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# Lotus-14R

CPU : Ivy Bridge ULV  
Chip Set : Intel Panther Point  
GFX : NVidia N13M-GS1  
INTEL HD 3000  
Remarks : Chief River Platform

Model Name : Lotus-14\_CRV

PBA Name : MAIN

PCB Code : BA41-02013A (GCE)  
BA41-02014A (NY)

Dev. Step : MP

Revision : 1.1

T.R. Date : 2012.03.30

Design	CHECK	APPROVAL
SY KIM	SJ KIM	MK KIM

■ Owner : SEC Mobile R & D      Signature : X

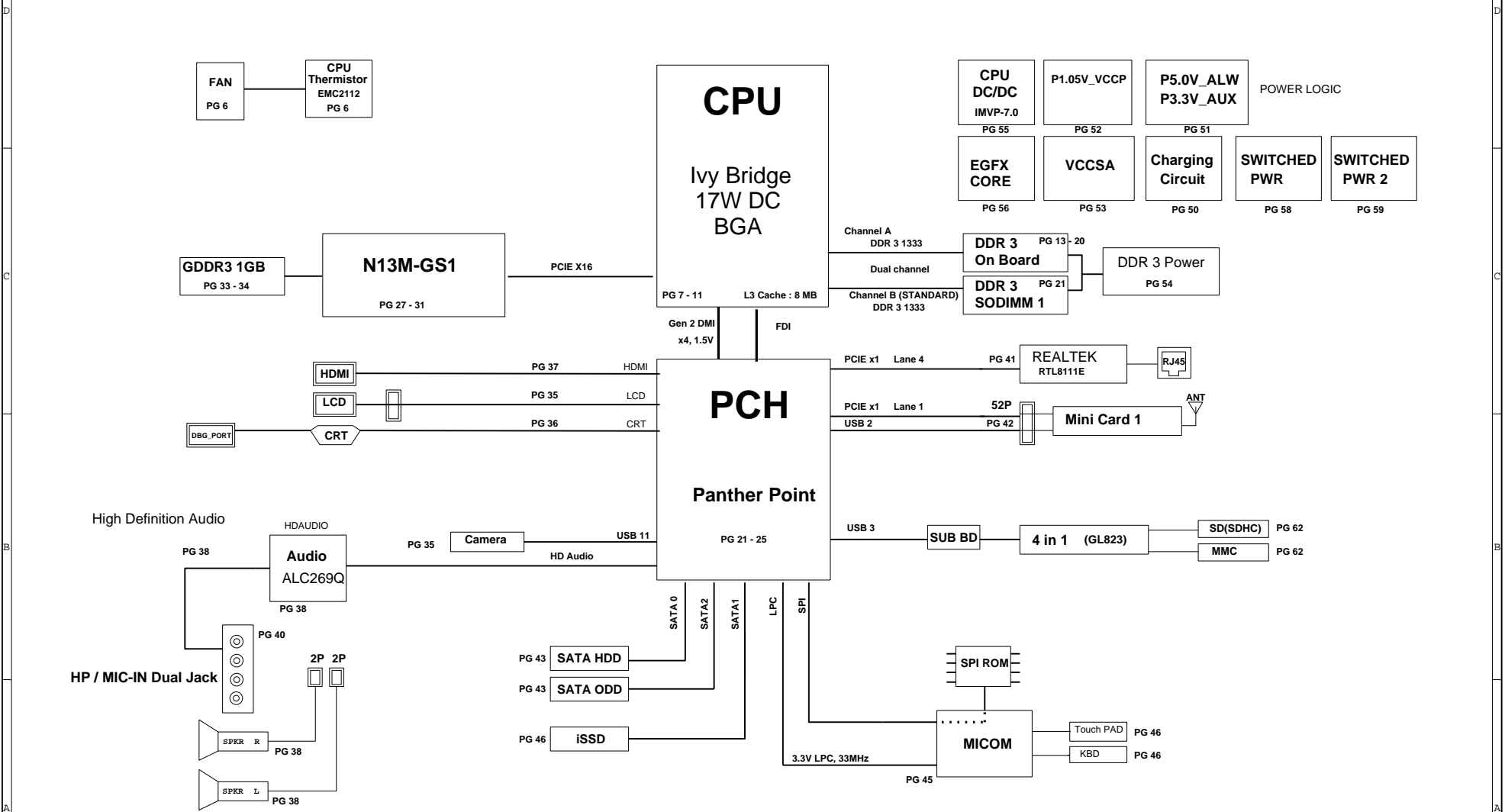
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sheet43 : MICOM / BIOS(ENEKB9010)  
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sheet47 : MAIN TO SUB CONNECTOR  
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sheet50 : Power - P1.05V (Chipset Power)  
sheet51 : Power - VCCSA  
sheet52 : Power - DDR3  
sheet53 : Power - CPU VRM  
sheet54 : Power - EGFX\_CORE  
sheet55 : Power - Switched Power 1  
sheet56 : Power - Switched Power 2  
sheet57 : Power - Power Discharge  
sheet58 : Mount Hole  
sheet59 : SUB1(4-IN-1(GL823) USB SUB)  
sheet60 : SUB1(4-IN-1(GL823) USB SUB)  
sheet61 : SUB2 (POWER SW)

DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP		MAIN	
APPROVAL	MK KIM	REV	REV 1.1		COVER	
MODULE CODE		LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	1	OF 61

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# BLOCK DIAGRAM



DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP	MAIN		
APPROVAL	MK KIM	REV	REV 1.1	BLOCK DIAGRAM	PART NO. BA41-02013A	
MODULE CODE	undefined	LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	2	OF 61

## SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails	Active in
VDC P3.3V_MICOM P5.0V_ALW P5.0V_STB	Primary DC system power supply (7 to 21V) 3.3V always power rail (for Microm) 5.0V always power rail 5.0V always power rail <b>S4 - S5</b>
P5.0V_AUX P3.3V_AUX P1.5V_AUX	5.0V switched on power rail (off in S4-S5) 3.3V switched on power rail (off in S4-S5) 1.5V power rail for DDR3 (off in S4-S5) <b>S3</b>
P5.0V P3.3V P1.8V P1.5V P0.75V P0.85V	5.0V switched power rail (off in S3-S5) 3.3V switched power rail (off in S3-S5) 1.8V switched power rail (off in S3-S5) 1.5V switched power rail (off in S3-S5) 0.75V power rail for DDR3 (off in S3-S5) 0.85V switched power rail (off in S3-S5) <b>S0</b>
VCC_CORE EGF_X_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for GPU VCC for PANTHERPOINT <b>S0</b>

USB PORT Assign		PCI Express Assign	
PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	SYSTEM PORT 0	1	Mini Card 1 (WLAN)
1	SYSTEM PORT 1	2	NC
2	Mini PCI Express (WLAN)	3	NC
3	SYSTEM PORT 2	4	LAN CONTROLLER
4	Multi Memory Card Controller	5	NC
5	Camera 1	6	NC
6	NC (N/A WITH HM65)	7	NC
7	NC (N/A WITH HM65)	8	NC
8	NC		
9	NC		
10	NC		
11	Camera 2		
12	NC		
13	NC		

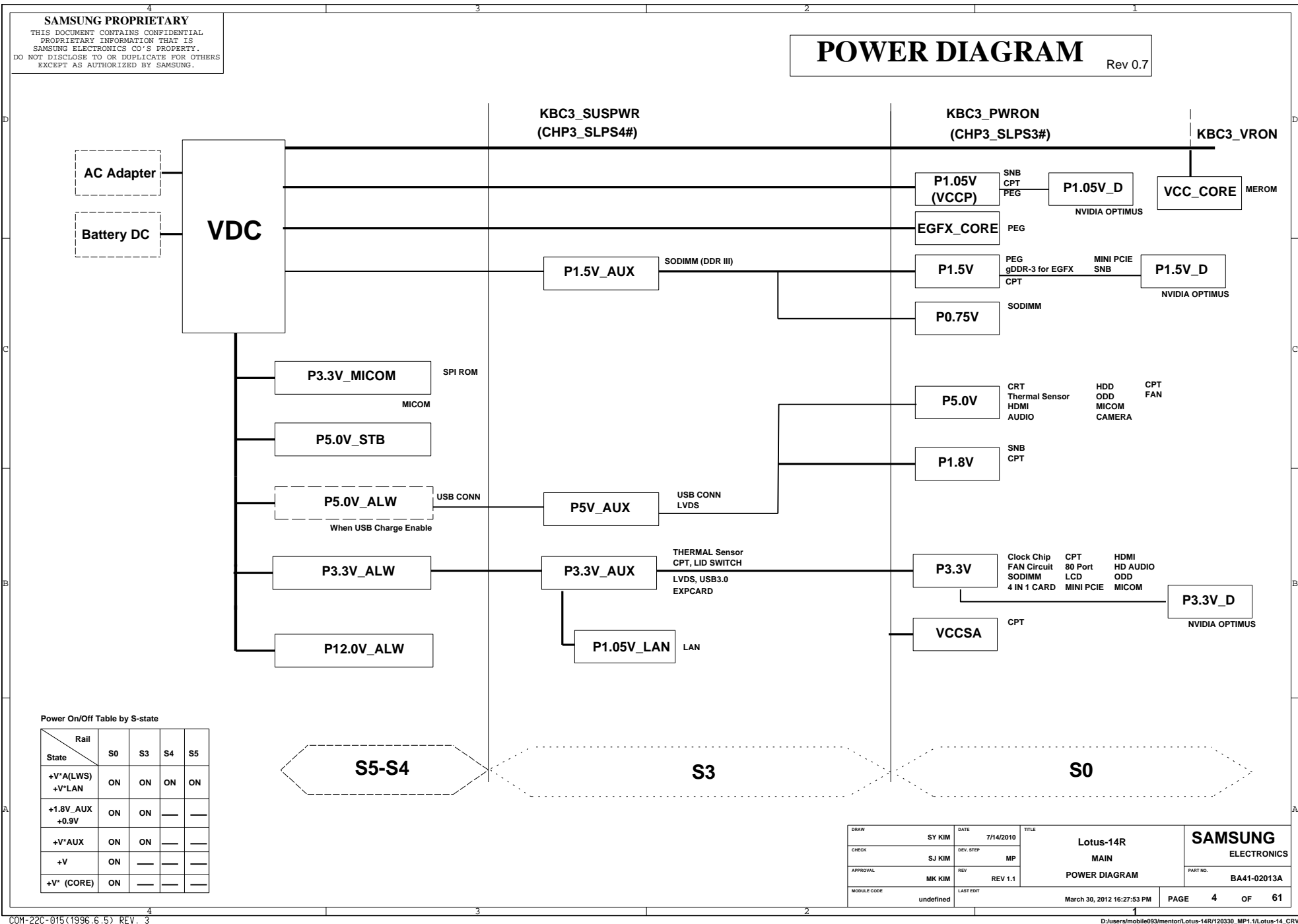
SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD/SSD
1	ISSD
2	ODD (14" ONLY)
3	
4	
5	

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	PANTHER POINT	Real Time Clock
Crystal	25MHz	LAN	REALTEK
Crystal	25MHz	PANTHER POINT	
Crystal	27MHz	N13M	
Crystal	24MHz	USB3.0 CHIP	

LCD Panel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

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

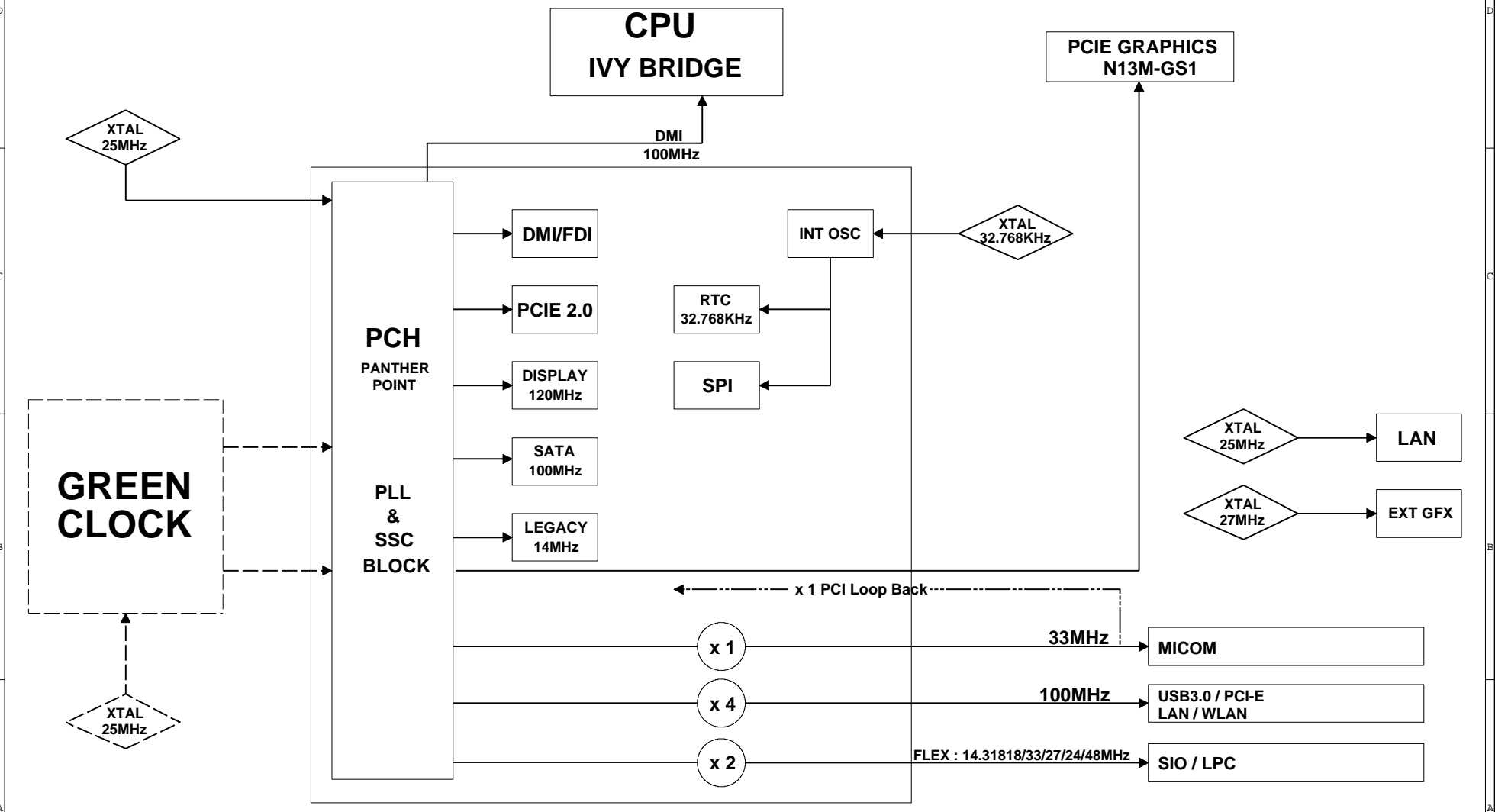
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CHECK		SJ KIM	DEV. STEP	MP				
APPROVAL		MK KIM	REV	REV 1.1				
MODULE CODE		undefined		LAST EDIT		March 30, 2012 16:27:53 PM		PAGE 3 OF 61



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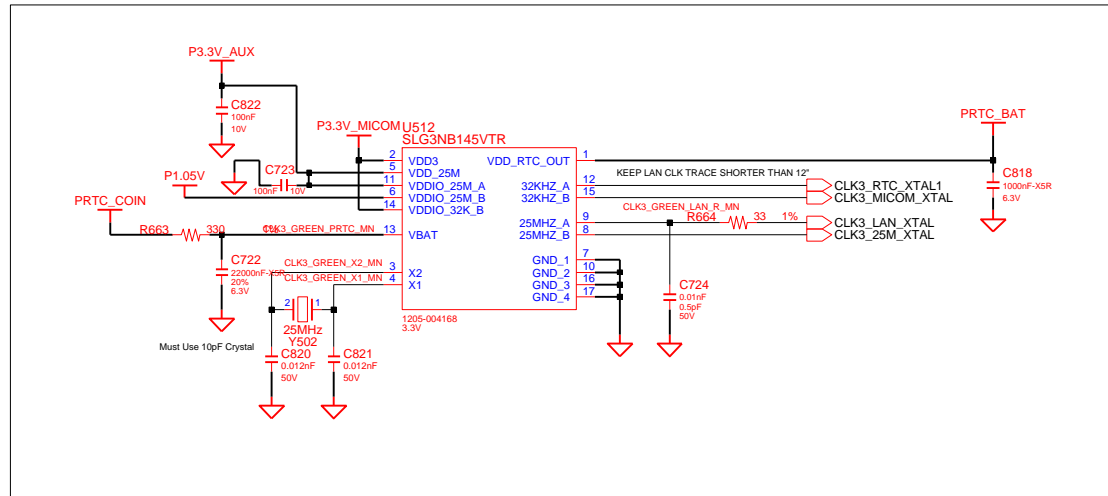
# CLOCK DISTRIBUTION

Rev. 0.8



DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG
CHECK	SJ KIM	DEV. STEP	MP	MAIN	MAIN	ELECTRONICS
APPROVAL	MK KIM	REV	REV 1.1	CLOCK DIAGRAM	PART NO.	BA41-02013A
MODULE CODE	undefined	LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	5	OF 61

## CLOCK DISTRIBUTOR



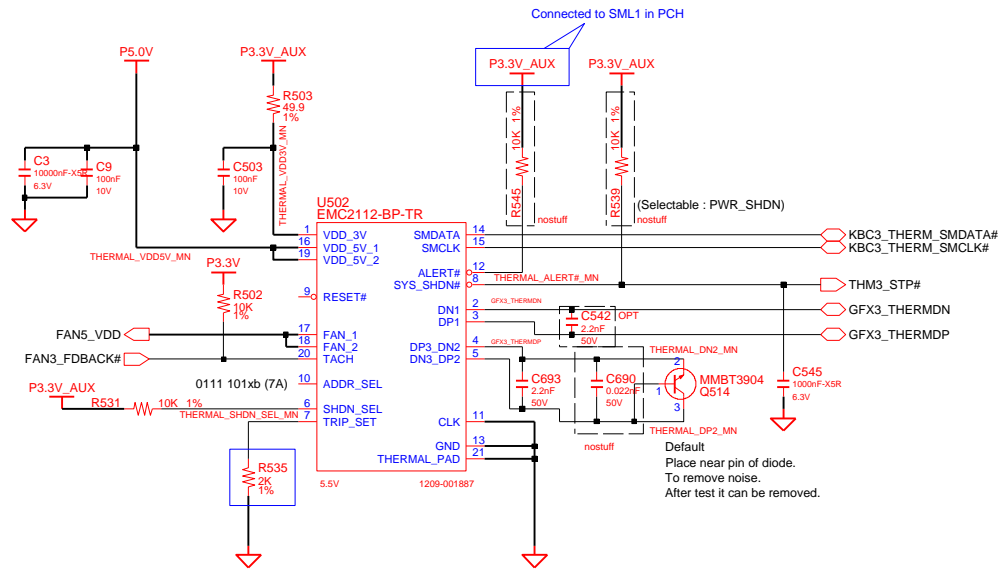
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK

DESIGN	SY KIM	DATE	1/03/2011	TITLE	Lotus-14R CLOCK CLOCK DISTRIBUTION	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP			PART NO. BA41-02013A
APPROVAL	MK KIM	REV	REV 1.1			
MODULE CODE		LAST EDIT		March 30, 2012 16:27:53 PM	PAGE 6 OF 61	

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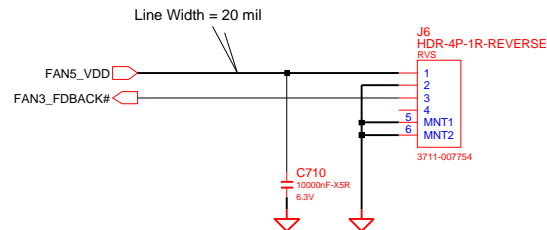
## THERMAL SENSOR & FAN CONTROL



