

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

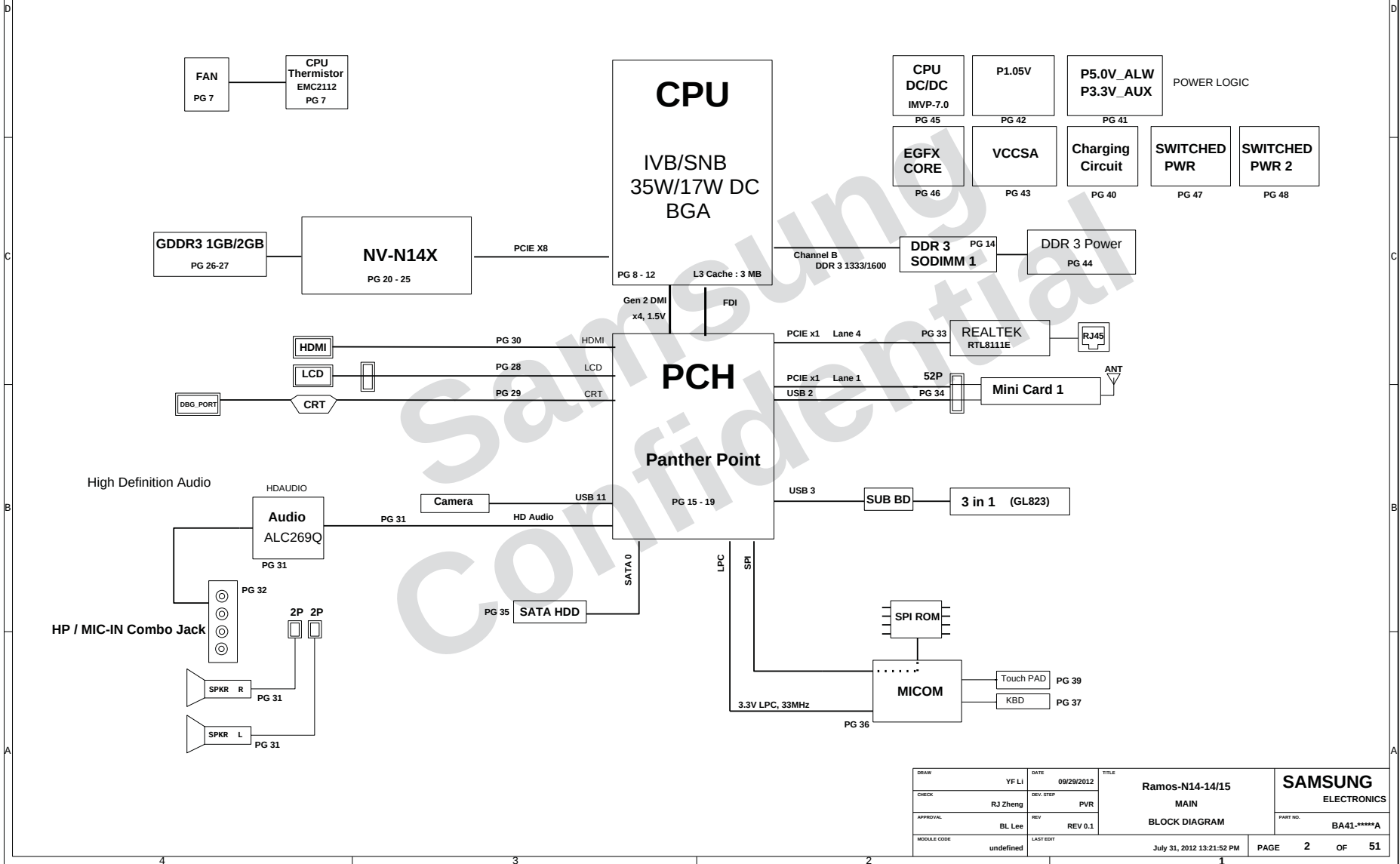
sheet01 : Cover
sheet02 : BLOCK DIAGRAM
sheet03 : BOARD INFORMATION
sheet04 : POWER DIAGRAM
sheet05 : CLOCK DISTRIBUTION
sheet06 : Green Clock
sheet07 : Thermal Sensor
sheet08 : CPU-IvyBridge (1/5)
sheet09 : CPU-IvyBridge (2/5)
sheet10 : CPU-IvyBridge (3/5)
sheet11 : CPU-IvyBridge (4/5)
sheet12 : CPU-IvyBridge (5/5)
sheet13 :
sheet14 : DDR3 SODIMM1
sheet15 : PCH-PantherPoint (1/5)
sheet16 : PCH-PantherPoint (2/5)
sheet17 : PCH-PantherPoint (3/5)
sheet18 : PCH-PantherPoint (4/5)
sheet19 : PCH-PantherPoint (5/5)
sheet20 : NV-N14X (1/5)
sheet21 : NV-N14X (2/5)
sheet22 : NV-N14X (3/5)
sheet23 : NV-N14X (4/5)
sheet24 : NV-N14X (5/5)
sheet25 : NV-N14X STRAP
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
CHECK	ZHENG, RJ	REV. STEP	PVR	MAIN		
APPROVAL	LEE, BL	REV	REV 0.1	COVER	PART NO. BA41-*****A	
MODULE CODE		LAST EDIT		December, 17, 2012 1:42:04 PM	PAGE	1 OF 51

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.

