICOM



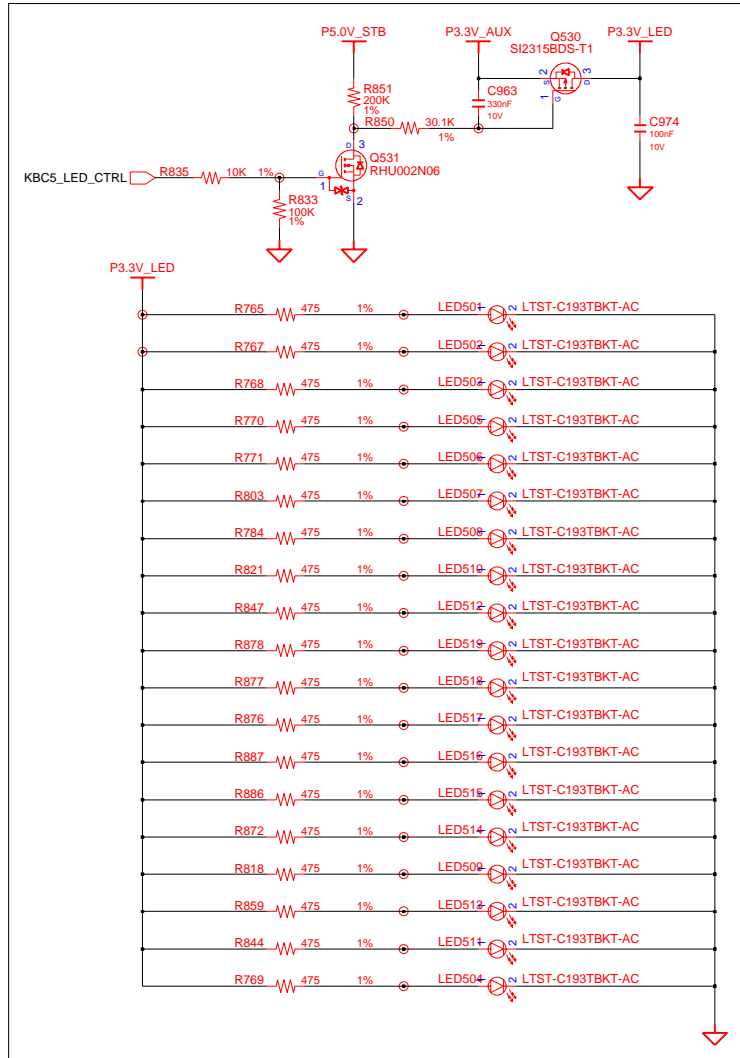
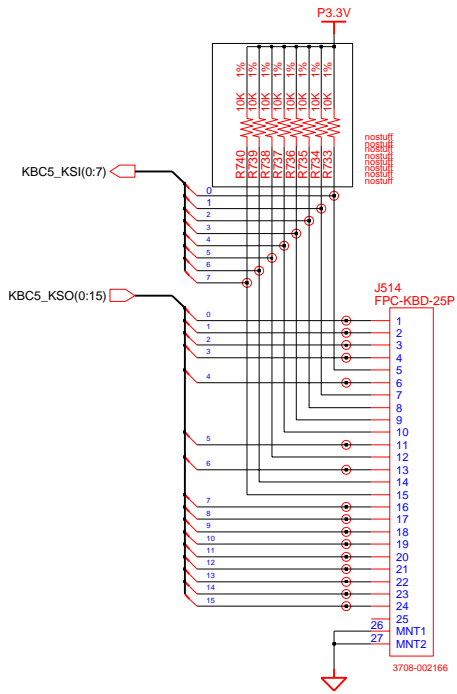
DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	MICOM_Renasas2110_100p	PART NO.	
APPROVAL	BC LEE	REV	1.0	MICOM_Renasas2110_100p	BA41-XXXXXX	
MODULE CODE		LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1 OF 1	

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.

Micom Glue Logic

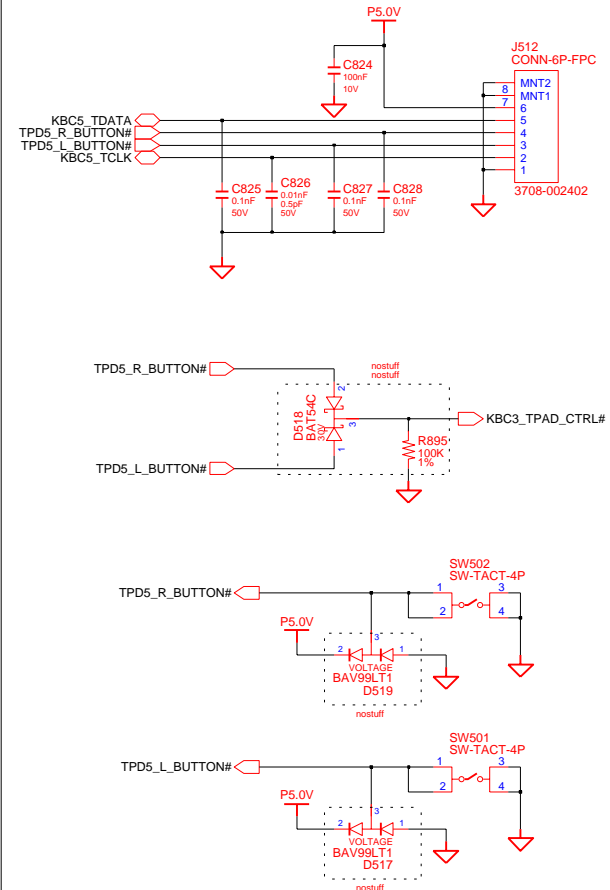
ER

KEYBOARD



QINGDAO_ER STUFF
 QINGDAO_LR NOSTUFF

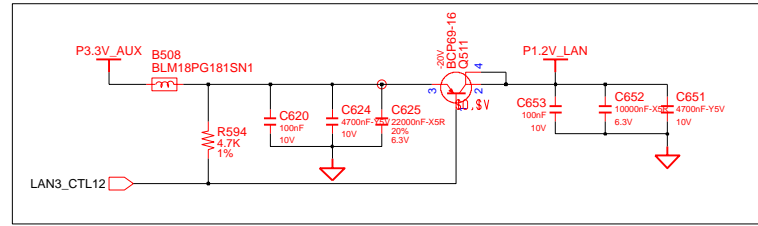
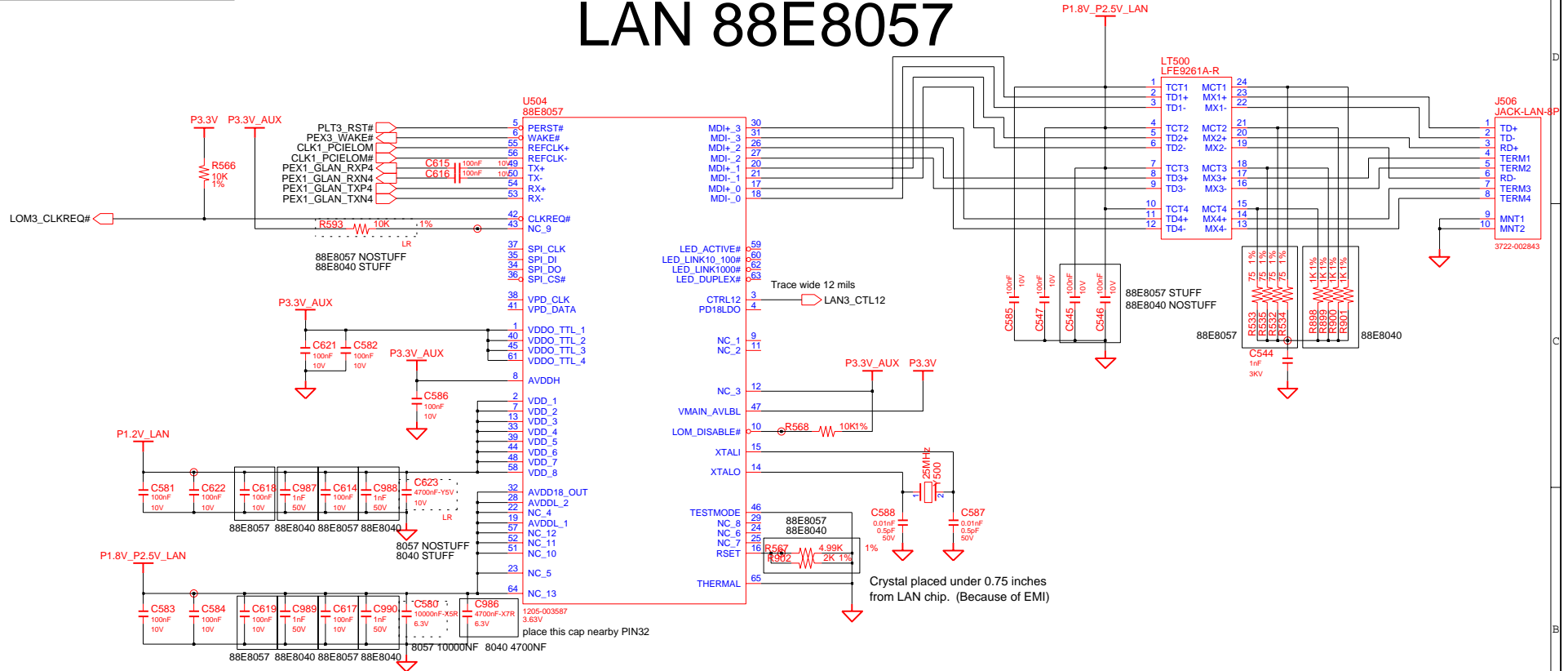
TOUCHPAD



DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR MICOM_GLUE_LOGIC KBD TP	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	1 of 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.

LAN 88E8057

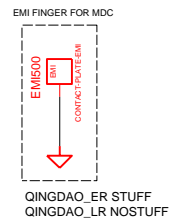
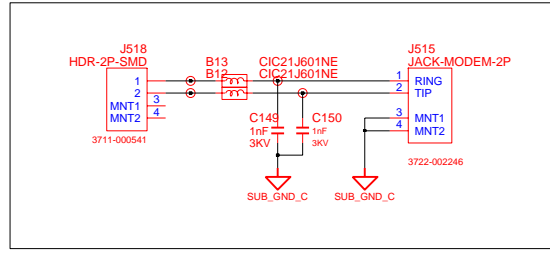
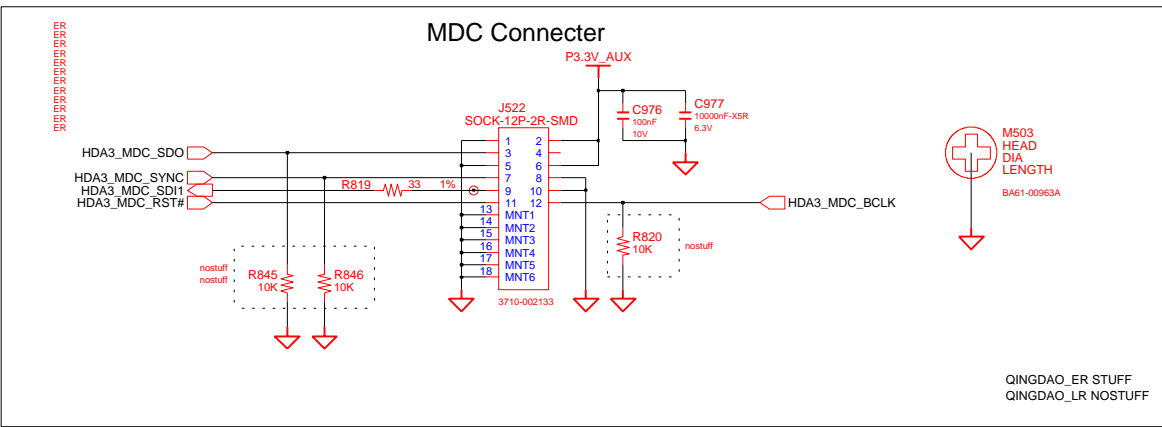


88E8057 SUTFF
 88E8040 NOSTUFF

DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	REV. STEP	PV	LAN_MARVELL_8055		
APPROVAL	BC LEE	REV.	1.0	LAN		PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM		PAGE 1 of 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.

MDC

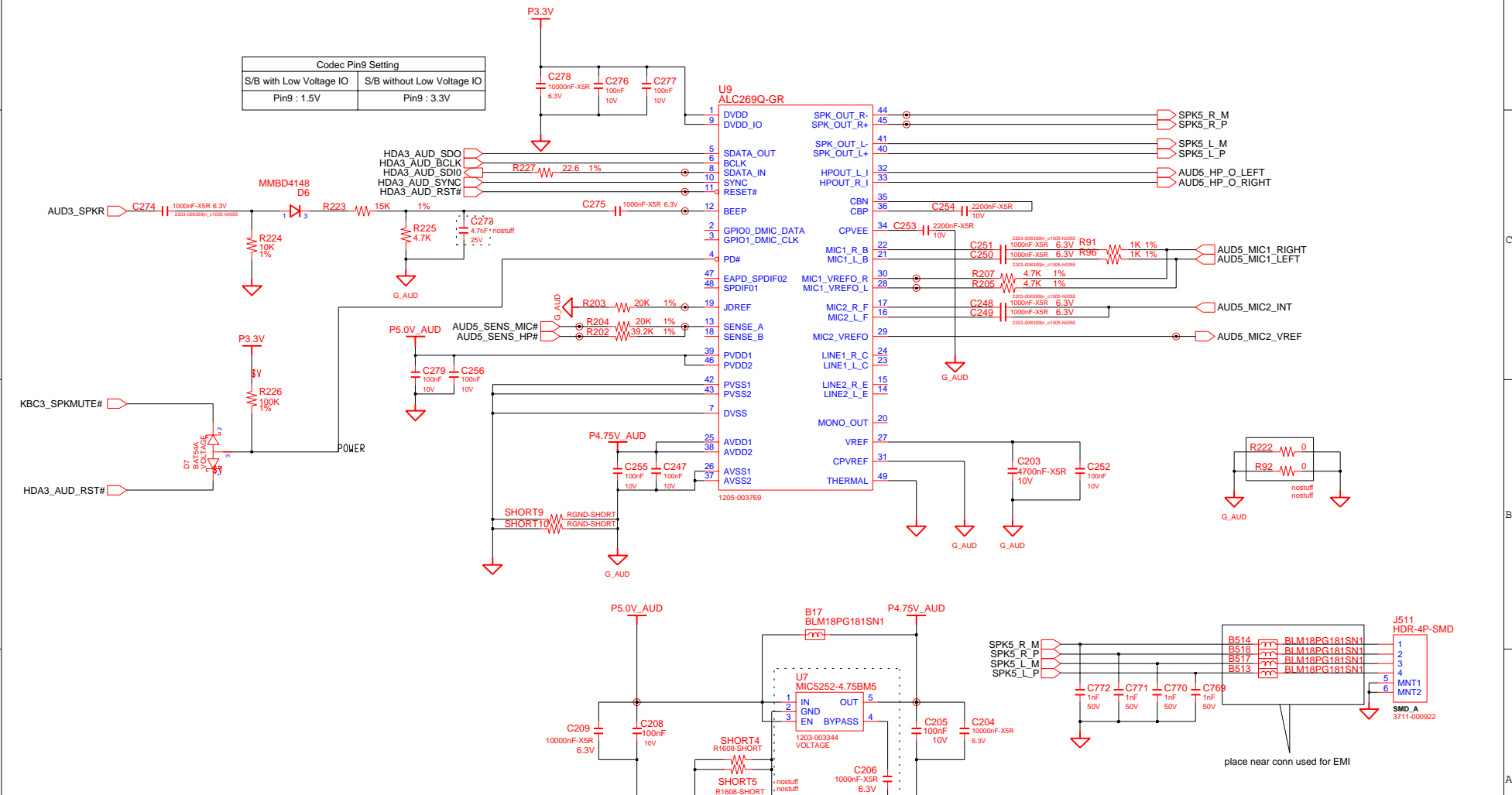


DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR HDA_Modem HDA_Modem	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	1 OF 1

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.