TEMPERATURE	103c	99c	95c
TRIP_SET resistor value	2.49K	2.0K	1.5K

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

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

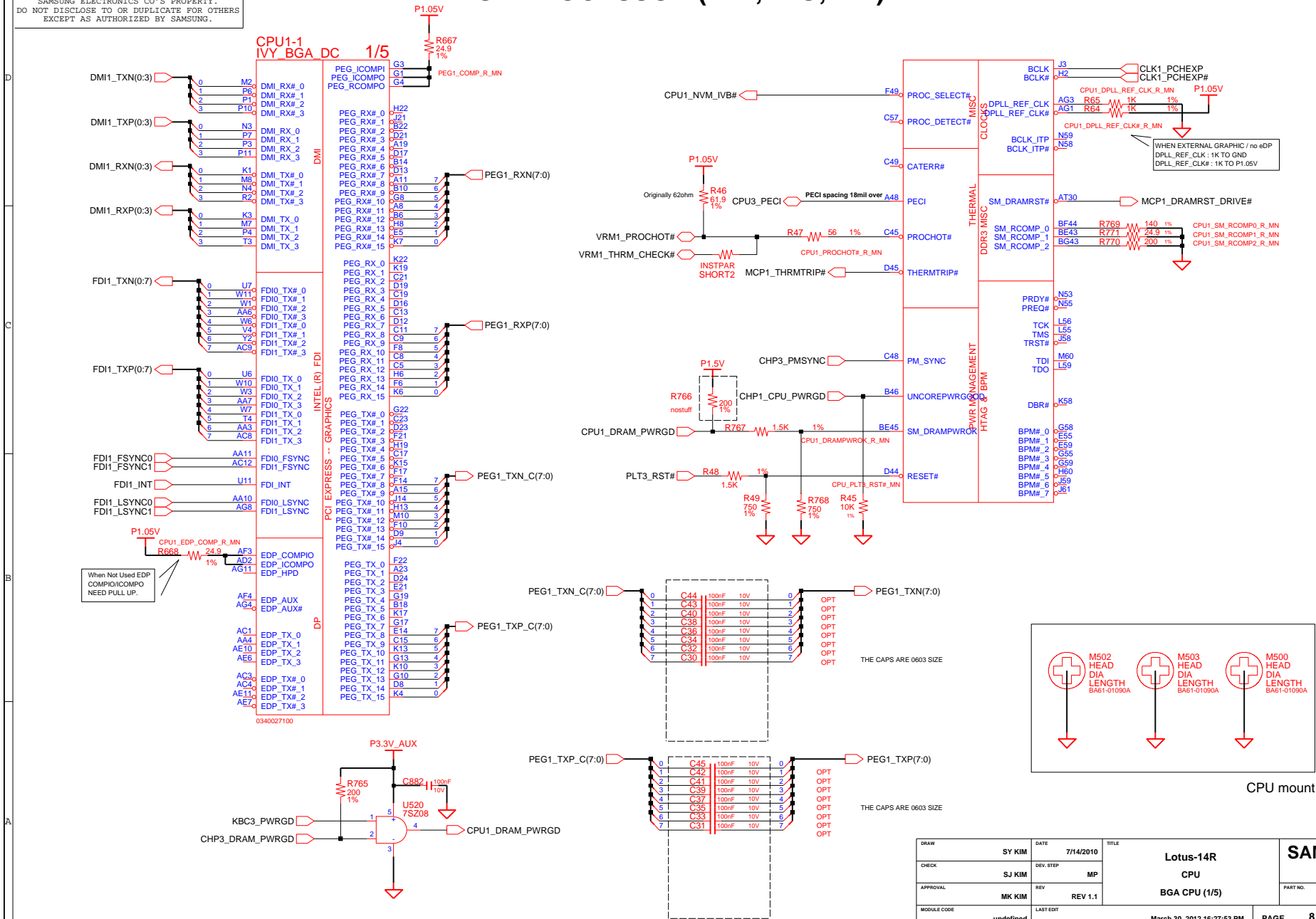


DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
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APPROVAL	MK KIM	REV	REV 1.1		THERMAL SENSOR EMC2112	
MODULE CODE		LAST EDIT				PART NO. BA41-02013A
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## IVYBRIDGE PROCESSOR (DMI,PEG, FDI)



DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R
CHECK	SJ KIM	DEV. STEP	MP		CPU
APPROVAL	MK KIM	REV	REV 1.1		BGA CPU (1/5)
MODULE CODE	undefined	LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	8 OF 61

**SAMSUNG**  
 ELECTRONICS  
 PART NO. BA41-02013A



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MEM1\_ADQ(63:0) 19-D4

CPU1-2  
IVY\_BGA\_DC 2/5

SA\_CLK\_0 AU36 18-C4 CLK1\_A\_MCLK0  
SA\_CLK#\_0 AY26 18-C4 CLK1\_A\_MCLK0#  
SA\_CKE\_0 AY26 18-C4 MEM1\_A\_CKE0

SA\_CLK\_1 AT40 CLK1\_A\_MCLK1  
SA\_CLK#\_1 AU40 CLK1\_A\_MCLK1#  
SA\_CKE\_1 BB26 MEM1\_A\_CKE1

SA\_CS#\_0 BB40 MEM1\_A\_CS0#  
SA\_CS#\_1 BC41 MEM1\_A\_CS1#

SA\_ODT\_0 AY40 MEM1\_A\_ODT0  
SA\_ODT\_1 BA41 MEM1\_A\_ODT1

SA\_DQS#\_0 AL11 0 MEM1\_ADQS#(7:0)  
SA\_DQS#\_1 AR8 1  
SA\_DQS#\_2 AY17 2  
SA\_DQS#\_3 AY45 4  
SA\_DQS#\_4 AY51 5  
SA\_DQS#\_5 AY55 6  
SA\_DQS#\_6 AT55 6  
SA\_DQS#\_7 AK55 7

SA\_DQS#\_0 AJ11 0 MEM1\_ADQS(7:0)  
SA\_DQS#\_1 AR10 1  
SA\_DQS#\_2 AY11 2  
SA\_DQS#\_3 AY17 3  
SA\_DQS#\_4 AW45 4  
SA\_DQS#\_5 AV51 5  
SA\_DQS#\_6 AT56 6  
SA\_DQS#\_7 AK54 7

SA\_MA\_0 BG35 0 MEM1\_AMA(14:0)  
SA\_MA\_1 BG34 1  
SA\_MA\_2 BE35 2  
SA\_MA\_3 BD35 3  
SA\_MA\_4 AT34 4  
SA\_MA\_5 AU34 5  
SA\_MA\_6 BB32 6  
SA\_MA\_7 AT32 7  
SA\_MA\_8 AY32 8  
SA\_MA\_9 BE37 9  
SA\_MA\_10 BA30 11  
SA\_MA\_11 BC30 12  
SA\_MA\_12 AW41 13  
SA\_MA\_13 AW28 14  
SA\_MA\_14 AU28 14  
SA\_MA\_15 AU26

MEM1\_ABS(2:0) 19-C4

MEM1\_ACAS# BE39 SA\_CAS#  
MEM1\_ARAS# BD39 SA\_RAS#  
MEM1\_AWE# AT41 SA\_WE#

0340027100

MEM1\_BDQ(63:0) 19-D4

SB\_CLK\_0 BA34 19-C4 CLK1\_B\_MCLK0  
SB\_CLK#\_0 AR22 19-C4 CLK1\_B\_MCLK0#  
SB\_CKE\_0 AR22 19-B4 MEM1\_B\_CKE0

SB\_CLK\_1 BA36 19-C4 CLK1\_B\_MCLK1  
SB\_CLK#\_1 BB36 19-C4 CLK1\_B\_MCLK1#  
SB\_CKE\_1 BF27 19-B4 MEM1\_B\_CKE1

SB\_CS#\_0 BE41 19-C4 MEM1\_B\_CS0#  
SB\_CS#\_1 BE47 19-C4 MEM1\_B\_CS1#

SB\_ODT\_0 AT43 19-B4 MEM1\_B\_ODT0  
SB\_ODT\_1 BG47 19-B4 MEM1\_B\_ODT1

SB\_DQS#\_0 AL3 0 MEM1\_BDQS#(7:0)  
SB\_DQS#\_1 AV3 1  
SB\_DQS#\_2 BG11 2  
SB\_DQS#\_3 BG17 3  
SB\_DQS#\_4 BG51 4  
SB\_DQS#\_5 BA59 5  
SB\_DQS#\_6 AT60 6  
SB\_DQS#\_7 AK59 7

SB\_DQS#\_0 AM2 0 MEM1\_BDQS(7:0)  
SB\_DQS#\_1 AV1 1  
SB\_DQS#\_2 BE11 2  
SB\_DQS#\_3 BD18 3  
SB\_DQS#\_4 BE51 4  
SB\_DQS#\_5 BA61 5  
SB\_DQS#\_6 AR59 6  
SB\_DQS#\_7 AK61 7

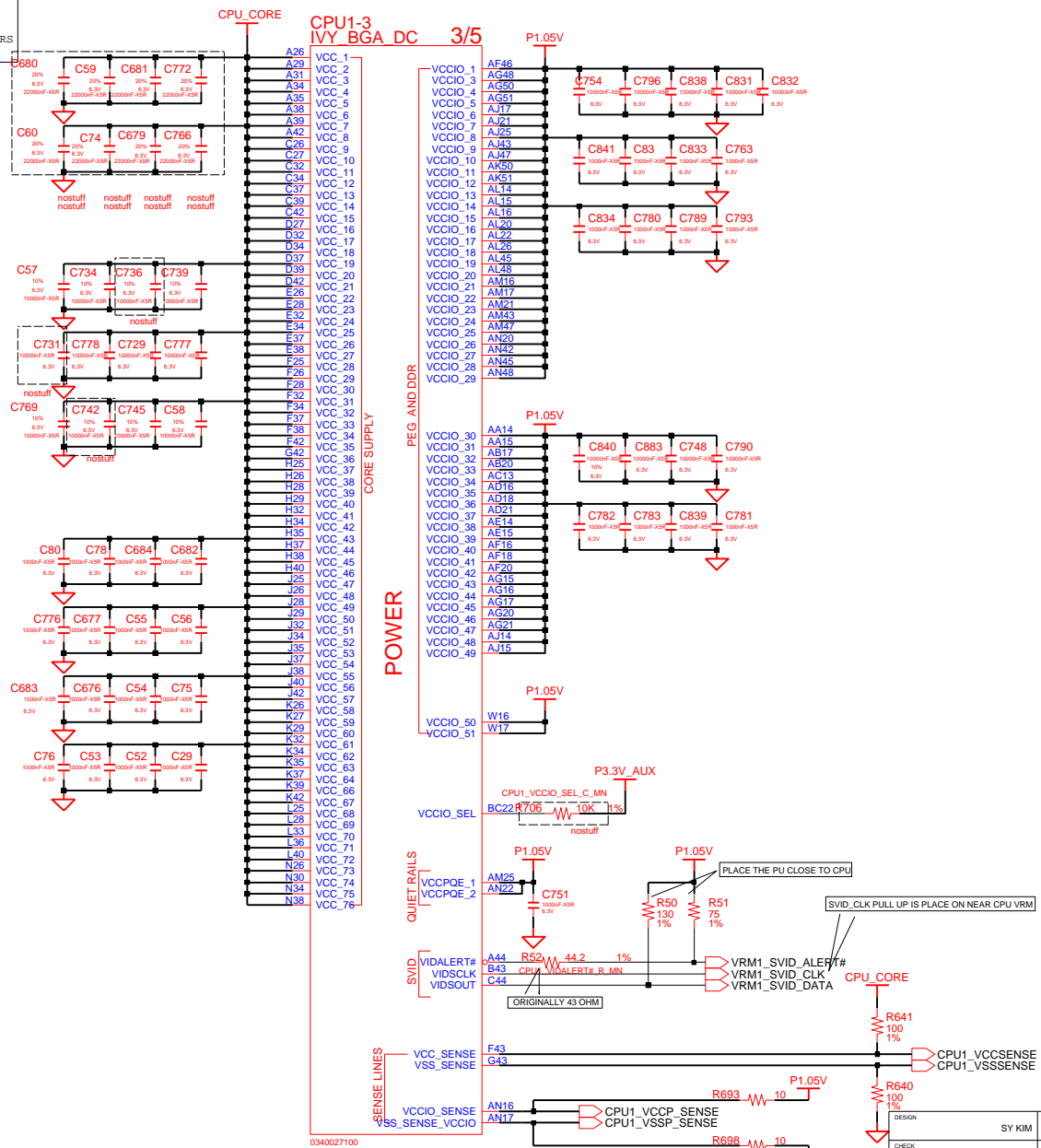
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SB\_MA\_1 BE33 1  
SB\_MA\_2 BD33 2  
SB\_MA\_3 AU30 3  
SB\_MA\_4 BD30 4  
SB\_MA\_5 AV30 5  
SB\_MA\_6 BE30 6  
SB\_MA\_7 BE29 7  
SB\_MA\_8 BE30 8  
SB\_MA\_9 BE28 9  
SB\_MA\_10 BD43 10  
SB\_MA\_11 AT28 11  
SB\_MA\_12 AV28 12  
SB\_MA\_13 BD46 13  
SB\_MA\_14 AT26 14  
SB\_MA\_15 AU22 15

MEM1\_BBS(2:0) 19-C4

MEM1\_BCAS# AV43 SA\_CAS#  
MEM1\_BRAS# BF40 SA\_RAS#  
MEM1\_BWE# BD45 SA\_WE#

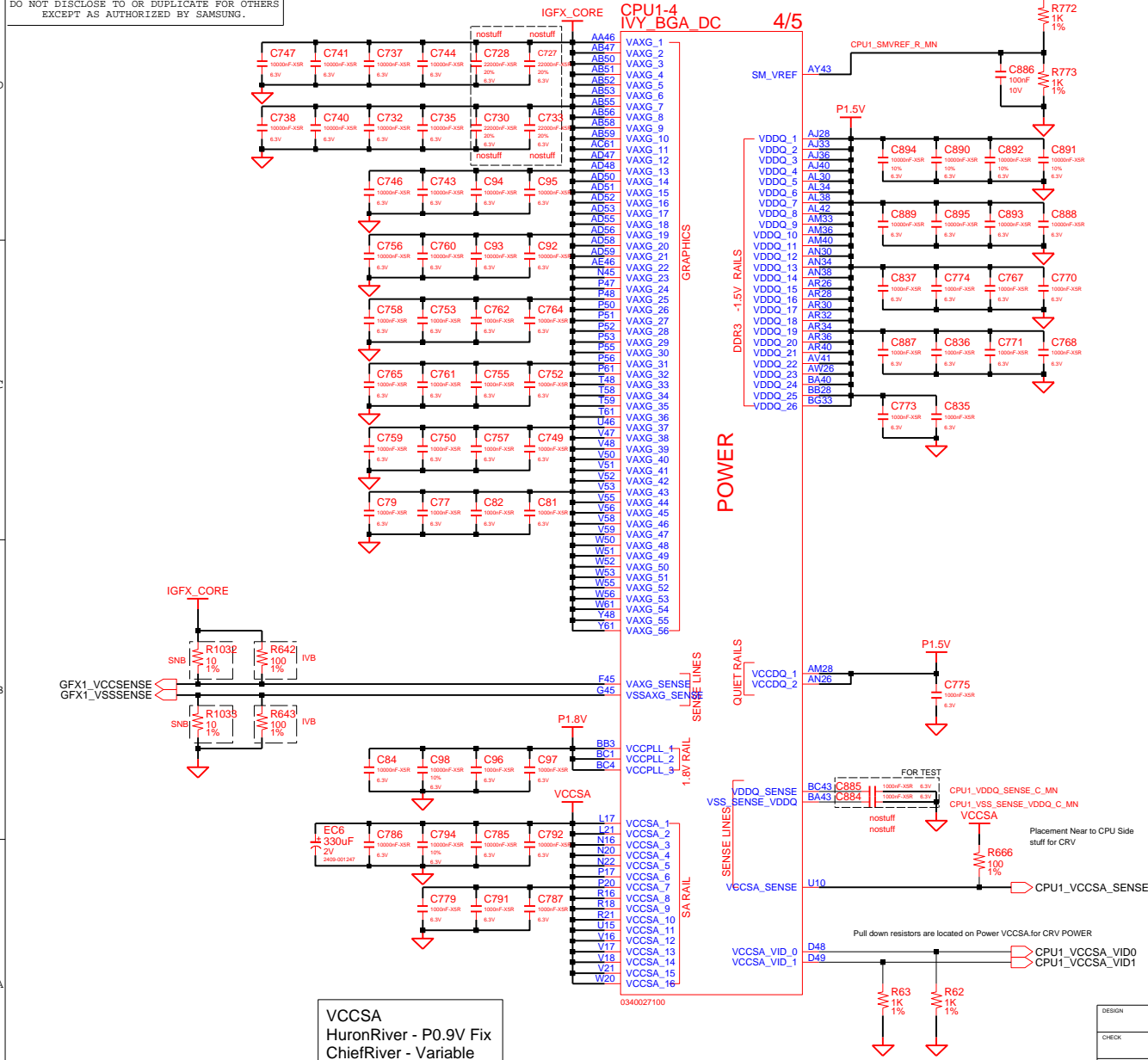
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CHECK	SJ KIM	DEV. STEP	MP	CPU		
APPROVAL	MK KIM	REV	REV 1.1	BGA CPU (2/5)		
MODULE CODE	undefined	LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	9 OF 61	

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DESIGN	SY KIM	DATE	7/14/2010	Lotus-14R CPU BGA CPU (3/5)	<b>SAMSUNG</b> ELECTRONICS		
CHECK	SJ KIM	DEV. STEP	MP				
APPROVAL	MK KIM	REV	REV 1.1		PART NO.	BA41-02013A	
MODULE CODE	LAST EDIT				March 30, 2012 16:27:53 PM	PAGE	10 OF 61

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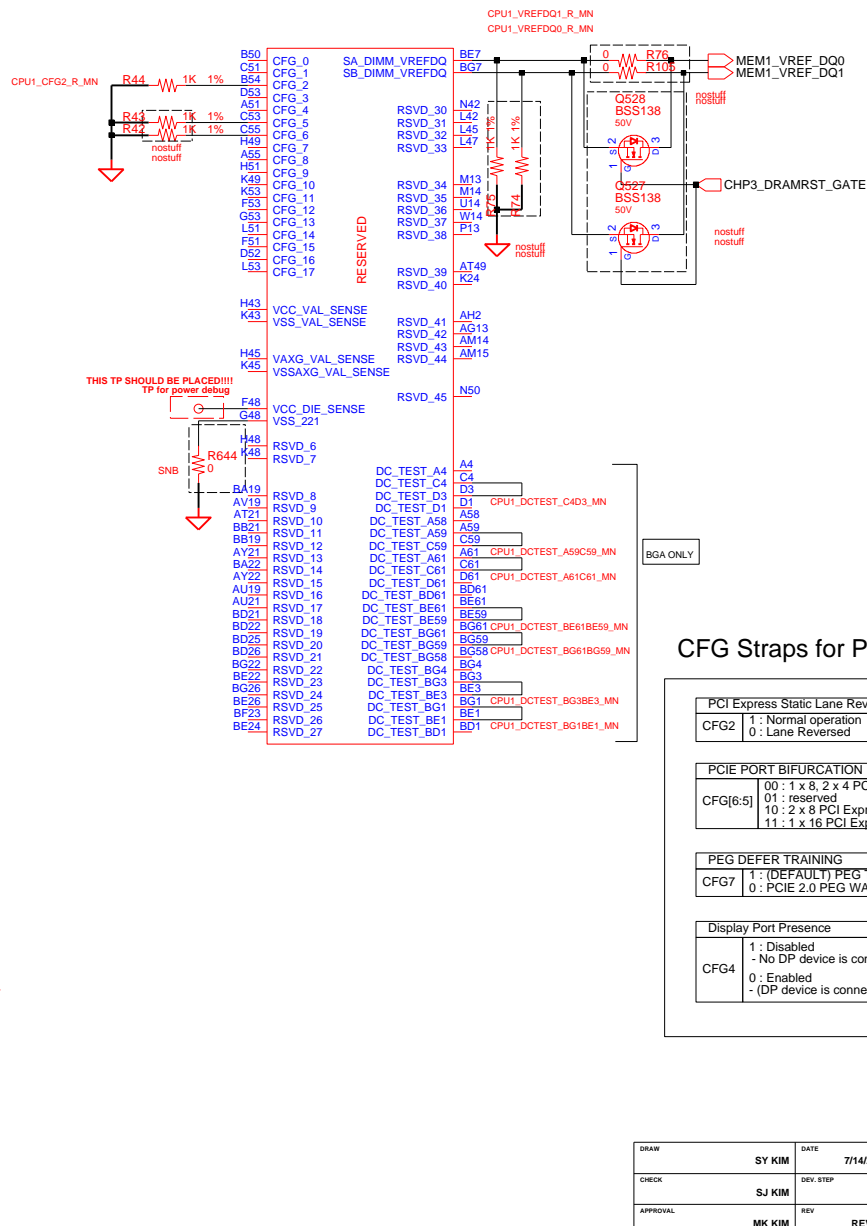
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APPROVAL	MK KIM	REV	REV 1.1		BGA CPU (4/5)	PART NO.
MODULE CODE		LAST EDIT				BA41-02013A
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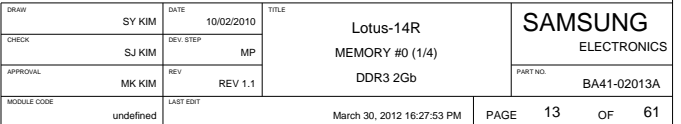
CPU1-5  
IVY BGA DC

5/5



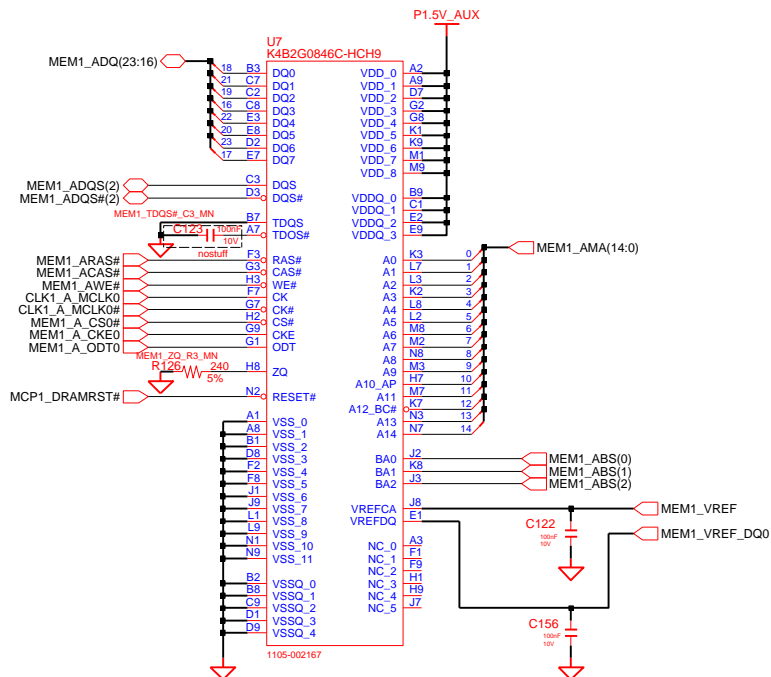
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CHECK	SJ KIM	DEV. STEP	MP			
APPROVAL	MK KIM	REV	REV 1.1	BGA CPU (5/5)		
MODULE CODE	undefined	LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	12 OF 61	