BLOCK DIAGRAM



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

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	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)
P6.0V 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

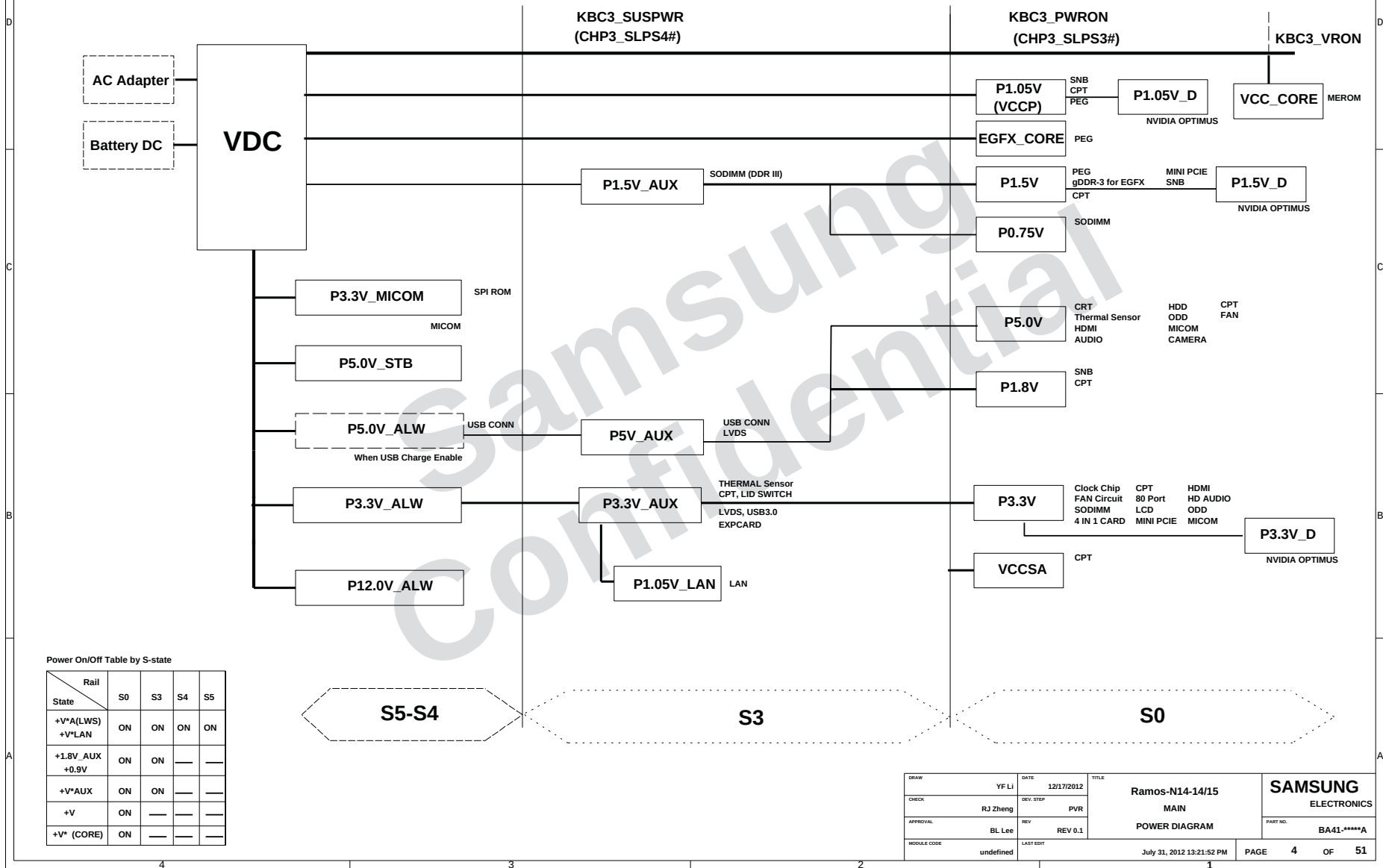
I ² C / SMB Address			
Devices	Address	Hex	Bus
PANTHERPOINT	Master	-	SMBUS Master
CPU Thermal Sensor	0011 000x	30h	Thermal Sensor
SODIMM0	1010 000x	A0h	-
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
on board DDR3 thermal Sensor	1001 100x	98h	-
Platform thermal management TS	1001 011x	96h	-

