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for VE

Ramos-15L

CPU : Ivy Bridge BGA
Chip Set : Intel Panther Point
GFX : NV N14M_GL/N14P_GV2
INTEL HD 3000/4000
Remarks : Chief River Platform

Model Name : Ramos-15L
PBA Name : MAIN
PCB Code : BA41-02317A (GCE/HST/PTC)

Dev. Step : PV
Revision : 1.0
T.R. Date : 2013.06.01

Design	CHECK	APPROVAL
Pei Wang	RJ Zheng	BL LEE

Owner : SEC Mobile R & D Signature : X

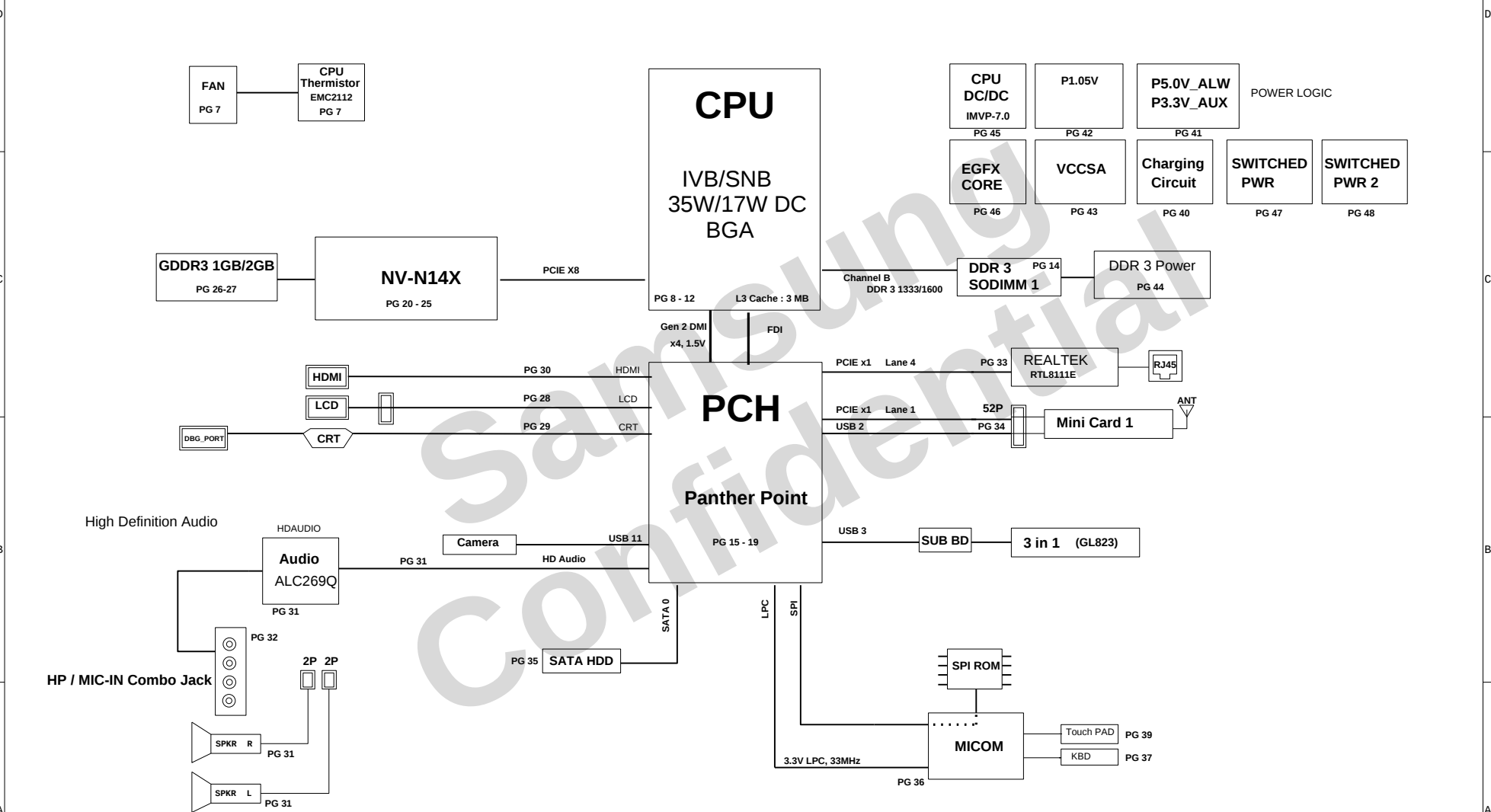
sheet01 : Cover
sheet02 : BLOCK DIAGRAM
sheet03 : BOARD INFORMATION
sheet04 : POWER DIAGRAM
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sheet06 : Green Clock
sheet07 : Thermal Sensor
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sheet09 : CPU-IvyBridge (2/5)
sheet10 : CPU-IvyBridge (3/5)
sheet11 : CPU-IvyBridge (4/5)
sheet12 : CPU-IvyBridge (5/5)
sheet13 :
sheet14 : DDR3 SODIMM1
sheet15 : PCH-PantherPoint (1/5)
sheet16 : PCH-PantherPoint (2/5)
sheet17 : PCH-PantherPoint (3/5)
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sheet26 : GFX memory
sheet27 : GFX memory
sheet28 : LVDS / CAMERA
sheet29 : VGA
sheet30 : HDMI
sheet31 : Audio - ALC269Q-VC-GR
sheet32 : Audio - Combo Jack
sheet33 : LAN (Realtek RTL8111E)
sheet34 : WLAN
sheet35 : SATA interface (HDD I/F)

sheet36 : MICOM / BIOS(MEC1310)
sheet37 : MICOM Glue Logic
sheet38 : USB3.0 connector
sheet39 : MAIN TO SUB CONNECTOR
sheet40 : Power - charger
sheet41 : Power - P3.3V_AUX / P5.0V_AUX
sheet42 : Power - P1.05V (Chipset Power)
sheet43 : Power - VCCSA
sheet44 : Power - DDR3
sheet45 : Power - CPU VRM
sheet46 : Power - EGFX_CORE
sheet47 : Power - Switched Power 1
sheet48 : Power - Switched Power 2
sheet49 : Power - Power Discharge
sheet50 : Mount Hole
sheet51 : SUB (TOUCHPAD)

DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS PART NO. BA41-****A
CHECK	ZHENG, RJ	DEV. STEP	PVR	MAIN		
APPROVAL	LEE, BL	REV	REV 0.1	COVER		
MODULE CODE		LAST EDIT	December, 17, 2012 1:42:04 PM	PAGE	1 OF 51	

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BLOCK DIAGRAM



DRAW	YF Li	DATE	09/29/2012	Ramos-N14-14/15 MAIN BLOCK DIAGRAM		SAMSUNG ELECTRONICS	
CHECK	RJ Zheng	DEV. STEP	PVR				
APPROVAL	BL Lee	REV	REV 0.1				
				PART NO.		BA41-*****A	
MODULE CODE		LAST EDIT		July 31, 2012 13:21:52 PM		PAGE	2 OF 51

BOARD INFORMATION

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 Micom) 5.0V always power rail 5.0V always power rail
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)
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)
VCC_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for GPU VCC for PANTHERPOINT

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

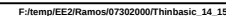
SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD
1	NC
2	NC
3	NC
4	NC
5	NC

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	PANTHER POINT	Real Time Clock
Crystal	25MHz	Green Clock	REALTEK
Crystal	27MHz	N14M	

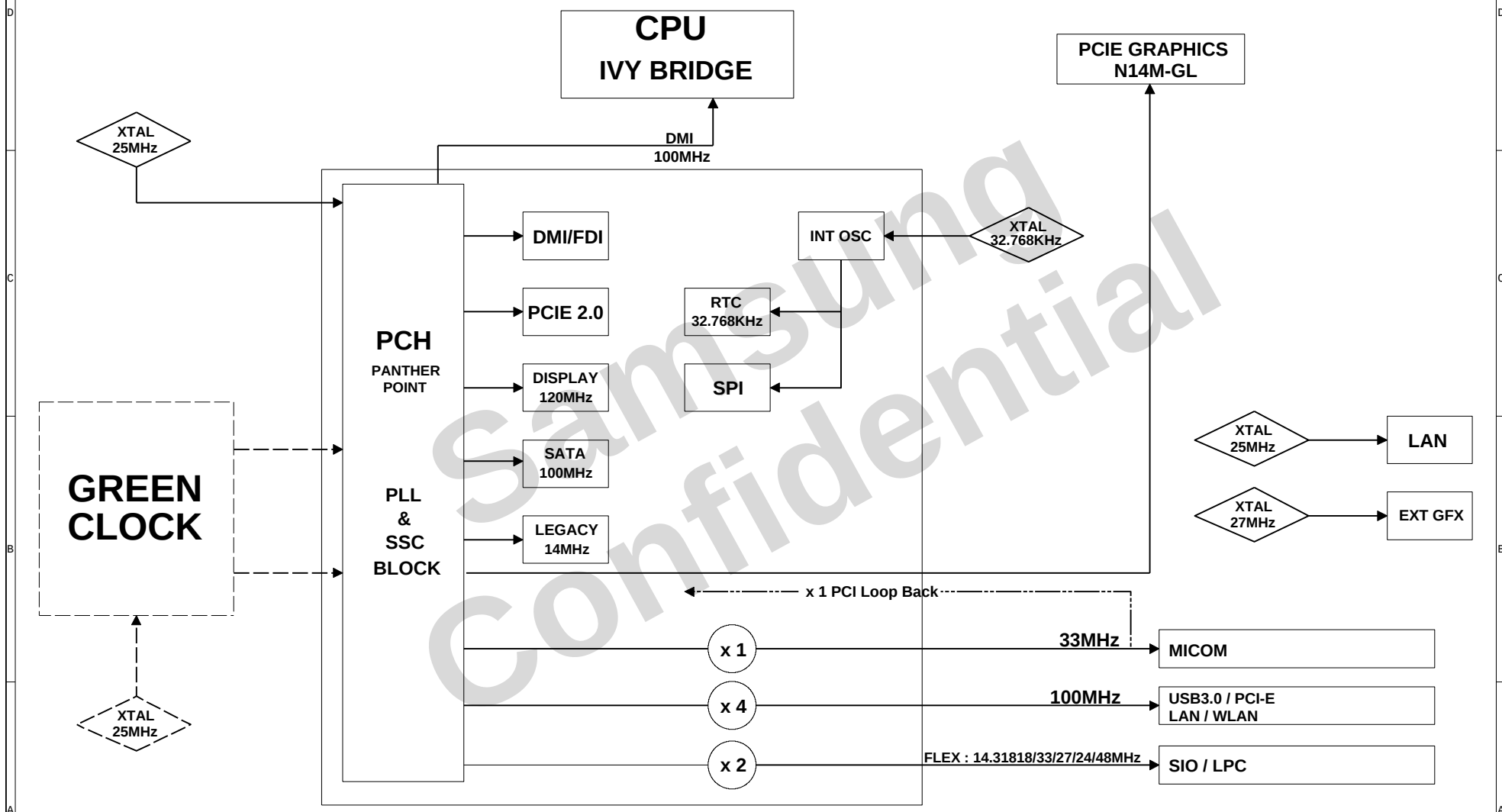
LCD Pannel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

I ² C / SMB Address			
Devices	Address	Hex	Bus
PANTHERPOINT	Master	-	SMBUS Master
CPU Thermal Sensor	0011 000X	30h	
SODIMM0	1010 000x	A0h	Thermal Sensor
SODIMM1	1010 010x	A4h	-
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	

DRAW	YF Li	DATE	12/17/2012	TITLE	Ramos-N14-14/15	SAMSUNG
CHECK	RJ Zheng	DEV. STEP	PVR		MAIN	ELECTRONICS
APPROVAL	BL Lee	REV	REV 0.1		BOARD INFO	PART NO. BA41-****A
MODULE CODE	undefined	LAST EDIT	July 31, 2012 13:21:52 PM	PAGE	3	OF 51



CLOCK DISTRIBUTION Rev. 0.8

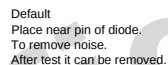


DESIGN	L1, YF	DATE	12/17/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR	MAIN	MAIN	
APPROVAL	LEE, L	REV	REV 0.1	MAIN	MAIN	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 12:15:06 PM	PAGE	5 OF 51	

[illegible]

DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15		SAMSUNG	
CHECK	ZHENG, RJ	DEV. STEP	PVR	CLOCK		ELECTRONICS		
APPROVAL	LEE, BL	REV	REV 0.1	CLOCK DISTRIBUTION		PART NO.	BA41-*****A	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 12:17:51 PM			PAGE	6	OF 51

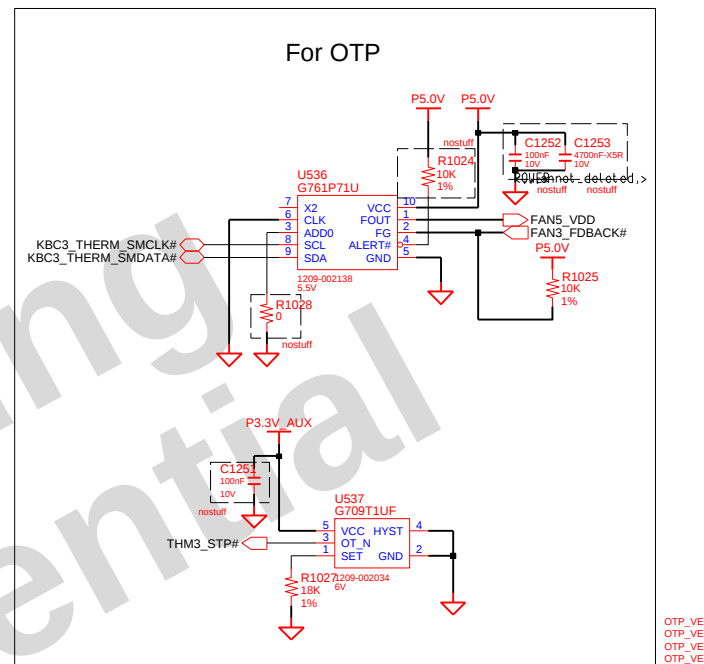
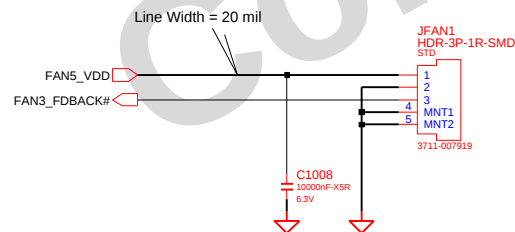
THERMAL SENSOR & FAN CONTROL



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

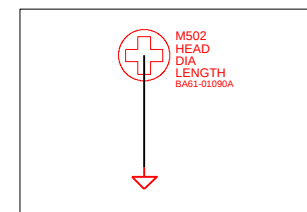
ADDRESSSEL MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

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

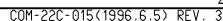


Temperature : 95.78c
confirmed by thermal charger
(2011.05.02)
 $R \text{ (kohm)} = 0.0012T - 0.9308T + 96.147$

FAN PEM



DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG	
CHECK	ZHENG, RJ	DEV. STEP	PVR		THERMAL SENSOR	ELECTRONICS	
APPROVAL	LEE, BL	REV	REV 0.1		THERMAL SENSOR EMC2112	PART NO.	BA41-*****A
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 12:19:40 PM			PAGE	7 OF 51



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CPU1-2
IVY BGA DC 2/5

AG6 SA_DQ_0
AJ6 SA_DQ_1
AP11 SA_DQ_2 SA_CLK_0 AU36
AL6 SA_DQ_2 SA_CLK#_0 AY26
AJ10 SA_DQ_3 SA_CKE_0
AJ8 SA_DQ_4
AL8 SA_DQ_5
AL7 SA_DQ_6
AR11 SA_DQ_7
AP6 SA_DQ_8
AU6 SA_DQ_9 SA_CLK_1 AT40
AV9 SA_DQ_10 SA_CLK#_1 AU40
AR6 SA_DQ_11 SA_CKE_1 BB26
AP8 SA_DQ_12
AT13 SA_DQ_13
AU13 SA_DQ_14
BC7 SA_DQ_15
BB7 SA_DQ_16
BA13 SA_DQ_17 SA_CS#_0 BB40
BA9 SA_DQ_18 SA_CS#_1 BC41
BB11 SA_DQ_19
BA7 SA_DQ_20
BA9 SA_DQ_21
BB9 SA_DQ_22
AY13 SA_DQ_23
AV14 SA_DQ_24 SA_ODT_0 AY40
AR14 SA_DQ_25 SA_ODT_1 BA41
AY17 SA_DQ_26
AR19 SA_DQ_27
BA14 SA_DQ_28
AU14 SA_DQ_29
BB14 SA_DQ_30
BB17 SA_DQ_31 SA_DQS#_0 AL11
BA45 SA_DQ_32 SA_DQS#_1 AR8
AR43 SA_DQ_33 SA_DQS#_2 AV11
AW8 SA_DQ_34 SA_DQS#_3 AT17
BC48 SA_DQ_35 SA_DQS#_4 AV45
BC25 SA_DQ_36 SA_DQS#_5 AY61
AR45 SA_DQ_37 SA_DQS#_6 AT55
AT48 SA_DQ_38 SA_DQS#_7 AK55
AY28 SA_DQ_39
BA49 SA_DQ_40
AV49 SA_DQ_41
BB51 SA_DQ_42
AY53 SA_DQ_43
BB49 SA_DQ_44
AU49 SA_DQ_45 SA_DQS_0 AJ11
BA53 SA_DQ_46 SA_DQS_1 AR10
BB55 SA_DQ_47 SA_DQS_2 AY11
BA55 SA_DQ_48 SA_DQS_3 AU17
AV55 SA_DQ_49 SA_DQS_4 AW45
AP50 SA_DQ_50 SA_DQS_5 AV51
AP53 SA_DQ_51 SA_DQS_6 AT56
AV54 SA_DQ_52 SA_DQS_7 AK54
AT54 SA_DQ_53
AP56 SA_DQ_54
AP52 SA_DQ_55
AN57 SA_DQ_56
AN53 SA_DQ_57
AG56 SA_DQ_58
AG53 SA_DQ_59
AN55 SA_DQ_60
AN52 SA_DQ_61 SA_MA_0 BG35
AG55 SA_DQ_62 SA_MA_1 BB34
AK56 SA_DQ_63 SA_MA_2 BE35
SA_MA_3 BD35
SA_MA_4 AT34
SA_MA_5 AU34
SA_MA_6 BB32
SA_MA_7 AT32
BD37 SA_BS_0 SA_MA_8 AY32
BF36 SA_BS_1 SA_MA_9 AV32
BA28 SA_BS_2 SA_MA_10 BE37
SA_MA_11 BA30
SA_MA_12 BC30
BE39 SA_CAS# SA_MA_13 AW41
BD39 SA_RAS# SA_MA_14 AY28
AT41 SA_WE# SA_MA_15 AU26