## DDR3 on board #0 (1/4)

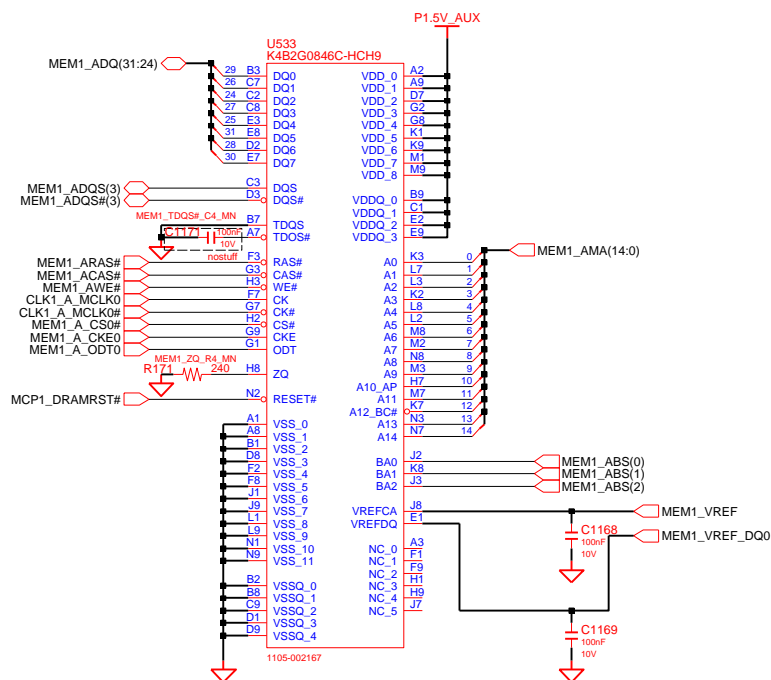


# DDR3 on board #0 (2/4)

## 1 RANK



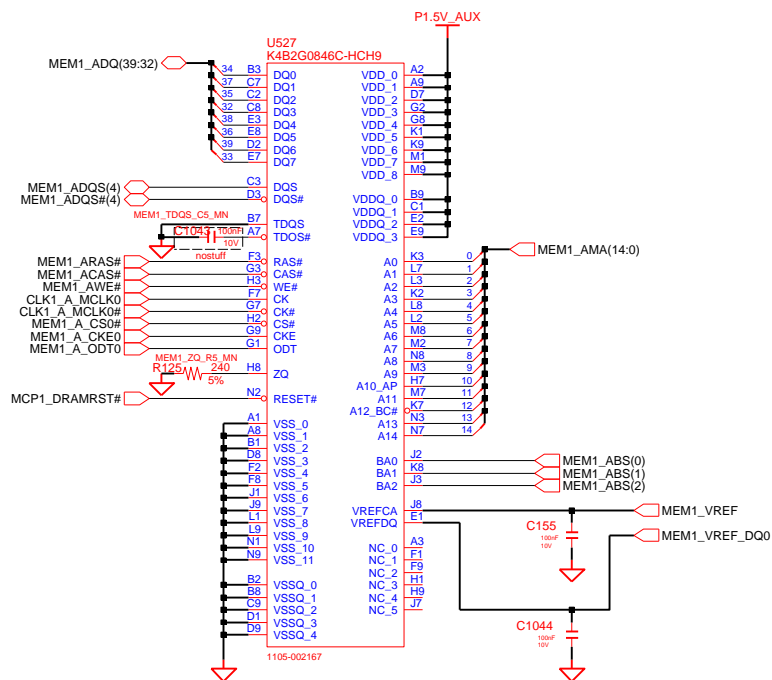
## 1 RANK



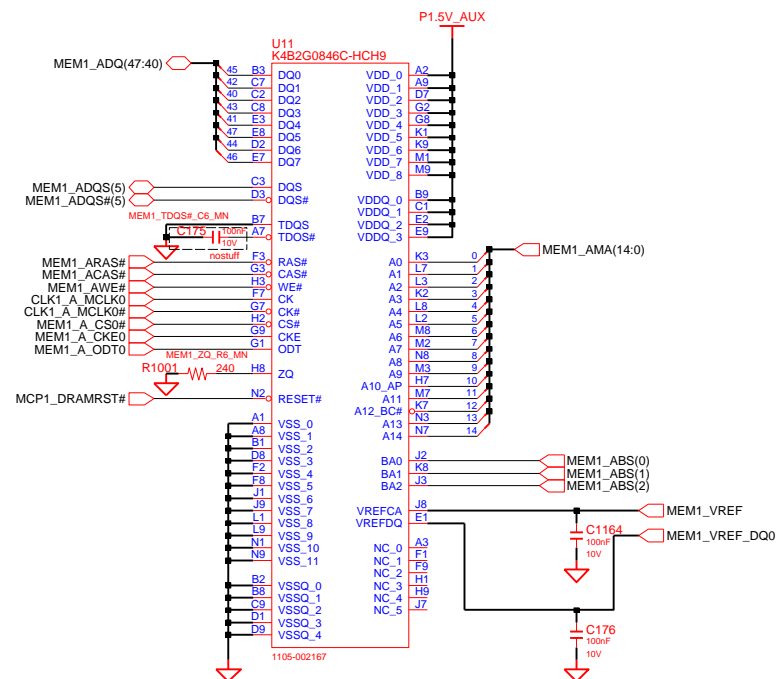
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CHECK	SJ KIM	DEV. STEP	MP		MEMORY #0 (2/4)	
APPROVAL	MK KIM	REV	REV 1.1		DDR3 2Gb	
MODULE CODE	undefined	LAST ENT	March 30, 2012 16:27:53 PM	PAGE	14	OF 61

### DDR3 on board #0 (3/4)

## 1 RANK



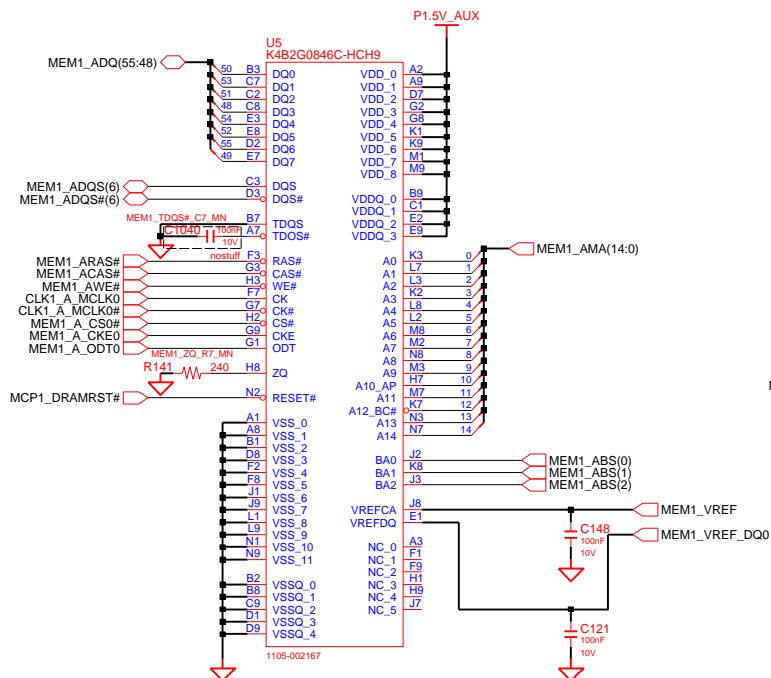
## 1 RANK



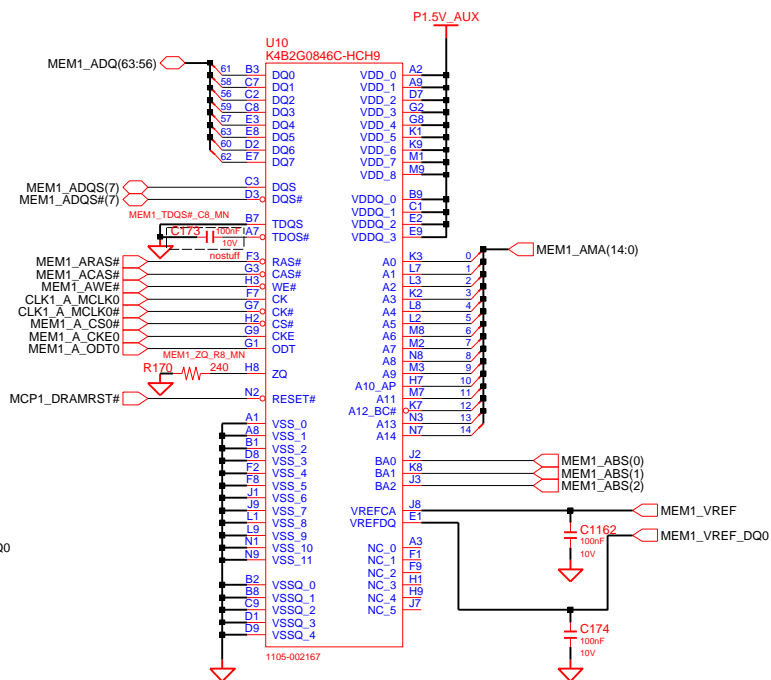
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# DDR3 on board #0 (4/4)

## 1 RANK



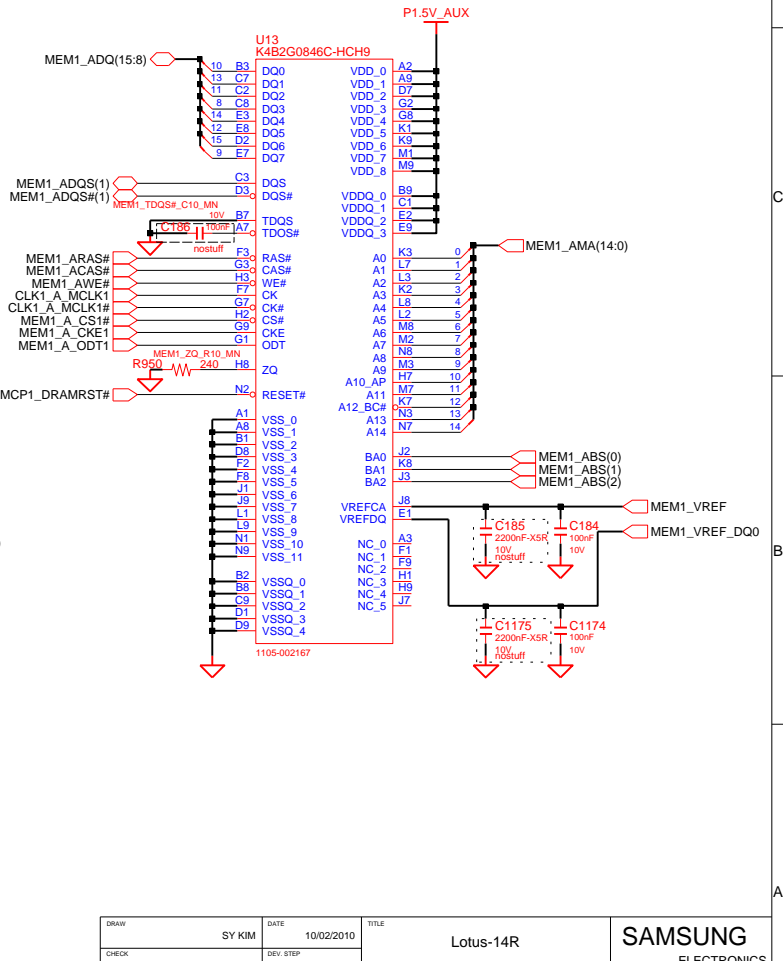
## 1 RANK



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MODULE CODE	undefined	LAST ENT	March 30, 2012 16:27:53 PM	PAGE	16	OF 61



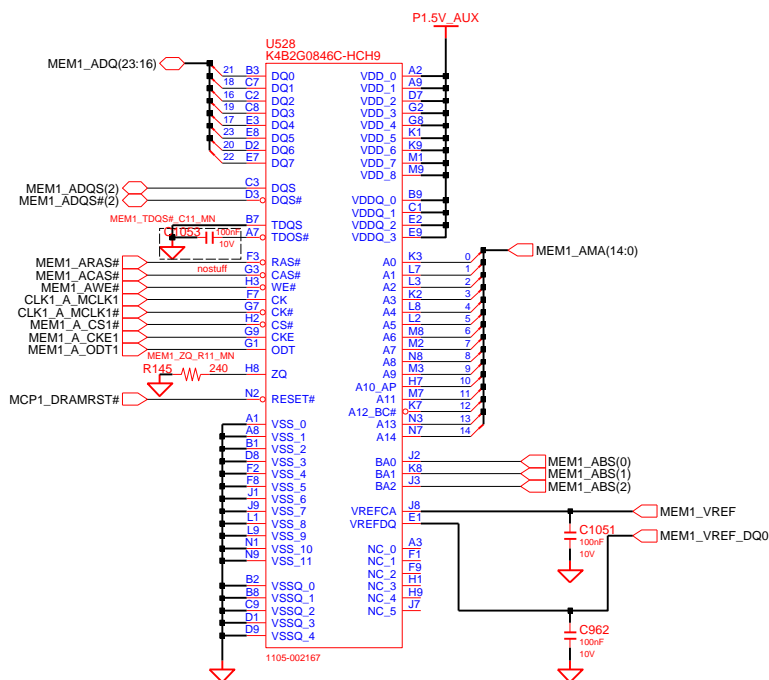
## DDR3 on board #0 (1/4)



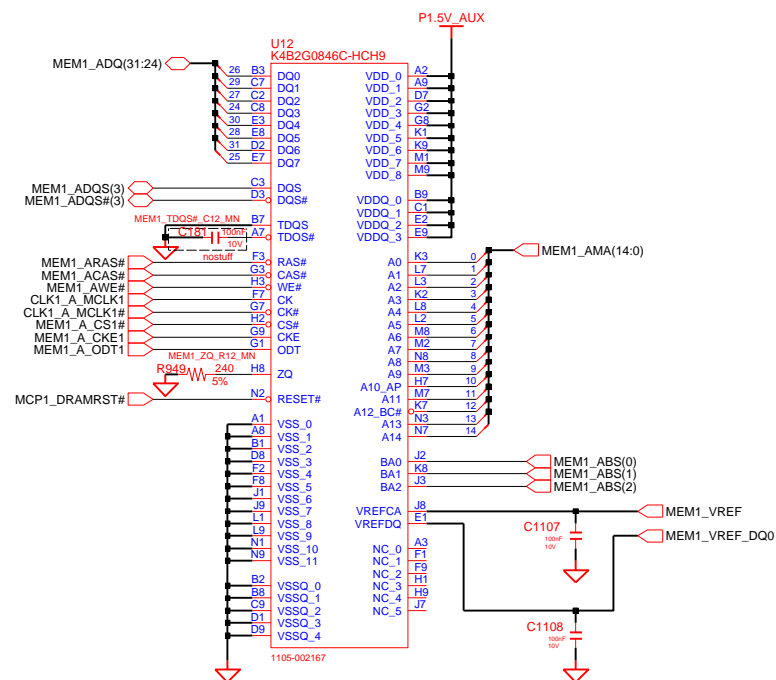
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CHECK	SJ KIM	DEV. STEP	MP							
APPROVAL	MK KIM	REV	REV 1.1							
				PART NO.	BA41-02013A					
MODULE CODE		LAST EDIT			March 30, 2012 16:27:53 PM		PAGE	17	OF	61
undefined										

# DDR3 on board #0 (2/4)

## 2 RANK



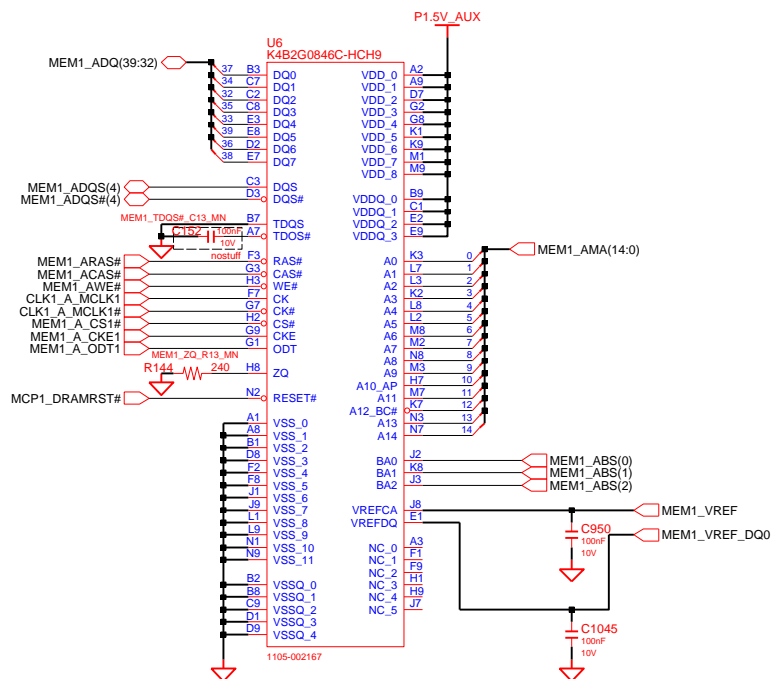
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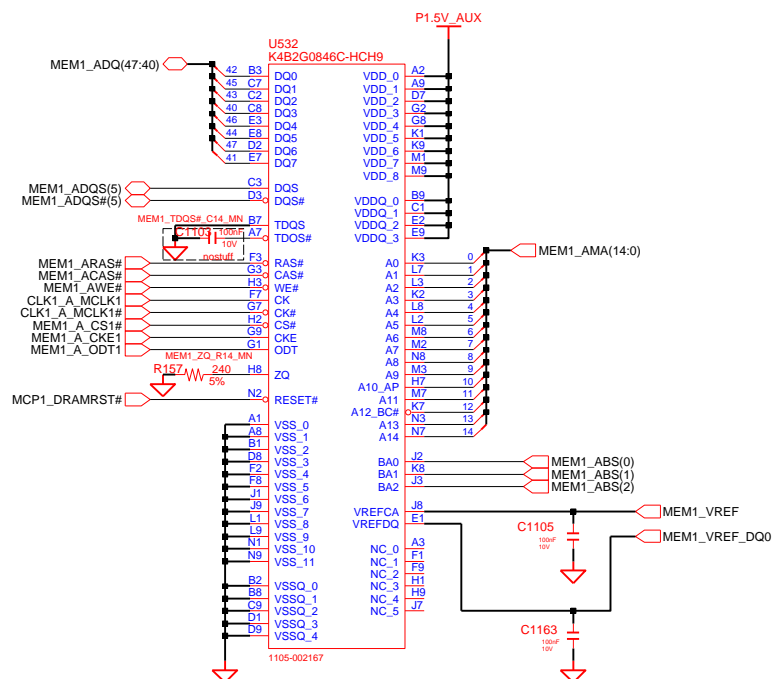
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APPROVAL	MK KIM	REV	REV 1.1	DDR3 2Gb	PART NO.	BA41-02013A
MODULE CODE	undefined	LAST ENT	March 30, 2012 16:27:53 PM	PAGE	18	OF 61