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

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

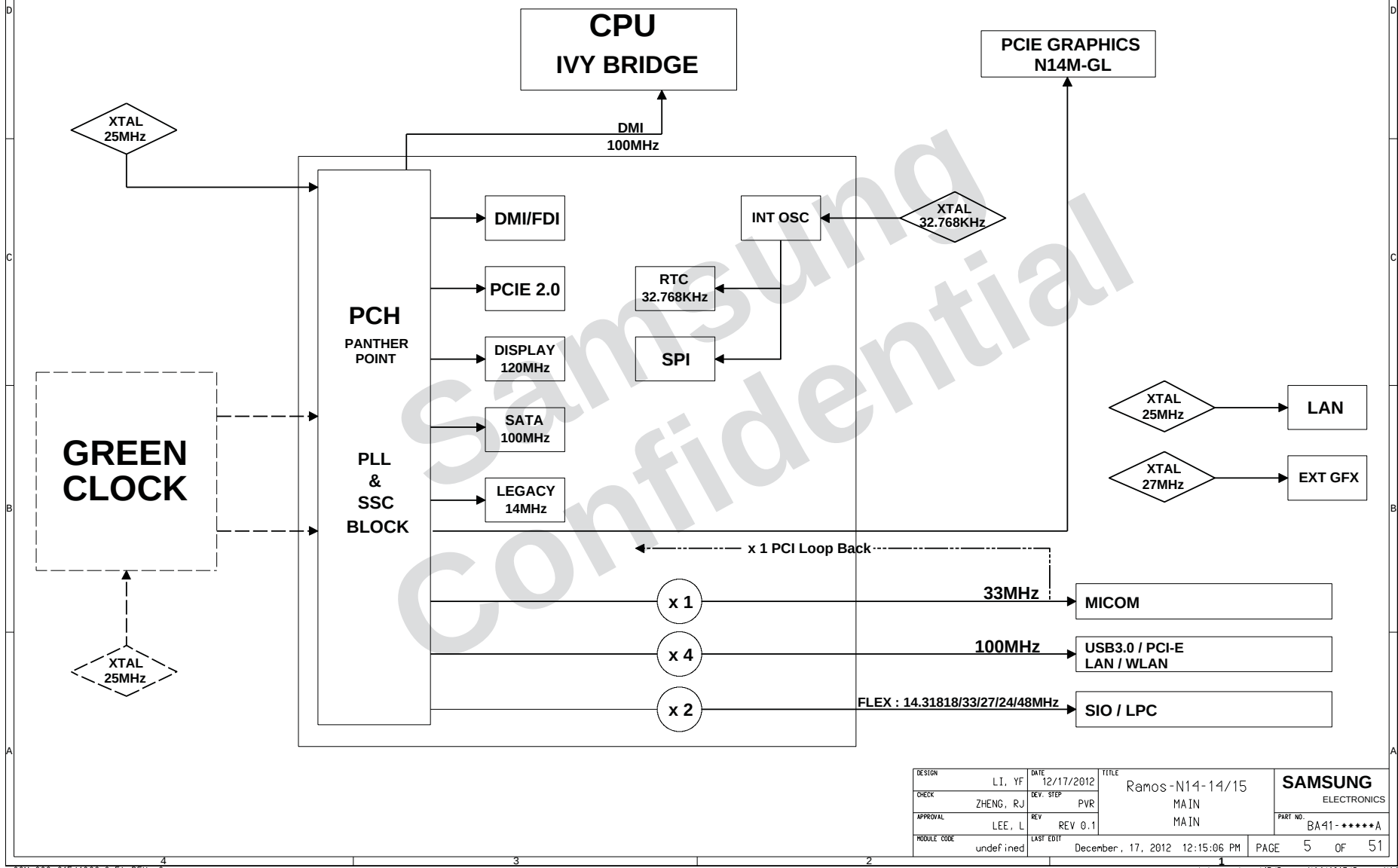
Rev 0.7



DRAW	YF Li	DATE	12/17/2012	TITLE	Ramos-N14-14/15	SAMSUNG
CHECK	RJ Zheng	DEV. STEP	PVR	MAIN	POWER DIAGRAM	ELECTRONICS
APPROVAL	BL Lee	REV	REV 0.1			PART NO.
MODULE CODE	undefined	LAST EDIT	July 31, 2012 13:21:52 PM			BA41-*****A
				PAGE	4	OF 51

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.

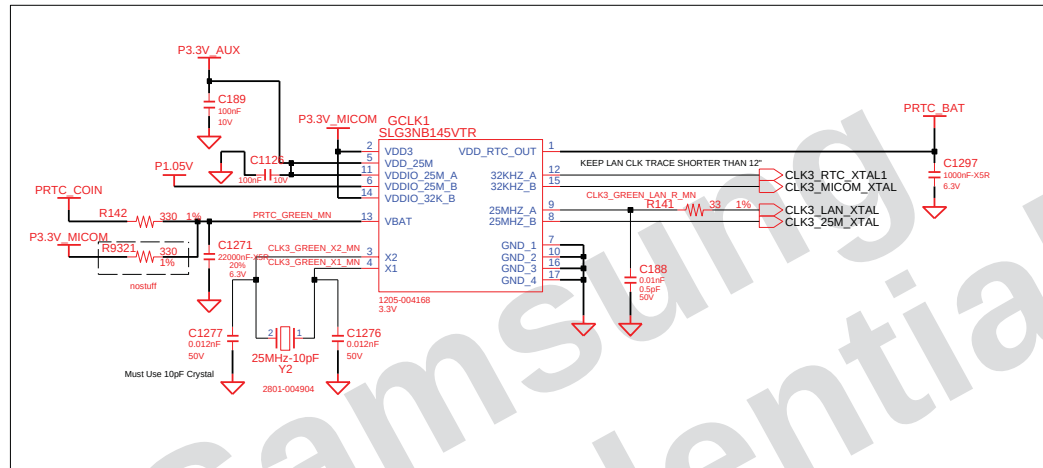
CLOCK DISTRIBUTION Rev. 0.8



DESIGN	LI, 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			
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 12:15:06 PM	PAGE	5 OF 51	

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.