AUDIO

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

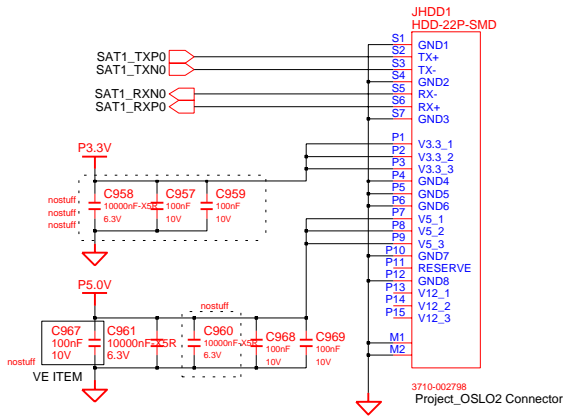


DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR HDA_CODEC_ALC272 AUDIO CODEC ALC272	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	1 OF 5

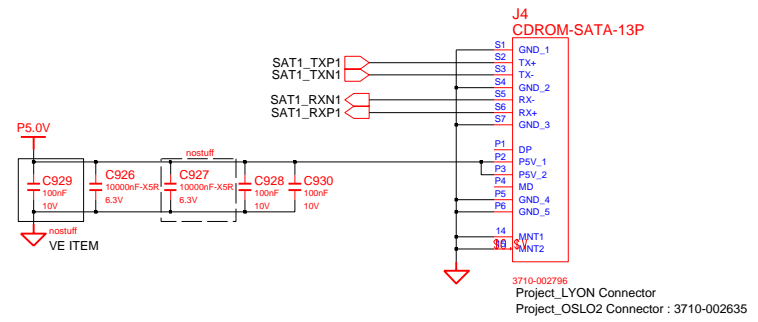
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

SATA I/F CONN

SATA HDD CONN



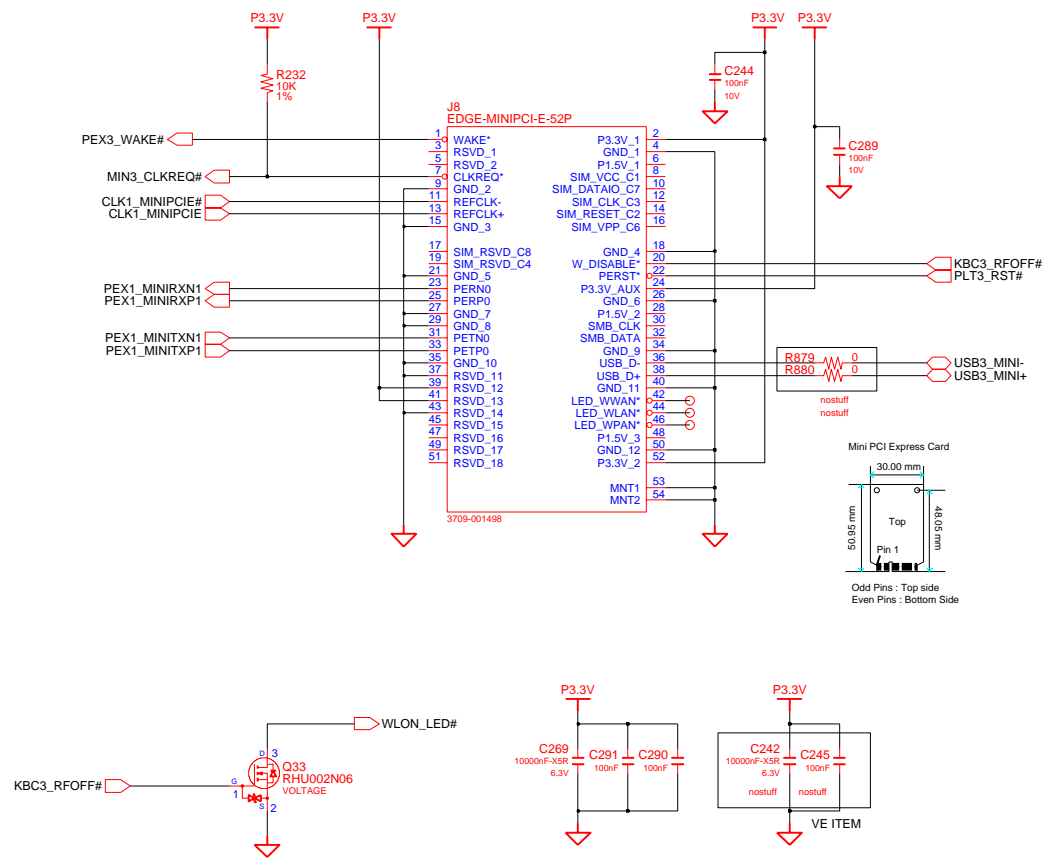
SATA ODD CONN



DESIGN	XiaoHong Zheng	DATE	12/3/2008	TITLE	QingDao_Ext SATA_DEVICES HDD ODD	SAMSUNG ELECTRONICS	
CHECK	RuJin Zheng	DEV. STEP	ADV1	PART NO.			BA41-xxxxxA
APPROVAL	BC LEE	REV	1.0	PAGE			1 OF
MODULE CODE	undefined	LAST EDIT	December , 3, 2008 12:06:51 PM				

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

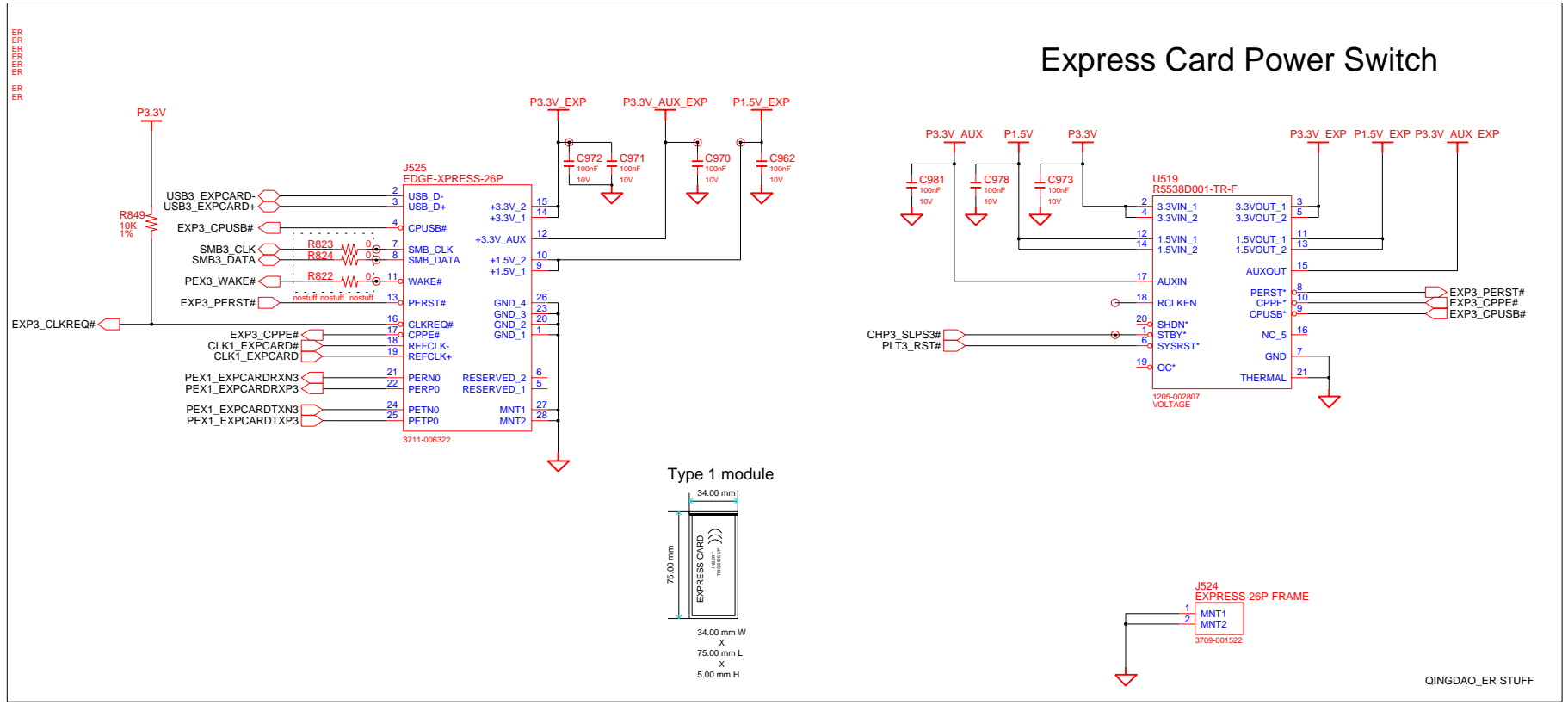


DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR MINI_PCIE_CONN	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	WLAN	PART NO.	
APPROVAL	BC LEE	REV	1.0		BA41-XXXXXX	
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1	OF