# DDR3 on board #0 (3/4)

## 2 RANK



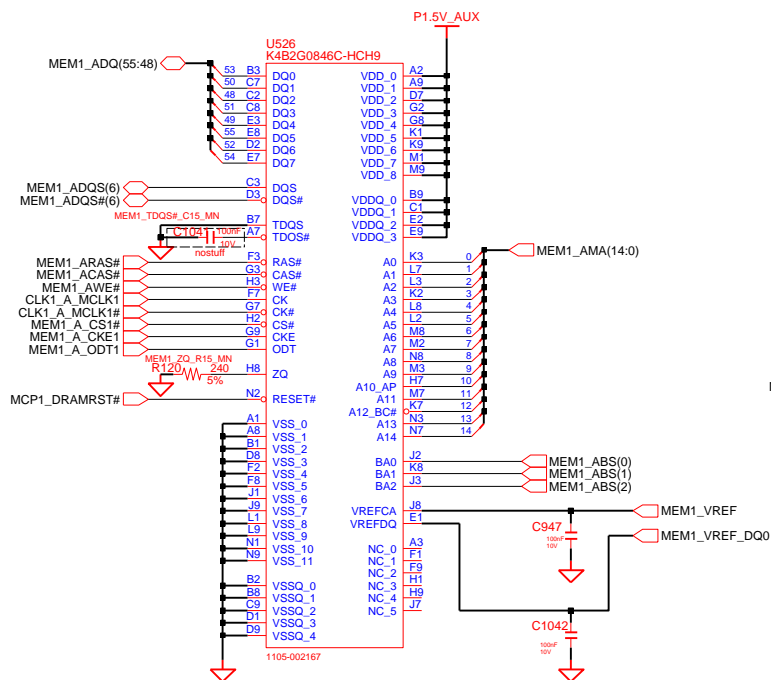
## 2 RANK



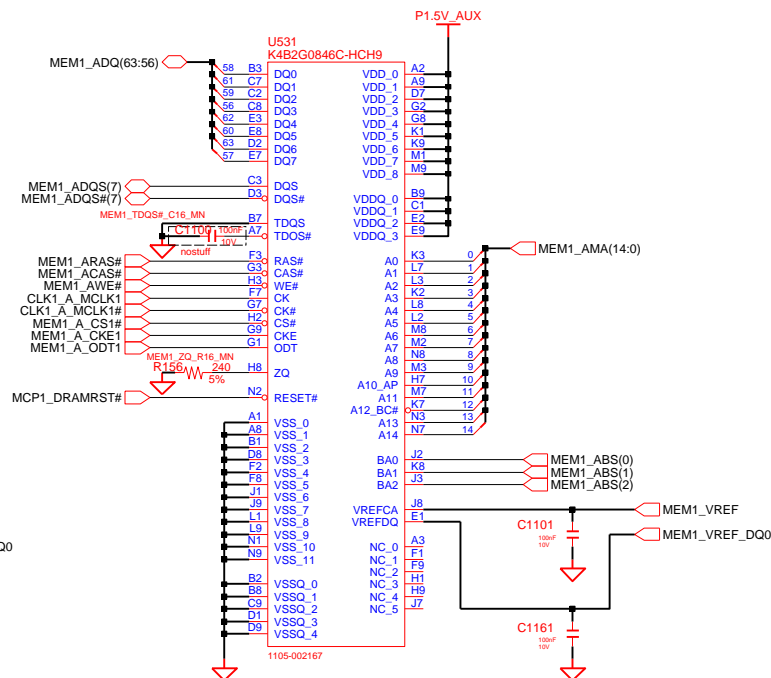
DRAW	SY KIM	DATE	10/02/2010	TITLE	Lotus-14R	SAMSUNG
CHECK	SJ KIM	DEV. STEP	MP	MEMORY #0 2RANK(3/4)		ELECTRONICS
APPROVAL	MK KIM	REV	REV 1.1	DDR3 2Gb	PART NO.	BA41-02013A
MODULE CODE	undefined	LAST ENT	March 30, 2012 16:27:53 PM	PAGE	19	OF 61

# DDR3 on board #0 (4/4)

## 2 RANK



## 2 RANK



DRAW	SY KIM	DATE	10/02/2010	TITLE	Lotus-14R	SAMSUNG
CHECK	SJ KIM	DEV. STEP	MP	MEMORY #0 2 RANK(4/4)		ELECTRONICS
APPROVAL	MK KIM	REV	REV 1.1	DDR3 2Gb	PART NO.	BA41-02013A
MODULE CODE	undefined	LAST ENT	March 30, 2012 16:27:53 PM	PAGE	20	OF 61

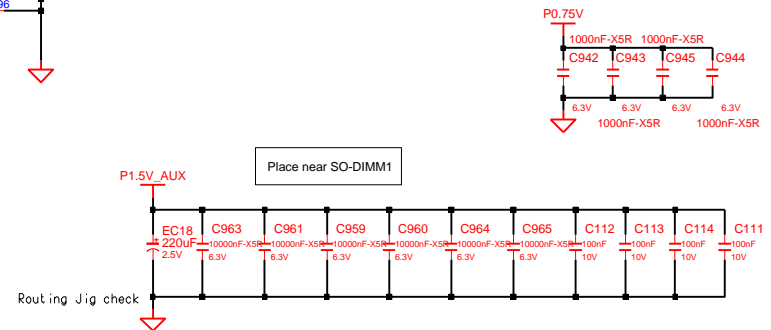
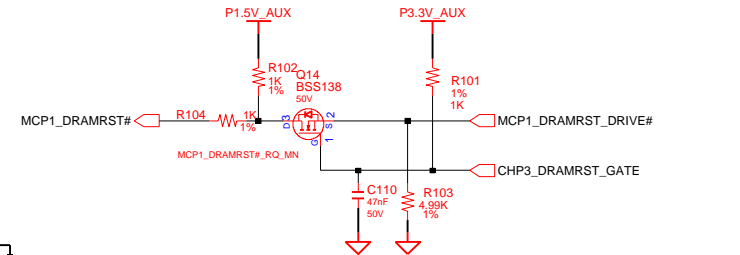
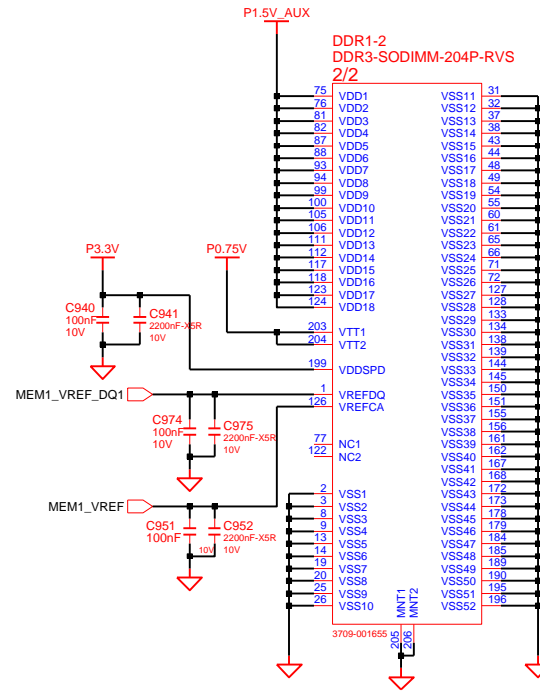
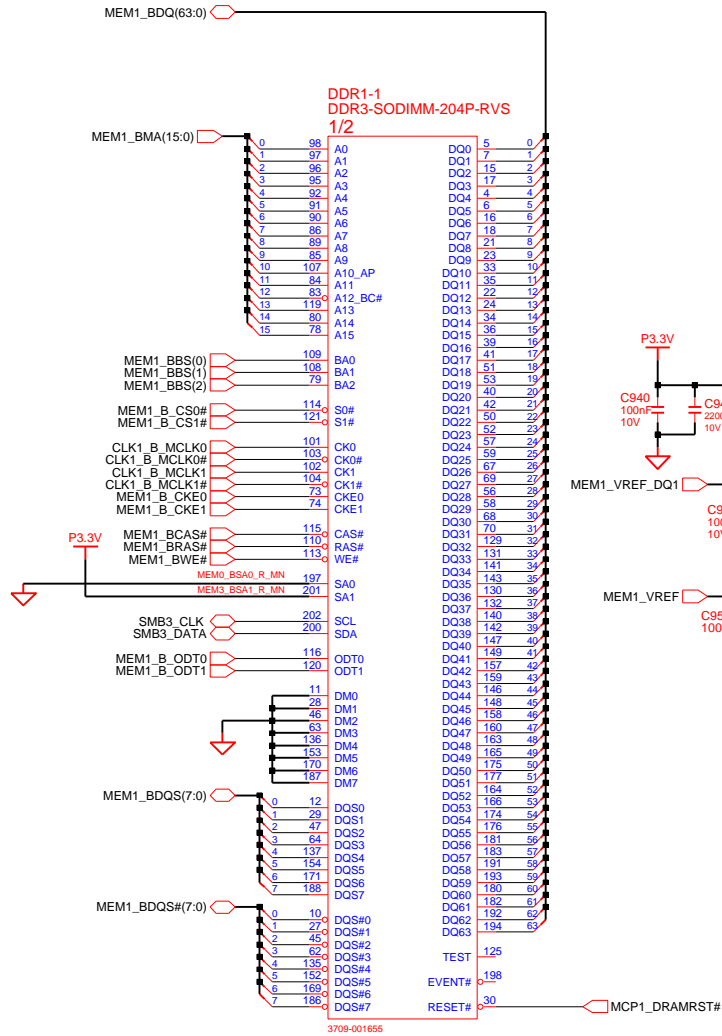
## SO-DIMM #1 : 1st SO-DIMM

### DDR SO-DIMM #1

Height : 8 mm (STANDARD)

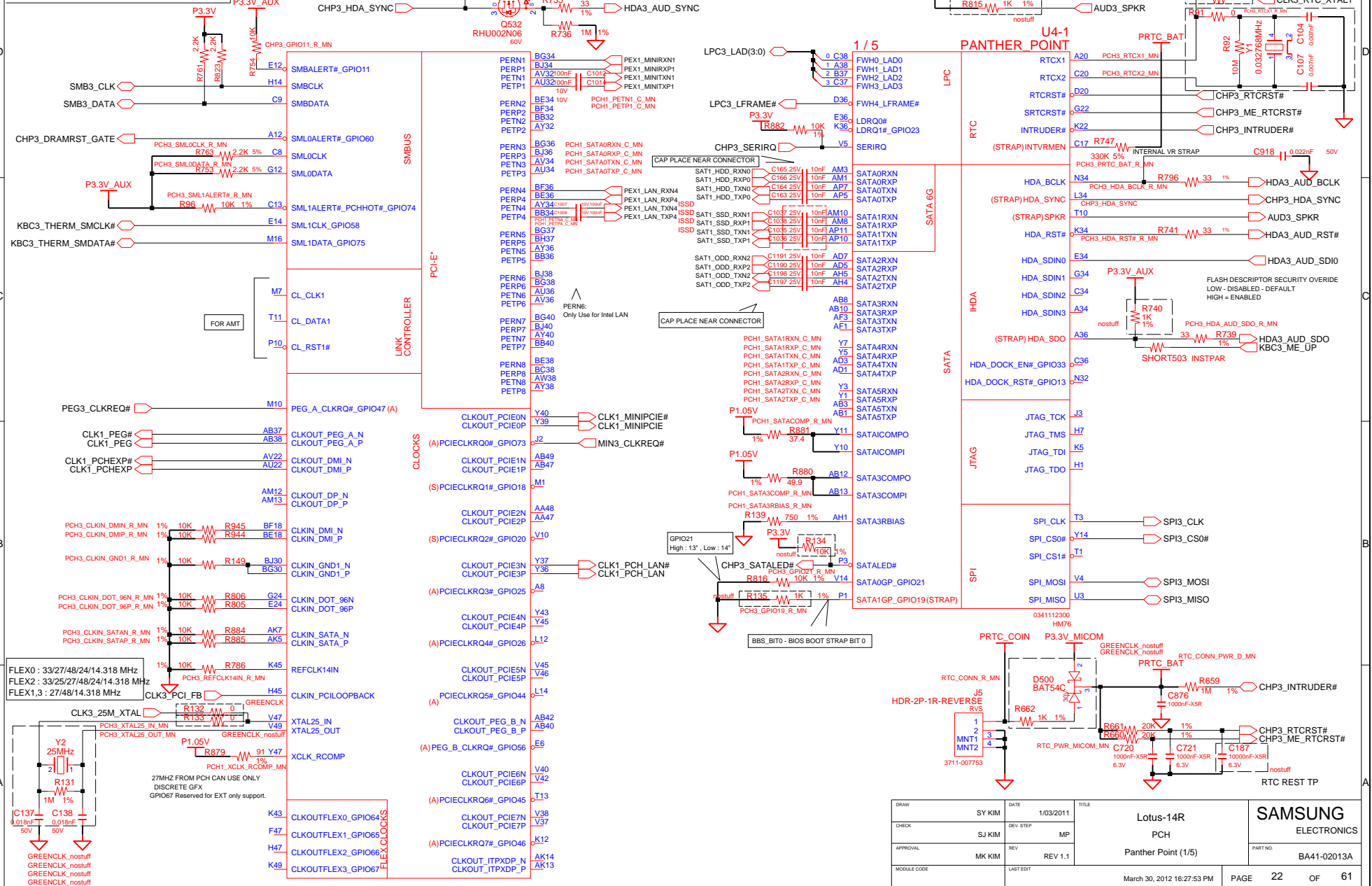
P/N : 3709-001615 (FOXCONN)

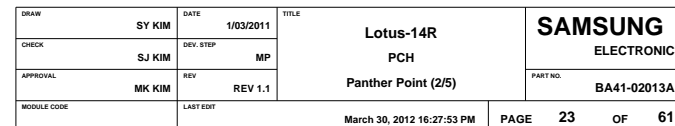
P/N : 3709-001622 (CONCRAFT)

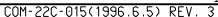


DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG
CHECK	SJ KIM	DEV. STEP	MP		SODIMM B	ELECTRONICS
APPROVAL	MK KIM	REV	REV 1.1		DDR3 2Gb	PART NO.
MODULE CODE		LAST ENT				BA41-02013A
				March 30, 2012 16:27:53 PM	PAGE	21 OF 61

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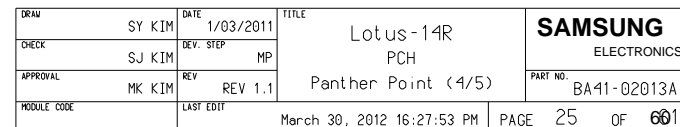








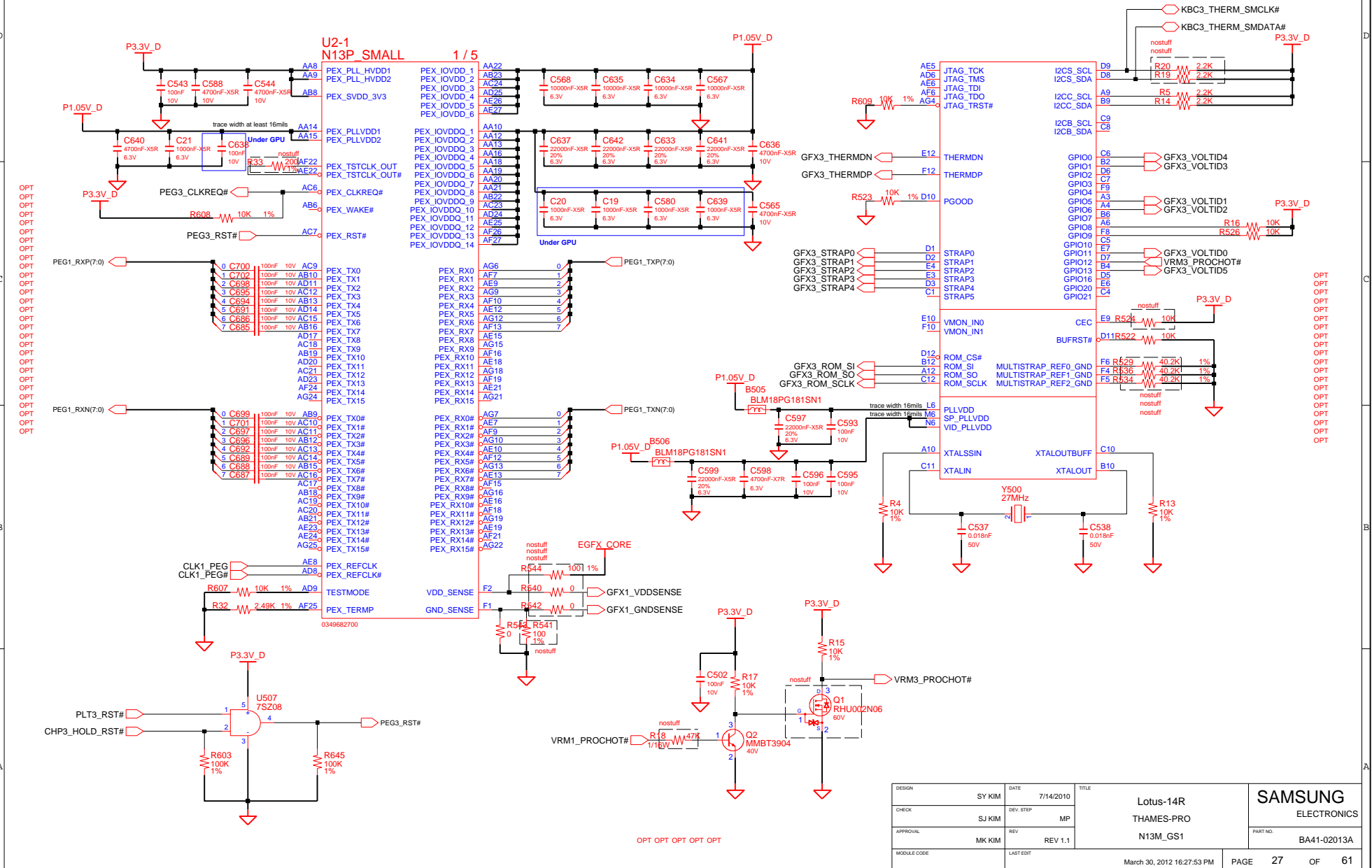
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OPT OPT OPT OPT OPT  
OPT OPT OPT OPT OPT  
OPT OPT OPT OPT OPT



DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-02013A
CHECK	SJ KIM	DEV. STEP	MP		THAMES-PRO	
APPROVAL	MK KIM	REV	REV 1.1		N13M_GS1	
MODULE CODE		LAST EDIT				
March 30, 2012 16:27:53 PM						PAGE 27 OF 61

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**OPT**

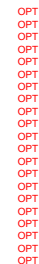
DESIGN	SY KIM	DATE	7/14/2010	Lotus-14R THAMES-PRO N13M_GS1	SAMSUNG ELECTRONICS	
CHECK	SJ KIM	DEV. STEP	MP			
APPROVAL	MK KIM	REV	REV 1.1			PART NO.
MODULE CODE	LAST EDIT					BA41-02013A
March 30, 2012 16:27:53 PM					PAGE 28 OF 61	

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OPT  
OPT

DESIGN	SY KIM	DATE	7/14/2010	Lotus-14R THAMES-PRO N13M_GS1	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP		
APPROVAL	MK KIM	REV	REV 1.1		
MODULE CODE	LAST EDIT			March 30, 2012 16:27:53 PM	PART NO. BA41-02013A
				PAGE 29	OF 61

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DESIGN	SY KIM	DATE	7/14/2010	Lotus-14R THAMES-PRO N13M_GS1	SAMSUNG ELECTRONICS			
CHECK	SJ KIM	DEV STEP	MP		PART NO.	BA41-02013A		
APPROVAL	MK KIM	REV	REV 1.1					
MODULE CODE	LAST EDIT				March 30, 2012 16:27:53 PM	PAGE	30	OF

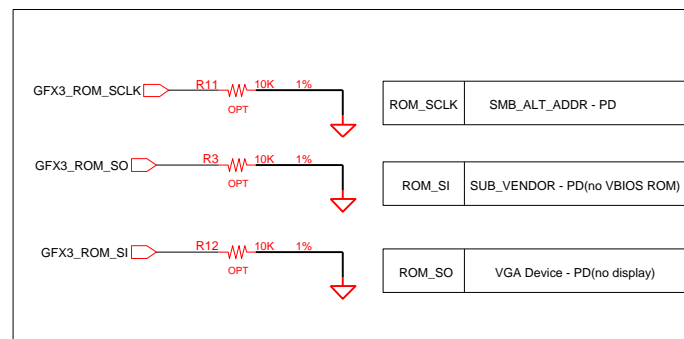
# N13x STRAP

The schematic diagram shows the internal pull-up resistors for the STRAP pins. Each pin is connected to a 3.3V supply through a 10K resistor. The resistors are labeled R22, R21, R530, R527, R532, R528, R533, and R538. The pins are labeled GFX3\_STRAP0 through GFX3\_STRAP4. The diagram also shows the connection to the 3.3V supply and the ground connection.