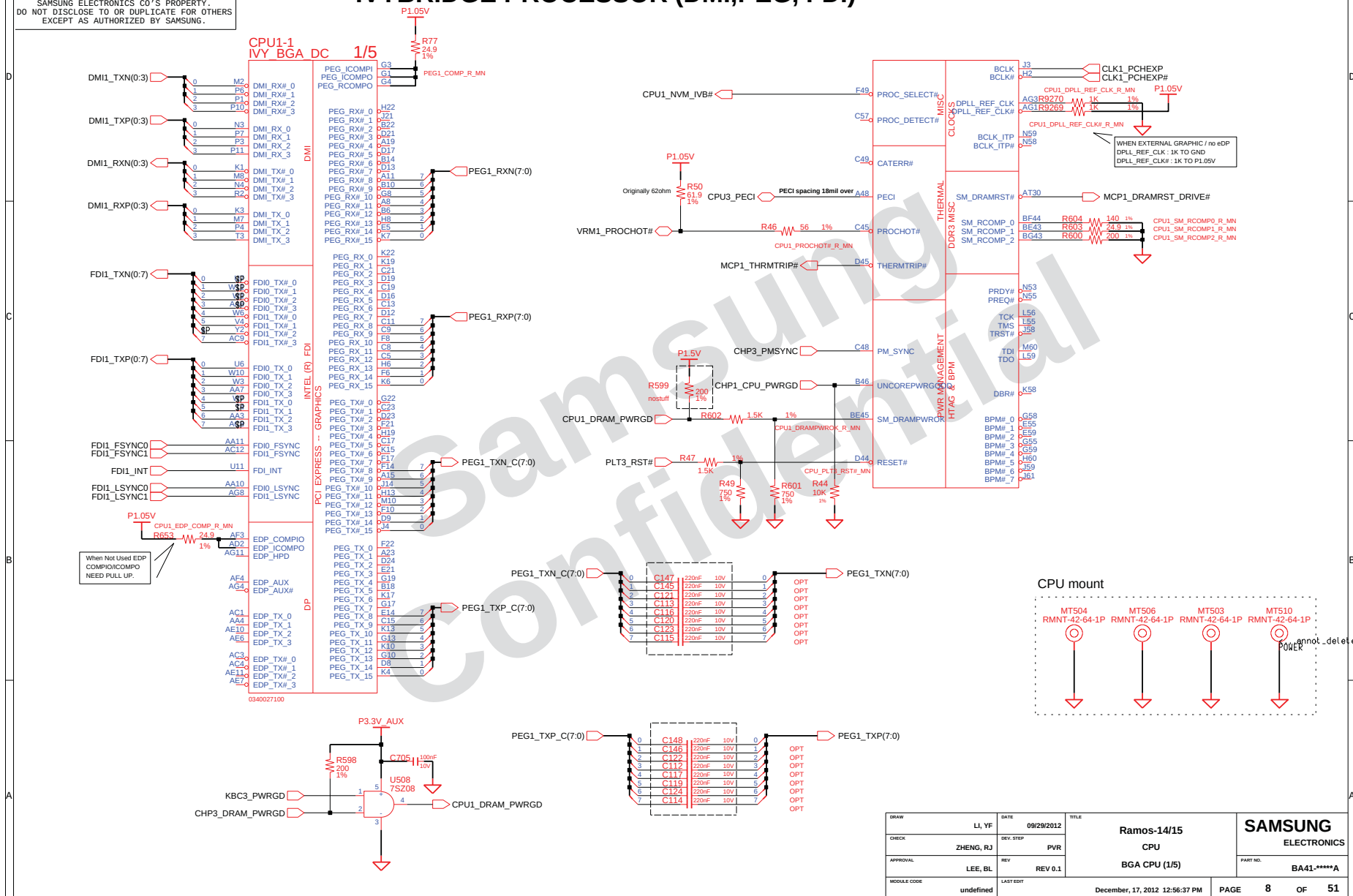
CLOCK DISTRIBUTOR



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

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.

IVYBRIDGE PROCESSOR (DMI,PEG, FDI)



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.

CPU1-2
IVY BGA DC 2/5

AG6 SA_DQ_0 AU36
AJ36 SA_DQ_1 AV36
AP11 SA_DQ_2 SA_CLK_0 AT26
AL6 SA_DQ_3 SA_CKE_0
AJ10 SA_DQ_4
AJ38 SA_DQ_5
AL8 SA_DQ_6
AL7 SA_DQ_7
AR11 SA_DQ_8
AP8 SA_DQ_9 SA_CLK_1 AT40
AU6 SA_DQ_10 SA_CLK#_1 AU40
AV9 SA_DQ_11 SA_CKE_1 BB26
AR6 SA_DQ_12
AP8 SA_DQ_13
AT13 SA_DQ_14
AU13 SA_DQ_15
BC7 SA_DQ_16
BB7 SA_DQ_17 SA_CS#_0 BB40
BA13 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
AU16 SA_DQ_29
BB14 SA_DQ_30
BB17 SA_DQ_31 SA_DQS#_0 AL11
BA45 SA_DQ_32 SA_DQS#_1 AR8
ARX3 SA_DQ_33 SA_DQS#_2 AY11
AW48 SA_DQ_34 SA_DQS#_3 AT17
BC48 SA_DQ_35 SA_DQS#_4 AV45
BC45 SA_DQ_36 SA_DQS#_5 AY51
AR45 SA_DQ_37 SA_DQS#_6 AT55
AY48 SA_DQ_38 SA_DQS#_7 AK55
AY49 SA_DQ_39
BA49 SA_DQ_40
AY48 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 AT17
AV56 SA_DQ_49 SA_DQS_4 AW45
AP50 SA_DQ_50 SA_DQS_5 AV51
AP53 SA_DQ_51 SA_DQS_6 AT55
AY54 SA_DQ_52 SA_DQS_7 AK54
AT54 SA_DQ_53
AP56 SA_DQ_54
AN52 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
SA_MA_8 AY32
SA_MA_9 AT22
SA_MA_10 BA30
SA_MA_11 BC30
SA_MA_12 ZW41
SA_MA_13 SA_MA_14 AY28
SA_MA_15 AU26