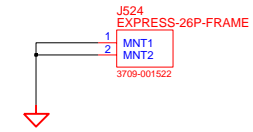
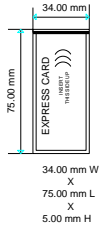
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

Express Card

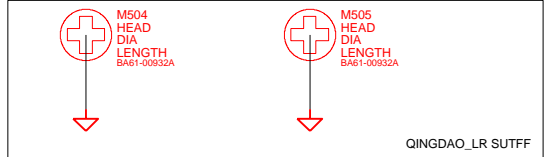
Express Card Power Switch



Type 1 module



QINGDAO_ER STUFF



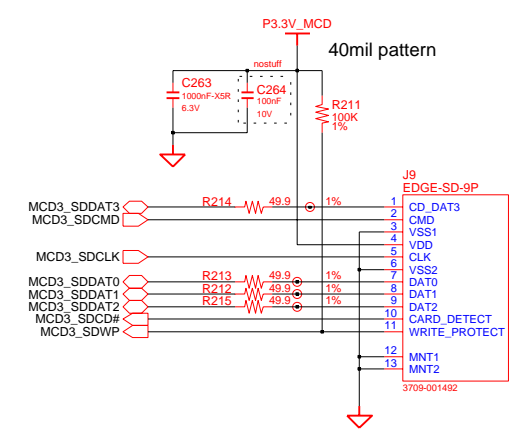
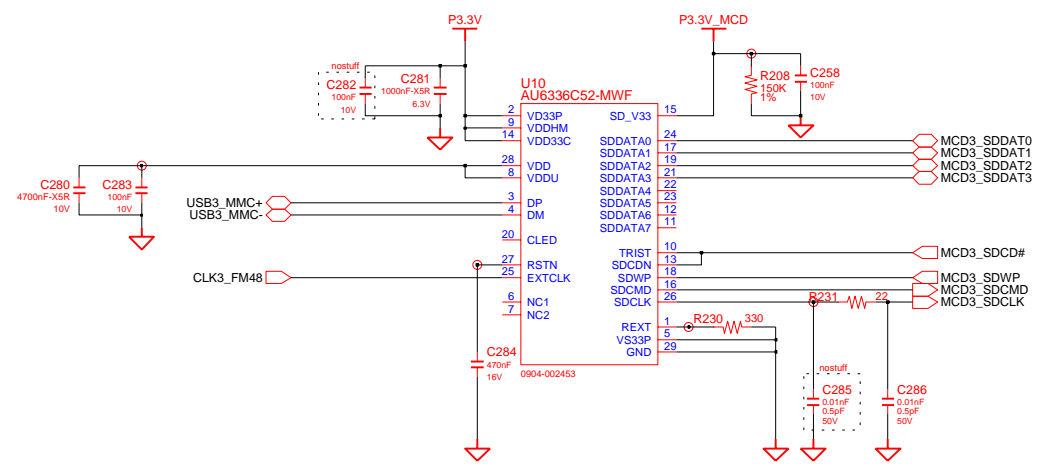
QINGDAO_LR SUTFF

DESIGN	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR EXPRESS CARD	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE	undef ined	LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	1 OF

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

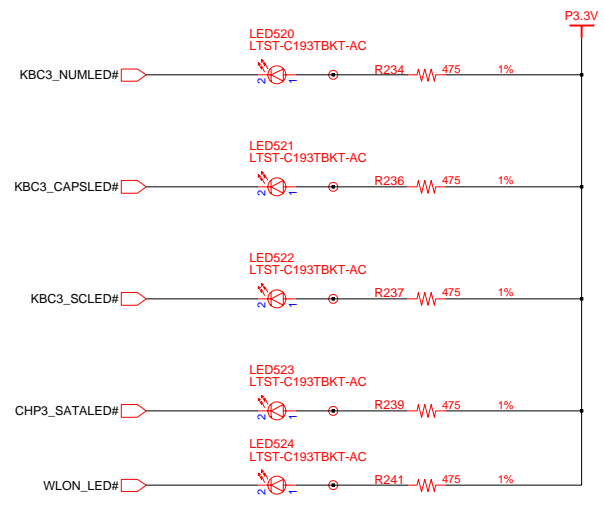
MSEL5	SD Write Protec Selection
Connected to VCC	High Enable
Connected to GND	Low Enable
MSEL7	PLL BASE CLOCK SELECTION
Connected to VCC	12MHz
Connected to GND	48MHz

DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV		AU6336	
APPROVAL	BC LEE	REV	1.0			PART NO. BA41-XXXXXX
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1	OF 3

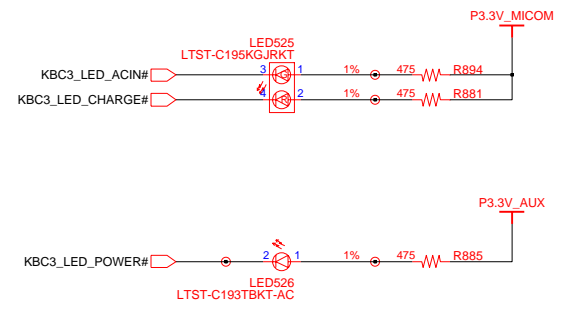
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