Memory STRAP PIN	1Gbit gDDR3	2Gbit gDDR3
<b>STRAP 3</b>	PD	PD
<b>STRAP 2</b>	PD	PU
<b>STRAP 1</b>	PU	PD
<b>STRAP 0</b>	PU	PU

STRAP4	PCIE_MAX_SPEED - PD
--------	---------------------

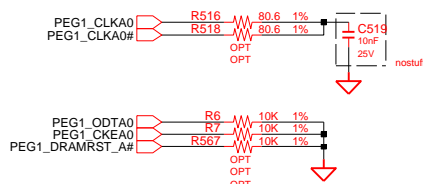
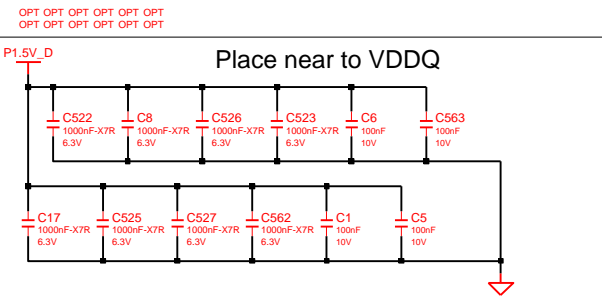
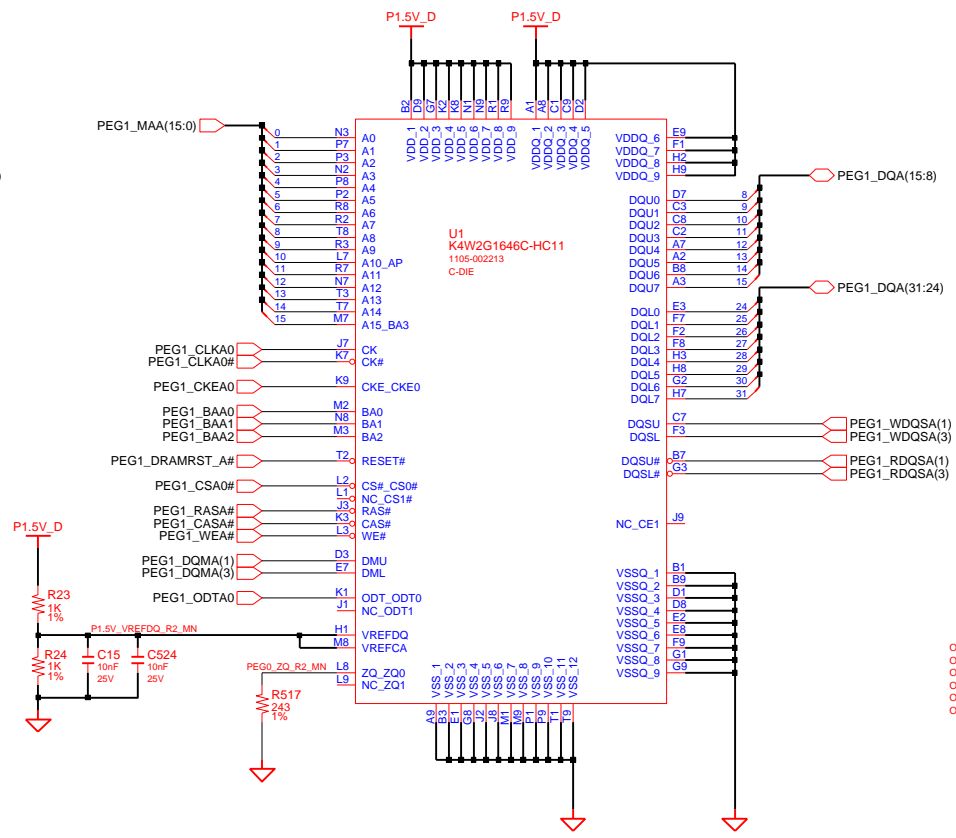
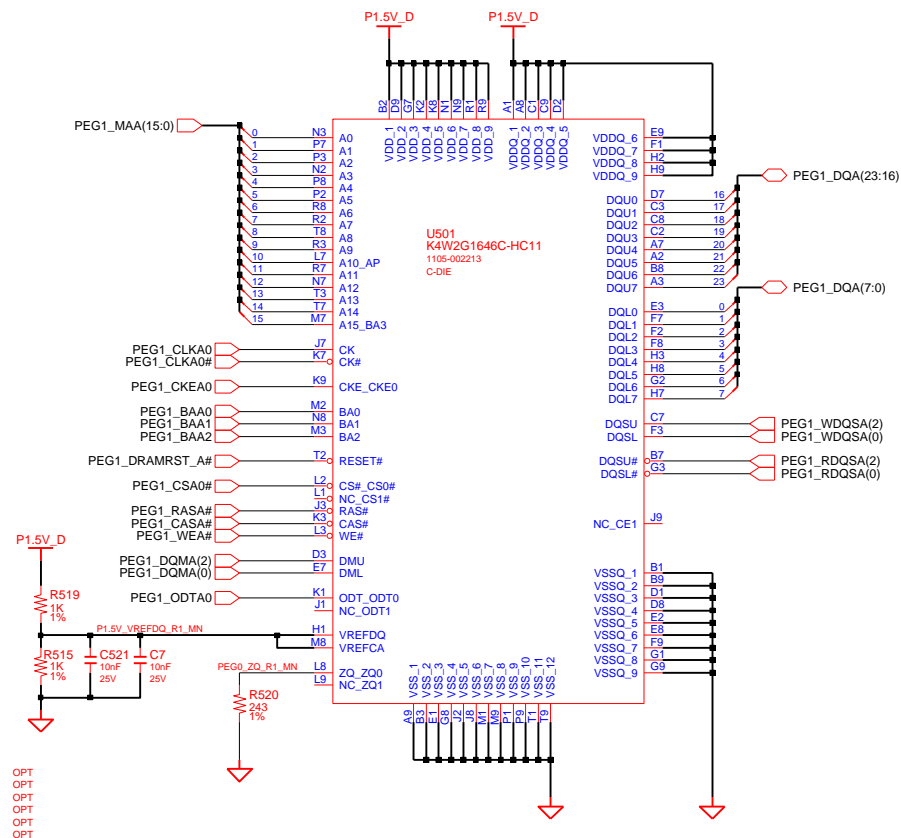


Memory STRAP PIN	1Gbit gDDR3	2Gbit gDDR3
STRAP 3	PD	PD
STRAP 2	PD	PU
STRAP 1	PU	PD
STRAP 0	PU	PU

STRAP4	PCIE_MAX_SPEED - PD
--------	---------------------

DESIGN		SY KIM	DATE	7/14/2010	TITLE  Lotus-14R  THAMES-PRO  THAMES-PRO	SAMSUNG ELECTRONICS			
CHECK		SJ KIM	DEV. STEP	MP					
APPROVAL		MK KIM	REV	REV 1.1					
								PART NO.	BA41-02013A
MODULE CODE			LAST EDIT		March 30, 2012 16:27:53 PM	PAGE	31	OF	61

## A-channel Lower Data



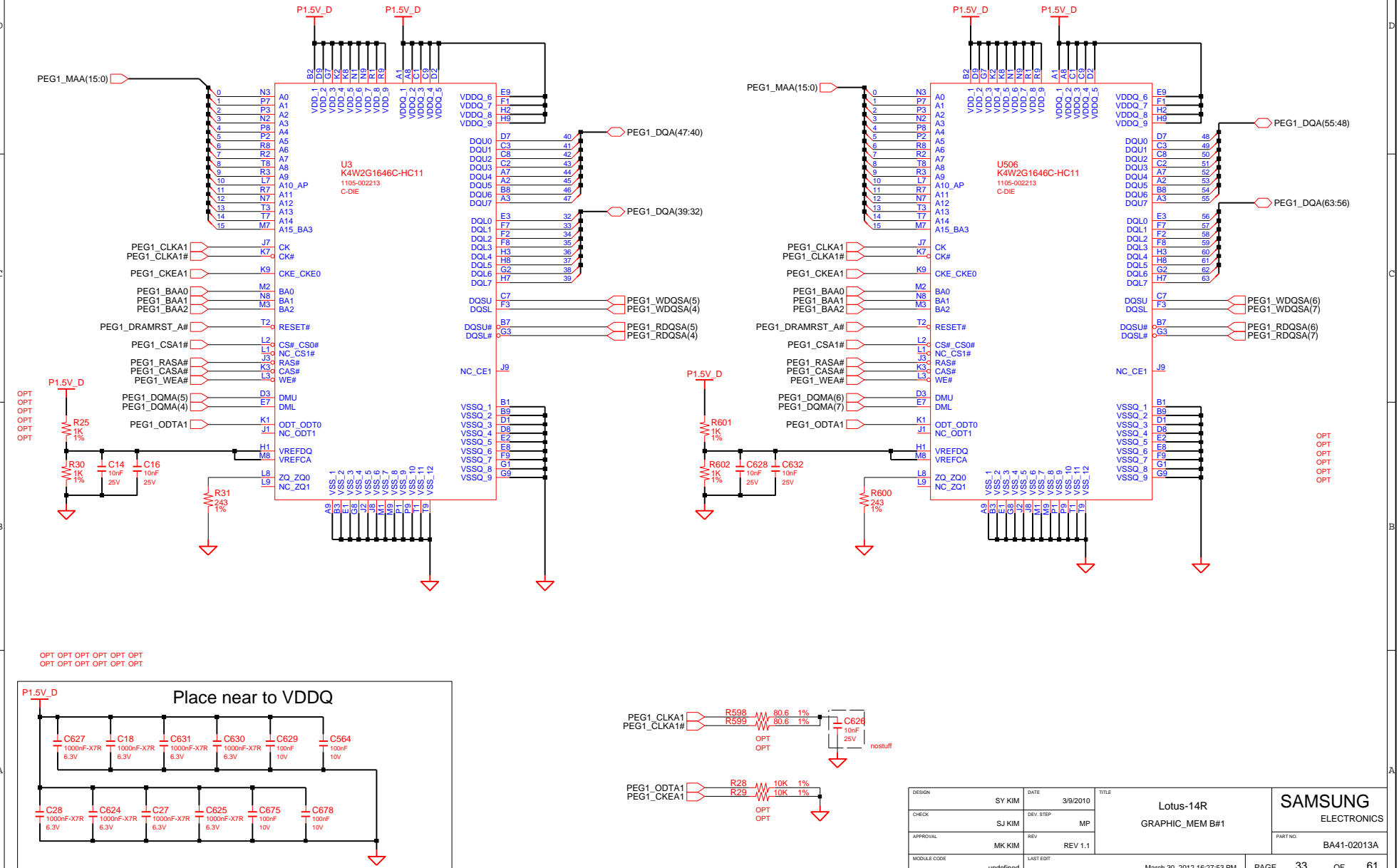
DESIGN	SY KIM	DATE	3/9/2010	TITLE  Lotus-14R  GRAPHIC_MEM B#0	SAMSUNG  ELECTRONICS		
CHECK	SJ KIM	DEV. STEP	MP		PART NO.	BA41-02013A	
APPROVAL	MK KIM	REV	REV 1.1				
MODULE CODE	undefined	LAST EDIT	March 30, 2012 16:27:53 PM		PAGE	32	OF 61



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## A-channel Upper Data

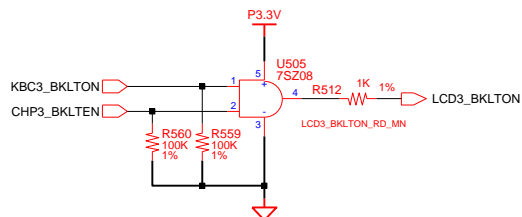


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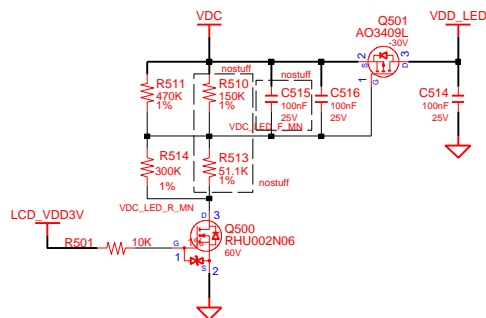
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# LVDS LOGIC

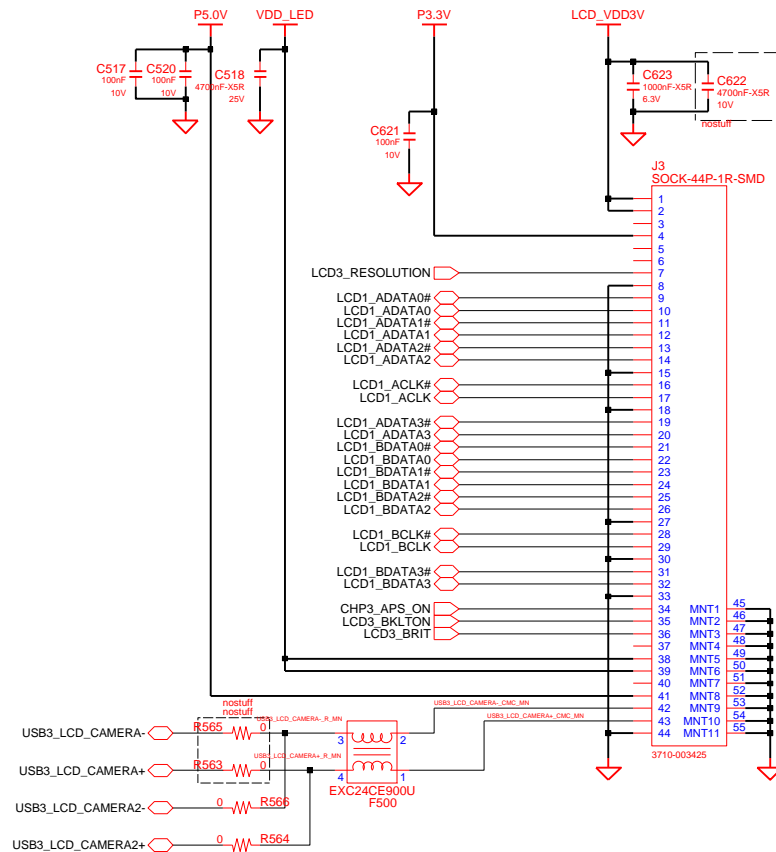
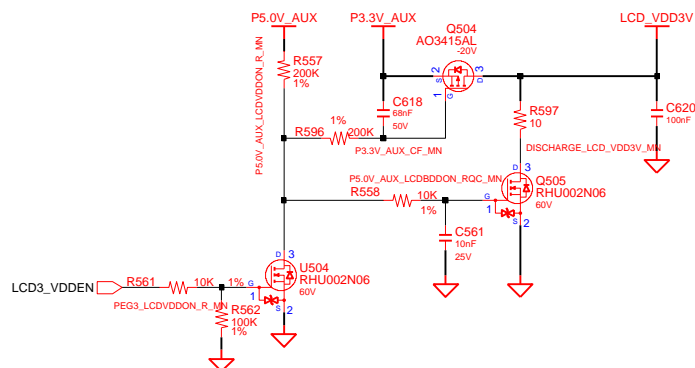
## Backlight On



## LED Power



## LCD Power



USB signal stub should be less than 100mil

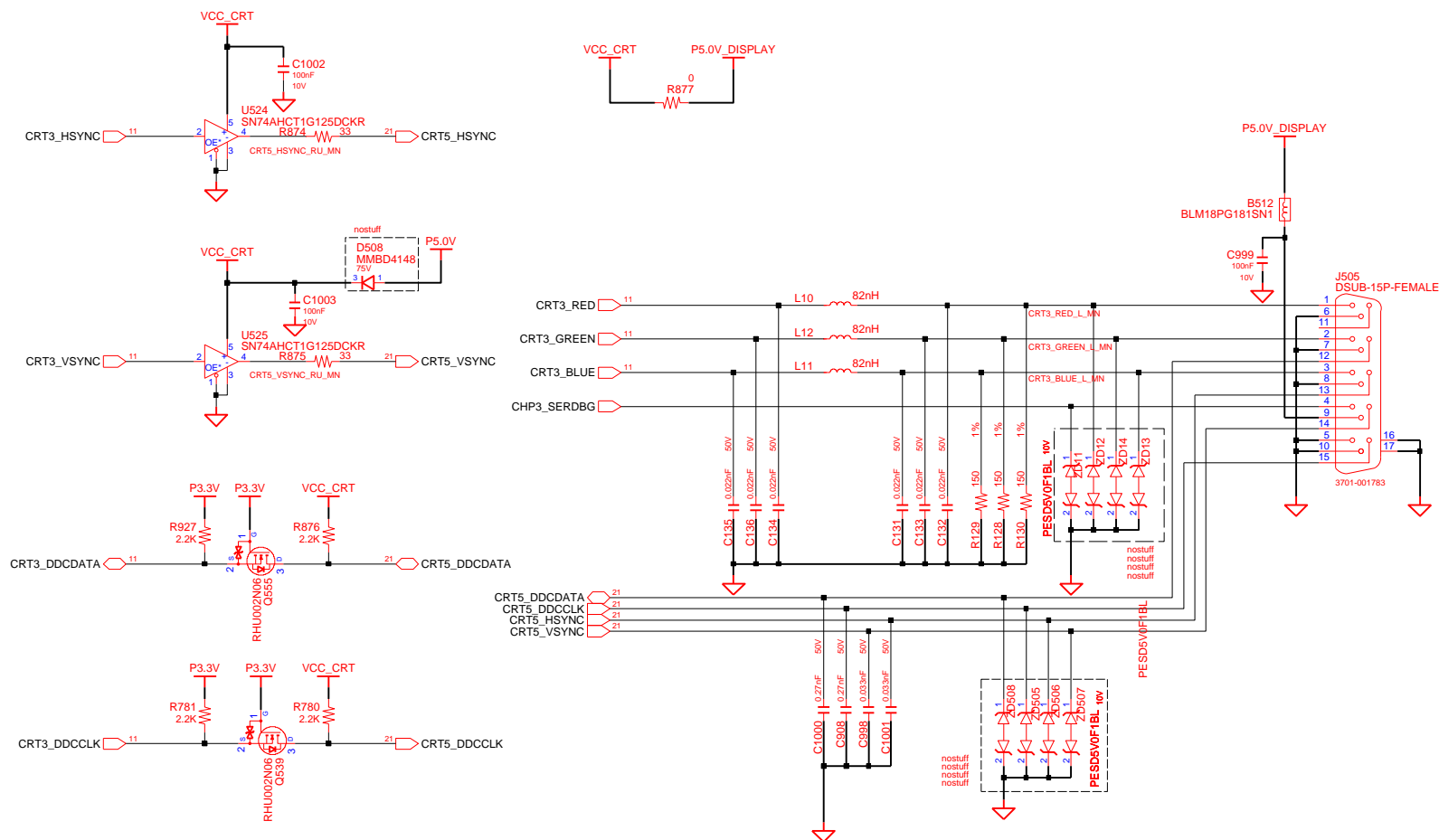
DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R
CHECK	SJ KIM	DEV. STEP	MP		GRAPHICS_IF
APPROVAL	MK KIM	REV	REV 1.1		LVDS
MODULE CODE		LAST EDIT			
				March 30, 2012 16:27:53 PM	PAGE 34 OF 61

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# VGA



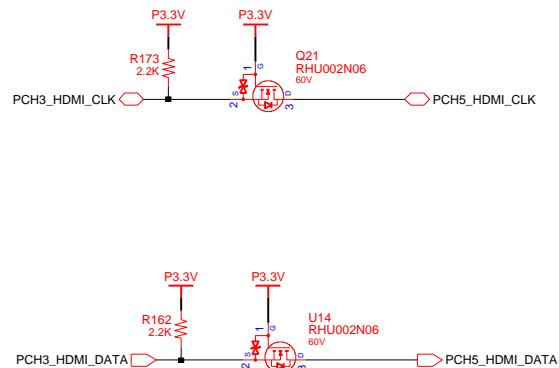
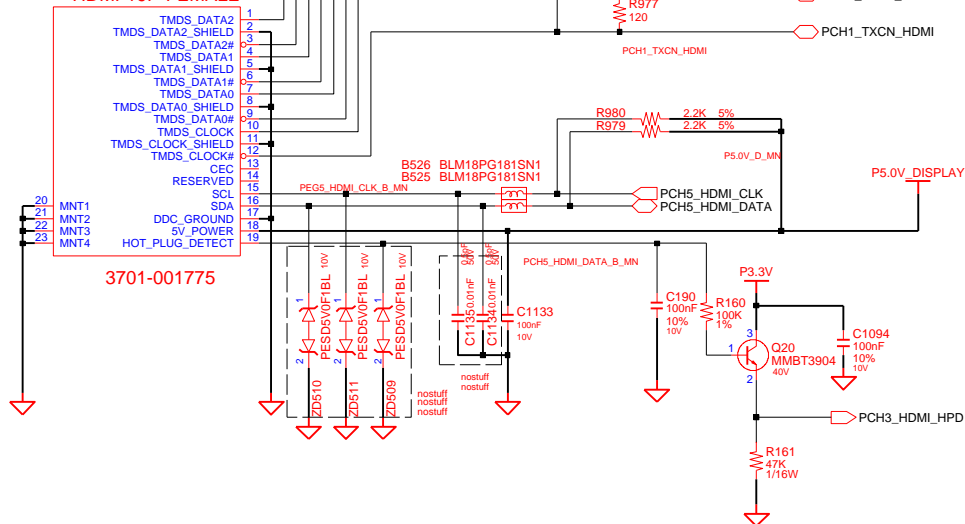
DESIGN	SY KIM	DATE	01/08/2009	TITLE	Lotus-14R GRAPHIC_IF CRT	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP			PART NO. BA41-02013A
APPROVAL	MK KIM	REV	REV 1.1			
MODULE CODE		LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	35	OF 61

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# HDMI

After checking, Houston need to use CMC for each signal.  
(EMC request at 2010.04.15)