DDR SYSTEM MEMORY A

MEM1_BDQ(63:0) 19-04

AL4 SB_DQ_0
AL1 SB_DQ_1
AN3 SB_DQ_2
AR11 SB_DQ_3
AK4 SB_DQ_4
AK3 SB_DQ_5
AN4 SB_DQ_6
AR1 SB_DQ_7
AU4 SB_DQ_8
AT2 SB_DQ_9
AV4 SB_DQ_10
BA4 SB_DQ_11
AU3 SB_DQ_12
AR3 SB_DQ_13
AY2 SB_DQ_14
BA3 SB_DQ_15
BE9 SB_DQ_16
BD9 SB_DQ_17
BD13 SB_DQ_18
BE12 SB_DQ_19
BFR SB_DQ_20
BD10 SB_DQ_21
BD14 SB_DQ_22
BE13 SB_DQ_23
BF16 SB_DQ_24
BE17 SB_DQ_25
BE19 SB_DQ_26
BE21 SB_DQ_27
BE14 SB_DQ_28
BG14 SB_DQ_29
BG18 SB_DQ_30
BF19 SB_DQ_31
BD50 SB_DQ_32
BF48 SB_DQ_33
BD54 SB_DQ_34
BF52 SB_DQ_35
BD49 SB_DQ_36
BE49 SB_DQ_37
BD54 SB_DQ_38
BE53 SB_DQ_39
BF56 SB_DQ_40
BE57 SB_DQ_41
BC59 SB_DQ_42
AY60 SB_DQ_43
BE54 SB_DQ_44
BG54 SB_DQ_45
BA58 SB_DQ_46
AW59 SB_DQ_47
AU58 SB_DQ_48
AN61 SB_DQ_49
AN59 SB_DQ_50
AU59 SB_DQ_51
AU61 SB_DQ_52
AN58 SB_DQ_53
AR58 SB_DQ_54
AK58 SB_DQ_55
AL58 SB_DQ_56
AG58 SB_DQ_57
AG59 SB_DQ_58
AM60 SB_DQ_59
AL69 SB_DQ_60
AF61 SB_DQ_61
AH60 SB_DQ_62
AH60 SB_DQ_63