LED SWITCH LOGIC

Function Key LEDs



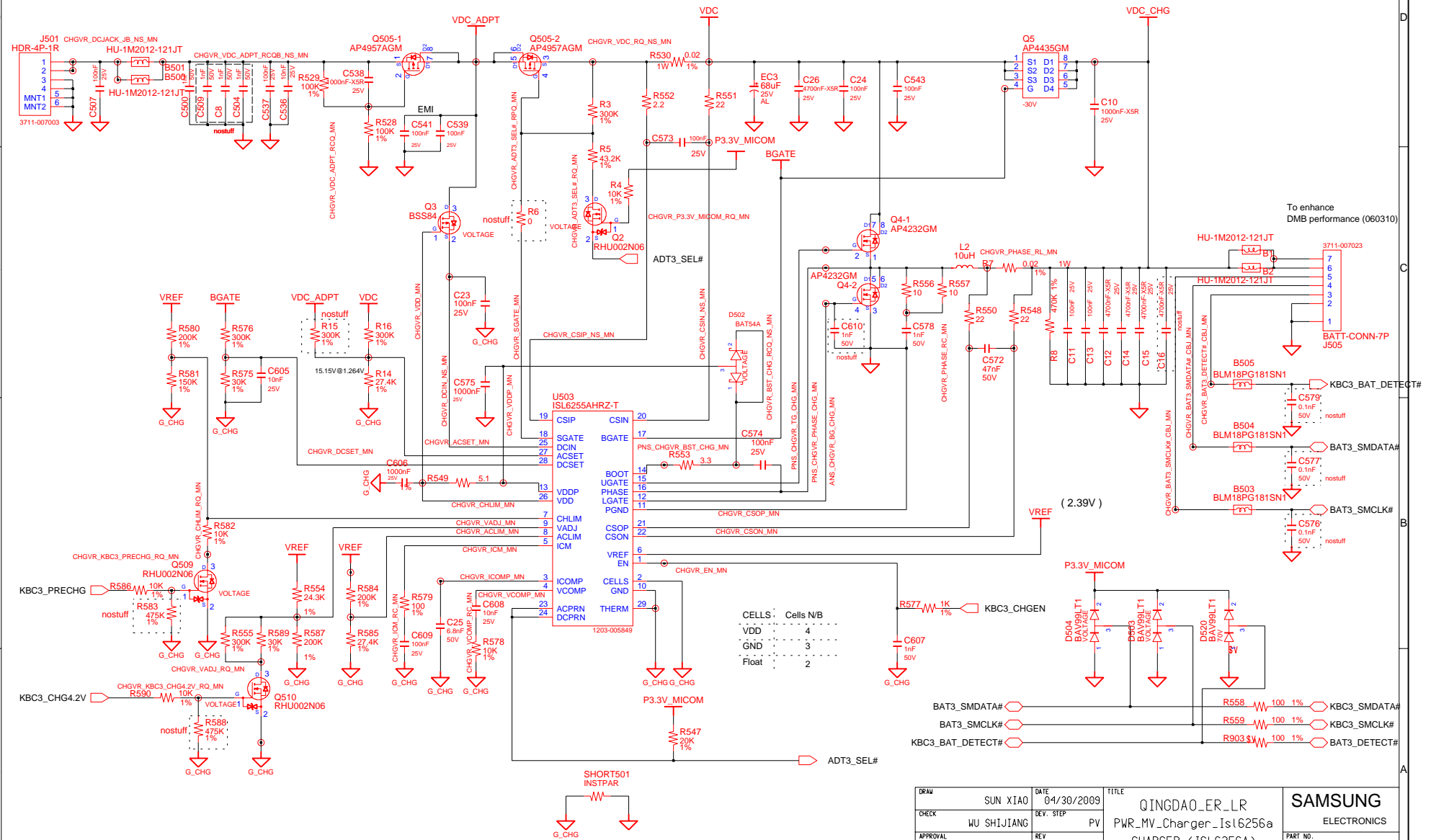
ADAPTERIN/CHARGING LED



DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	LED_Switch	LED_Switch	
APPROVAL	BC LEE	REV	1.0	LED_Switch	LED_Switch	PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1 OF 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.

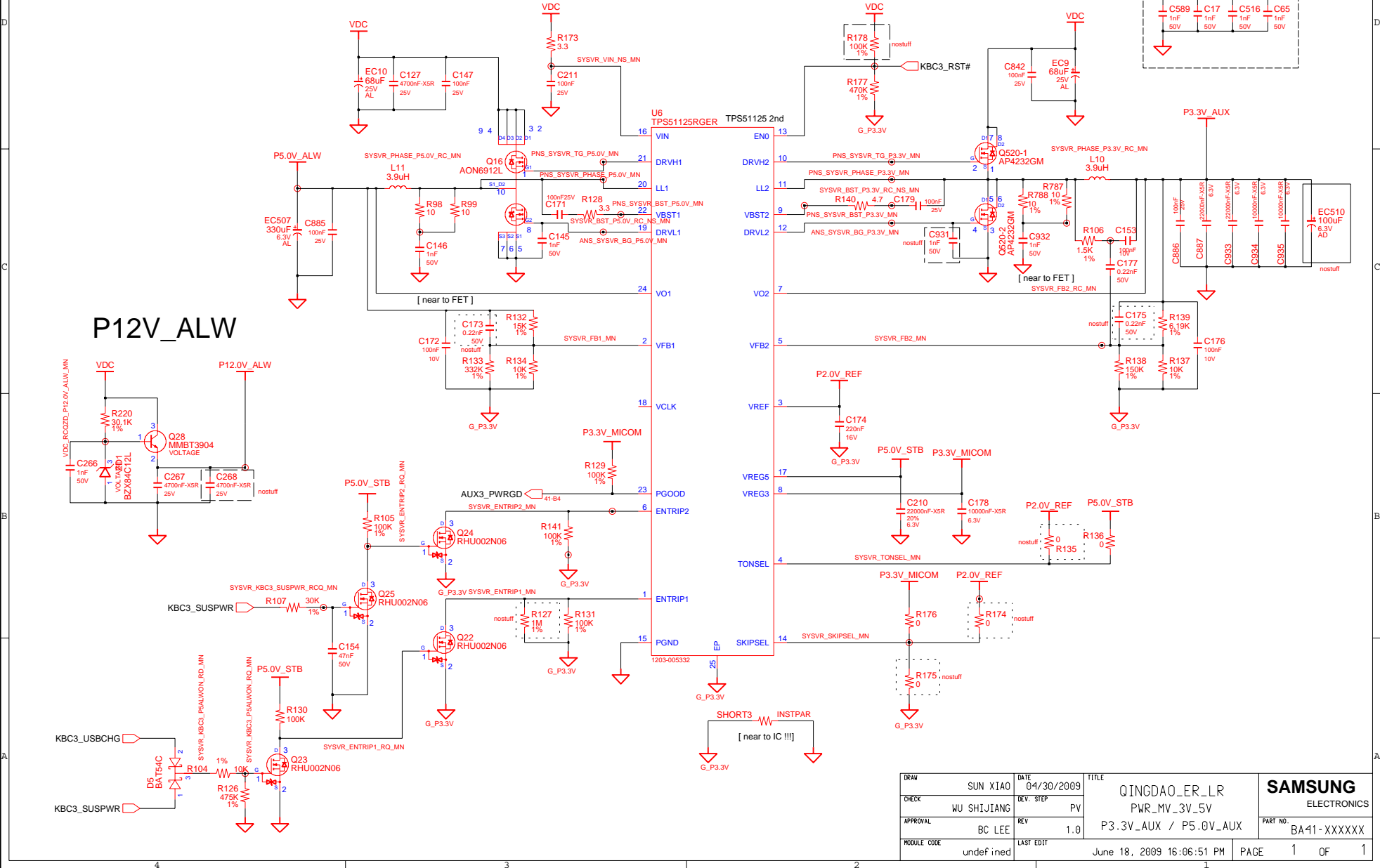
CHARGER & POWER MANAGEMENT



DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	REV. STEP	PV	PWR_MV_Charger_Isl6256a	CHARGER (ISL6256A)	
APPROVAL	BC LEE	REV	1.0			PART NO. BA41-XXXXXX
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1	OF 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.