DDR SYSTEM MEMORY A

MEM1_BDQ(63:0) 19-D4

0 AL4 SB_DQ_0
1 AL1 SB_DQ_1
2 AN3 SB_DQ_2 SB_CLK_0 BA34
3 AR4 SB_DQ_2 SB_CLK#_0 AR22 CLK1_B_MCLK0#
4 AK4 SB_DQ_3 SB_CKE_0 AR22 MEM1_B_CKE0
5 AK3 SB_DQ_4
6 AN4 SB_DQ_5
7 AR1 SB_DQ_6
8 AU4 SB_DQ_7
9 AT2 SB_DQ_8
10 AV4 SB_DQ_9 SB_CLK_1 BA36
11 BA4 SB_DQ_10 SB_CLK#_1 BB36 CLK1_B_MCLK1#
12 AU3 SB_DQ_11 SB_CKE_1 BF27 MEM1_B_CKE1
13 AR3 SB_DQ_12
14 AY2 SB_DQ_13
15 BA3 SB_DQ_14
16 BE9 SB_DQ_15
17 BD9 SB_DQ_16
18 BD13 SB_DQ_17 SB_CS#_0 BE41
19 BF12 SB_DQ_18 SB_CS#_1 BE47 MEM1_B_CS0#
20 BF8 SB_DQ_19 MEM1_B_CS1#
21 BD10 SB_DQ_20
22 BD14 SB_DQ_21
23 BE13 SB_DQ_22
24 BF16 SB_DQ_23
25 BE16 SB_DQ_24 AT43
26 BE16 SB_DQ_25 BG47 MEM1_B_ODT0
27 BE21 SB_DQ_26 MEM1_B_ODT1
28 BE14 SB_DQ_27
29 BG14 SB_DQ_28
30 BG16 SB_DQ_29
31 BF19 SB_DQ_30
32 BD50 SB_DQ_31
33 BF48 SB_DQ_32
34 BD33 SB_DQ_33 SB_DQS#_0 AL3
35 BE52 SB_DQ_34 SB_DQS#_1 AV3 MEM1_BDQS(7:0)
36 BD49 SB_DQ_35 SB_DQS#_2 BG11
37 BE49 SB_DQ_36 SB_DQS#_3 BG51
38 BD54 SB_DQ_37 SB_DQS#_4 BA59
39 BE53 SB_DQ_38 SB_DQS#_5 AT60
40 BE56 SB_DQ_39 SB_DQS#_6 AR59
41 BE57 SB_DQ_40 SB_DQS#_7 AK59
42 BC59 SB_DQ_41
43 AY60 SB_DQ_42
44 BE54 SB_DQ_43
45 BG54 SB_DQ_44
46 BA58 SB_DQ_45
47 AW59 SB_DQ_46 SB_DQS_0 AM2
48 AW58 SB_DQ_47 SB_DQS_1 AV1 MEM1_BDQS(7:0)
49 AU58 SB_DQ_48 SB_DQS_2 BE11
50 AN61 SB_DQ_49 SB_DQS_3 BD18
51 AN59 SB_DQ_50 SB_DQS_4 BE51
52 AU59 SB_DQ_51 SB_DQS_5 BA61
53 AU61 SB_DQ_52 SB_DQS_6 AR59
54 AN58 SB_DQ_53 SB_DQS_7 AK61
55 AR58 SB_DQ_54
56 AK58 SB_DQ_55
57 AL58 SB_DQ_56
58 AG58 SB_DQ_57
59 AG59 SB_DQ_58
60 AM60 SB_DQ_59
61 AL59 SB_DQ_60
62 AF61 SB_DQ_61 SB_MA_0 BF32
63 AH60 SB_DQ_62 SB_MA_1 BE33
SB_DQ_63 SB_MA_2 BD33
SB_MA_3 AU30
SB_MA_4 BD30
SB_MA_5 AV30
SB_MA_6 BE30
SB_MA_7 BE29
SB_MA_8 BE28
SB_MA_9 BD43
SB_MA_10 AT28
SB_MA_11 AV28
SB_MA_12 BD46
SB_MA_13 AT26
SB_MA_14 AU22
SB_MA_15

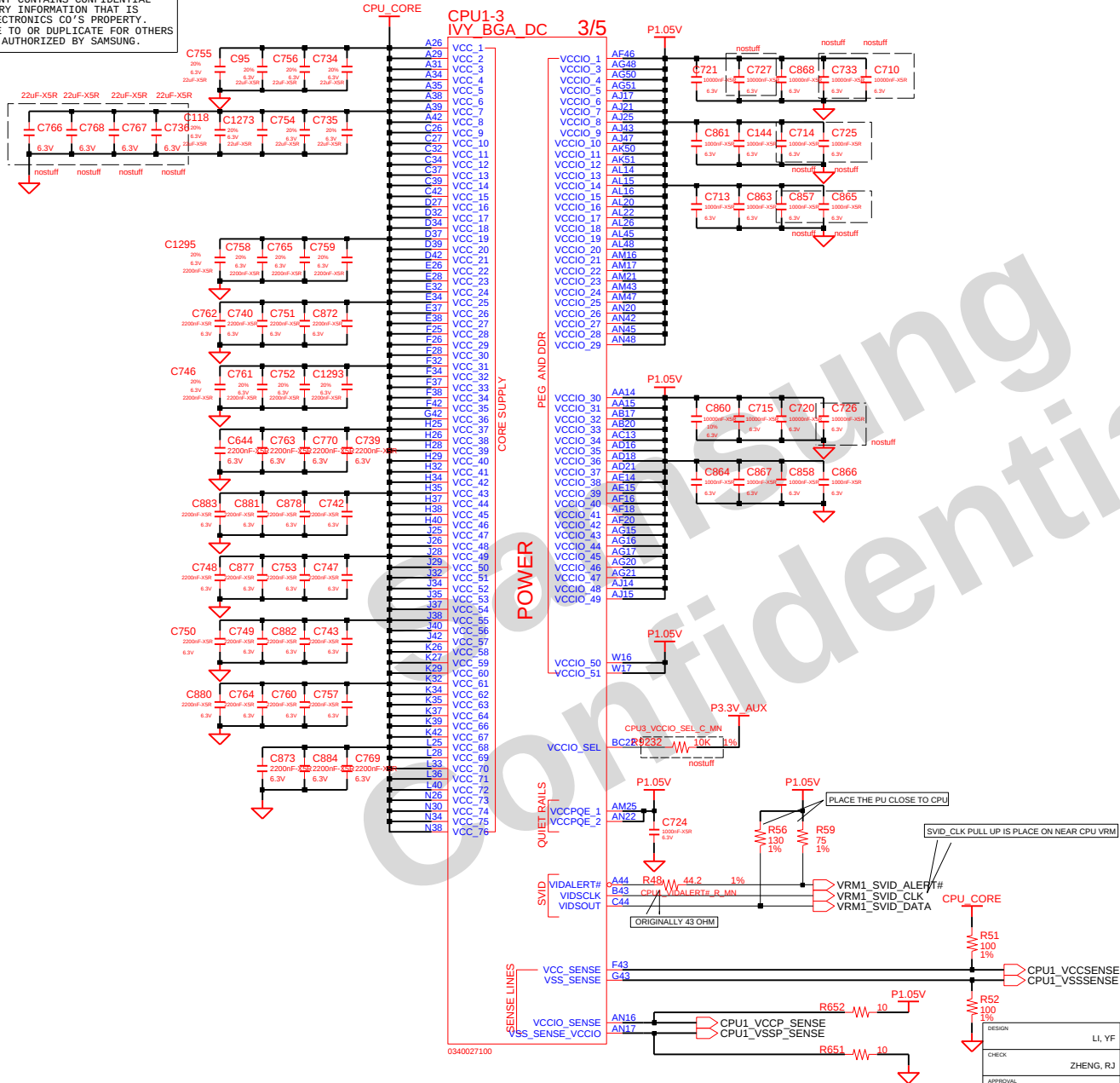
DDR SYSTEM MEMORY B

MEM1_BBS(2:0) 19-C4

MEM1_BCAS# AV43C
MEM1_BRAS# BF40C
MEM1_BWE# BD45C

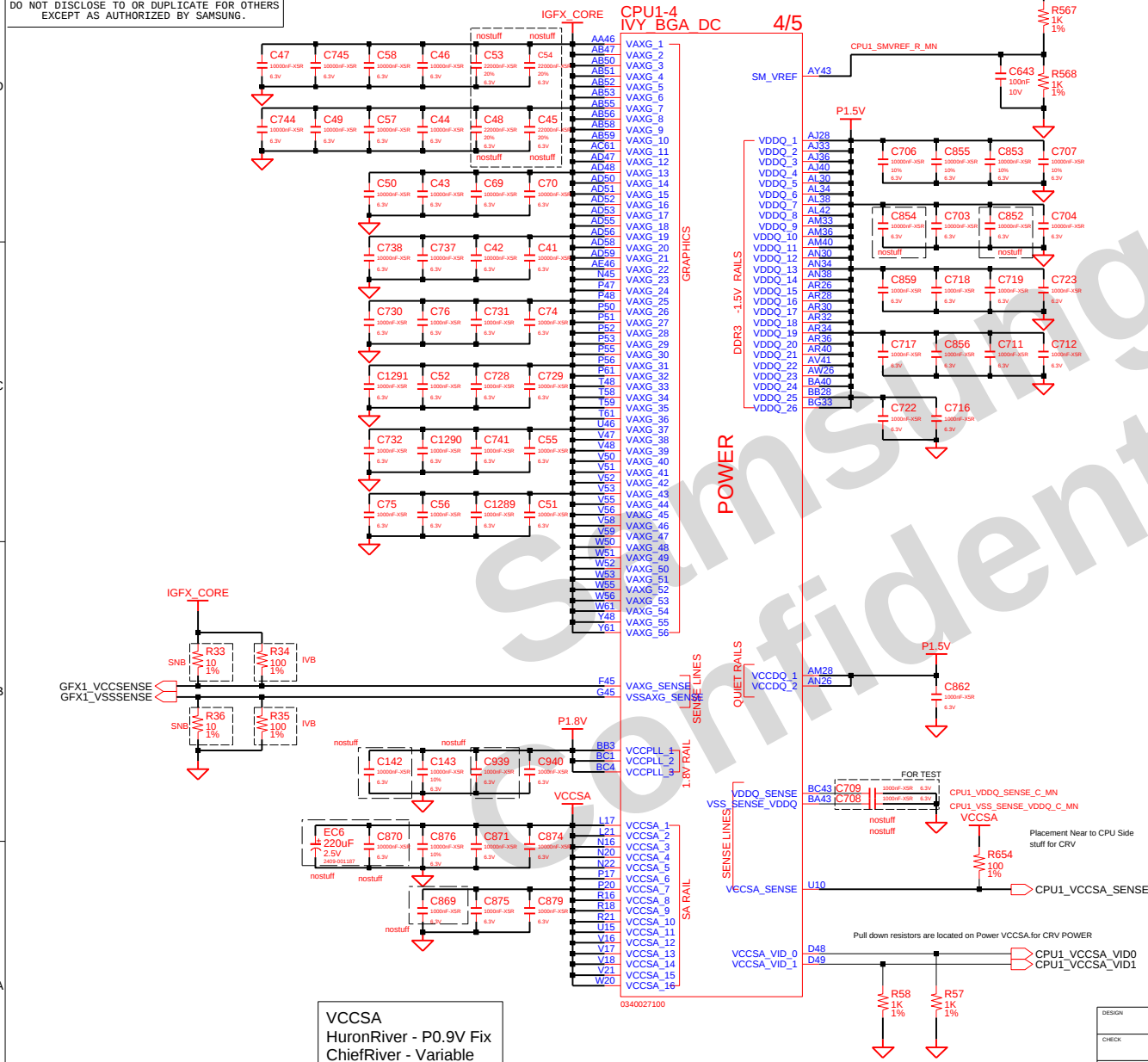
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CHECK	ZHENG, RJ	DEV. STEP	PVR			
APPROVAL	LEE, BL	REV	REV 0.1			
				PART NO.	BA41-*****A	
MODULE CODE	undefined	LAST EDIT			December, 17, 2012 1:43:27 PM	PAGE 9 OF 51

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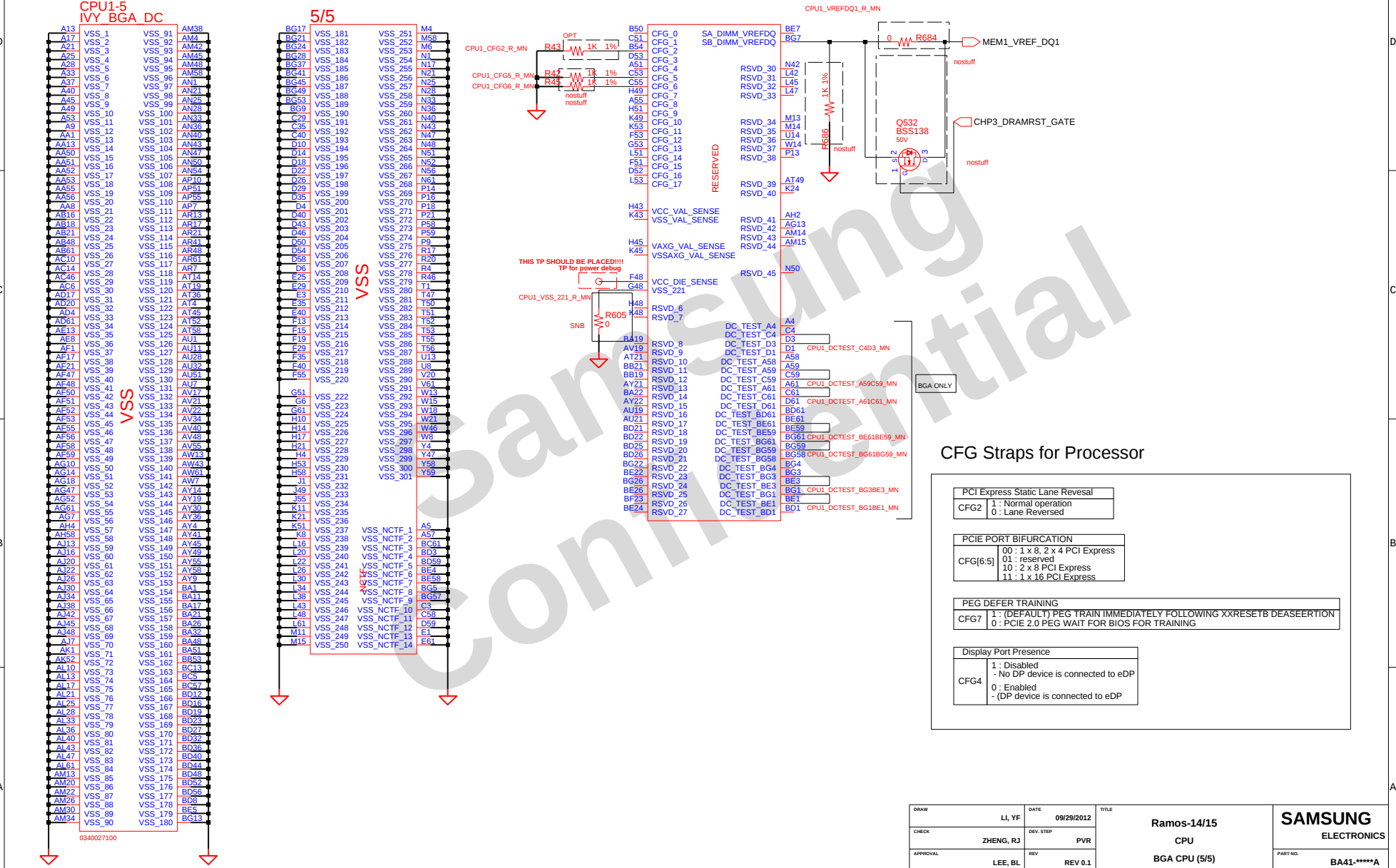
DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15 CPU	SAMSUNG ELECTRONICS PART NO. BA41-****A
CHECK	ZHENG, RJ	DEV. STEP	PVR		BGA CPU (3/5)	
APPROVAL	LEE, BL	REV	REV 0.1			
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:44:34 PM	PAGE	10 OF 51	

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VCCSA
HuronRiver - P0.9V Fix
ChiefRiver - Variable

DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15 CPU	SAMSUNG ELECTRONICS
CHECK	ZHENG, RJ	DEV. STEP	PVR			PART NO. BA41-****A
APPROVAL	LEE, BL	REV	REV 0.1		BGA CPU (4/5)	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:45:24 PM	PAGE	11	OF

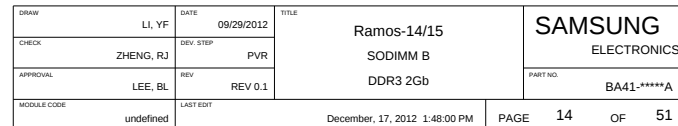
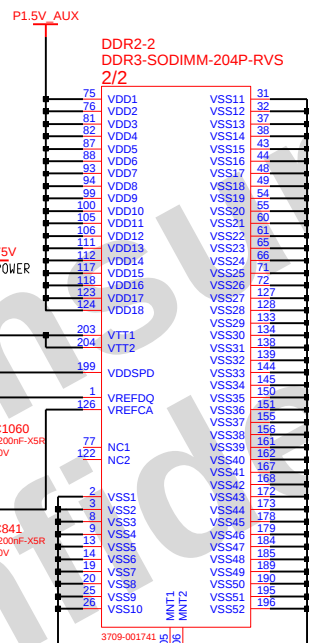


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D															
4				3				2				1			

DRAW	LI, YF	DATE	09/29/2012	Ramos-N14-14/15 MEMORY #0 2 RANK(4/4)		SAMSUNG ELECTRONICS	
CHECK	ZHENG, RJ	DEV. STEP	PVR				
APPROVAL	LEE, L	REV	REV 0.1	DDR3 2Gb		PART NO.	BA41-*****A
MODULE CODE	undefined			December, 17, 2012 1:47:16 PM		PAGE	13 OF 51