DDR SYSTEM MEMORY B

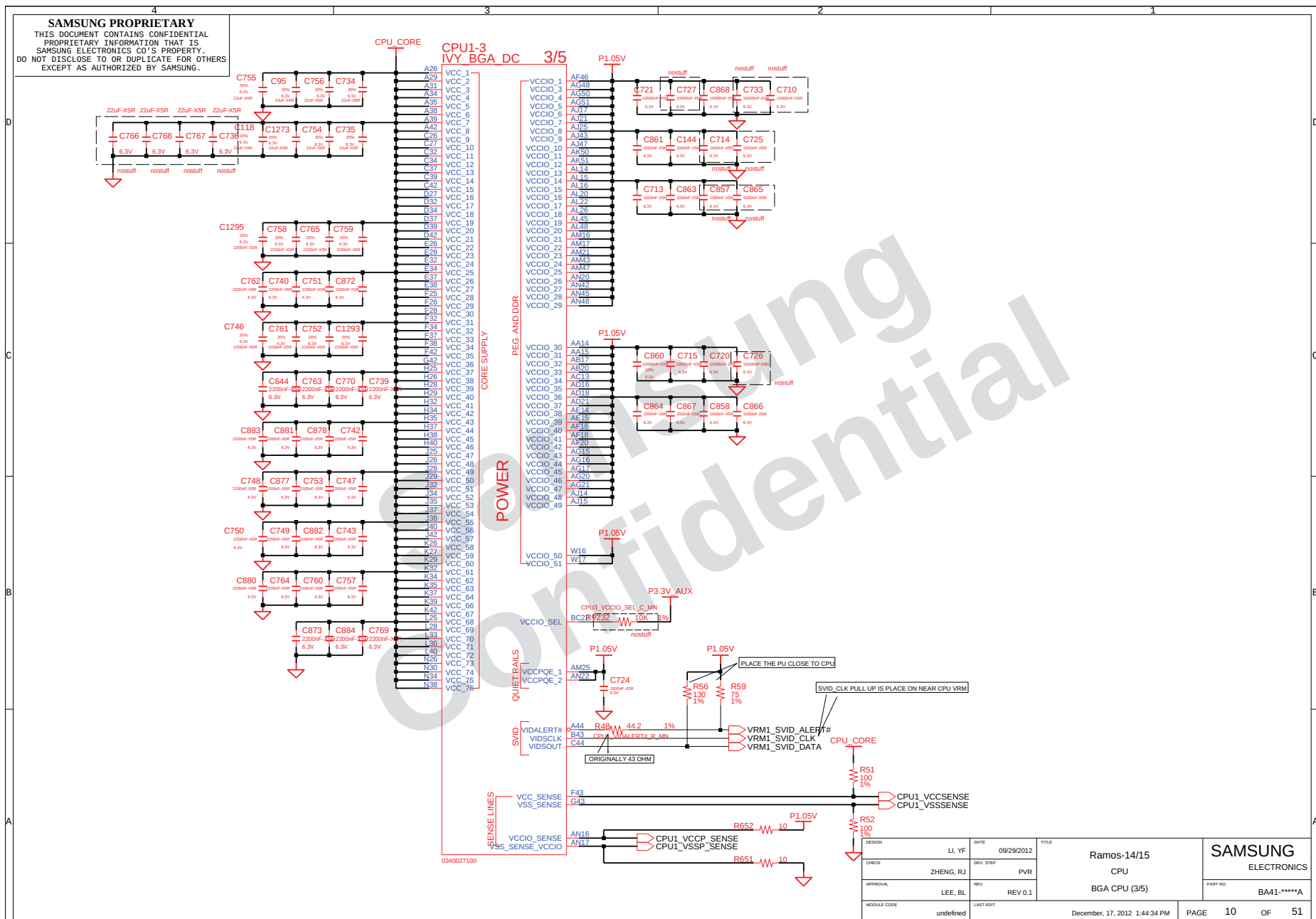
BA34 SB_CLK_0 CLK1_B_MCLK0
AY34 SB_CLK#_0 CLK1_B_MCLK0#
AR22 SB_CKE_0 MEM1_B_CKE0
BA36 SB_CLK_1 CLK1_B_MCLK1
BB36 SB_CLK#_1 CLK1_B_MCLK1#
BF27 SB_CKE_1 MEM1_B_CKE1
BE41 SB_CS#_0 MEM1_B_CS0#
BE47 SB_CS#_1 MEM1_B_CS1#
AT43 SB_ODT_0 MEM1_B_ODT0
BG47 SB_ODT_1 MEM1_B_ODT1
AL3 SB_DQS#_0 MEM1_BDQS(7:0)
AV3 SB_DQS#_1
BG11 SB_DQS#_2
BD17 SB_DQS#_3
BG51 SB_DQS#_4
BA59 SB_DQS#_5
AT60 SB_DQS#_6
AK59 SB_DQS#_7
AM2 SB_DQS_0 MEM1_BDQS(7:0)
AV1 SB_DQS_1
BE11 SB_DQS_2
BD18 SB_DQS_3
BE51 SB_DQS_4
BA61 SB_DQS_5
AR59 SB_DQS_6
AK61 SB_DQS_7
BF32 SB_MA_0 MEM1_BMA(15:0)
BE33 SB_MA_1
BD33 SB_MA_2
AU30 SB_MA_3
BD30 SB_MA_4
AV30 SB_MA_5
BG30 SB_MA_6
BD29 SB_MA_7
BE30 SB_MA_8
BE28 SB_MA_9
BD43 SB_MA_10
AT28 SB_MA_11
AV28 SB_MA_12
BD45 SB_MA_13
AT26 SB_MA_14
AU22 SB_MA_15