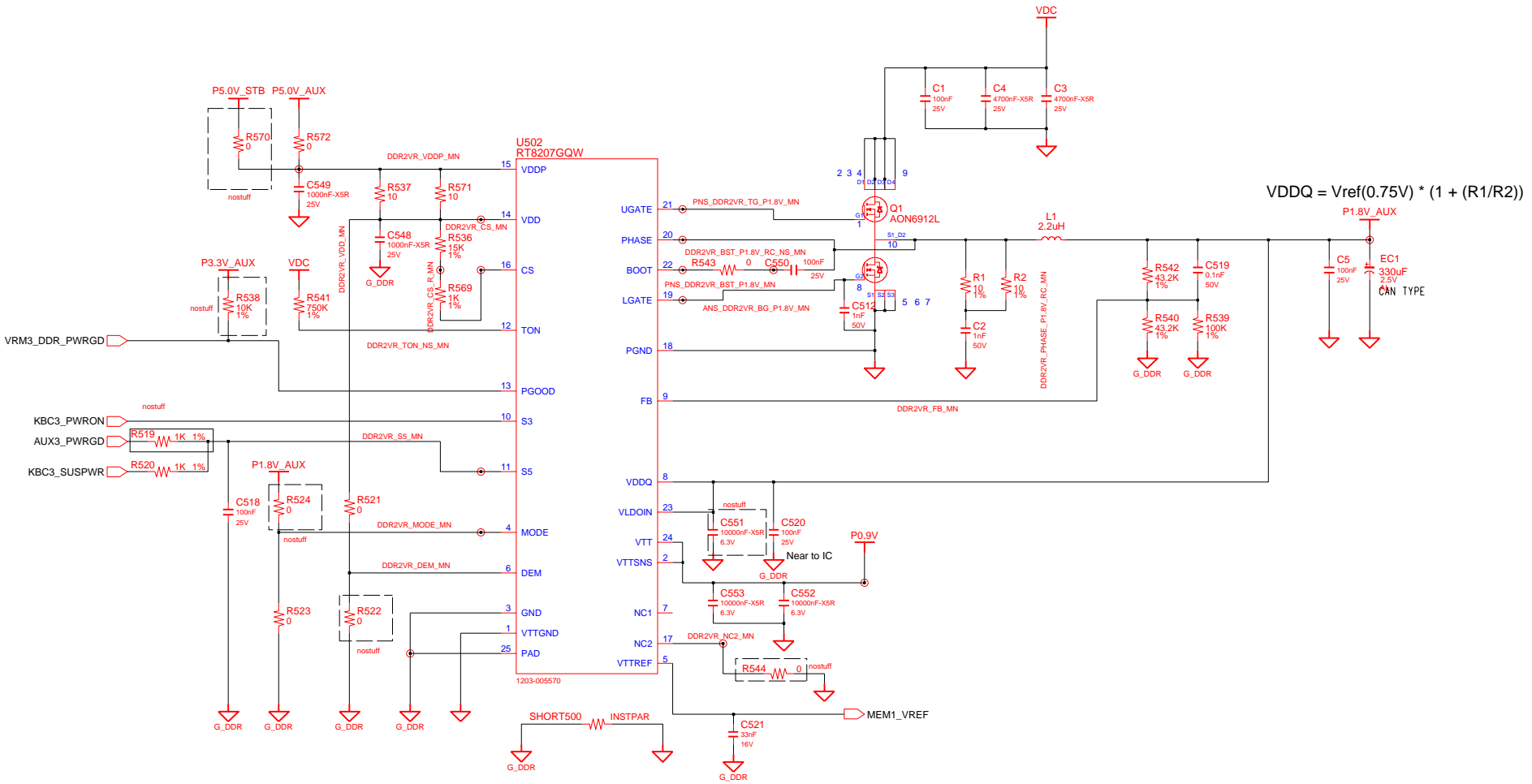
P3.3V_AUX & P5.0V_AUX



DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	PWR_MW_3V_5V		
APPROVAL	BC LEE	REV	1.0	P3.3V_AUX / P5.0V_AUX		PART NO.
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1	OF
					1	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.

DDR2 Power



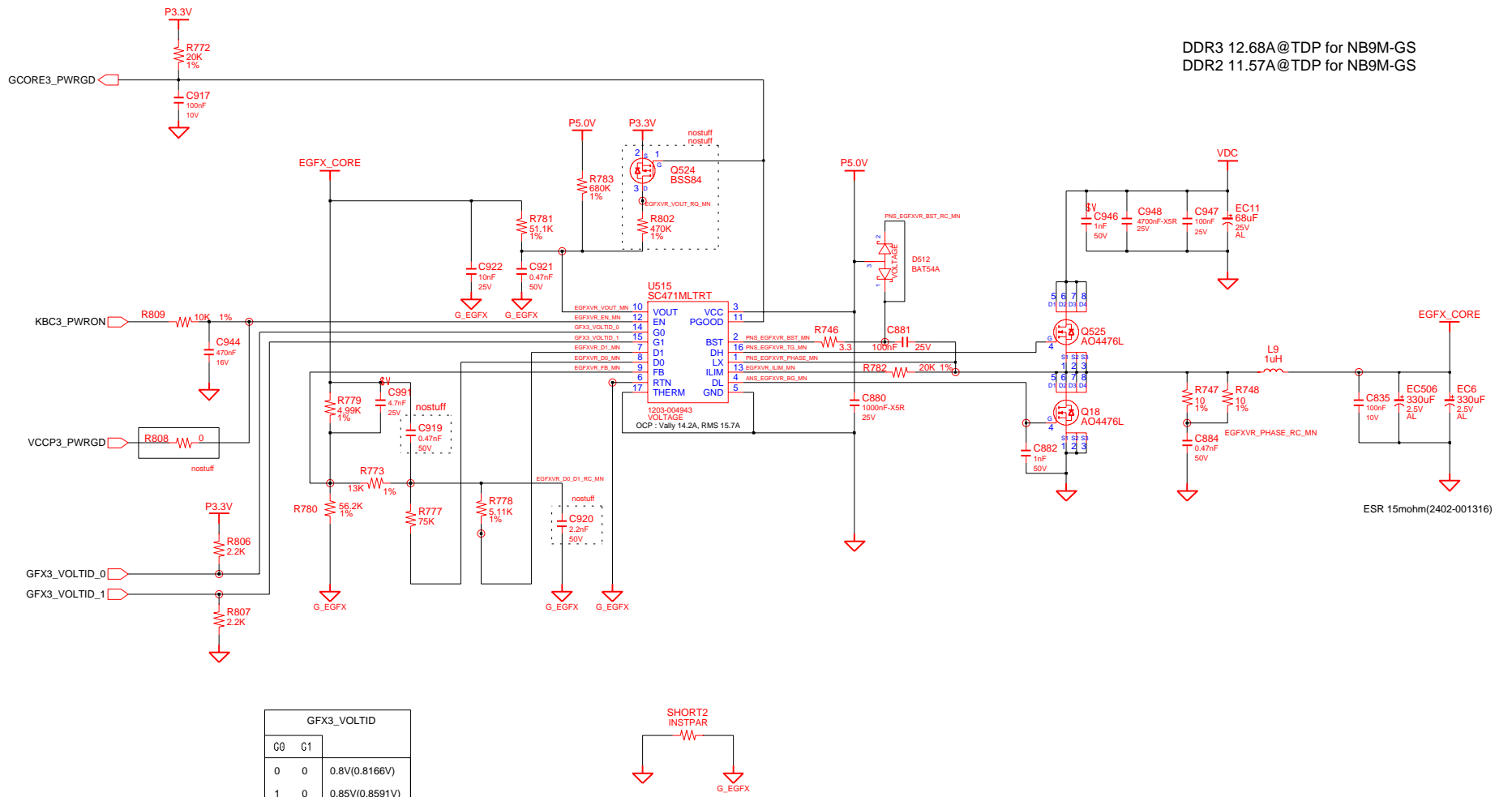
$VDDQ = Vref(0.75V) * (1 + (R1/R2))$

DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	PWR_MV_MeMory		
APPROVAL	BC LEE	REV	1.0	DDR3 POWER <P1.5V_AUX>		PART NO.
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM	PAGE	1	OF 1

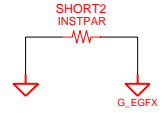
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

Graphic Core Power

DDR3 12.68A@TDP for NB9M-GS
 DDR2 11.57A@TDP for NB9M-GS



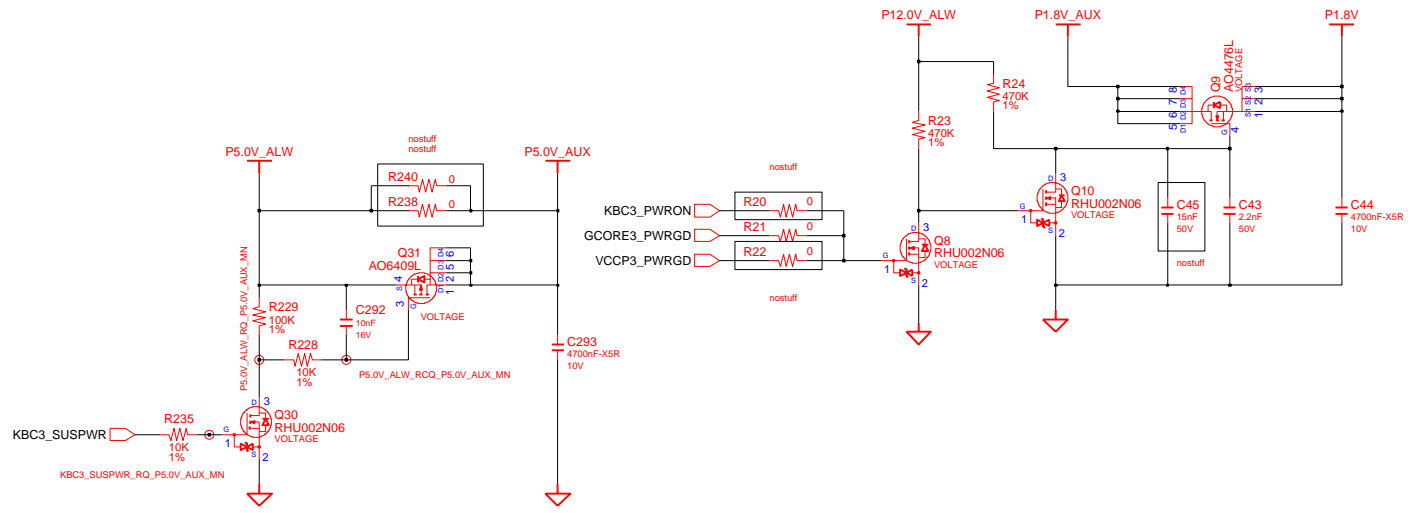
GFX3_VOLTID	
G0	G1
0	0
1	0
0	1
1	1



DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	PWR_Gfx_MV_Ext		
APPROVAL	BC LEE	REV	1.0	Ext Gfx Memory(SC486)		PART NO. BA41-XXXXXX
MODULE CODE		LAST EDIT		June 18, 2009 16:06:51 PM		
				PAGE	1	OF 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.