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

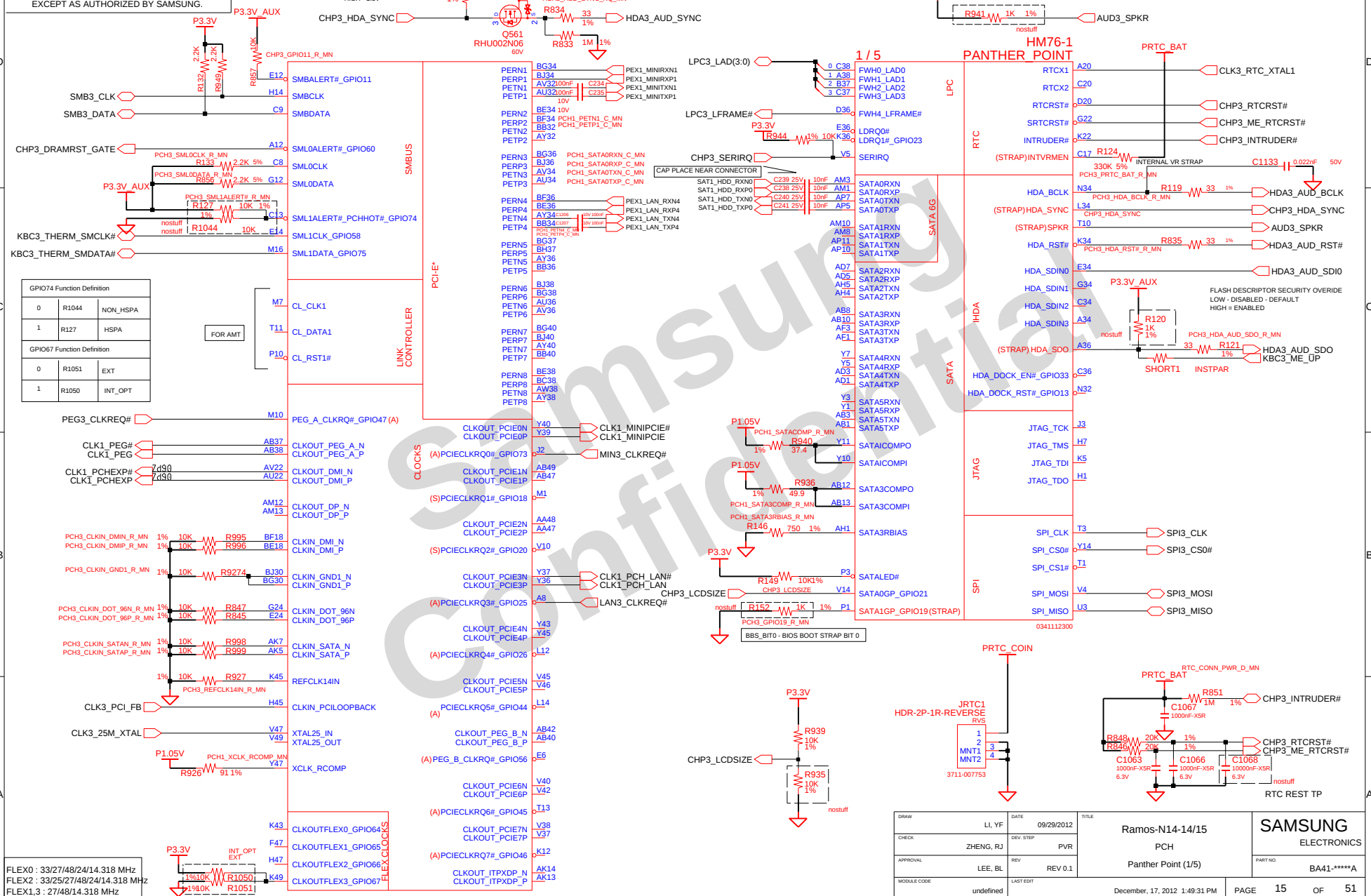
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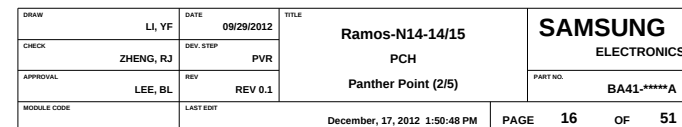


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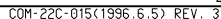
NO REBOOT STRAP

DISABLED : LOW DEFAULT
ABLED : HIGH





GREEN WATT



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HM76-4 PANTHER POINT

AD49 VCCACLK
T16 VCCDSW3_3
V12 DCPSUS8YP
T38 VCC3_3_5
BH23 VCCAPLLDM2
AL29 VCCIO_14
AL24 DCPSUS_3
AA19 VCCASW_1
AA21 VCCASW_2
AA24 VCCASW_3
AA26 VCCASW_4
AA27 VCCASW_5
AA29 VCCASW_6
AA31 VCCASW_7
AC26 VCCASW_8
AC27 VCCASW_9
AC29 VCCASW_10
AC31 VCCASW_11
AD29 VCCASW_12
AD31 VCCASW_13
W21 VCCASW_14
W23 VCCASW_15
W24 VCCASW_16
W26 VCCASW_17
W29 VCCASW_18
W31 VCCASW_19
W33 VCCASW_20
N16 DCPRTC
Y49 VCCVRM_4
BD47 VCCADPLLA
BF47 VCCADPLLB
AF17 VCCIO_7
AF33 VCCDIFFCLKN_1
AF34 VCCDIFFCLKN_2
AG34 VCCDIFFCLKN_3
AG33 VCCSSC
V16 DCPSST
T17 DCPSUS_1
V19 DCPSUS_2
BJ8 V_PROC_IO
A22 VCCRTC

CLOCK AND MISCELLANEOUS

USB

PCI / GPIO / LPC

SATA

MISC

RTC

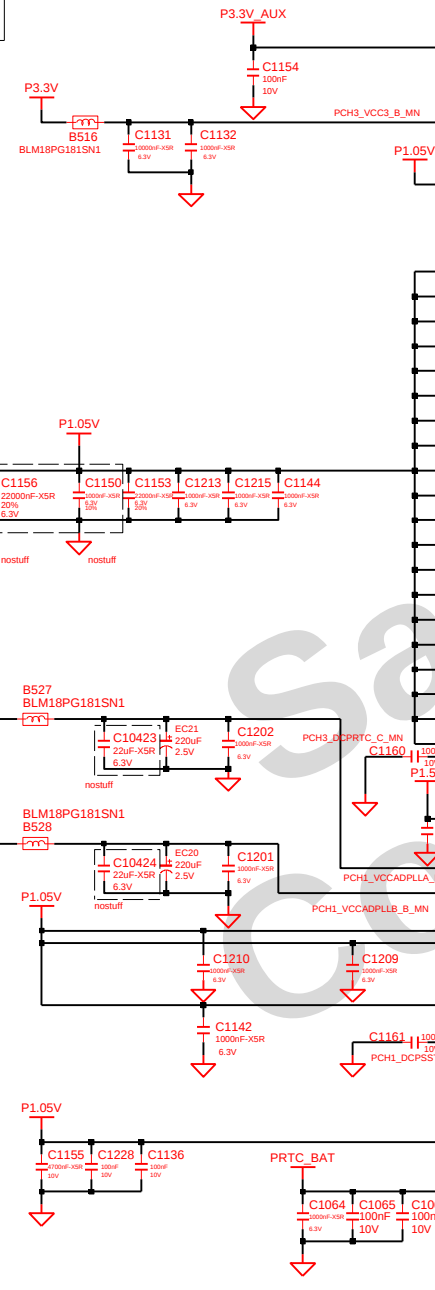
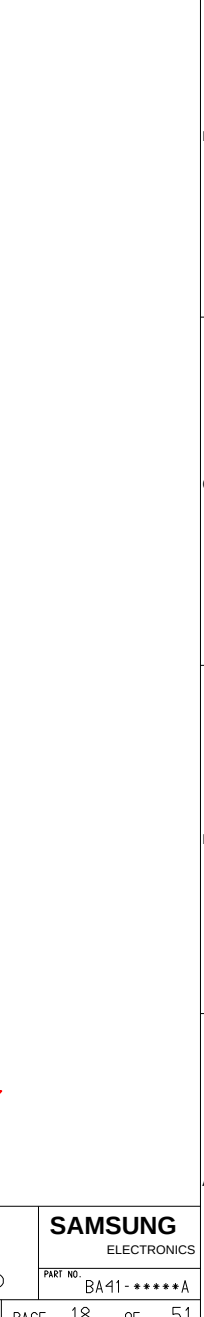
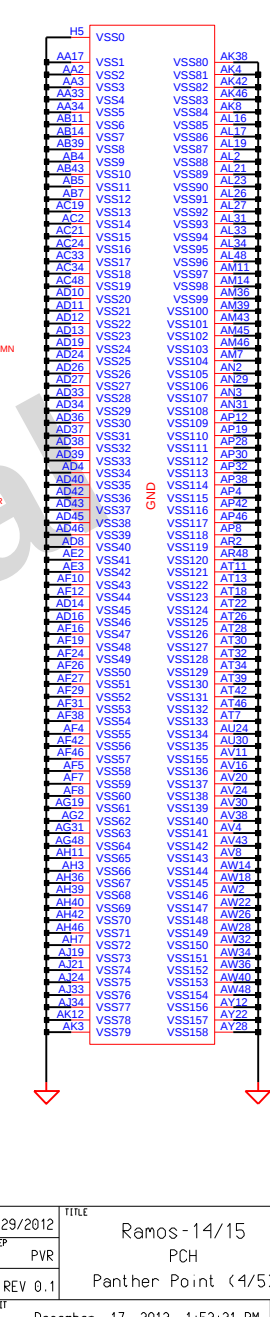
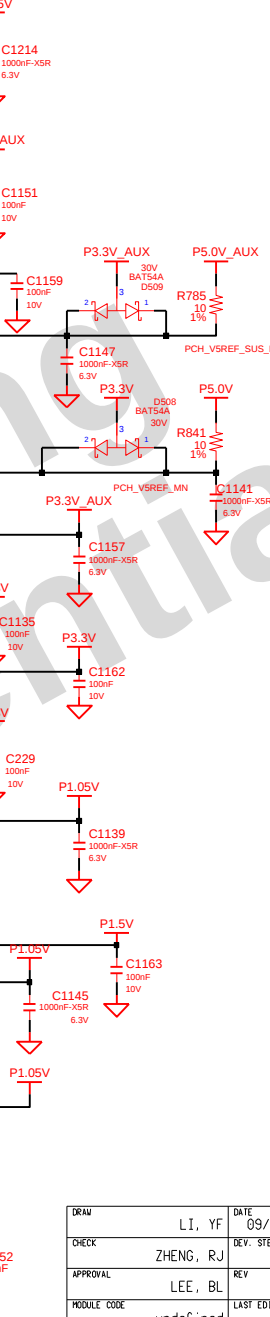
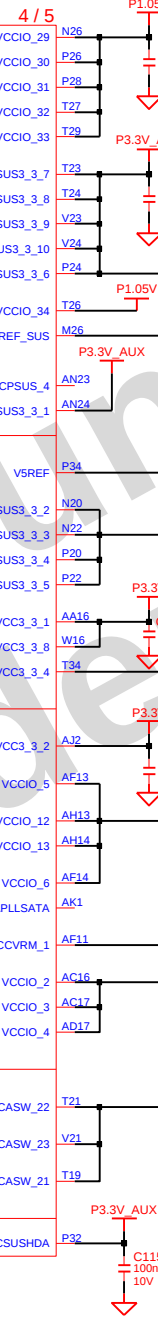
HDA

CPU

RTC

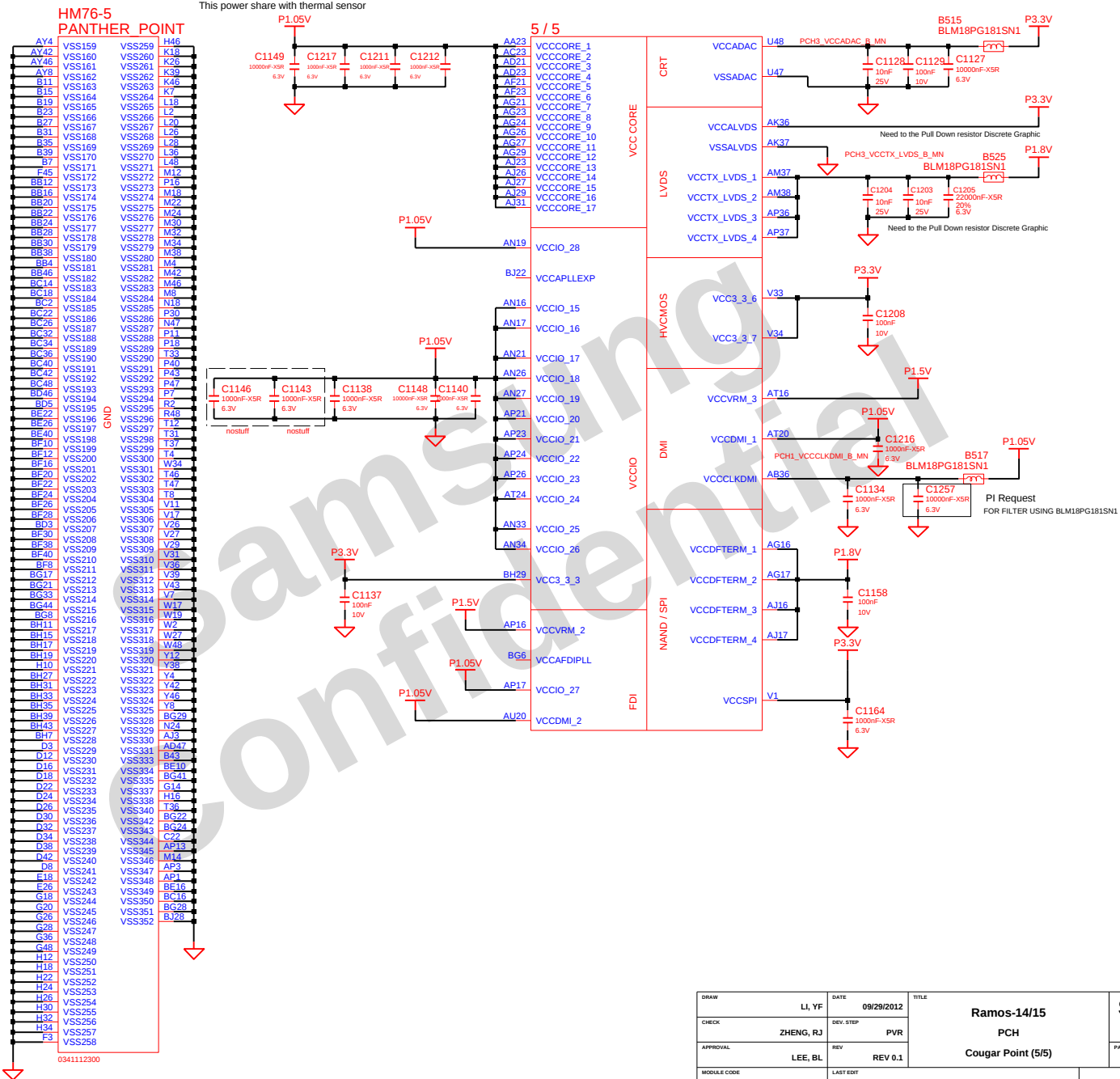
HDA

VCCIO_29
VCCIO_30
VCCIO_31
VCCIO_32
VCCIO_33
VCCSUS3_3_7
VCCSUS3_3_8
VCCSUS3_3_9
VCCSUS3_3_10
VCCIO_34
V5REF_SUS
DCPSUS_4
VCCSUS3_3_1
VCCSUS3_3_2
VCCSUS3_3_3
VCCSUS3_3_4
VCCSUS3_3_5
VCC3_3_1
VCC3_3_2
VCC3_3_3
VCC3_3_4
VCC3_3_5
VCCIO_5
VCCIO_12
VCCIO_13
VCCIO_14
VCCIO_6
VCCAPLLSATA
VCCVRM_1
VCCIO_2
VCCIO_3
VCCIO_4
VCCASW_22
VCCASW_23
VCCASW_21
VCCSUSHDA



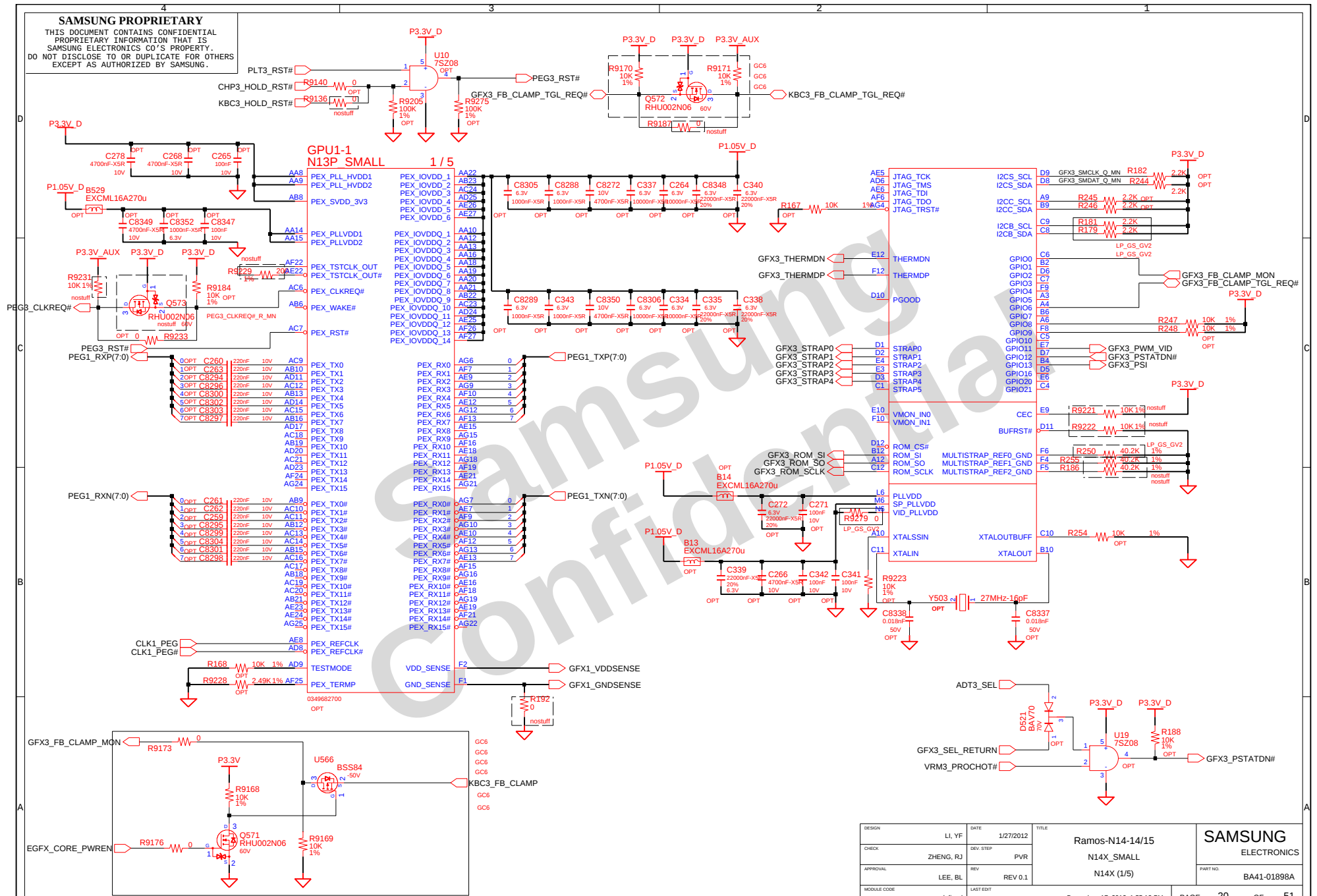
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CHECK	ZHENG, RJ	DEV. STEP	PVR		PCH	
APPROVAL	LEE, BL	REV	REV 0.1		Panther Point (4/5)	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:52:21 PM	PAGE	18 OF 51	