MEM1_BBS(2:0) 19-04

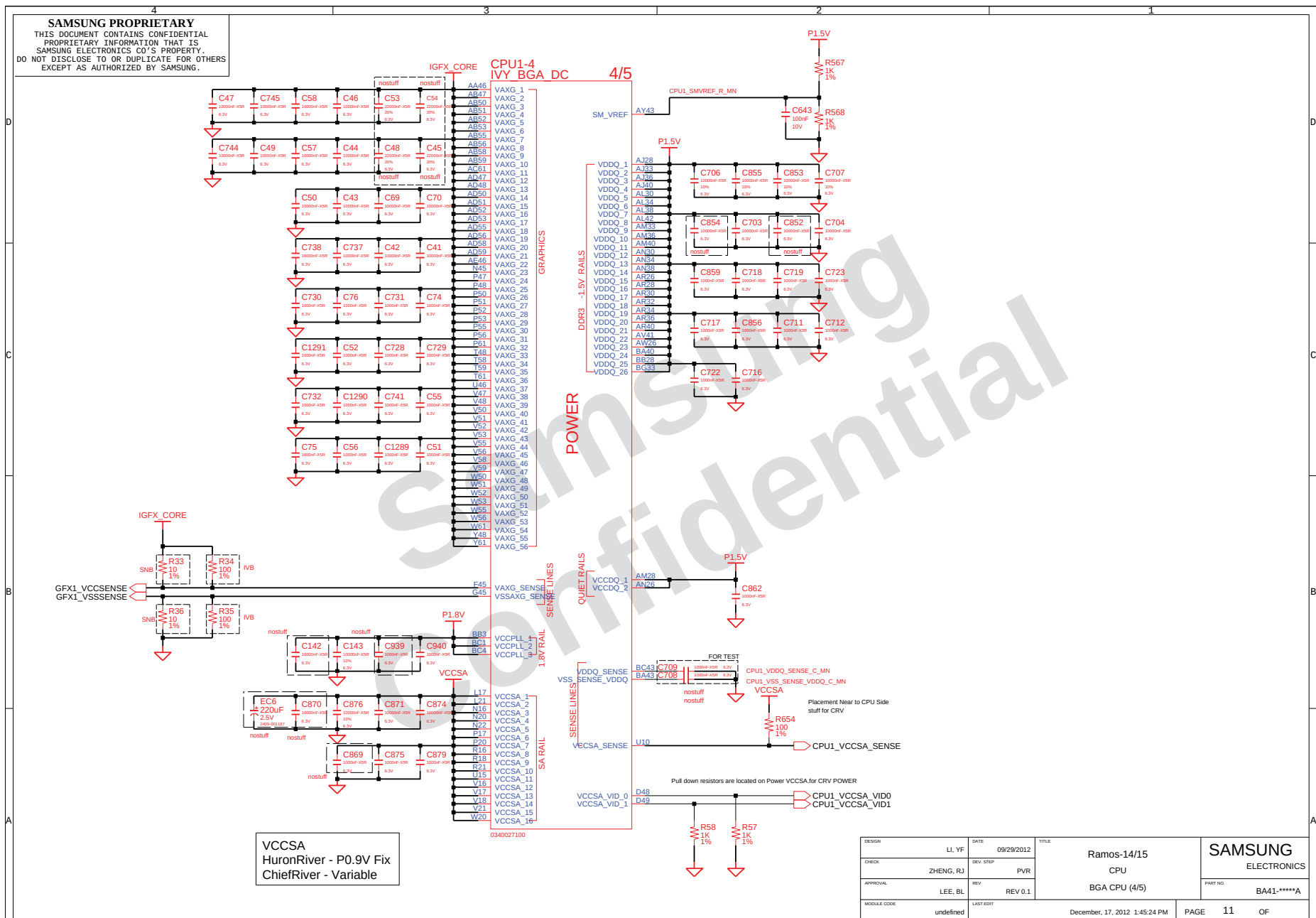
MEM1_BCAS# 19-04
MEM1_BRAS# 19-04
MEM1_BWE# 19-04

DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS PART NO. BA41-****A
CHECK	ZHENG, RJ	REV. STEP	PVR	CPU		
APPROVAL	LEE, BL	REV	REV 0.1	BGA CPU (2/5)		
MODULE CODE	undefined	LAST EDIT		December, 17, 2012 1:43:27 PM	PAGE 9 OF 51	

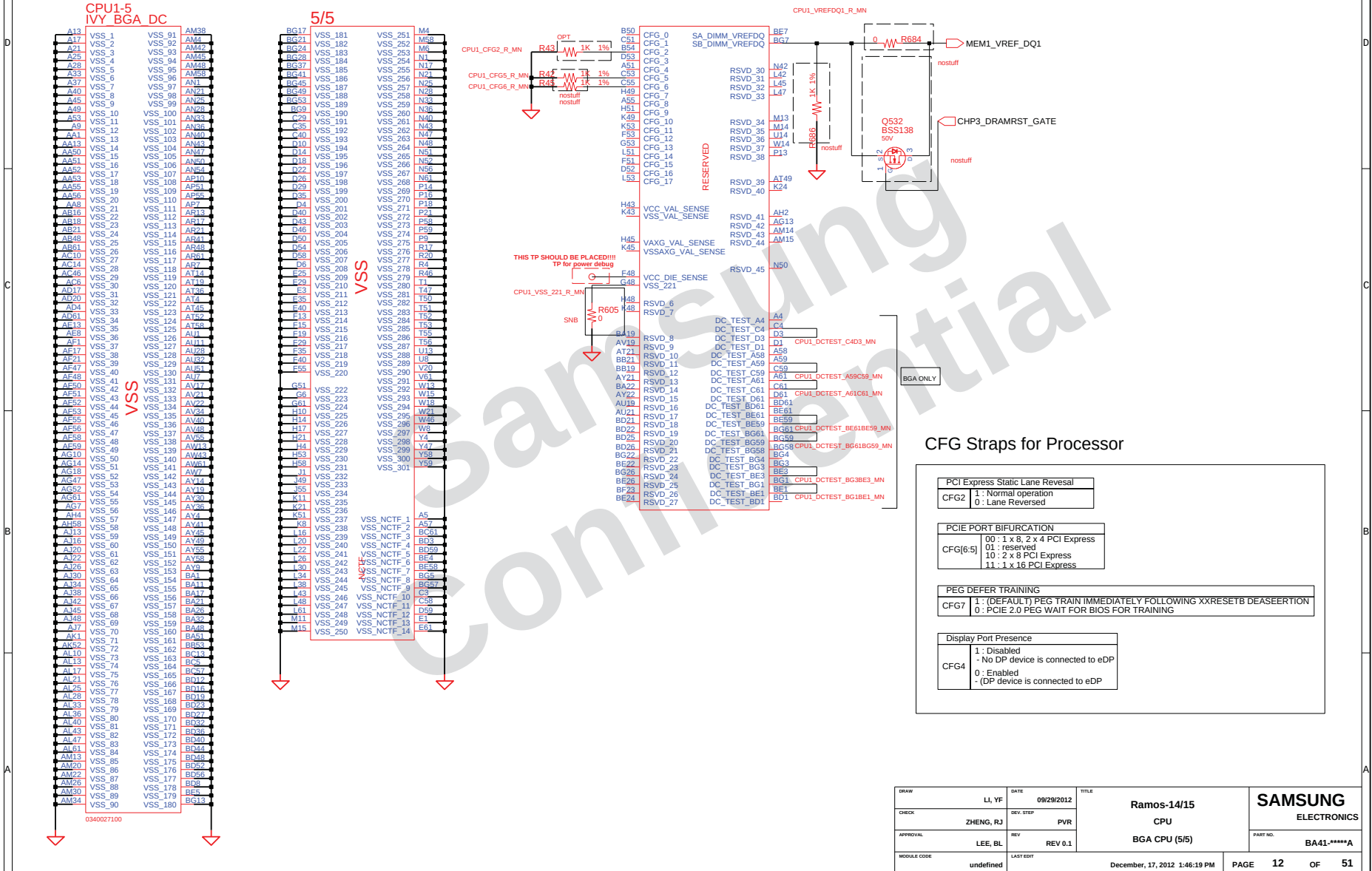
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