Switched Power

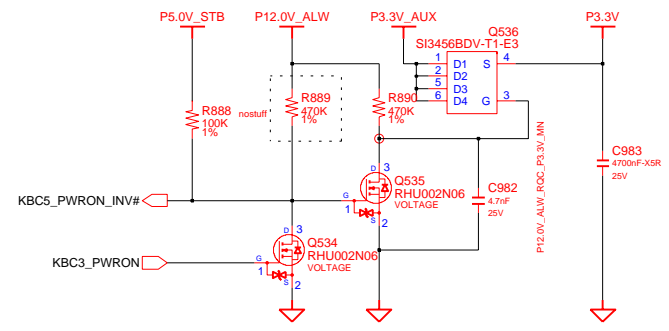


DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR PWR_MV_Switched SWITCHED POWER	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
CHECK	WU SHIJIANG	DEV. STEP	PV			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT				
				June 18, 2009 16:06:51 PM	PAGE	1 OF 2

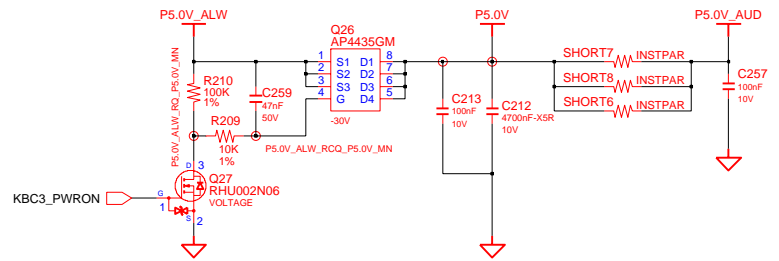
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

Switched Power

Switched Power On (P3.3V)



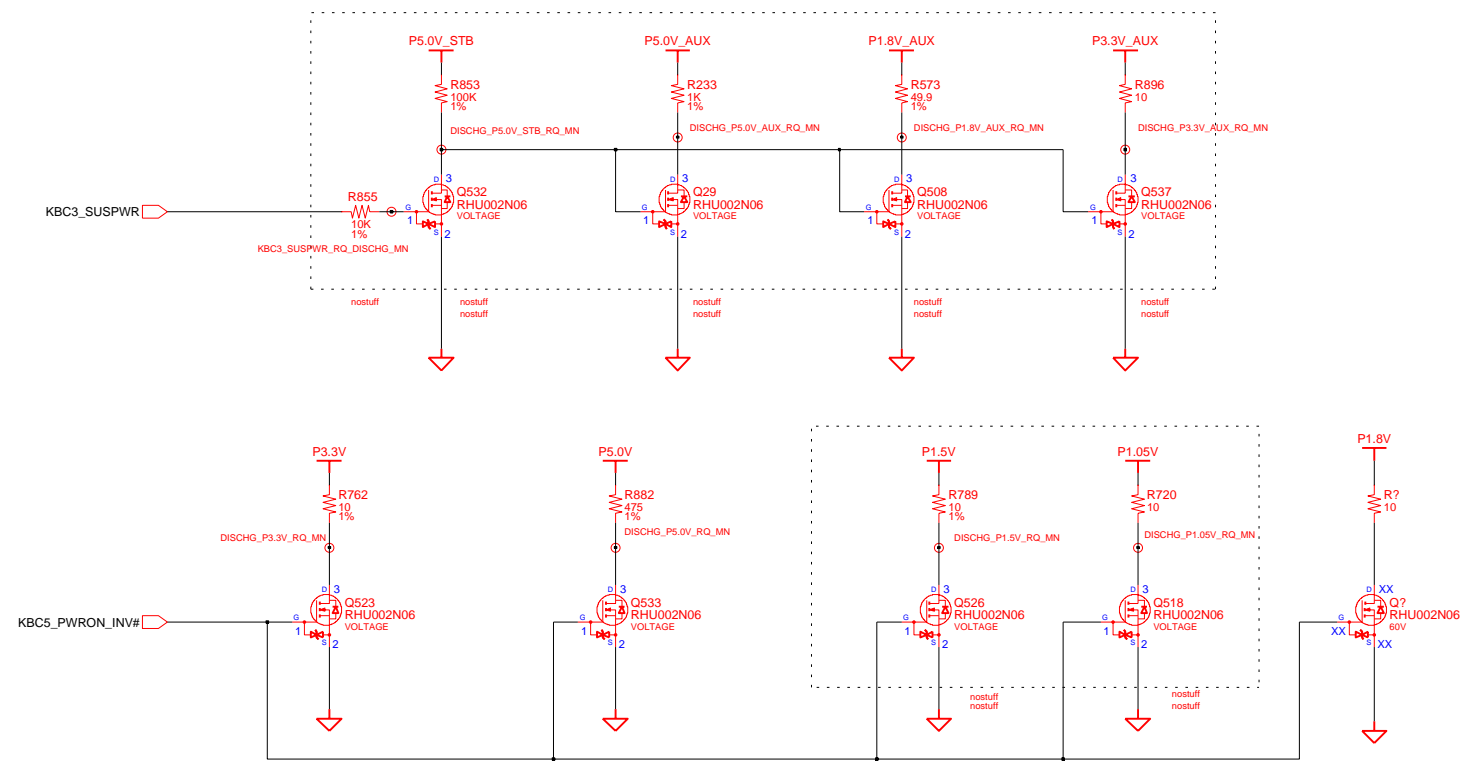
Switched Power On (P5.0V)



DESIGN	XIAOHONG, ZHANG	DATE	12/3/2008	TITLE	QingDao_Ext PWR_MV_SWITCHED Switched Power	SAMSUNG ELECTRONICS PART NO. BA41-xxxxxA
CHECK	RUJIN, ZHENG	DEV. STEP	ADV1			
APPROVAL	BC, LEE	REV	1.0			
MODULE CODE		LAST EDIT	December, 3, 2008 3:39:16 PM	PAGE 2 OF		

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

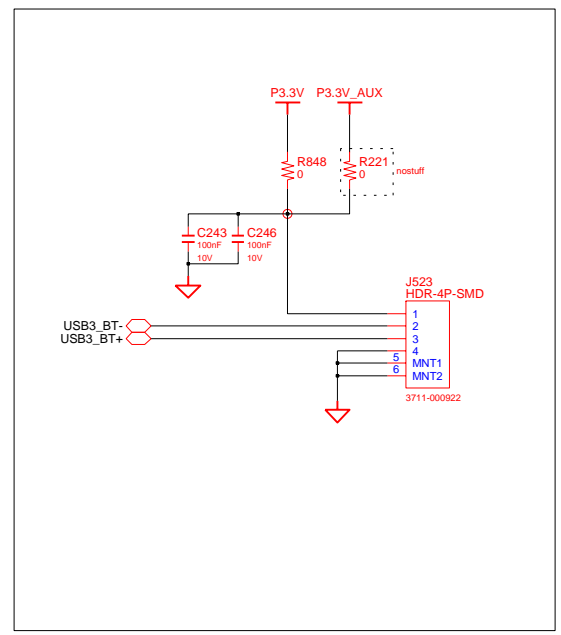


DRAW	SUN XIAO	DATE	04/30/2009	TITLE	QINGDAO_ER_LR	SAMSUNG ELECTRONICS
CHECK	WU SHIJIANG	DEV. STEP	PV	PWR_MV_DisCharger DISCHARGING LOGIC		
APPROVAL	BC LEE	REV	1.0	PART NO. BA41-XXXXXX		PAGE 1 OF 1
MODULE CODE	undefined	LAST EDIT	June 18, 2009 16:06:51 PM			