**FOR HDMI VERIFICATION TEST****J507  
HDMI-19P-FEMALE**

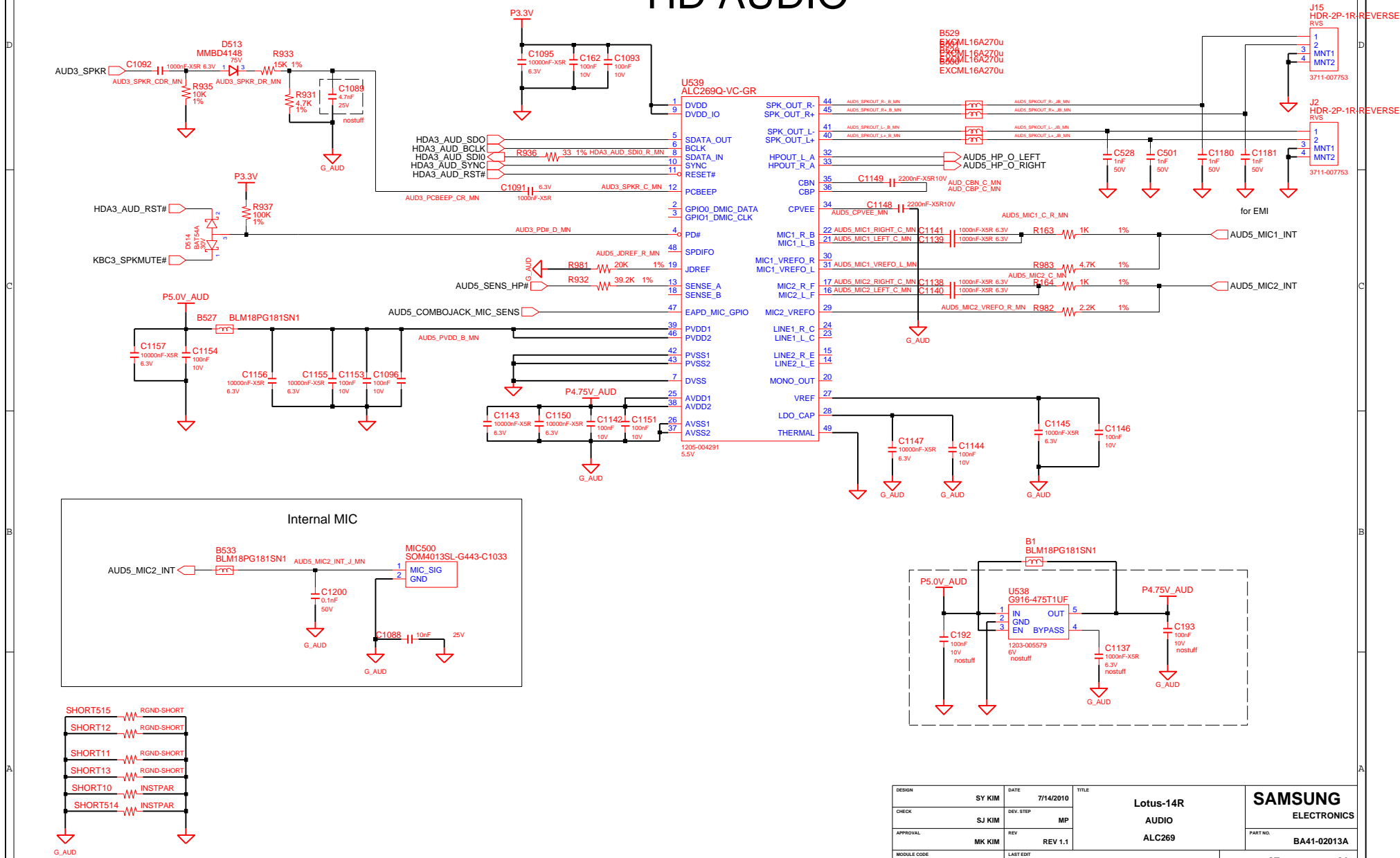
N10x/N11x\_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance

DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP	GRAPHICS_IF		
APPROVAL	MK KIM	REV	REV 1.1	HDMI		
MODULE CODE		LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	36	OF 61

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## HD AUDIO



DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R
CHECK	SJ KIM	DEV. STEP	MP		AUDIO
APPROVAL	MK KIM	REV	REV 1.1		ALC269
MODULE CODE		LAST EDIT			
				March 30, 2012 16:27:53 PM	PAGE 37 OF 61

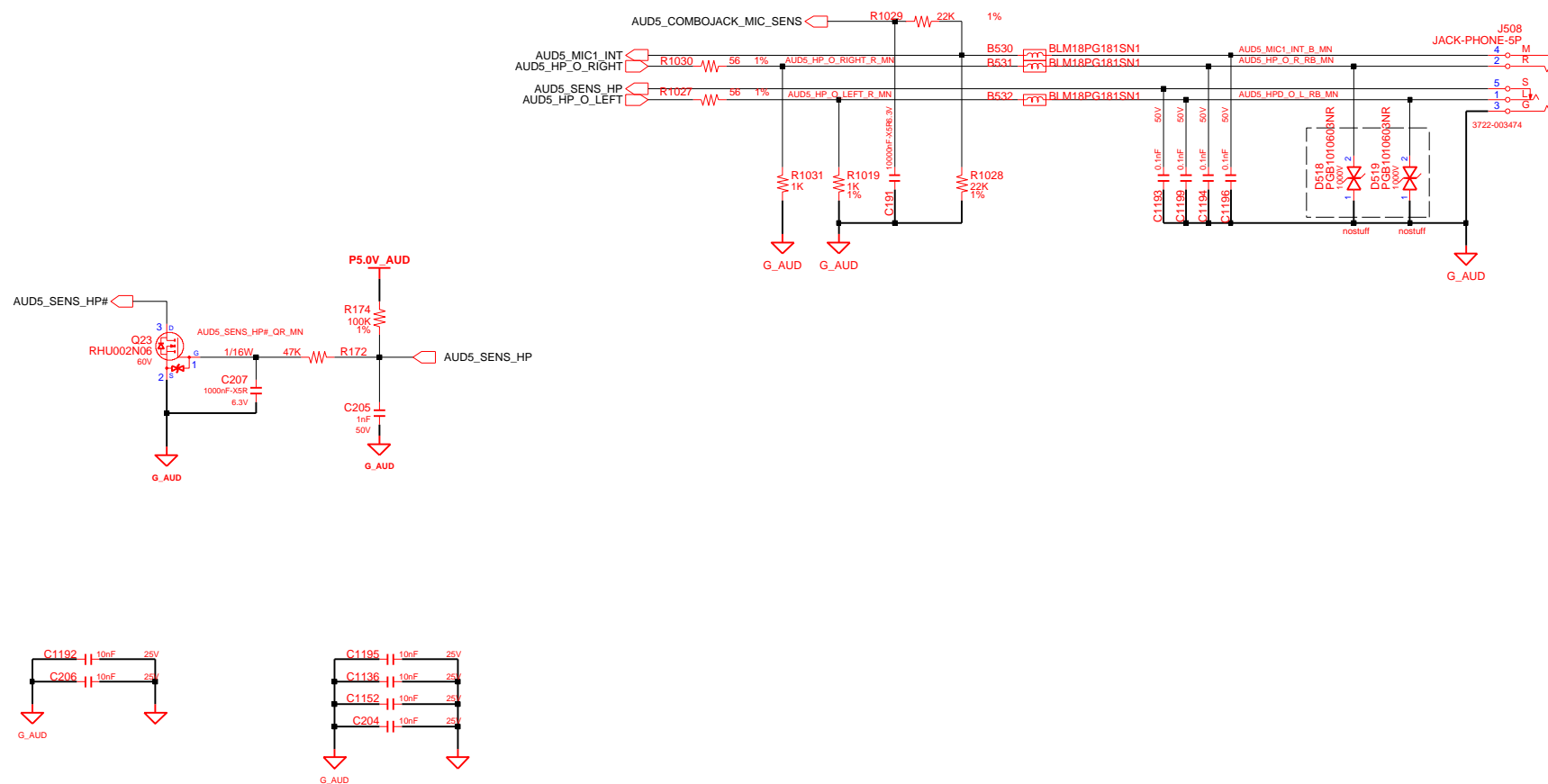
**SAMSUNG**  
ELECTRONICS  
PART NO.  
BA41-02013A

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# HD AUDIO

## COMBO JACK



DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP		HDA_CODEC	
APPROVAL	MK KIM	REV	REV 1.1		AUDIO CODEC ALC269	
MODULE CODE		LAST EDIT				
				March 30, 2012 16:27:53 PM	PAGE 38 OF 61	PART NO. BA41-02013A

## D

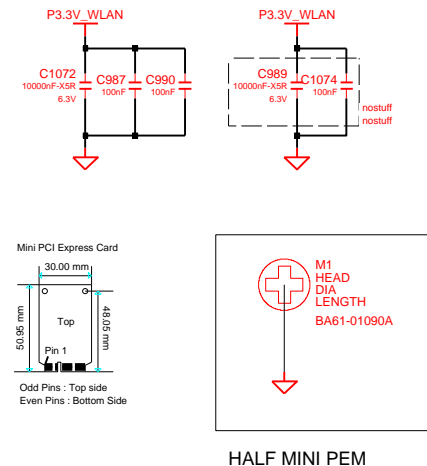
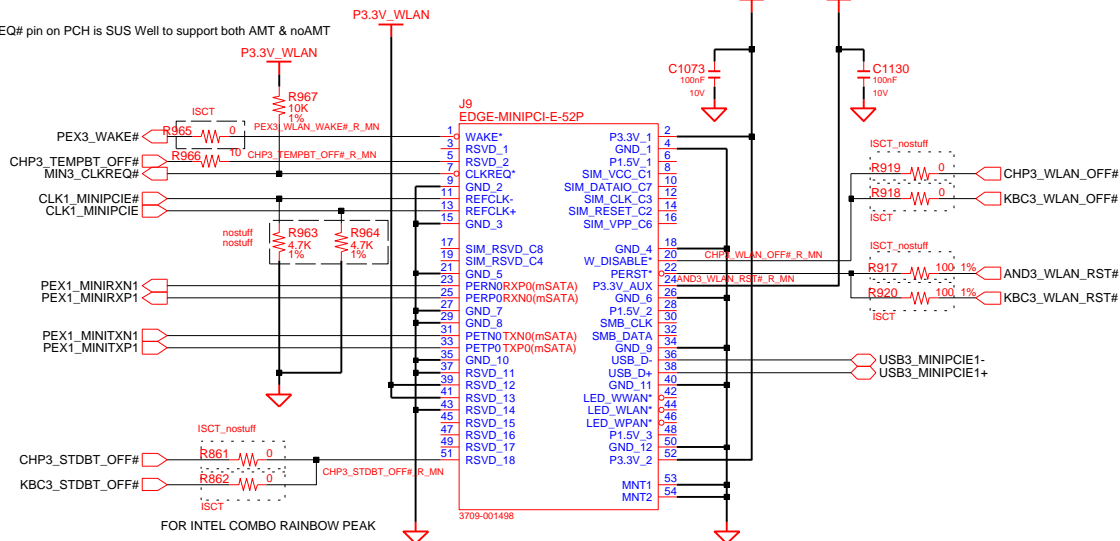
A

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## WLAN

CLKREQ# pin on PCH is SUS Well to support both AMT & noAMT



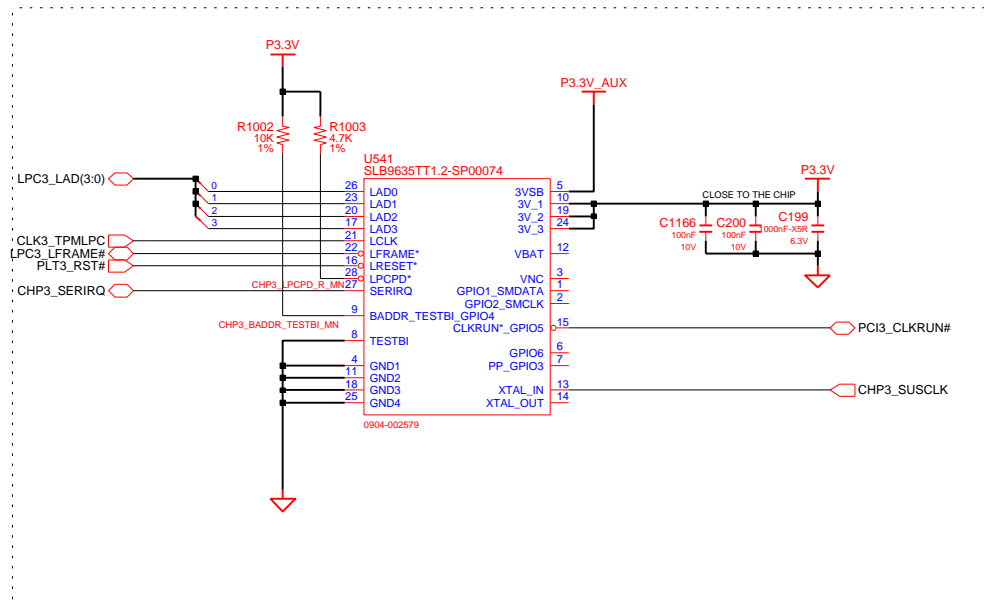
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CHECK	SJ KIM	DEV. STEP	MP		WLAN	
APPROVAL	MK KIM	REV	REV 1.1		WLAN	
MODULE CODE		LAST EDIT				PART NO. BA41-02013A
				March 30, 2012 16:27:53 PM	PAGE	40 OF 61



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## TPM1.2



TPM  
TPM  
TPM  
TPM  
TPM  
TPM

DESIGN	SY KIM	DATE	7/14/2010	Lotus-14R AUDIO COMBO JACK		SAMSUNG ELECTRONICS	
CHECK	SJ KIM	DEV. STEP	MP				
APPROVAL	MK KIM	REV	REV 1.1	AUDIO COMBO JACK		PART NO.	BA41-02013A
MODULE CODE	LAST EDIT			March 30, 2012 16:27:53 PM		PAGE	41 OF 61

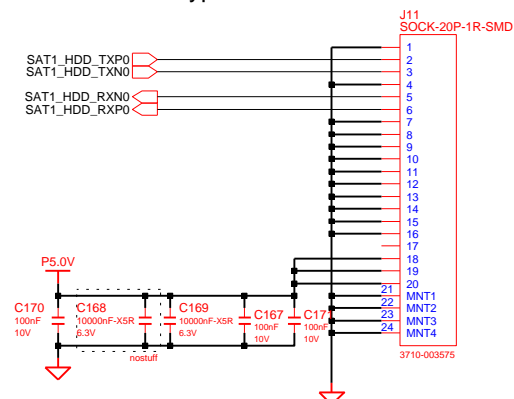
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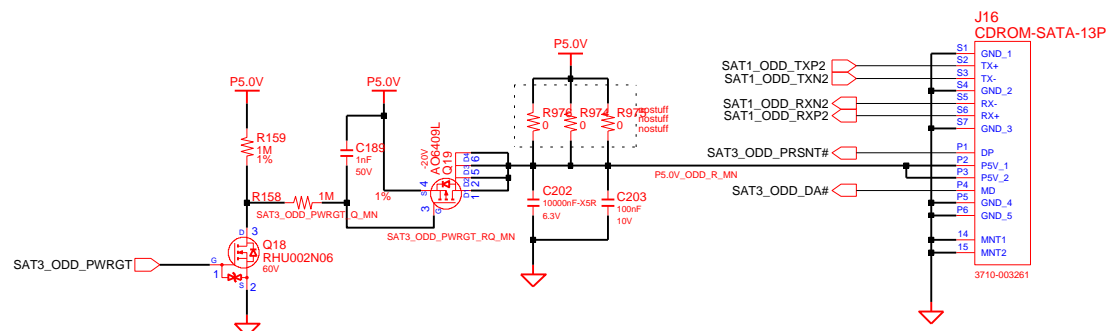
## SATA I/F CONN

## SATA HDD CONN

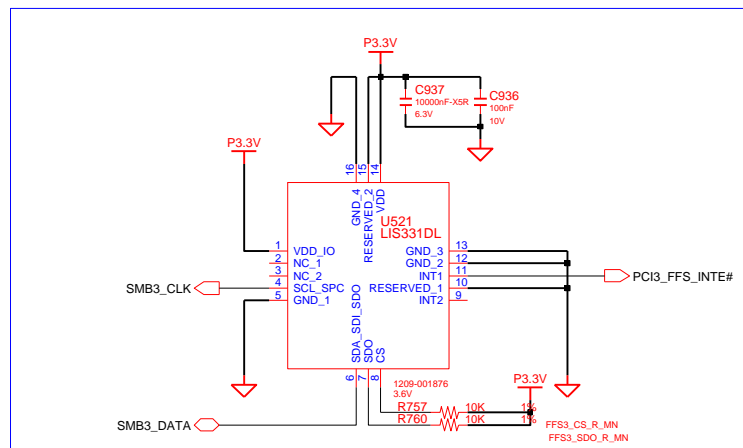
Cable Connector Type



## SATA ODD



## Free Fall Sensor



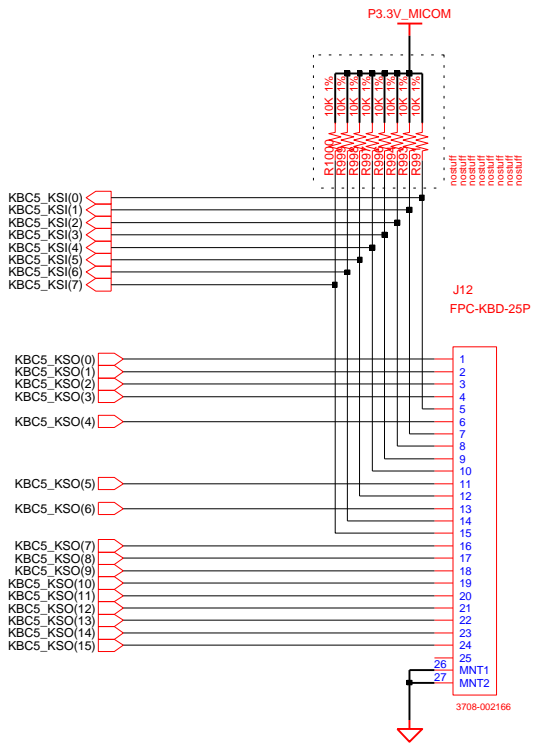
FREEFALL  
FREEFALL  
FREEFALL  
FREEFALL  
FREEFALL

DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP		SATA I/F	
APPROVAL	MK KIM	REV	REV 1.1		SATA I/F	
MODULE CODE		LAST EDIT		March 30, 2012 16:27:53 PM	PAGE	42 OF 61

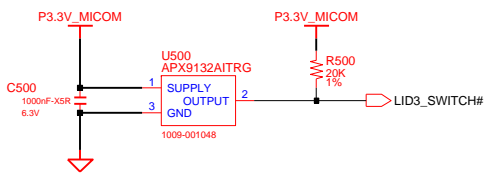


# Micom Glue

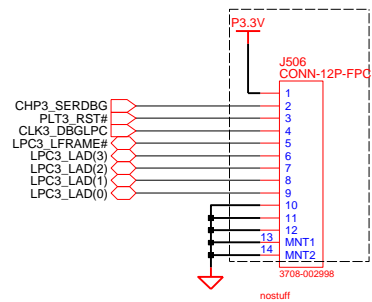
## KEYBOARD



## LID3\_SWITCH



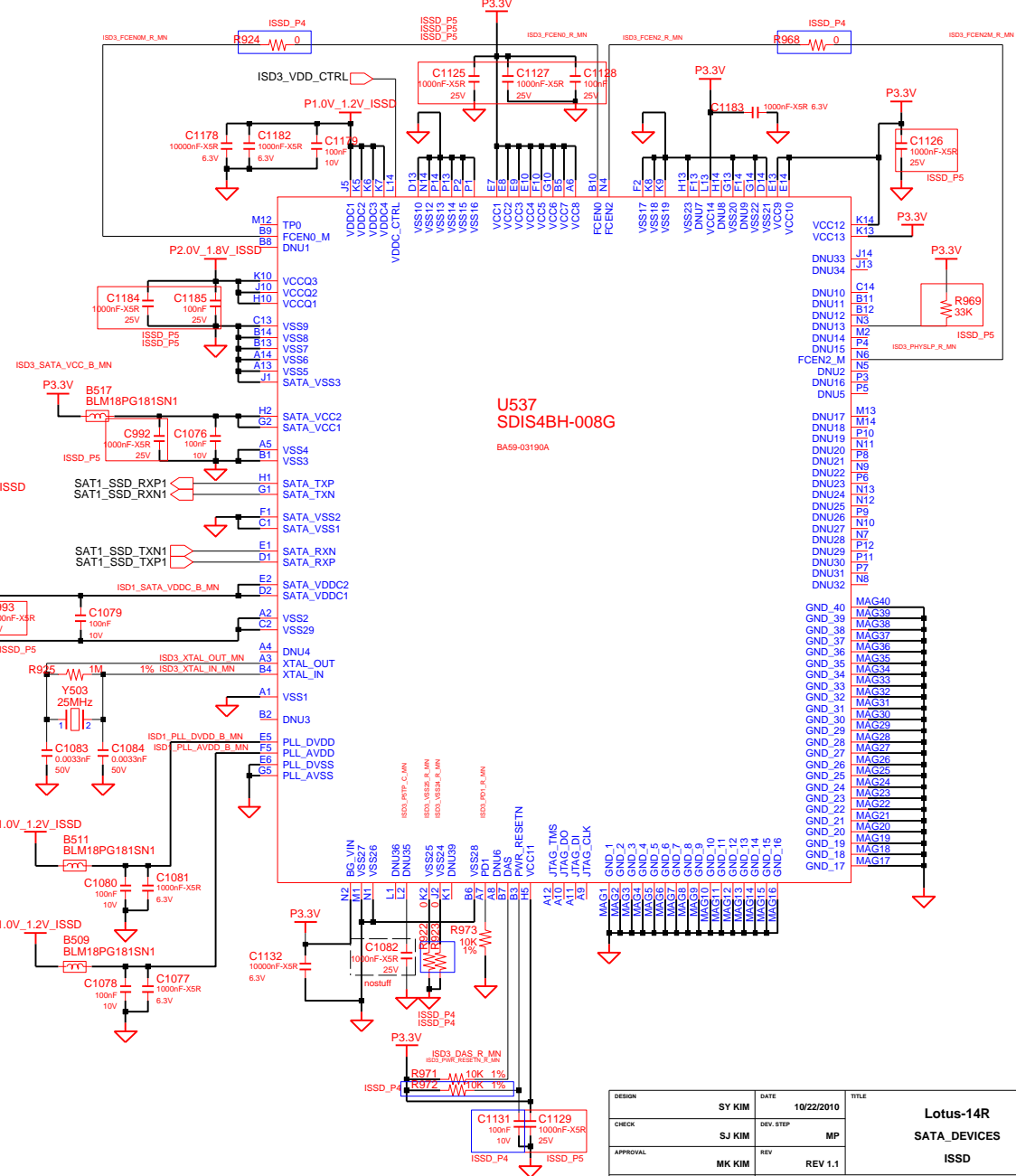
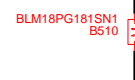
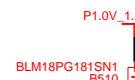
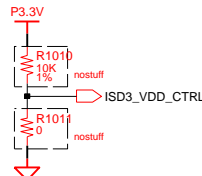
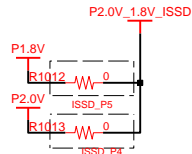
## 80H PORT DEBUG



DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R MICOM MICOM GLUE LOGIC	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP			PART NO. BA41-02013A
APPROVAL	MK KIM	REV	REV 1.1			
MODULE CODE		LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	44	OF 61

# ISSD

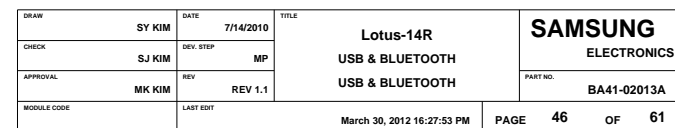
3.3V: For P5 VCCQ=1.8V VDDC=1.2V  
GND: For P4 VCCQ=2.0V VDDC=1.0V



DESIGN	SY KIM	DATE	10/22/2010	TITLE	Lotus-14R
CHECK	SJ KIM	DEV. STEP	MP	SATA_DEVICES	
APPROVAL	MK KIM	REV	REV 1.1	ISSD	
MODULE CODE		LAST EDIT			
				March 30, 2012 16:27:53 PM	PAGE 45 OF 61

SAMSUNG	
ELECTRONICS	
PART NO.	BA41-02013A

## USB 3.0 CONNECTOR

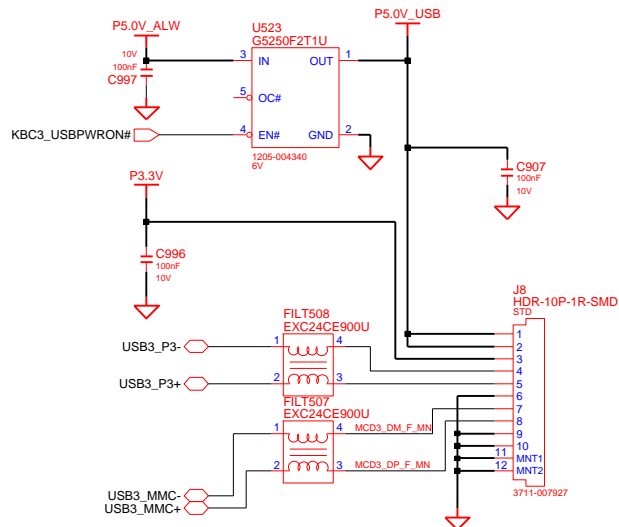


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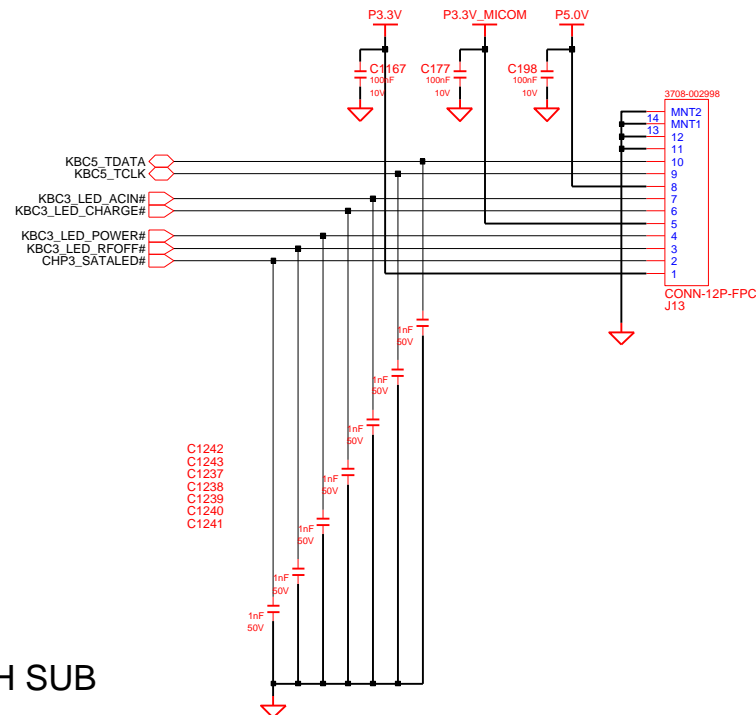
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## MAIN TO SUB

### MAIN to 4-in-1 / USB SUB

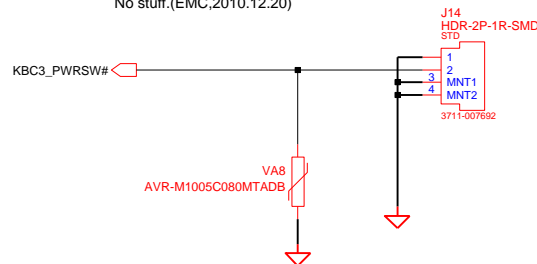


### TOUCHPAD & LED MAIN TO SUB



### MAIN to POWER SWITCH SUB

For ESD issue, added diode.(EMC,2010.11.19)  
No stuff.(EMC,2010.12.20)



DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG
CHECK	SJ KIM	DEV. STEP	MP	SUB BOARD CONNECTOR	ELECTRONICS	
APPROVAL	MK KIM	REV	REV 1.1	MAIN TO SUB	PART NO.	BA41-02013A
MODULE CODE		LAST EDIT		March 30, 2012 16:27:53 PM	PAGE	47 OF 61

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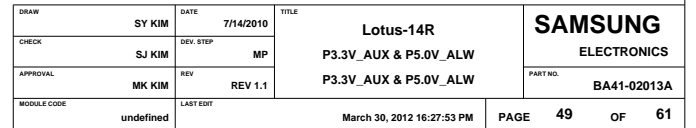
The schematic diagram illustrates the internal components and connections of a Samsung BA41-02013A battery charger. Key components include:

- Power Input:** J1 HDR-4P-1R (3711-007807) providing input to the circuit.
- Power Regulation:** U530 BQ24735GRR (1st: AON7410, 0505-002777; 2nd: AP9402GYT, 0505-002902) is the main charging IC.
- Power MOSFETs:** Q560 AON7410, Q552 AON7200, and Q553 AON7410 are used for power switching and regulation.
- Control ICs:** U535 LMV331BVR (60V) and U561 Q562 RHU002N06 (60V) are used for signal processing and control.
- Capacitors:** Various electrolytic and ceramic capacitors (C1-C20) are used for filtering and timing.
- Resistors:** A wide range of resistors (R1-R100) are used for current sensing, timing, and signal conditioning.
- Connectors:** J10 HDR-9P-1R (3711-007549) for battery connection and J11 MNT1 MNT2 for testing.
- Status Signals:** BAT3\_DETECT#, BAT3\_SMDATA#, and BAT3\_SMCLK# are output signals from the charger.

The diagram includes detailed pin connections, component values, and test points for troubleshooting and assembly.

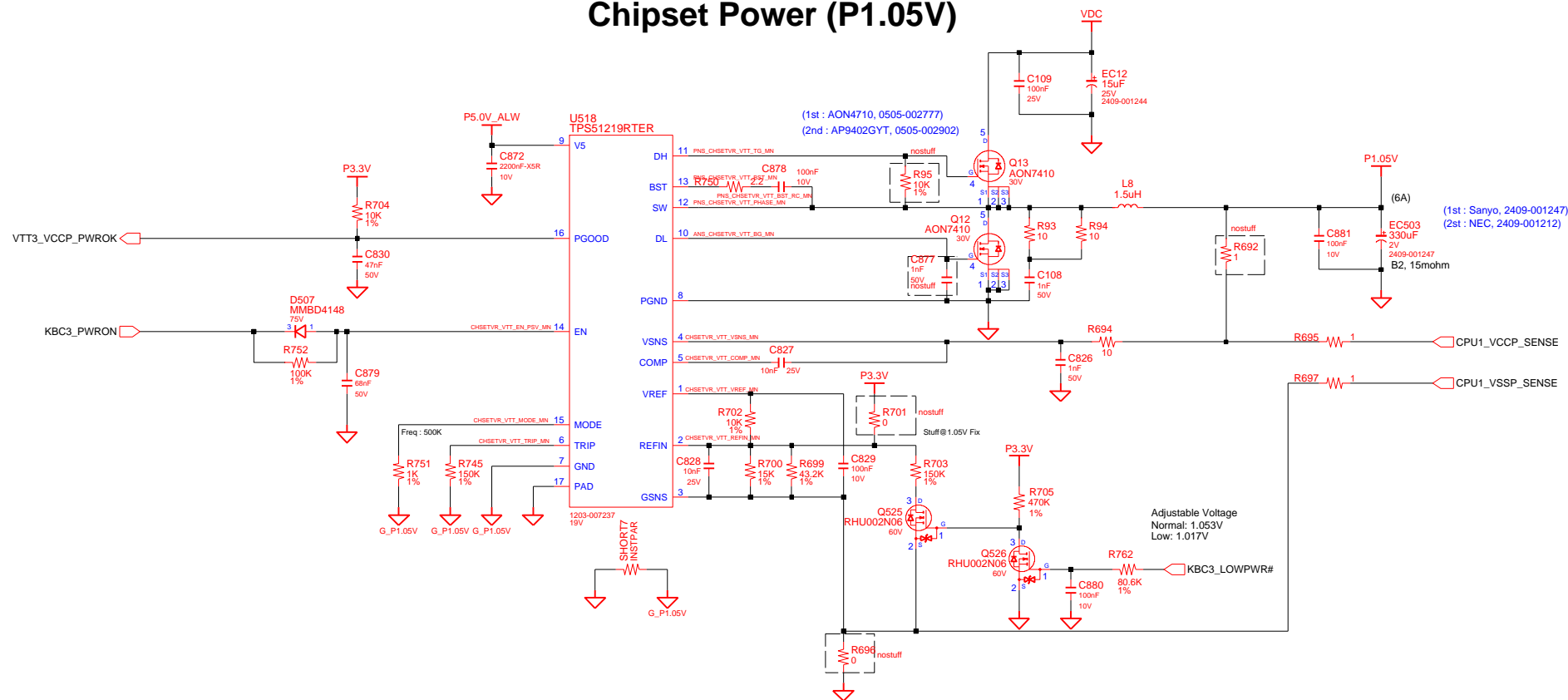


## P3.3V\_AUX & P5.0V\_ALW



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### Chipset Power (P1.05V)



DESIGN	SY KIM	DATE	7/14/2010	Lotus-14R CHIPSET PWR P1.05V	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP		
APPROVAL	MK KIM	REV	REV 1.1		
MODULE CODE		LAST EDIT		March 30, 2012 16:27:53 PM	PAGE 50 OF 61

(1st : TPS54319, 1203-006544)  
(2st : G5173R41D, 0505-006777)

Set : 1.8194V

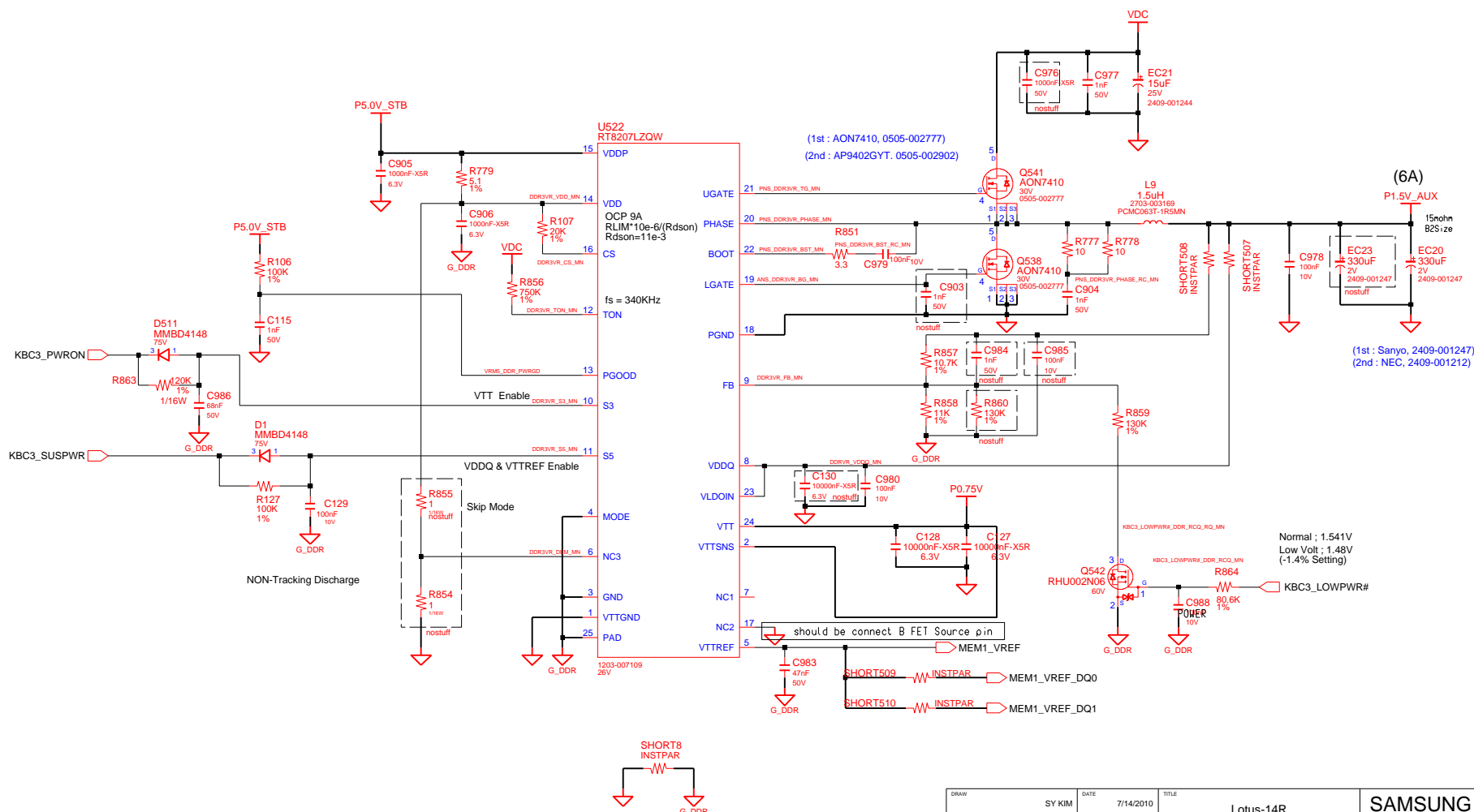
Place close to Out Cap


**Normal ; 1.8194V  
Low Voltage setting  
-> 1.7367V(-3.7%)**

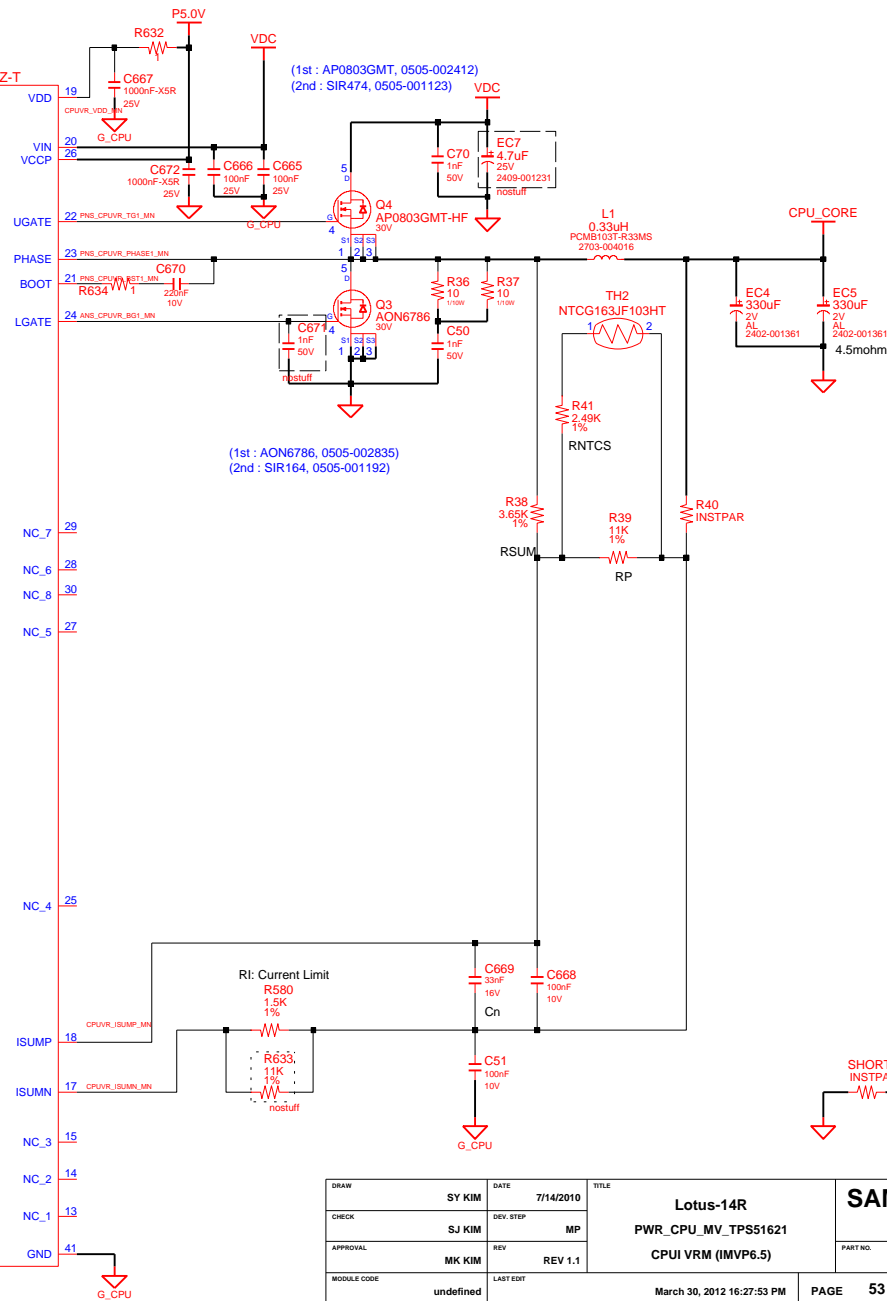
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CHECK	SJ KIM	DEV. STEP	MP	VCCSA	PART NO. BA41-02013A
APPROVAL	MK KIM	REV	REV 1.1	VCCSA	
MODULE CODE		LAST EDIT	March 30, 2012 16:27:53 PM		
PAGE	51	OF			

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## DDR3 Power



DRAW	SY KIM	DATE	7/14/2010	TITLE  Lotus-14R  P1.05V  TI TPS51125		
CHECK	SJ KIM	DEV. STEP	MP			
APPROVAL	MK KIM	REV	REV 1.1			
MODULE CODE		LAST EDIT		March 30, 2012 16:27:53 PM	PAGE	52 OF 61

[illegible]

DRAW	SY KIM	DATE	7/14/2010	Lotus-14R PWR_CPU_MV_TPS51621 CPU1 VRM (IMVP.6.5)	SAMSUNG ELECTRONICS	
CHECK	SJ KIM	DEV. STEP	MP			
APPROVAL	MK KIM	REV	REV 1.1		PART NO.	BA41-02013A
MODULE CODE		undefined			LAST EDIT	March 30, 2012 16:27:53 PM

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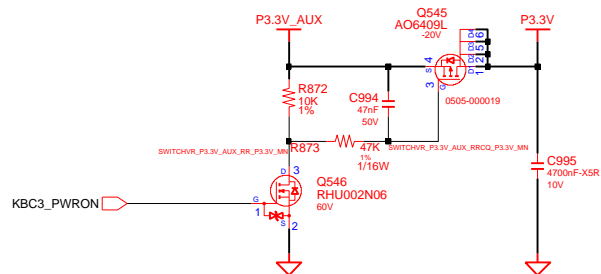
COM-22C-015(1996.6.5) REV. 3

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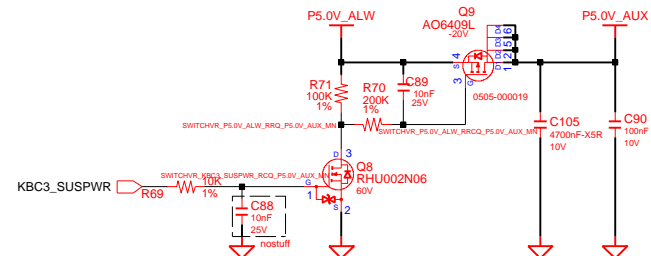
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## Switched Power