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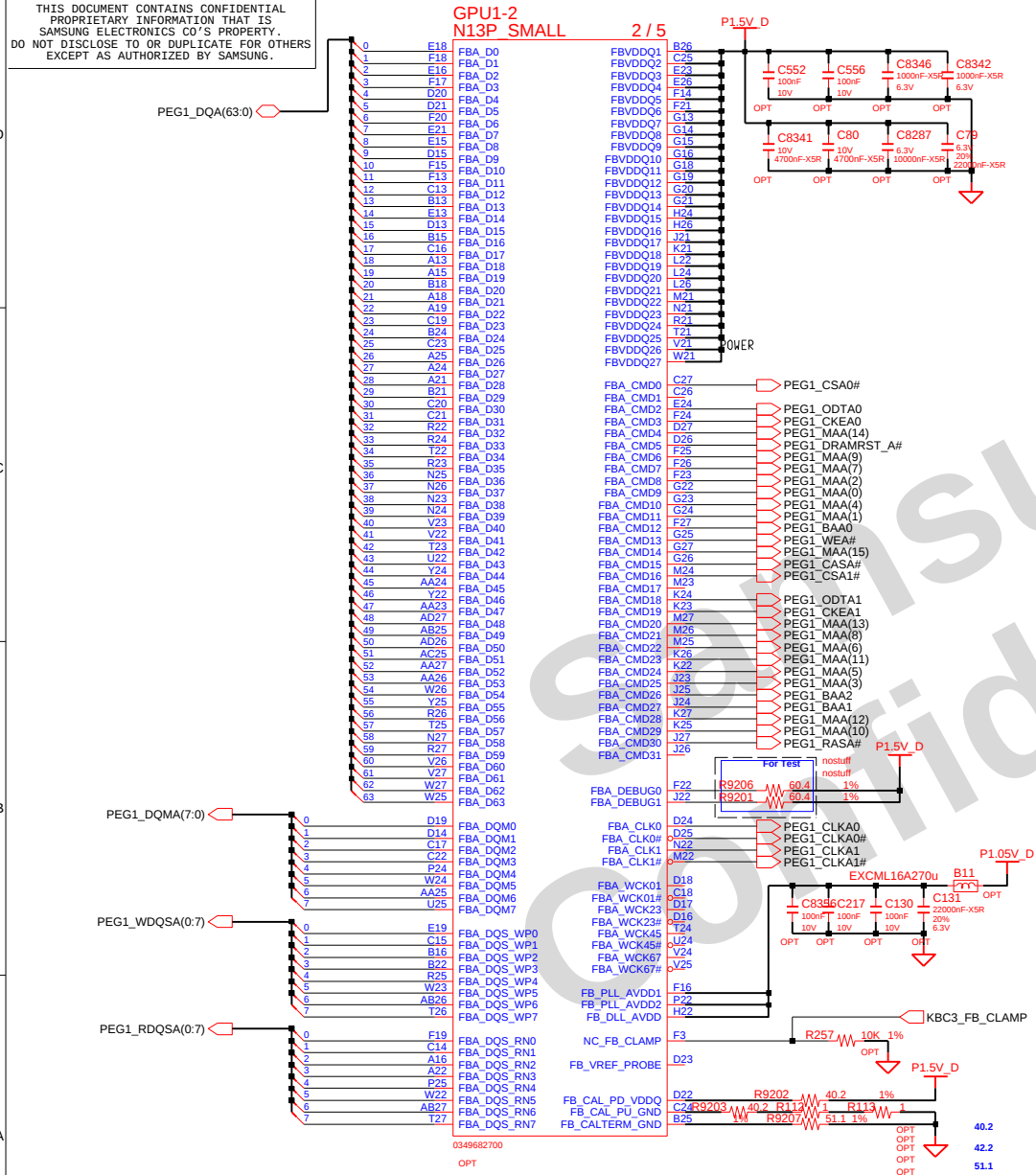
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LI, YF		09/29/2012	Ramos-14/15 PCH			
CHECK	ZHENG, RJ	PVR				
APPROVAL	LEE, BL	REV	REV 0.1	Cougar Point (5/5)		PART NO.
						BA41-*****A
MODULE CODE		LAST EDIT		December, 17, 2012 1:53:01 PM		PAGE 19 OF 51

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DESIGN	LI, YF	DATE	1/27/2012			Ramos-N14-14/15 N14X_SMALL N14X (1/5)			SAMSUNG ELECTRONICS		
CHECK	ZHENG, RJ	REV STEP	PVR								
APPROVAL	LEE, BL	REV	REV 0.1			N14X (1/5)			PART NO.	BA41-01898A	
MODULE CODE	undefined		LAST EDIT						December, 17, 2012 1:55:13 PM		PAGE

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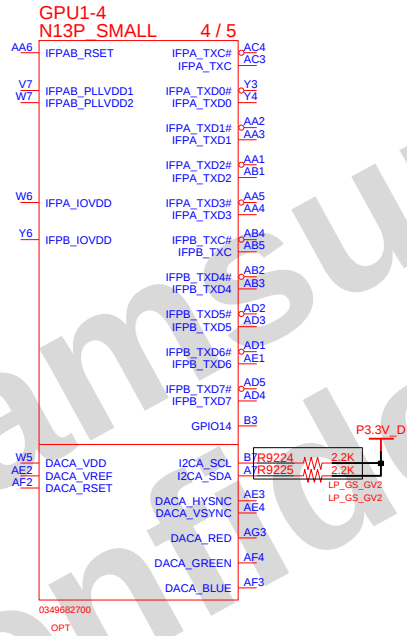
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APPROVAL	LEE, BL	REV	REV 0.1		N14X (2/5)	PART NO.
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:56:51 PM	PAGE	21	BA41-xxxxxx
				OF	51	

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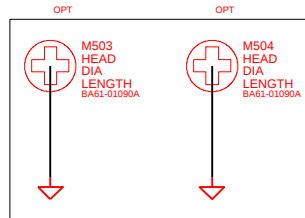
COM-22C-015(1996.6.5) REV. 3

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DESIGN	LI, YF	DATE	1/27/2012	TITLE	Ramos-N14-14/15	SAMSUNG
CHECK	ZHENG, RJ	DEV. STEP	PVR	N14X_SMALL		ELECTRONICS
APPROVAL	LEE, BL	REV	REV 0.1	N14X(4/5)	PART NO.	BA41-xxxxxx
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:59:42 PM	PAGE	23	OF 51

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

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GF117_N14M_GL/GE STRAP DEFINITION

GK208_N14M_LP/GS STRAP DEFINITION

GK208_N14P_GV2_STRAP DEFINITION

RESISTOR MAPPING TO HEX VALUES

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

GPU STRAP TABLE

STRAP PIN	GK208		GF117		
	N14P_GV2	N14M_GS	N14M_LP	N14M_GE	N14M_GL
ROM_SCLK	5K PU LP_GS_GV2	5K PU LP_GS_GV2	5K PU LP_GS_GV2	10K PD GL_GE	10K PD GL_GE
ROM_SI	refer to RAM strap	refer to RAM strap	refer to RAM strap	10K PD GL_GE	10K PD GL_GE
ROM_SO	5K PU LP_GS_GV2	5K PU LP_GS_GV2	5K PU LP_GS_GV2	10K PD GL_GE	10K PD GL_GE
STRAP0	45K PU LP_GS_GV2	45K PU LP_GS_GV2	45K PU LP_GS_GV2	refer to RAM strap	refer to RAM strap
STRAP1	45K PD LP_GS_GV2	45K PD LP_GS_GV2	45K PD LP_GS_GV2	refer to RAM strap	refer to RAM strap
STRAP2	15K PD GV2	5K PD GS	10K PD LP	refer to RAM strap	refer to RAM strap
STRAP3	5K PD LP_GS_GV2	5K PD LP_GS_GV2	5K PD LP_GS_GV2	refer to RAM strap	refer to RAM strap
STRAP4	45K PD LP_GS_GV2	45K PD LP_GS_GV2	45K PD LP_GS_GV2	10K PD GL_GE	10K PD GL_GE

MULTI-LEVEL MODE STRAPPING

STRAP PIN	BIT 3	BIT 2	BIT 1	BIT0
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	PCI_DEVID[5]	PEX_PLL_EN_TERM
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
ROM_SO	FB[1]	FB[0]	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP3	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
STRAP4	RESERVED	PCIE_SPEED_CHANGE_GEN	PCIE_MAX_SPEED	DP_PLL_VDD33V

BINARY STRAP

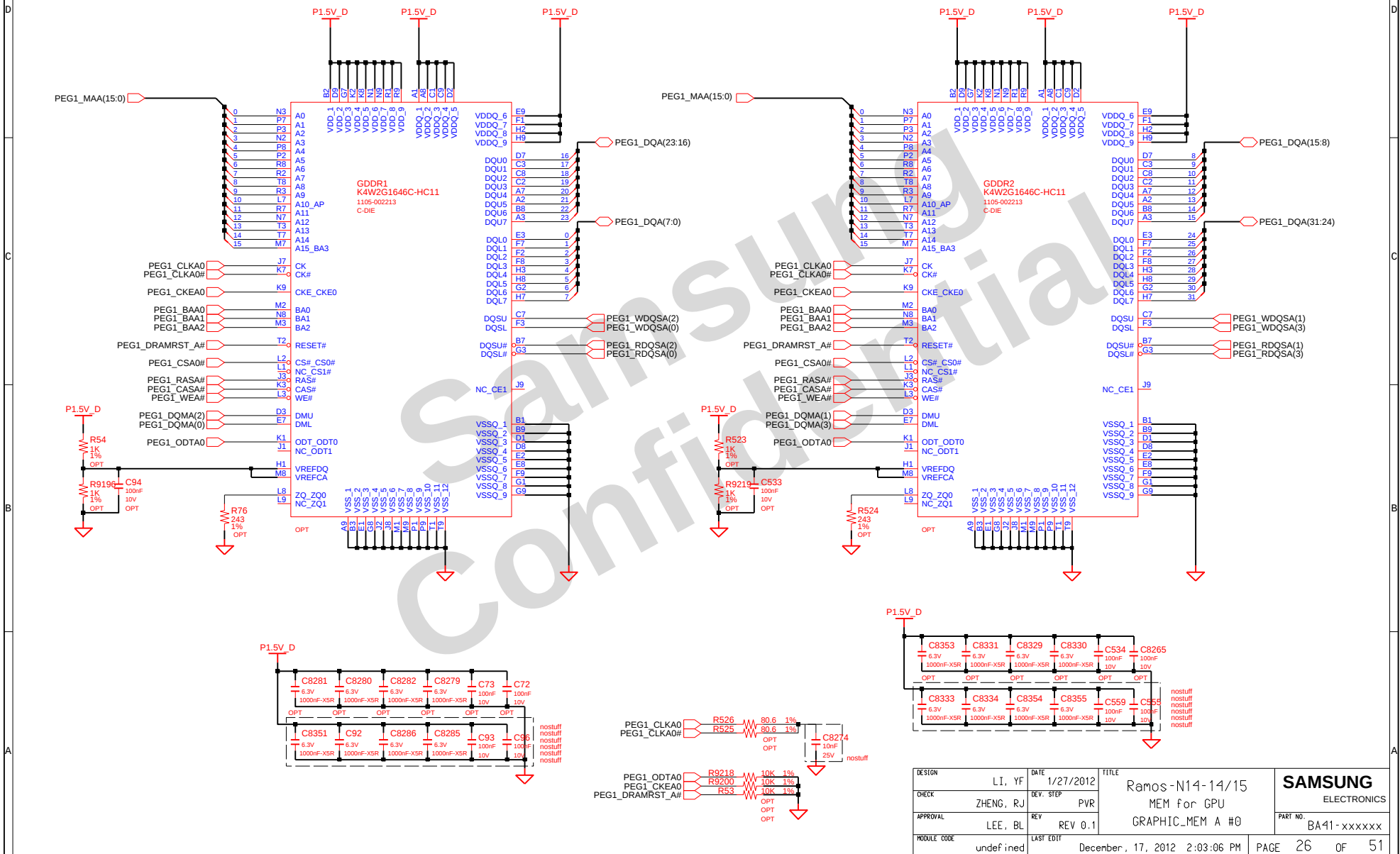
STRAP PIN	STRAP MAPPING	RESISTANCE	POLARITY
ROM_SCLK	SMB_ALT_ADDR	10K	PD
ROM_SI	SUB_VENDOR	10K	PU TO 3V3 IF VBIOS ROM EXISTS PD IF NO VBIOS ROM EXISTS
ROM_SO	VGA_DEVICE	10K	PD(NO DISPLAY)
STRAP0	RAM_CFG[0]	10K	NA
STRAP1	RAM_CFG[1]	10K	NA
STRAP2	RAM_CFG[2]	10K	NA
STRAP3	RAM_CFG[3]	10K	NA
STRAP4	PCIE_MAX_SPEED	10K	PD

VRAM STRAP TABLE

	SAM 1G	SAM 2G	HY 1G	HY 2G	MICRO 1G	MICRO 2G
GK208 ROM_SI	LP_GS_GV2_1G 45K PD	LP_GS_GV2_2G 20K PD	LP_GS_GV2_1G 35K PD	NA	LP_GS_GV2_1G 30K PD	LP_GS_GV2_2G 10K PD
GF117 STRAP0	SAM_MICRO_1G 10K PU	SAM_HY_MICRO_2G 10K PU	HY_1G 10K PD	SAM_HY_MICRO_2G 10K PU	SAM_MICRO_1G 10K PU	SAM_HY_MICRO_2G 10K PU
GF117 STRAP1	SAM_MICRO_1G 10K PD	SAM_HY_2G 10K PU	HY_1G 10K PU	SAM_HY_2G 10K PU	SAM_MICRO_1G 10K PD	MICRO_2G 10K PD
GF117 STRAP2	SAM_HY_1G 10K PU	SAM_HY_2G 10K PD	SAM_HY_1G 10K PU	SAM_HY_2G 10K PD	MICRO_1G 10K PD	MICRO_2G 10K PU
GF117 STRAP3	SAM_HY_MICRO_1G 10K PD	SAM_MICRO_2G 10K PU	SAM_HY_MICRO_1G 10K PD	HY_2G 10K PD	SAM_HY_MICRO_1G 10K PD	SAM_MICRO_2G 10K PU

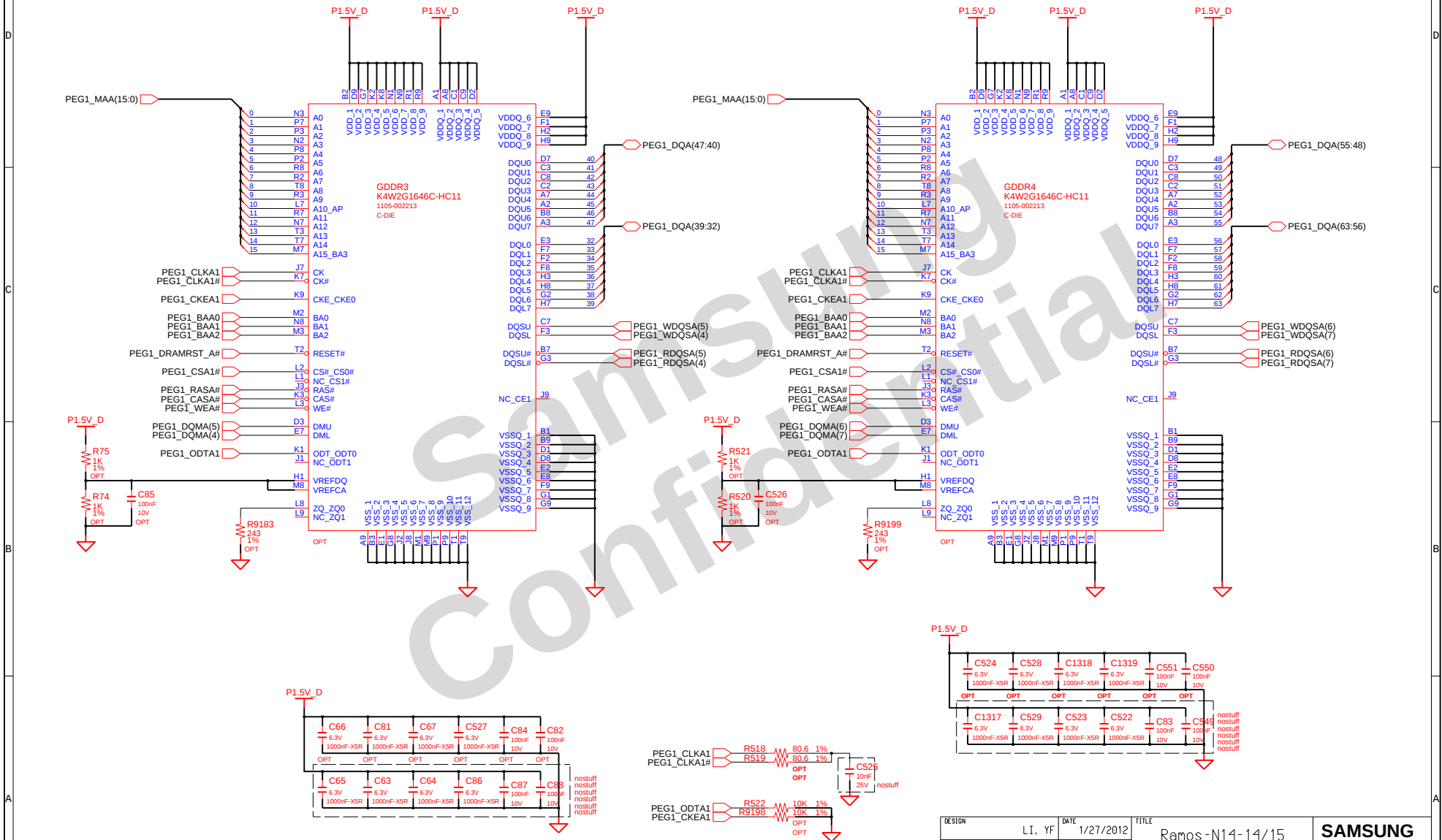
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CHECK	ZHENG, RJ	DEV. STEP	PVR					
APPROVAL	LEE, BL	REV	REV 0.1					
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:02:10 PM	PAGE	25	OF	51	