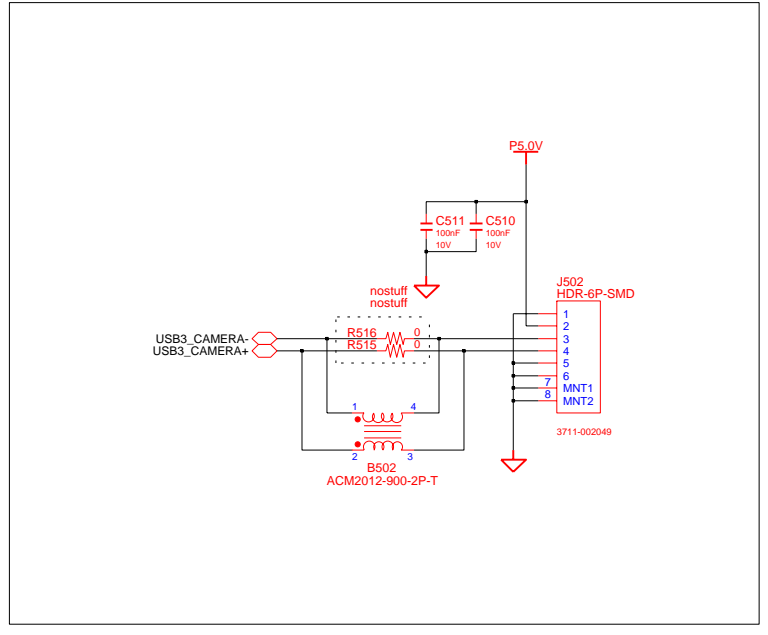
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

USB I/F Devices

Bluetooth Interface



CAMERA

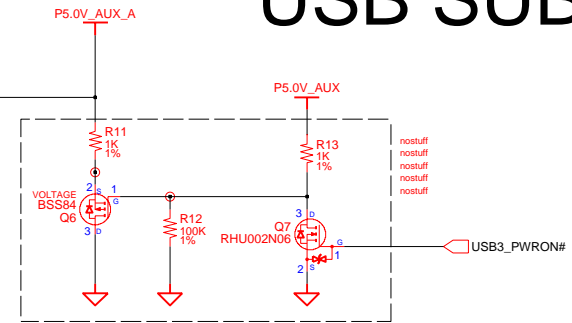
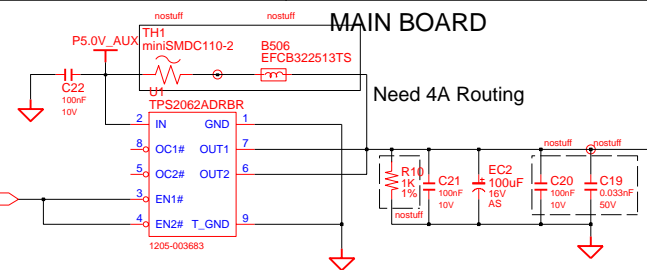
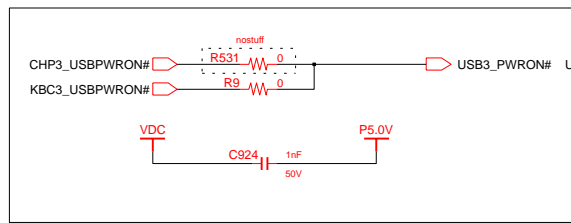


DESIGN	XiaoHong Zhang	DATE	12/3/2008	TITLE	QingDao_Ext USB_DEVICES BT CAMERA	SAMSUNG ELECTRONICS PART NO. BA41-xxxxxA
CHECK	RuJin Zheng	DEV. STEP	ADV1			
APPROVAL	BC LEE	REV	1.0			
MODULE CODE		LAST EDIT	December , 3, 2008 12:12:55 PM	PAGE		

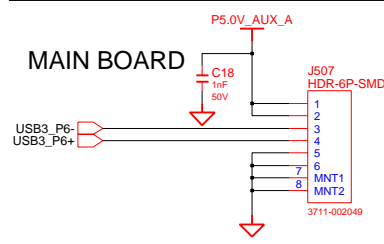
SAMSUNG PROPRIETARY
 THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

USB SUB

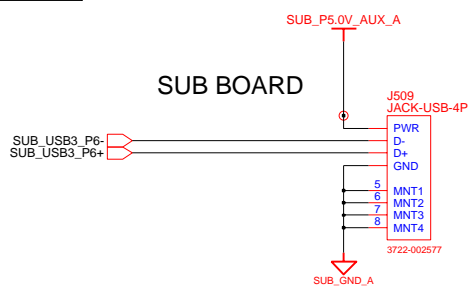
MAIN BOARD



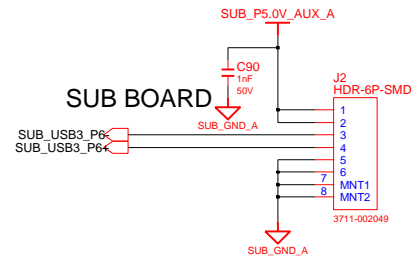
MAIN BOARD



SUB BOARD

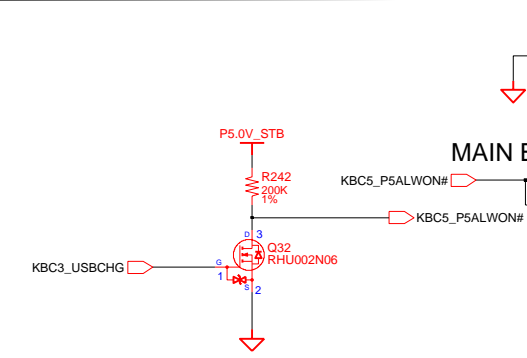


SUB BOARD

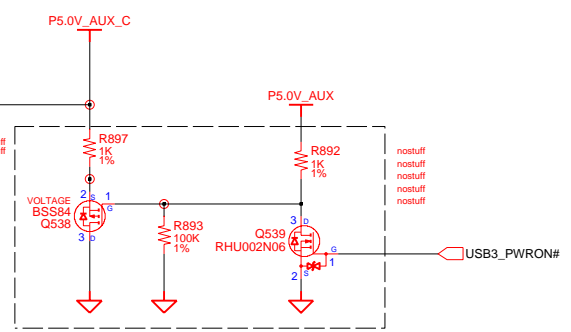
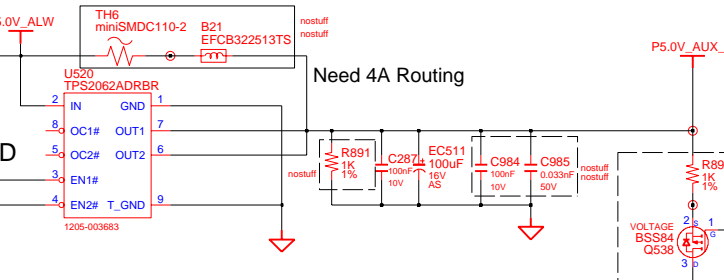


UP

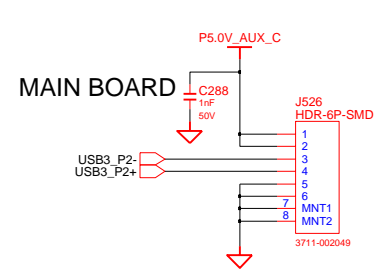
MAIN BOARD



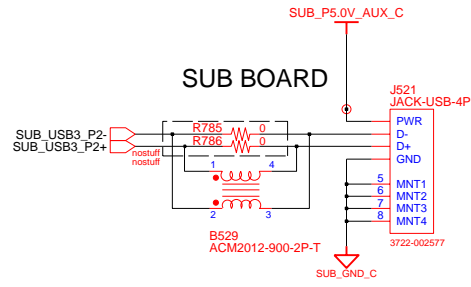
Need 4A Routing



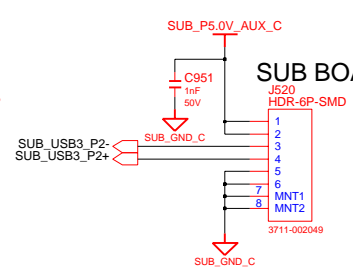
MAIN BOARD



SUB BOARD



SUB BOARD



DOWN

DESIGN	XiaoHong Zhang	DATE	12/3/2008	TITLE	To RJ11 cable. (Connect with BA39-00593A)	
CHECK	RuJin Zheng	DEV. STEP	ADV1	QingDao_Ext USB_CONN USB SUB		SAMSUNG ELECTRONICS
APPROVAL	BC LEE	REV	1.0	PART NO. BA41-xxxxxA		
MODULE CODE	undefined	LAST EDIT	December , 3, 2008 12:12:18 PM	PAGE	1	OF