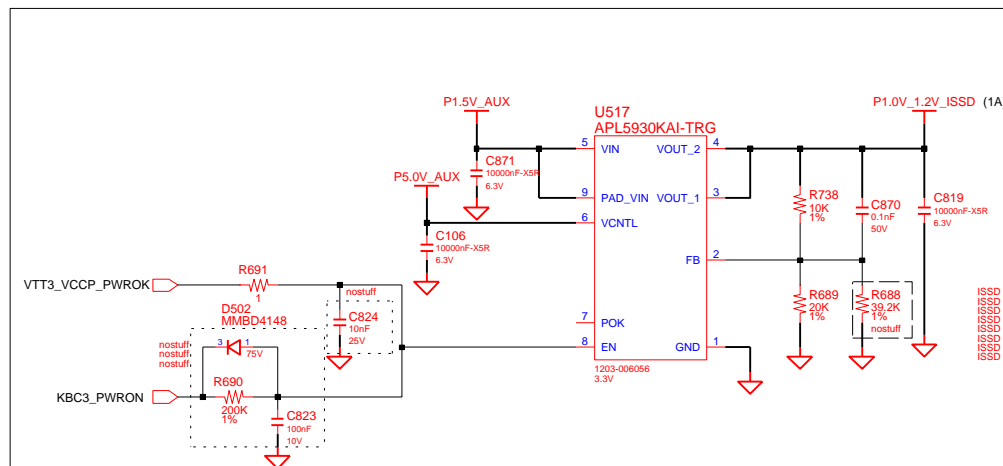
### Switched Power On (P3.3V) Multi@AP2607GY



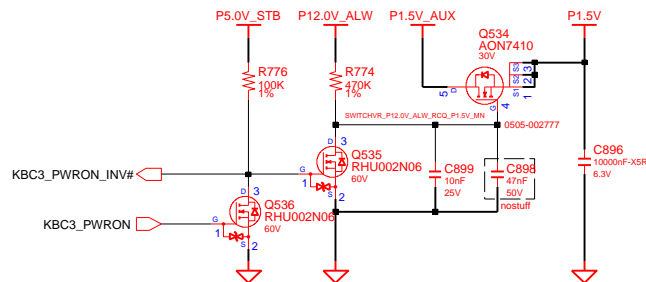
### P5.0V\_AUX Multi@AP2607GY



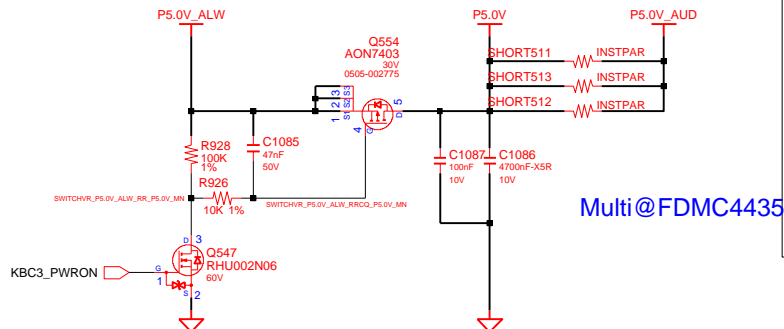
### ISSD Power (P1.0V : Max 2.2A)



### Switched Power On (P1.5V)

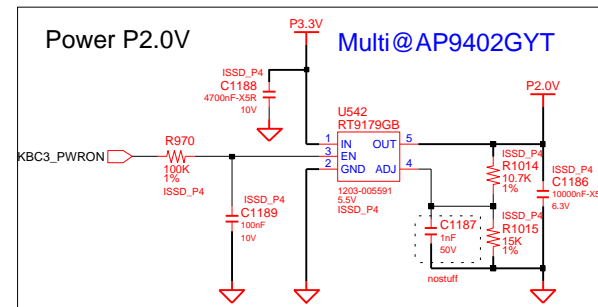


### Switched Power On (P5.0V)



### Power P2.0V

### Multi@AP9402GYT



DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R
CHECK	SJ KIM	DEV. STEP	MP		PWR_MV_SWITCHED
APPROVAL	MK KIM	REV	REV 1.1		SWITCHED POWER
MODULE CODE		LAST EDIT			
				March 30, 2012 16:27:53 PM	PAGE 55 OF 61

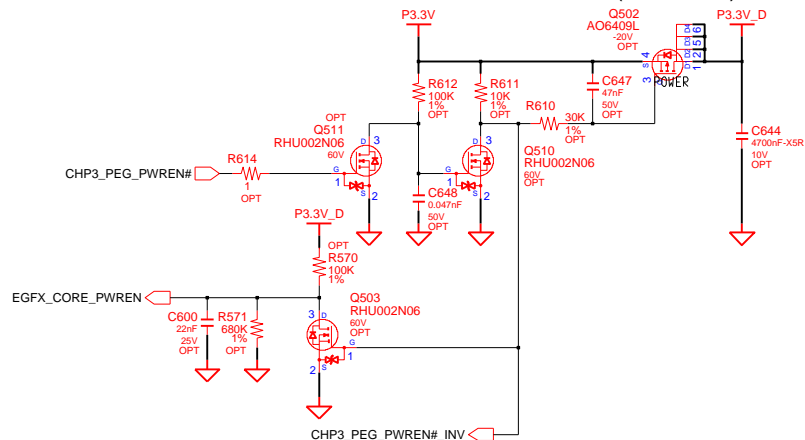
**SAMSUNG**  
ELECTRONICS  
PART NO.  
BA41-02013A

# SAMSUNG PROPRIETARY

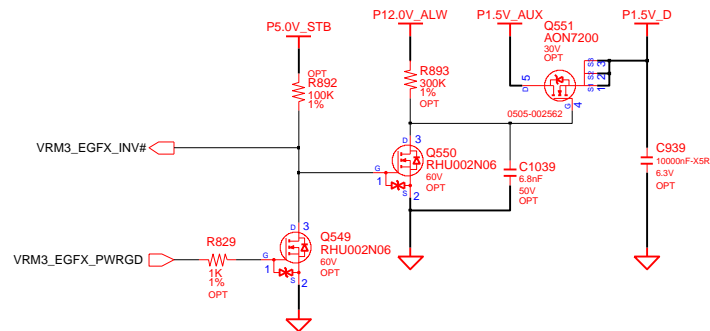
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## Switched Power 2

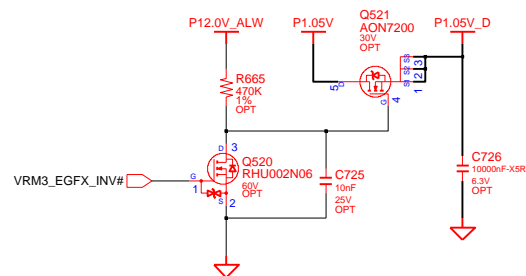
### Discrete Switched Power (P3.3V\_D)



### Discrete Switched Power (P1.5V\_D : MAX 5.3A)



### Discrete Switched Power (P1.05V\_D : Max 3A)



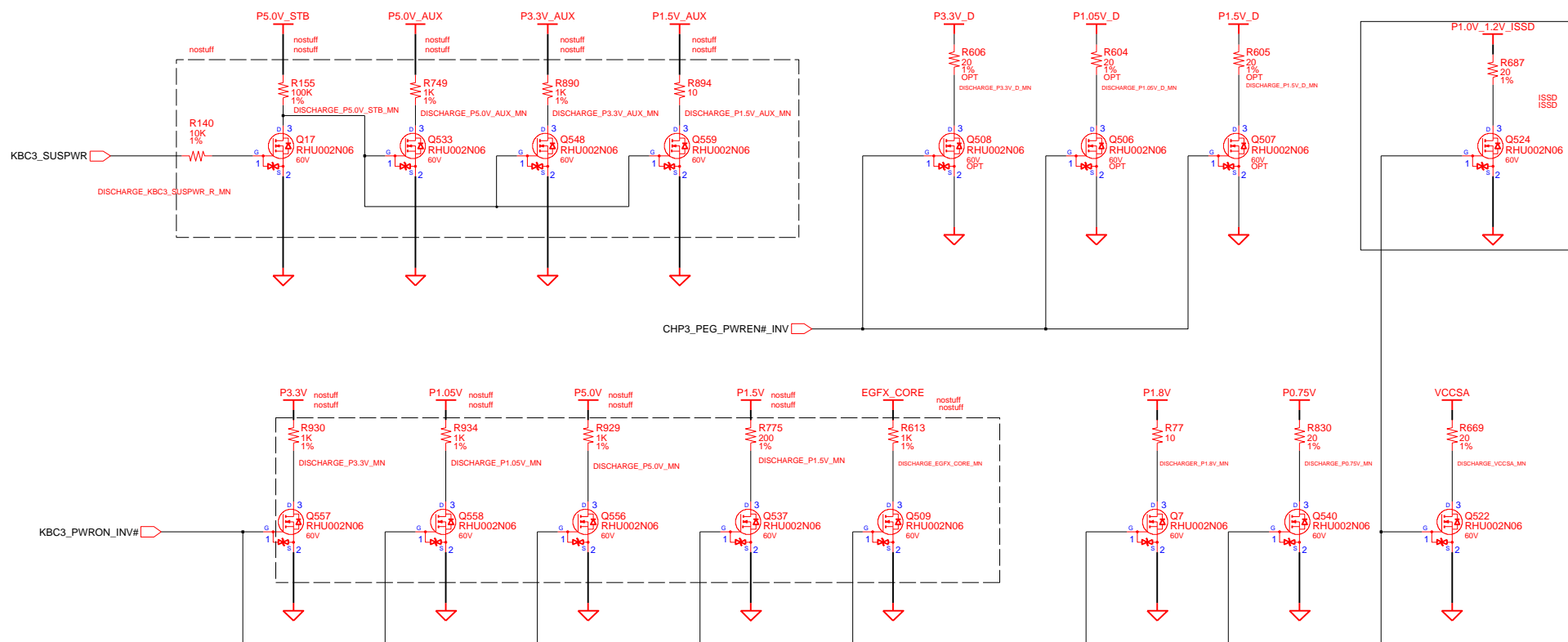
DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP	Switched PWR 2		
APPROVAL	MK KIM	REV	REV 1.1	FOT POWER XPRESS & USB3.0 PWR	PART NO. BA41-02013A	
MODULE CODE		LAST EDIT		March 30, 2012 16:27:53 PM	PAGE	56 OF 61



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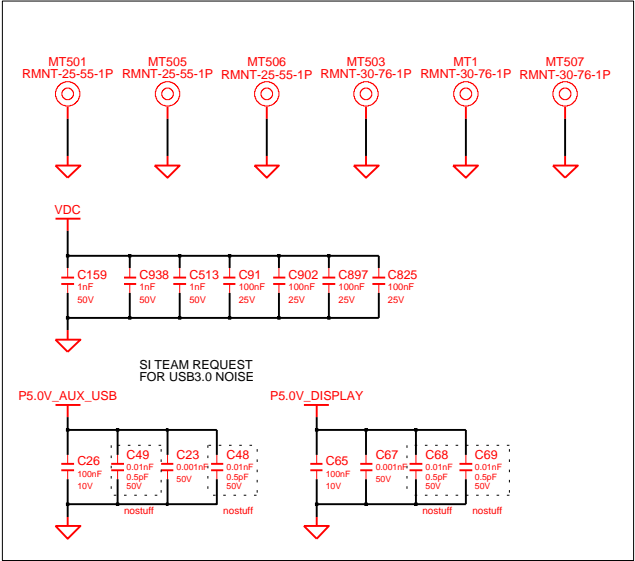
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# POWER DISCHARGER

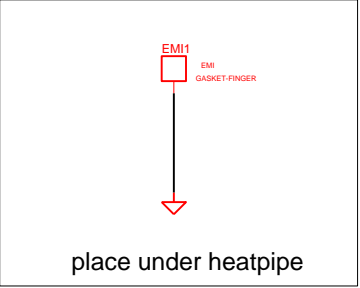


DRAW	SY KIM	DATE	7/14/2010	Lotus-14R  PWR_MV_DISCHARGER  DISCHARGING LOGIC		SAMSUNG  ELECTRONICS					
CHECK	SJ KIM	DEV. STEP	MP								
APPROVAL	MK KIM	REV	REV 1.1								
				PART NO.		BA41-02013A					
MODULE CODE		undefined		LAST EDIT		March 30, 2012 16:27:53 PM		PAGE	57	OF	61

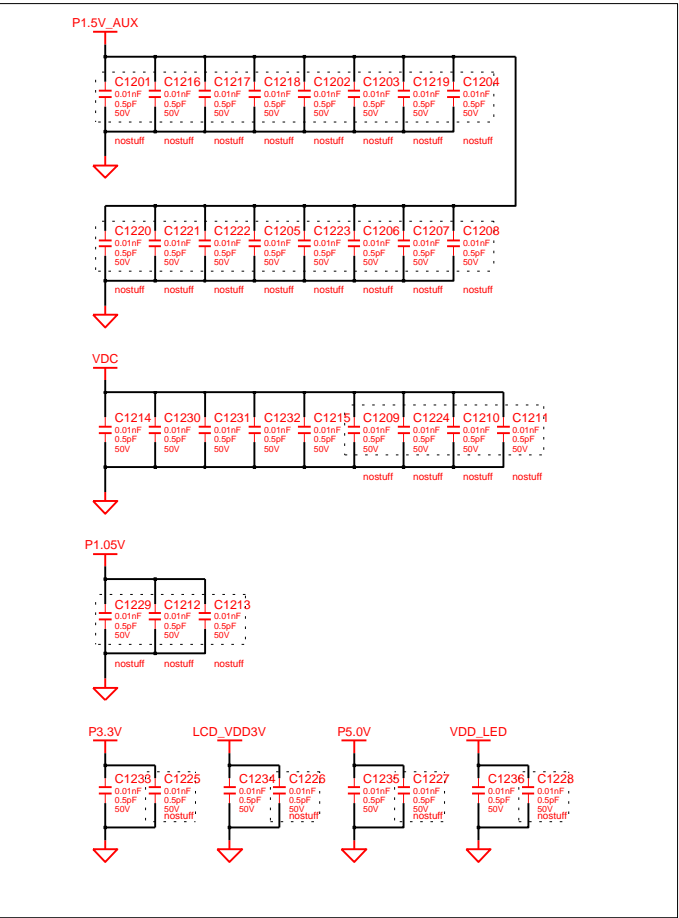
Mainboard Mount ((25-55)X3EA, (30-76)X3EA))



WLAN Performance issue



WLAN Performance issue

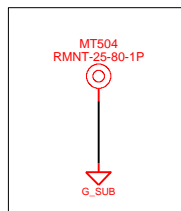
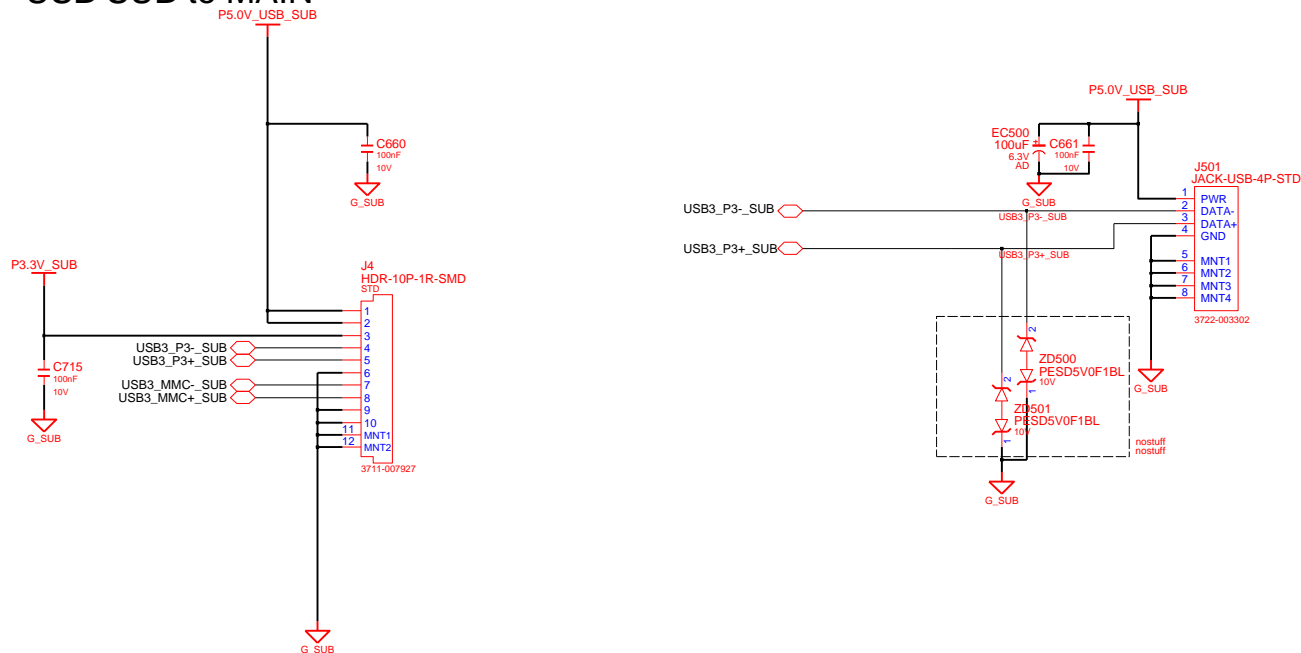


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## 4IN1(GL823) USB SUB1

### USB SUB to MAIN

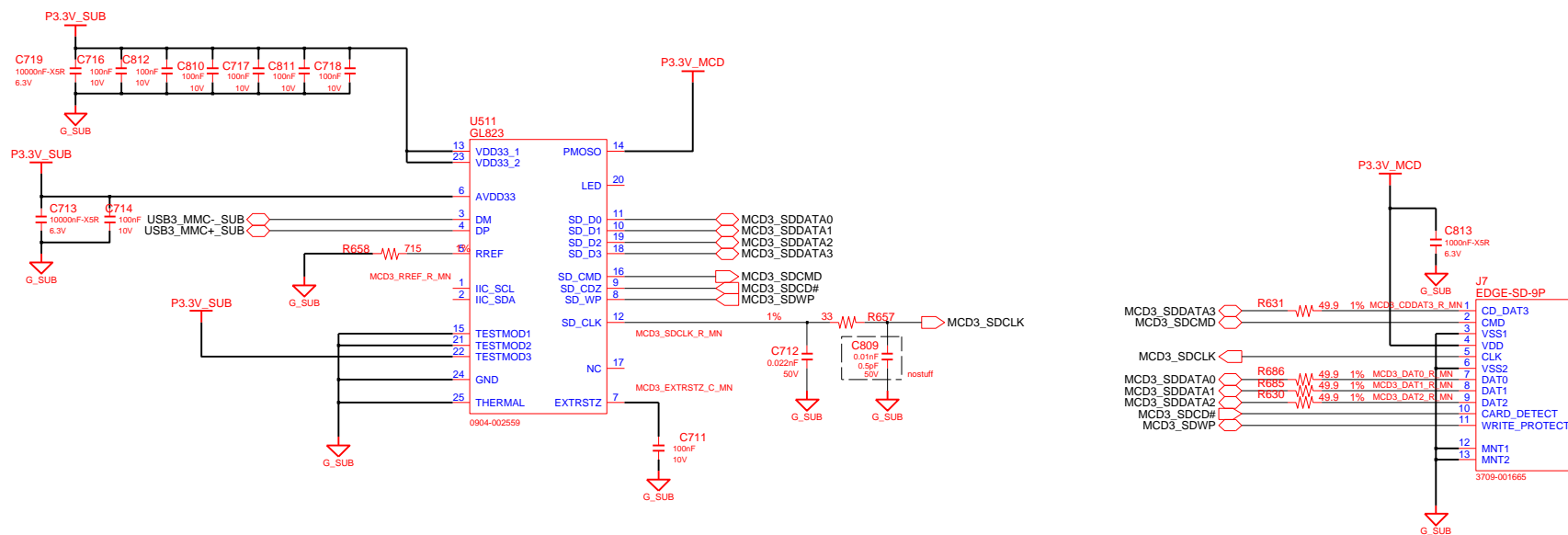


DRAW	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP	SUB1		
APPROVAL	MK KIM	REV	REV 1.1	USB SUB		
MODULE CODE		LAST EDIT				PART NO. BA41-02013A
					March 30, 2012 16:27:53 PM	PAGE 59 OF 61

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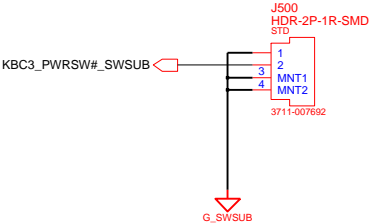
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## 4IN1(GL823) USB SUB1

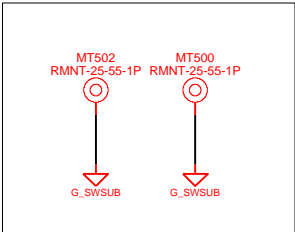
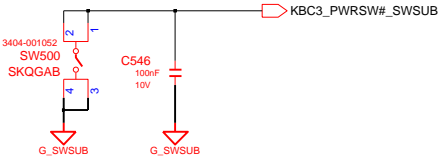


DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R
CHECK	SJ KIM	DEV. STEP	MP		SUB1
APPROVAL	MK KIM	REV	REV 1.1		4IN1 SUB
MODULE CODE		LAST EDIT			
				PAGE	60 OF 61

POWER SWITCH SUB2



Power Switch Button



DESIGN	SY KIM	DATE	7/14/2010	TITLE	Lotus-14R SUB BOARD POWER SWITCH	SAMSUNG ELECTRONICS
CHECK	SJ KIM	DEV. STEP	MP			PART NO. BA41-02013A
APPROVAL	MK KIM	REV	REV 1.1			
MODULE CODE		LAST EDIT	March 30, 2012 16:27:53 PM	PAGE	61	OF 61