A-Channel #0 (D-mode)



DESIGN	L1, YF	DATE	1/27/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS PART NO. BA41-xxxxxx
CHECK	ZHENG, RJ	DEV. STEP	PVR	MEM for GPU		
APPROVAL	LEE, BL	REV	REV 0.1	GRAPHIC_MEM A #0		
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:03:06 PM	PAGE 26 OF 51		

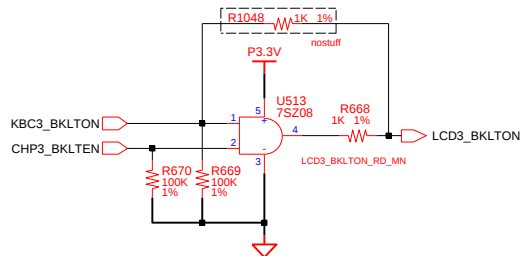
A-Channel #1 (D-mode)



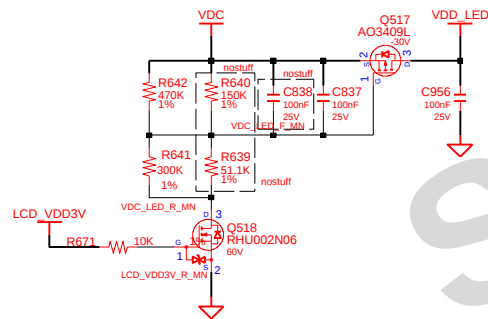
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CHECK	ZHENG, RJ	DEV. STEP	PVR		MEM for GPU	
APPROVAL	LEE, BL	REV	REV 0.1		GRAPHIC_MEM A #1	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:03:57 PM	PAGE	27 OF 51	

LVDS LOGIC

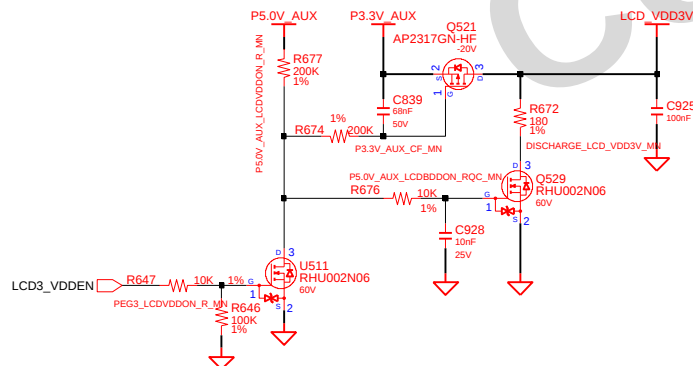
Backlight On



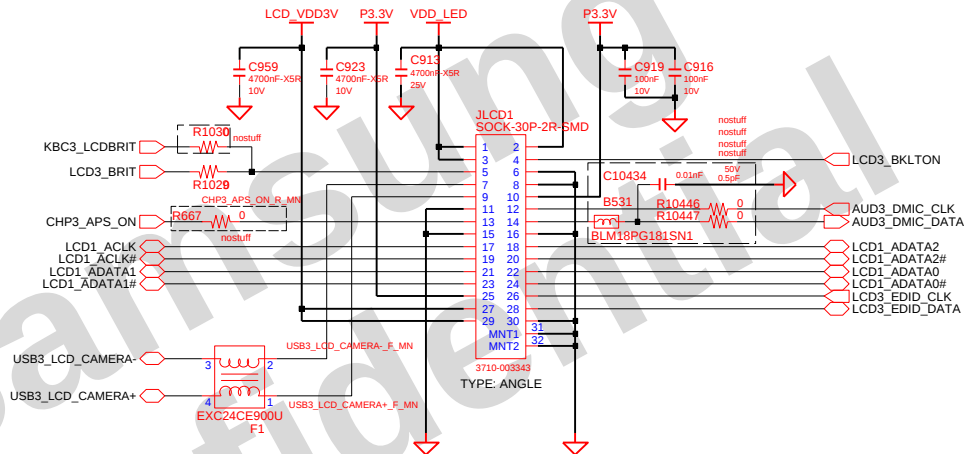
LED Power



LCD Power



1Ch. LCD Connector + CAMERA + INT MIC

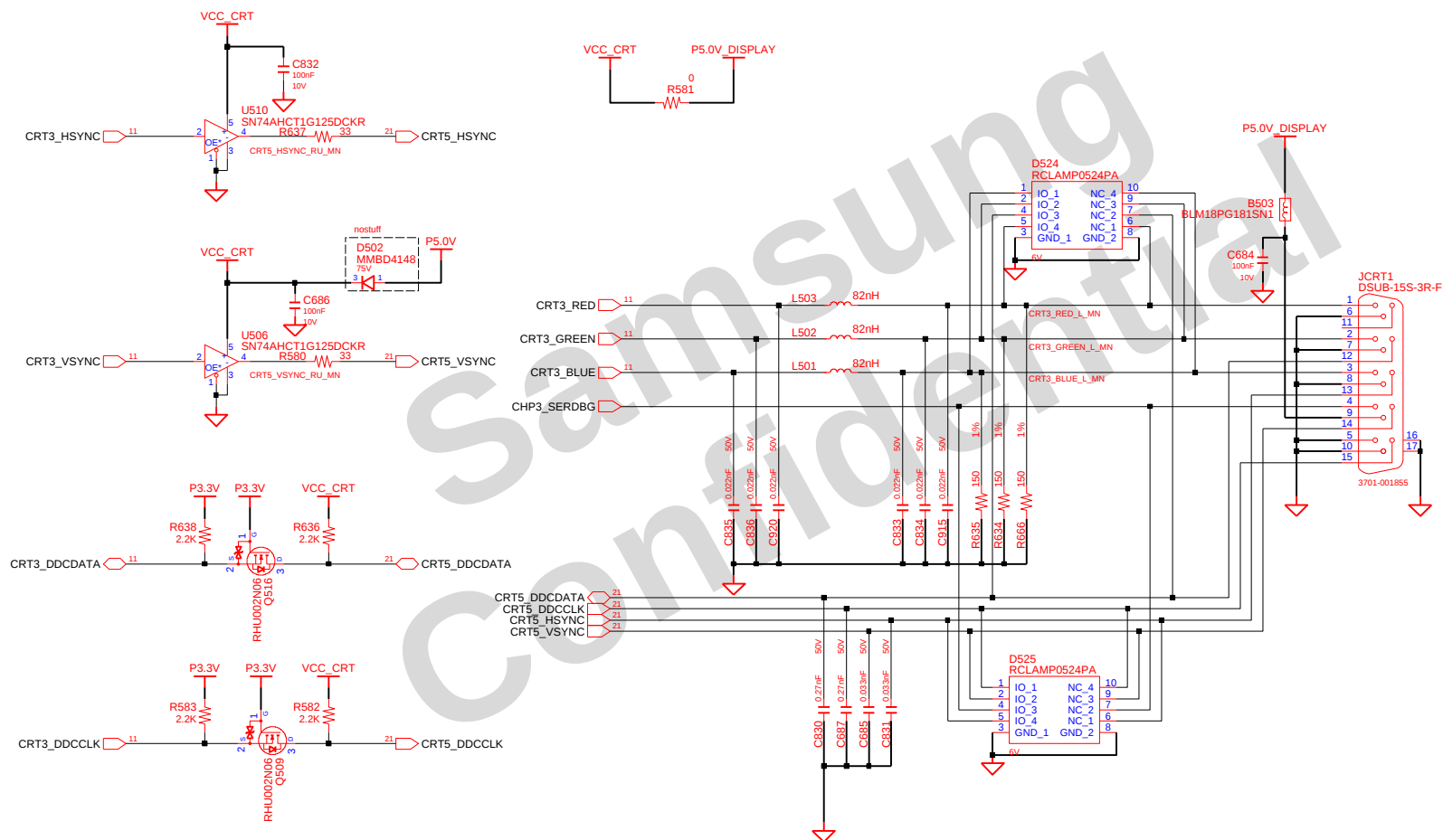


USB signal stub should be less than 100mil

DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS
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APPROVAL	LEE, BL	REV	REV 0.1		LVDS	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:05:09 PM	PAGE	28	OF 51

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VGA

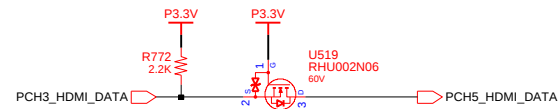
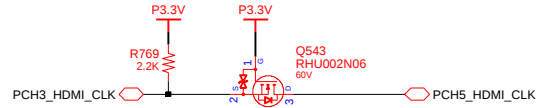


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MODULE CODE	undef ined	LAST EDIT	December, 17, 2012 2:05:49 PM	PAGE	29	OF 51	

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HDMI

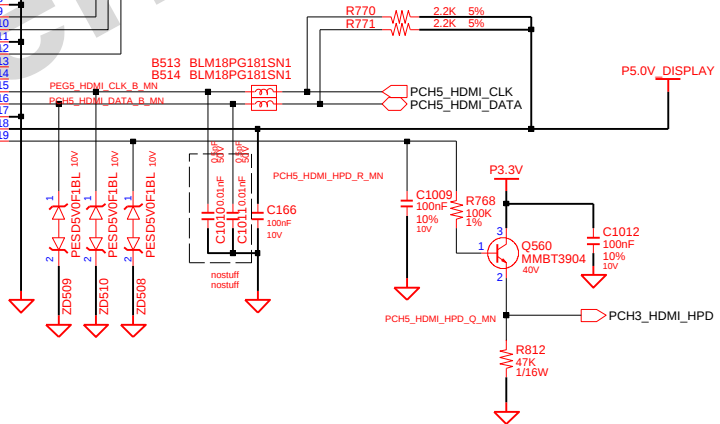
FOR HDMI VERIFICATION TEST



JHDMI1
HDMI-19P-FEMALE

- 1 TMDS_DATA2
- 2 TMDS_DATA2_SHIELD
- 3 TMDS_DATA2#
- 4 TMDS_DATA1
- 5 TMDS_DATA1_SHIELD
- 6 TMDS_DATA1#
- 7 TMDS_DATA0
- 8 TMDS_DATA0_SHIELD
- 9 TMDS_DATA0#
- 10 TMDS_CLOCK
- 11 TMDS_CLOCK_SHIELD
- 12 TMDS_CLOCK#
- 13 CEC
- 14 RESERVED
- 15 SCL
- 16 SDA
- 17 DDC_GROUND
- 18 5V_POWER
- 19 HOT_PLUG_DETECT

3701-001775

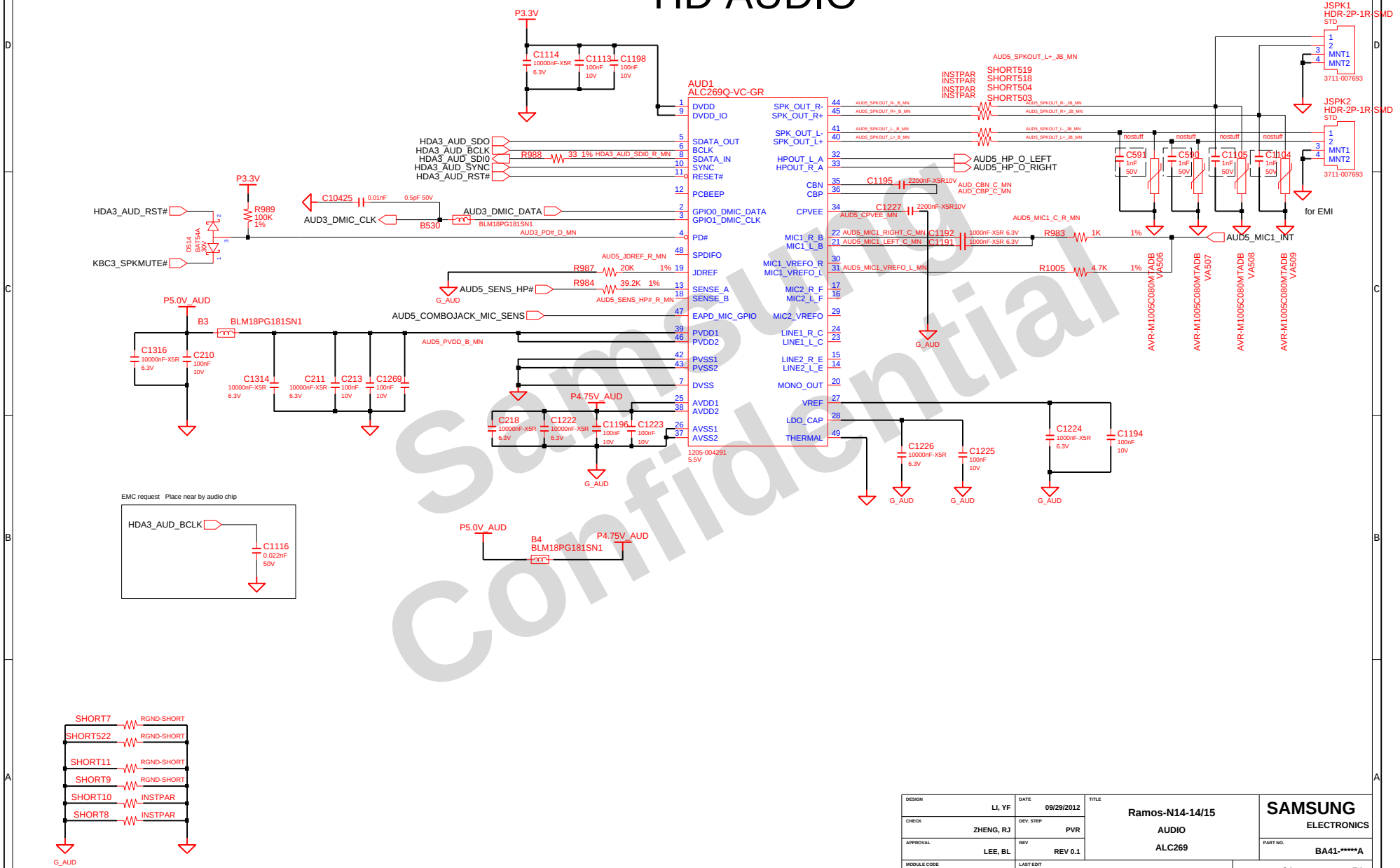


N10x/N11x_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance

DESIGN	LI, YF	DATE	09/29/2012	Ramos-N14-14/15 GRAPHICS_IF HDMI		SAMSUNG ELECTRONICS	
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APPROVAL	LEE, BL	REV	REV 0.1			PART NO.	BA41-*****A
MODULE CODE		undefined		LAST EDIT		December, 17, 2012 2:06:34 PM	
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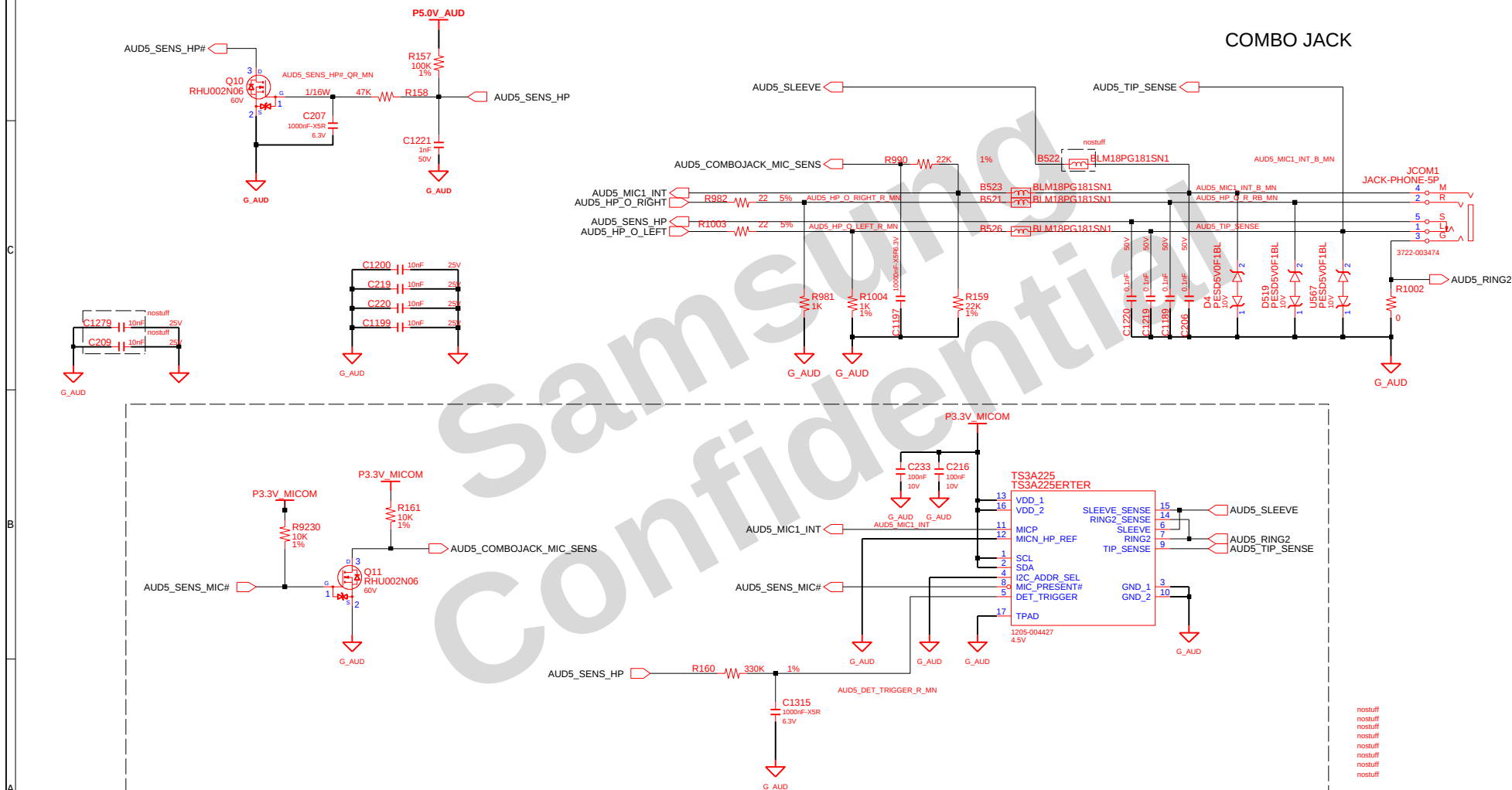
HD AUDIO



DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS PART NO. BA41-****A
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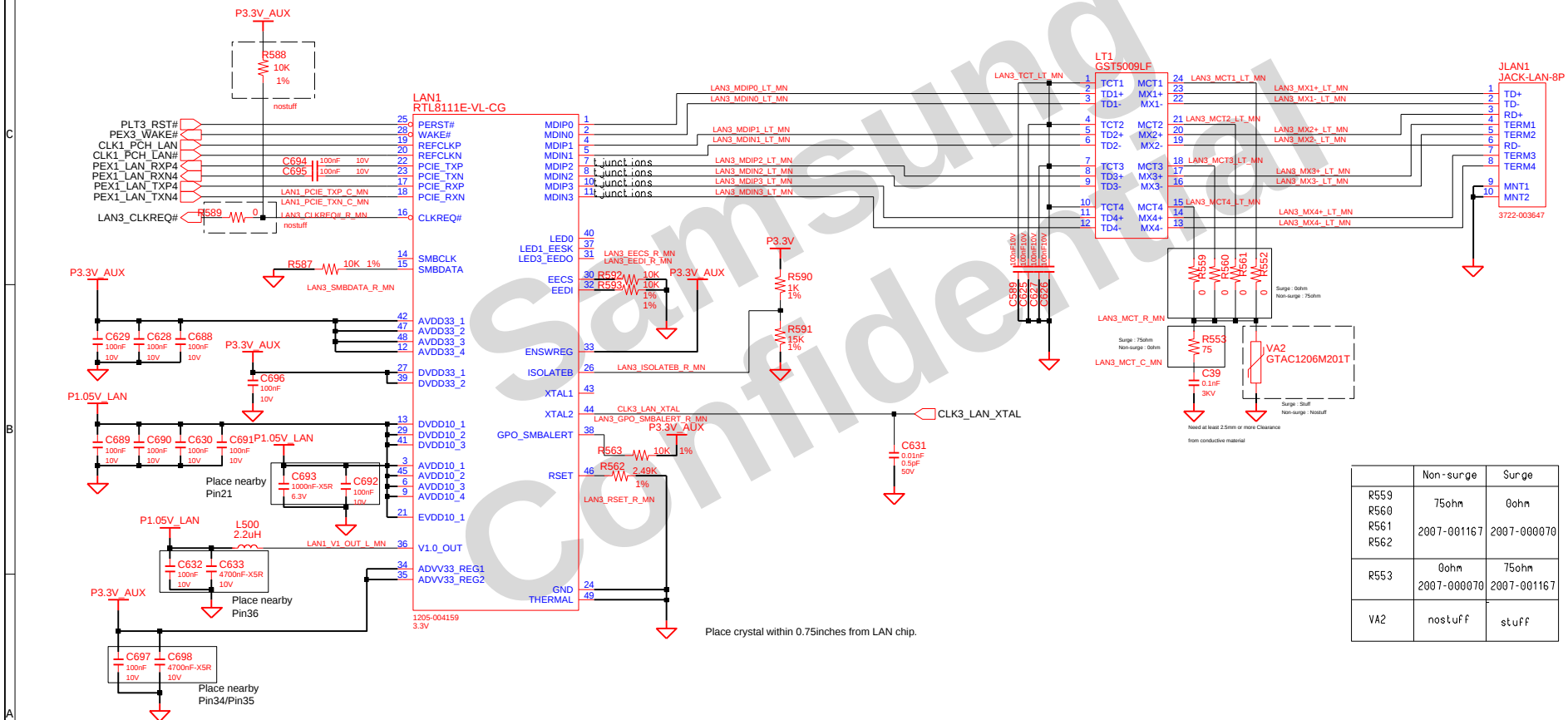
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COMBO JACK



DESIGN	LI, YF	DATE	09/29/2012	Ramos-N14-14/15 AUDIO AUDIO COMBO JACK	SAMSUNG ELECTRONICS		
CHECK	ZHENG, DJ	REV. STEP	PVR				
APPROVAL	LEE, BL	REV	REV 0.1				
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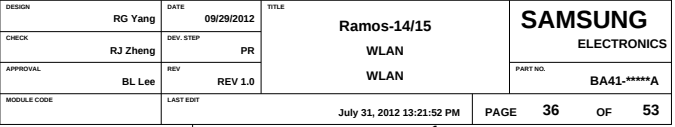
Realtek RTL8111E (GigaBit)



	Non-surge	Surge
R559	75ohm	0ohm
R560	2007-001167	2007-000070
R561		
R562		
R553	0ohm	75ohm
	2007-000070	2007-001167
VA2	nostuff	stuff

Place crystal within 0.75inches from LAN chip.

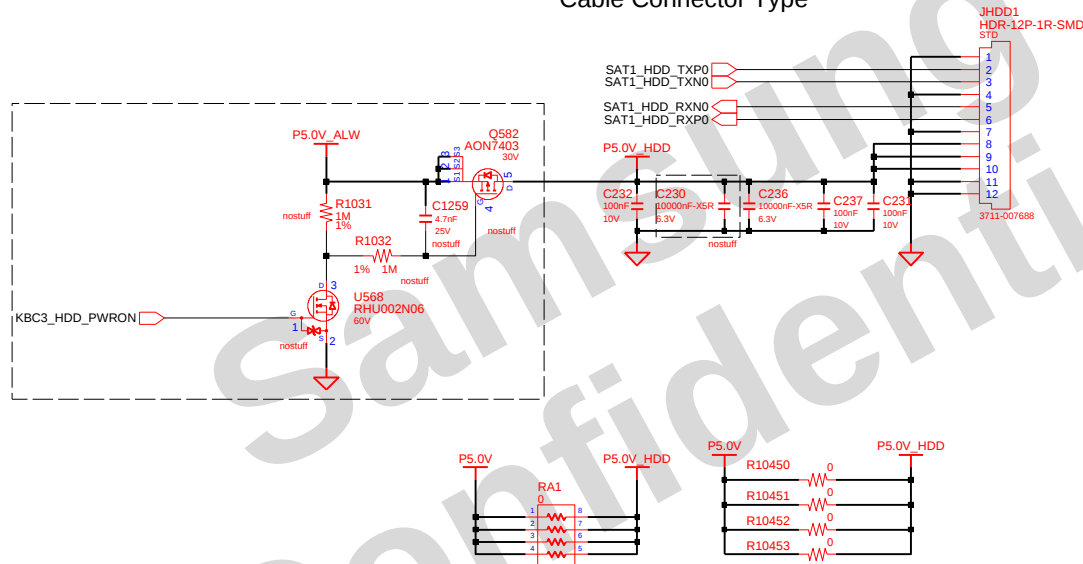
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APPROVAL	LEE, BL	REV	REV 0.1		LAN_Realtek_RTL8111E)	
MODULE CODE	undefined	LAST EDIT		December, 17, 2012 2:09:00 PM	PAGE 33 OF 51	



SATA I/F CONN

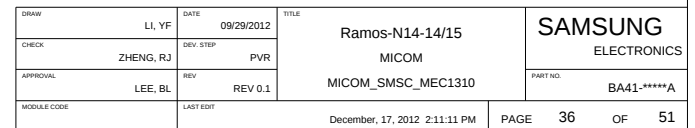
SATA HDD CONN

Cable Connector Type



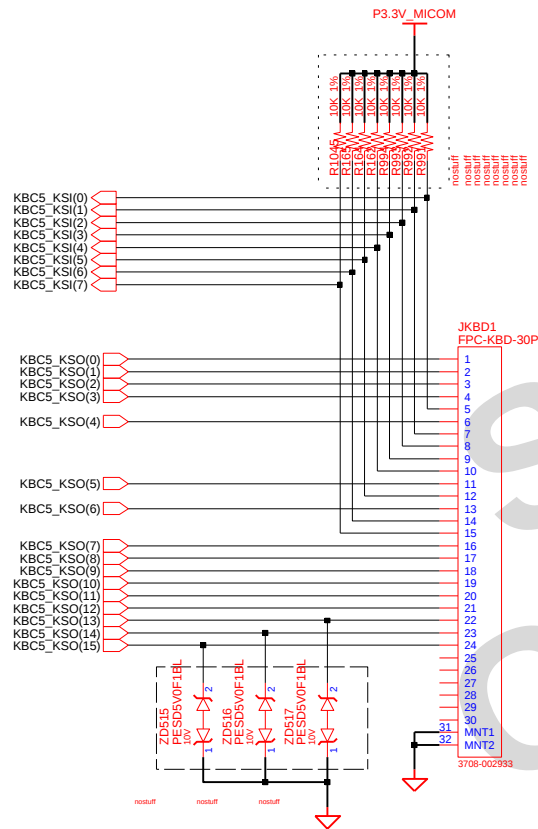
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APPROVAL	LEE, BL	REV	REV 0.1		SATA I/F	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:10:21 PM	PAGE	35	OF 51

MAIN BOARD (MICOM)

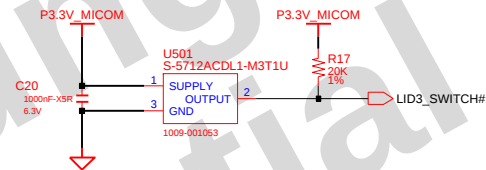


Micom Glue

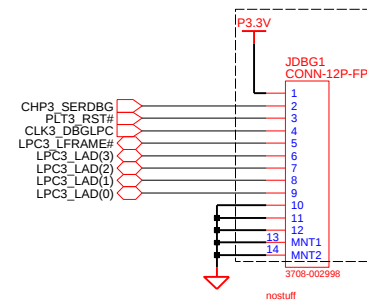
KEYBOARD



LID3_SWITCH



80H PORT DEBUG

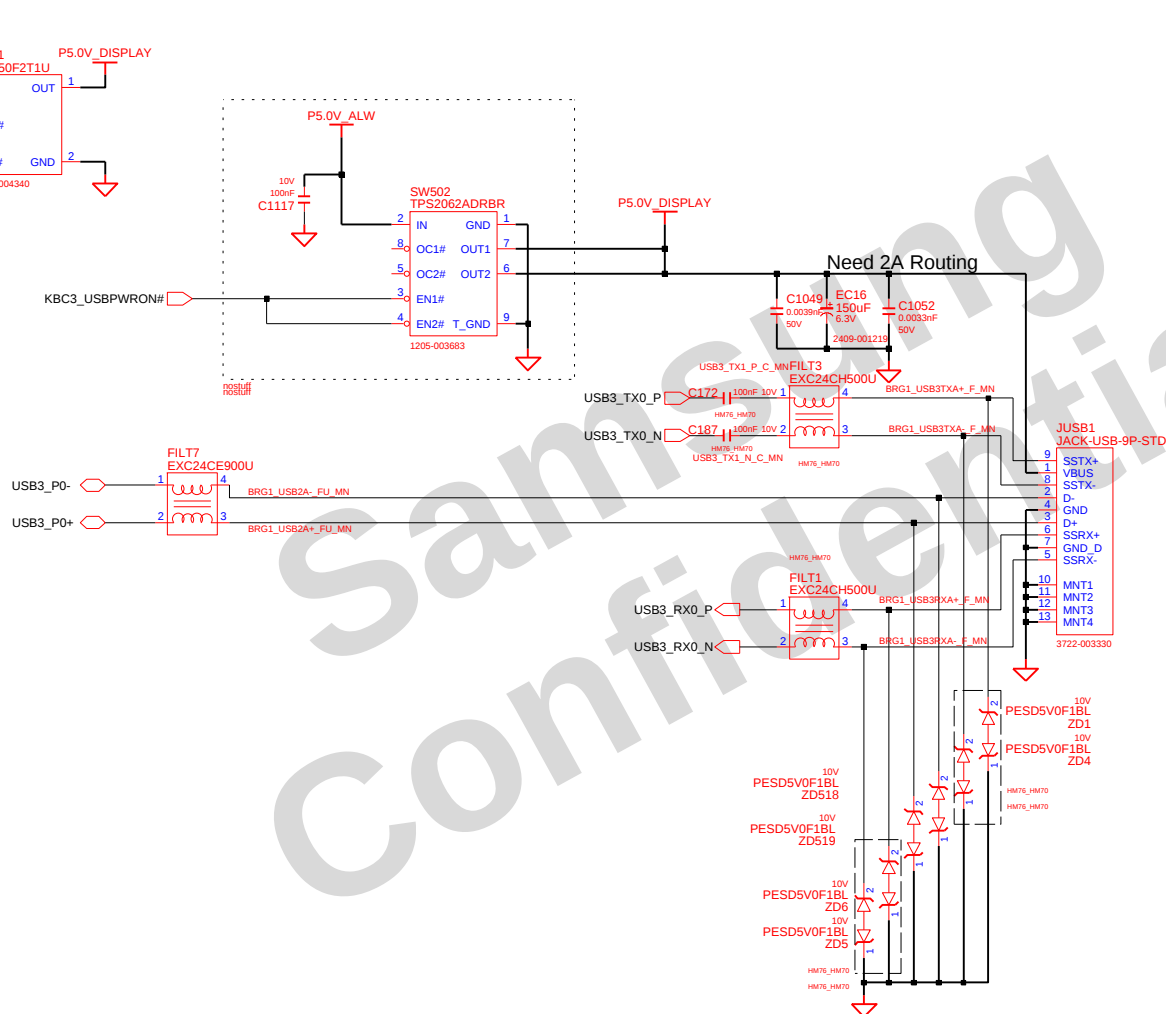


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CHECK	ZHENG, RJ	DEV. STEP	PVR		MICOM	
APPROVAL	LEE, BL	REV	REV 0.1		MICOM GLUE LOGIC	
MODULE CODE		LAST EDIT		December, 17, 2012 2:11:59 PM	PAGE 37 OF 51	PART NO. BA41-****A

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USB 3.0 CONNECTOR

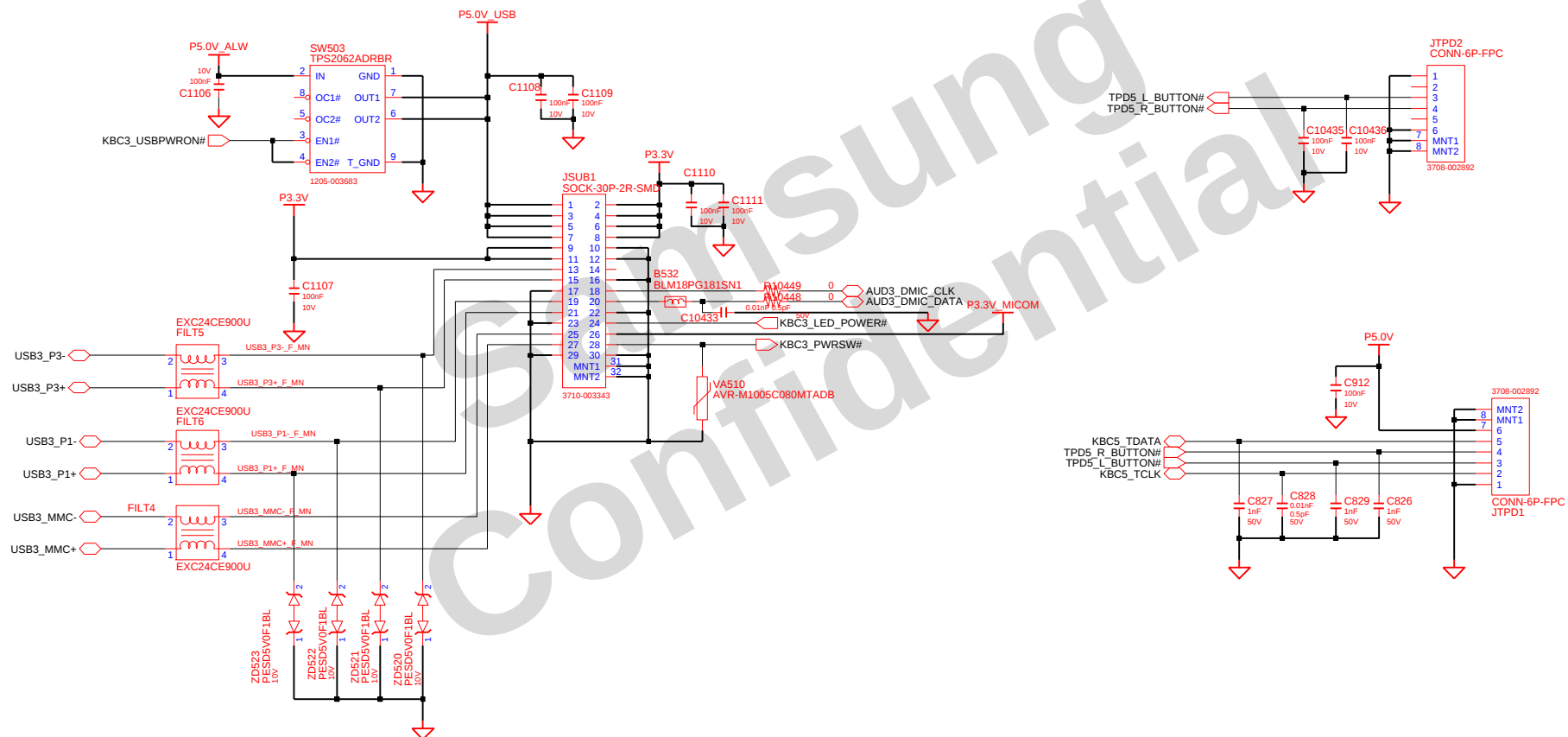


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CHECK	ZHENG, RJ	DEV. STEP	PVR	USB3.0	USB 3.0 CONNECTOR	ELECTRONICS
APPROVAL	LEE, BL	REV	REV 0.1			PART NO.
MODULE CODE		LAST EDIT				BA41-XXXXXX
				December, 17, 2012 2:12:44 PM	PAGE	38 OF 51

MAIN TO SUB

MAIN to 3-in-1 / USB SUB

TOUCHPAD BUTTON MAIN TO SUB

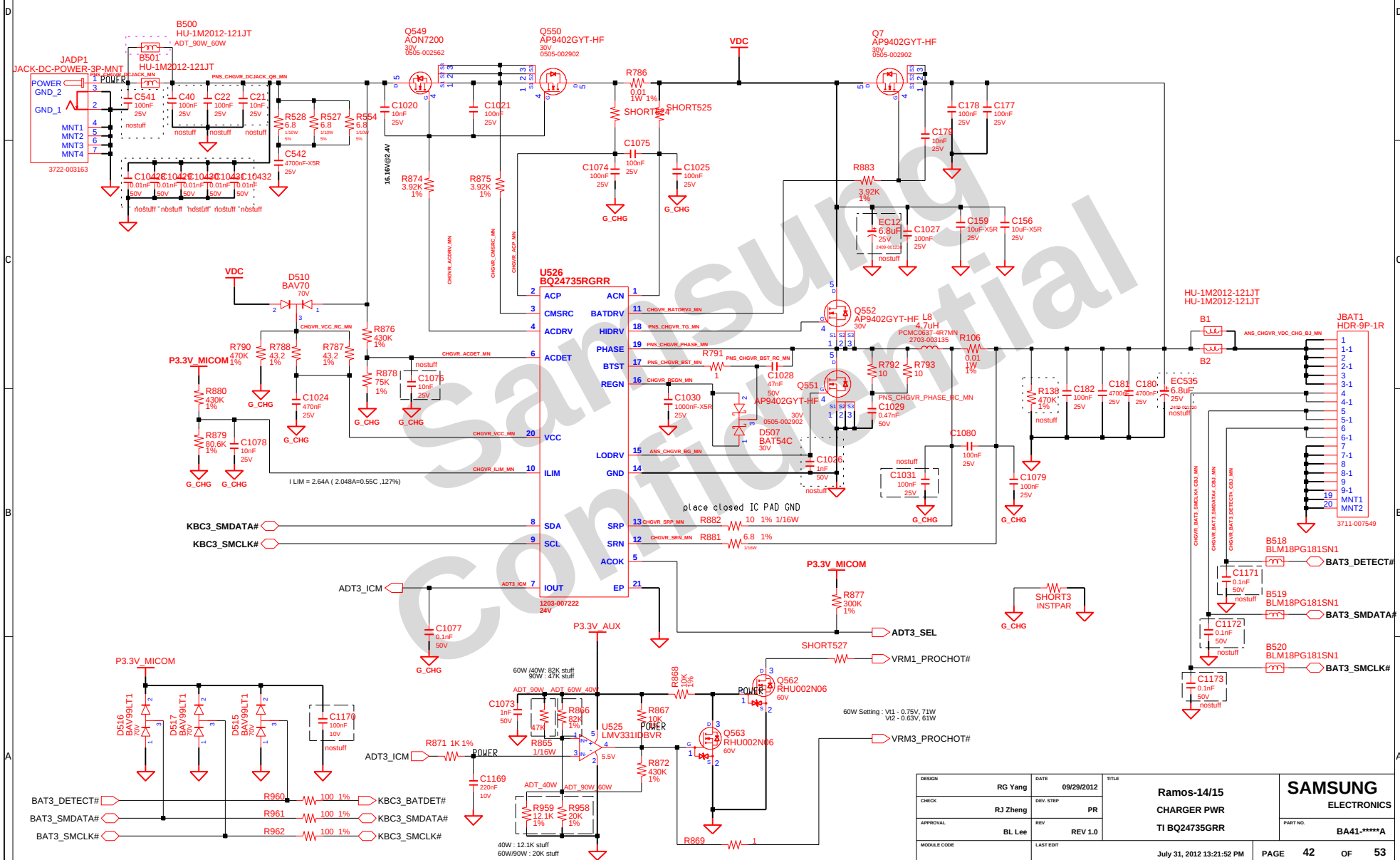


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CHECK	ZHENG, RJ	DEV. STEP	PVR		SUB BOARD CONNECTOR	
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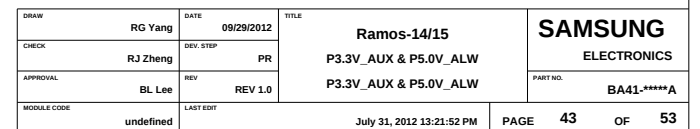
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CHARGER & POWER MANAGEMENT



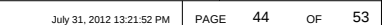
DESIGN	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15
CHECK	RJ Zheng	DEV. STEP	PR		CHARGER PWR
APPROVAL	BL Lee	REV	REV 1.0		TI BQ24735RGR
MODULE CODE		LAST EDIT			
July 31, 2012 13:21:52 PM					PAGE 42 OF 53
F:\temp\EE2\Ramos\07302000\Thinbasic_14_15					

P3.3V_AUX & P5.0V_ALW



A

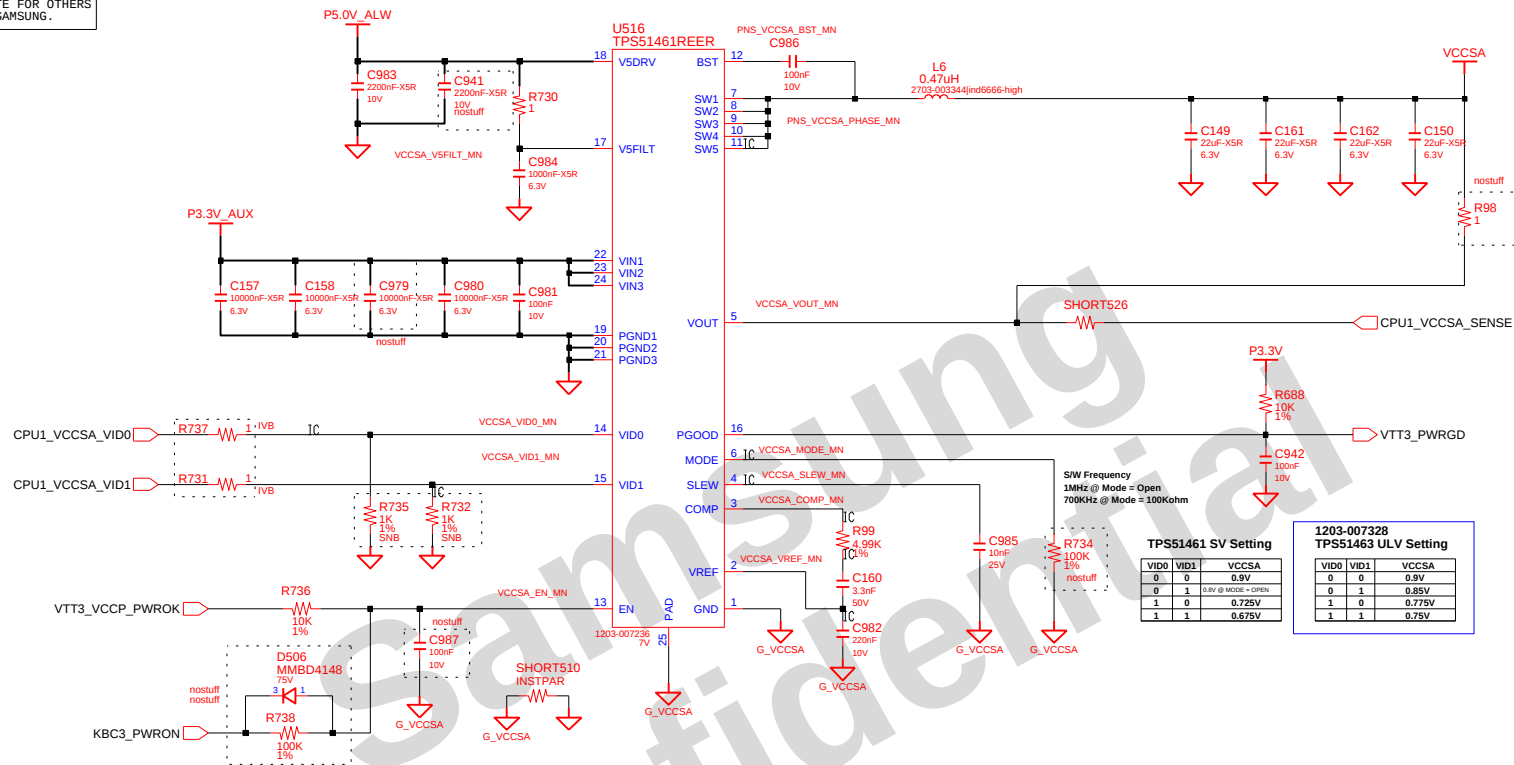
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F:\temp\EE2\Ramos\07302000\Thinbasic_14_15

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CHIPSET POWER(VCCSA)



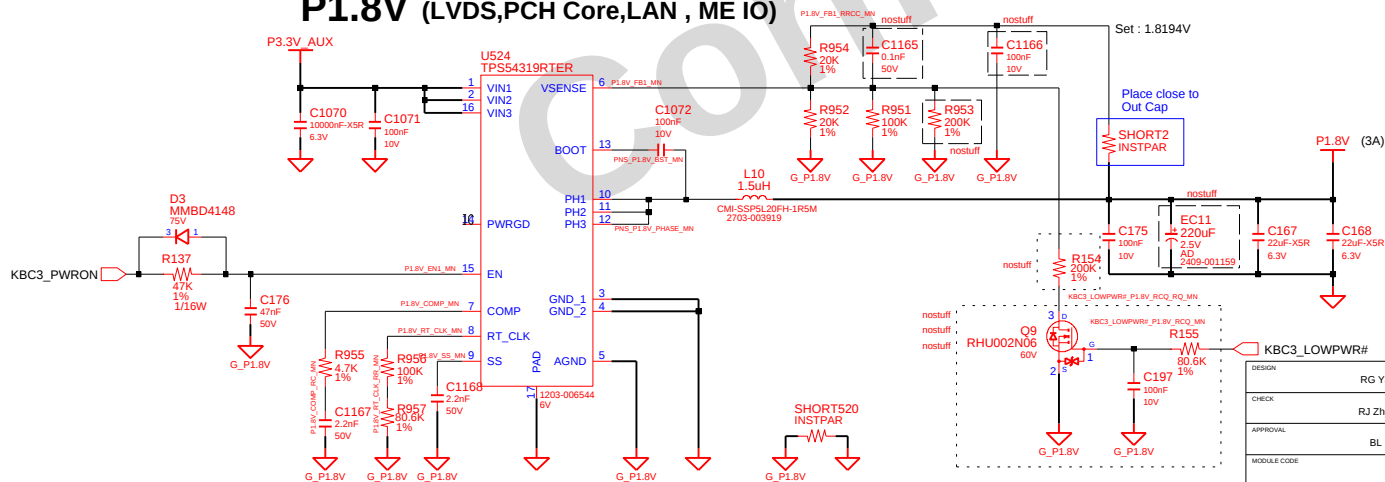
TPS51461 SV Setting

VID0	VID1	VCCSA
0	0	0.9V
0	1	0.95V
1	0	0.725V
1	1	0.675V

**1203-007328
TPS51463 ULV Setting**

VID0	VID1	VCCSA
0	0	0.9V
0	1	0.95V
1	0	0.775V
1	1	0.75V

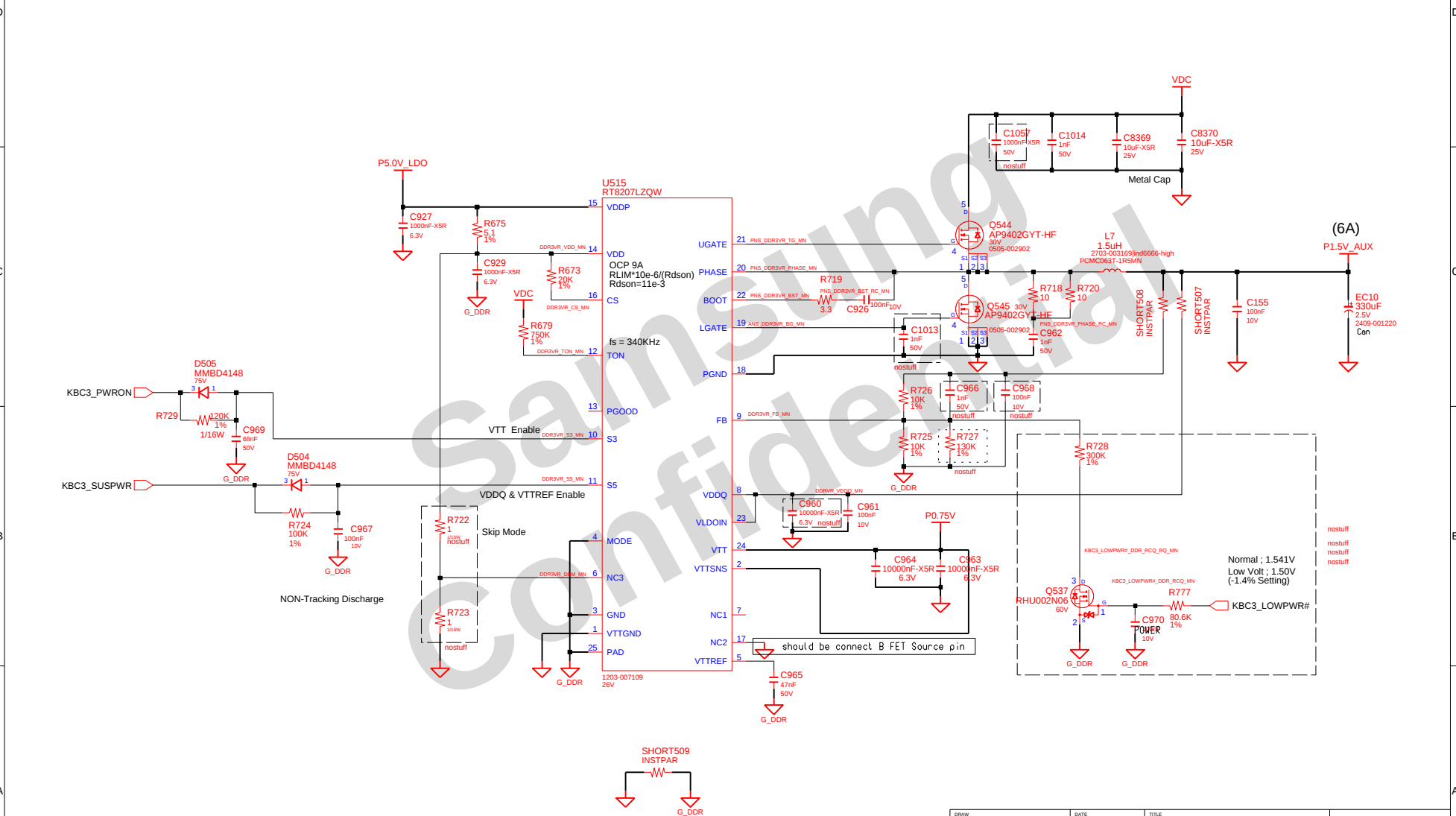
P1.8V (LVDS,PCH Core,LAN , ME IO)



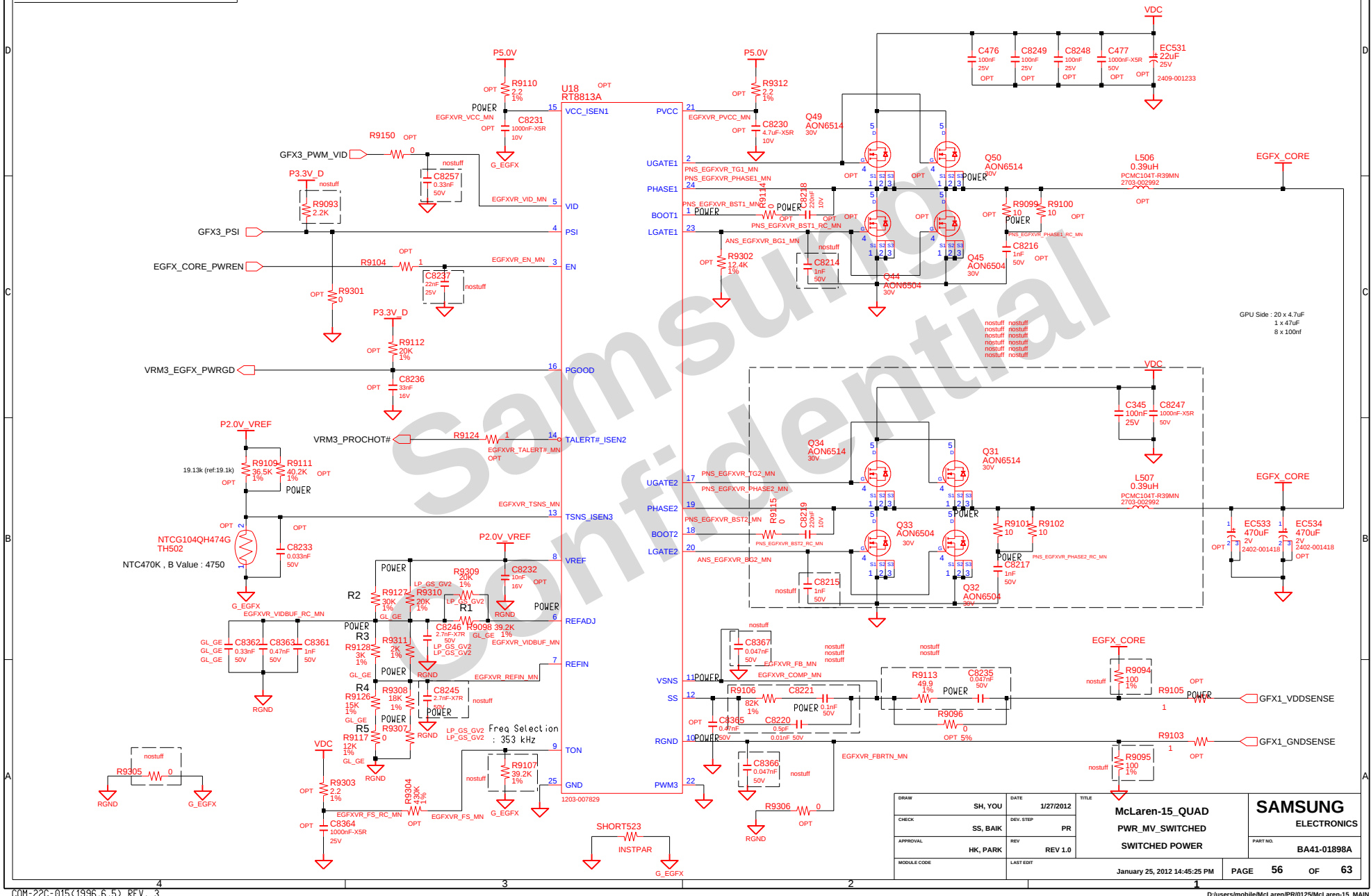
DESIGN	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS
CHECK	RJ Zheng	DEV. STEP	PR		VCCSA	
APPROVAL	BL Lee	REV	REV 1.0		VCCSA	
MODULE CODE		LAST EDIT				

PART NO.	BA41-****A
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DDR3 Power



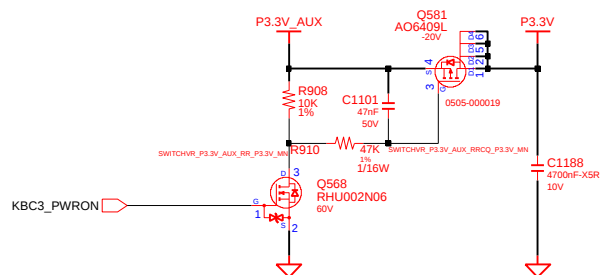
External Graphic Core Power



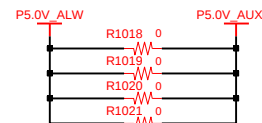
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Switched Power

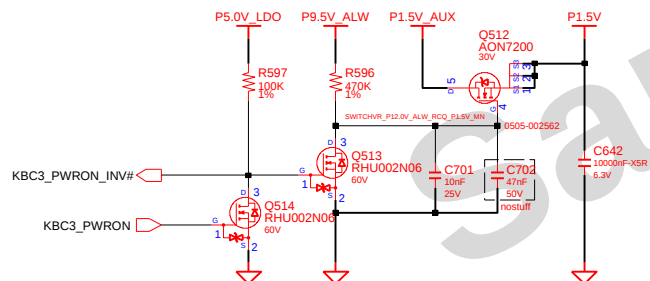
Switched Power On (P3.3V)



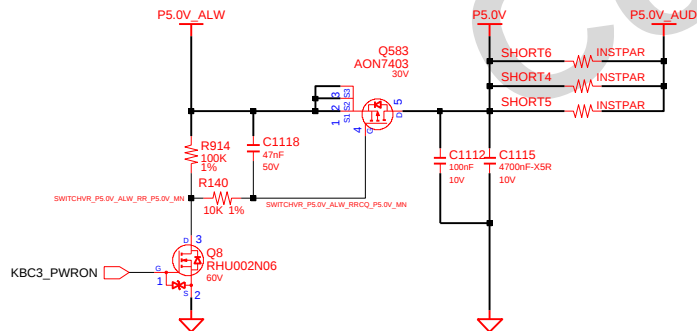
P5.0V_AUX



Switched Power On (P1.5V)

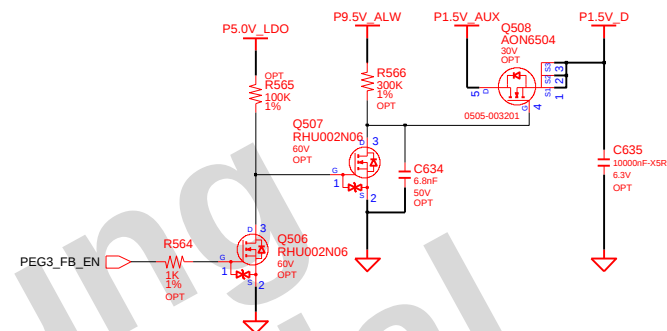


Switched Power On (P5.0V)



DRAW	RG Yang	DATE	09/29/2012	TITLE Ramos-14/15		SAMSUNG ELECTRONICS			
CHECK	RJ Zheng	DEV. STEP	PR					PWR_MV_SWITCHED	
APPROVAL	BL Lee	REV	REV 1.0	SWITCHED POWER				PART NO.	BA41-*****A
MODULE CODE	LAST EDIT		July 31, 2012 13:21:52 PM			PAGE	49	OF	53

Discrete Switched Power (P1.5V_D : MAX 5.3A)



VRM3_EGFX_PWRGD

P523
B3754C
30V

1 2 3

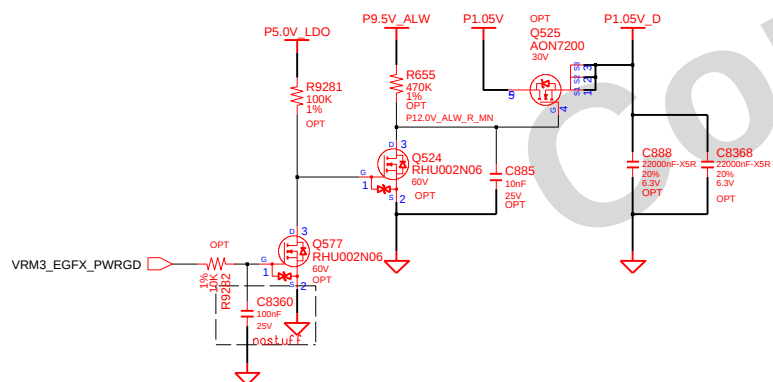
OPT

R9280
100K
1%

OPT

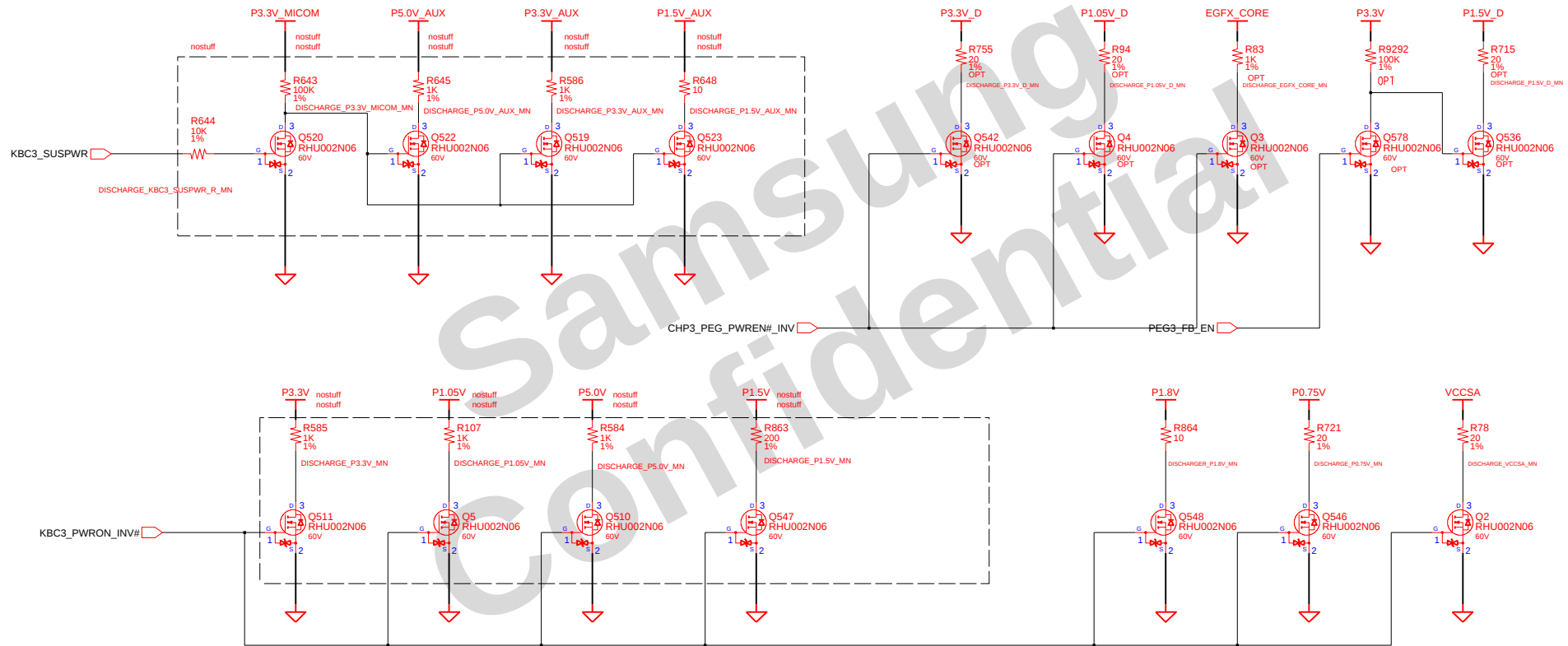
PEG3_FB_EN

KBC3_FB_CLAMP



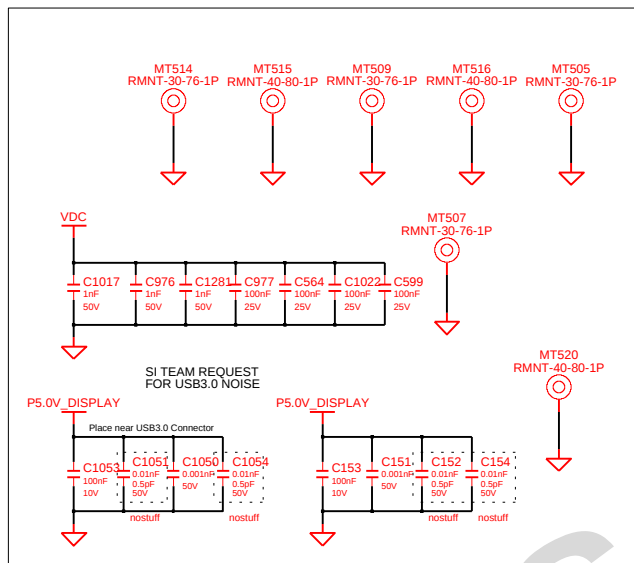
COM-22C-015(1996.6.5) REV. 3

POWER DISCHARGER

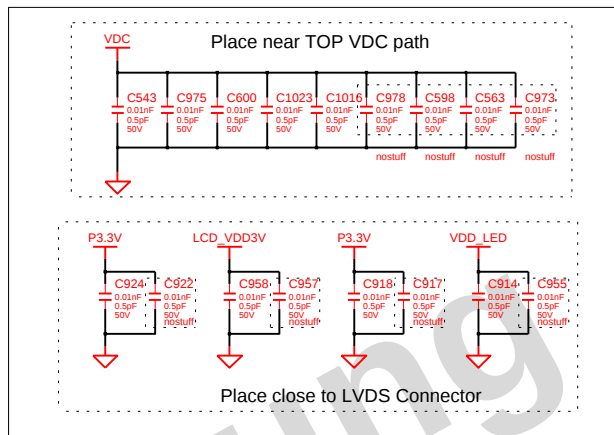


DRAW	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG
CHECK	RJ Zheng	DEV. STEP	PR		PWR_MV_DISCHARGER	ELECTRONICS
APPROVAL	BL Lee	REV	REV 1.0		DISCHARGING LOGIC	PART NO.
MODULE CODE	undefined	LAST EDIT	July 31, 2012 13:21:52 PM			BA41-****A
				PAGE	51	OF 53

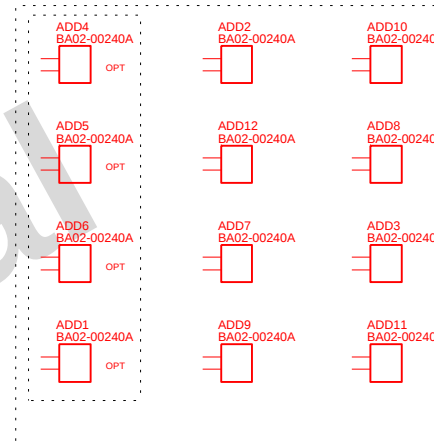
Mainboard Mount ((40-80)X2EA, (30-76)X5EA))



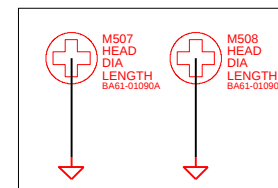
WLAN Performance issue



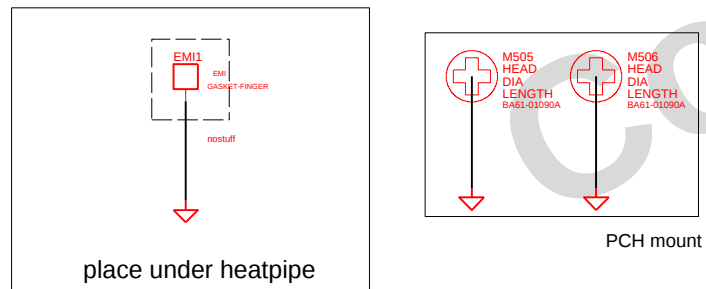
Corner Fill for CPU, PCH, GPU



Memory Shield PEM



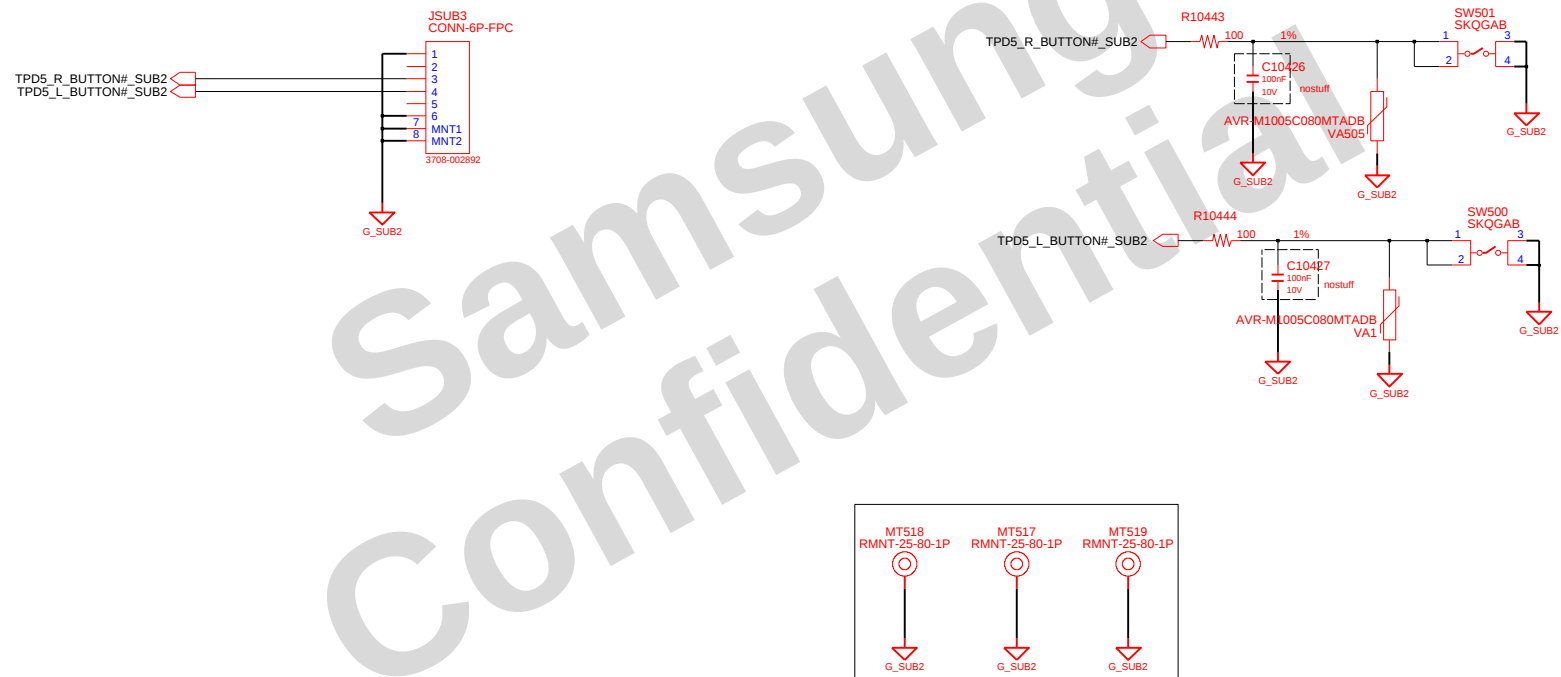
WLAN Performance issue



DESIGN	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS
CHECK	RJ Zheng	DEV. STEP	PR		MOUNT HOLE	
APPROVAL	BL Lee	REV	REV 1.0		MOUNT HOLE	
MODULE CODE		LAST EDIT				
				July 31, 2012 13:21:52 PM	PAGE 52 OF 53	PART NO. BA41-****A

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TP SUB BOARD



DRAW	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15 SUB2 TOUCHPAD & LED	SAMSUNG ELECTRONICS
CHECK	RJ Zheng	DEV. STEP	PR			PART NO. BA41-****A
APPROVAL	BL Lee	REV	REV 1.0			
MODULE CODE		LAST EDIT	July 31, 2012 13:21:52 PM	PAGE	53	OF 53