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



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



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

Samsung
Confidential

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

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.

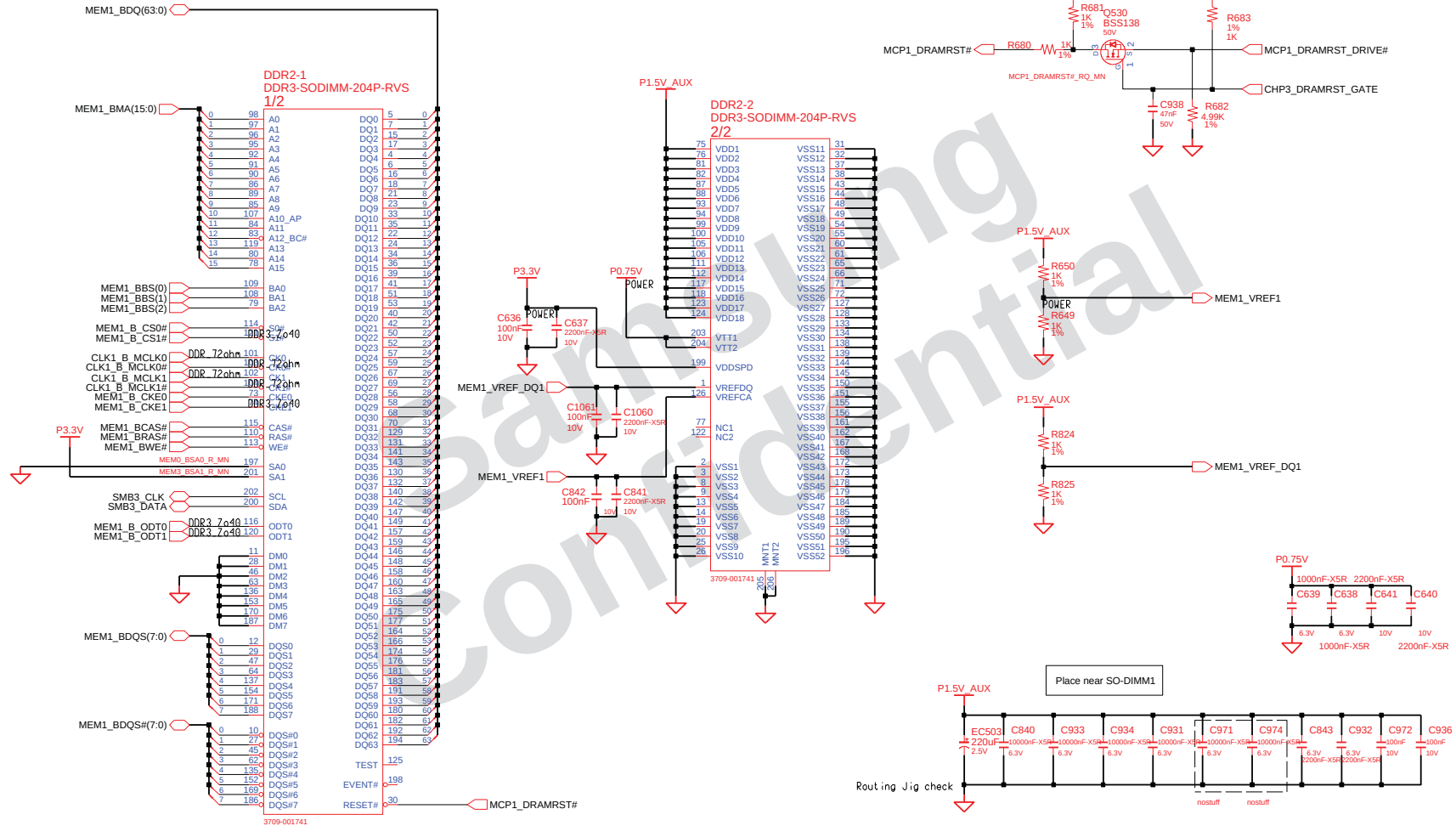
SO-DIMM #1 : 1st SO-DIMM

DDR SO-DIMM #1

Height : 8 mm (STANDARD)

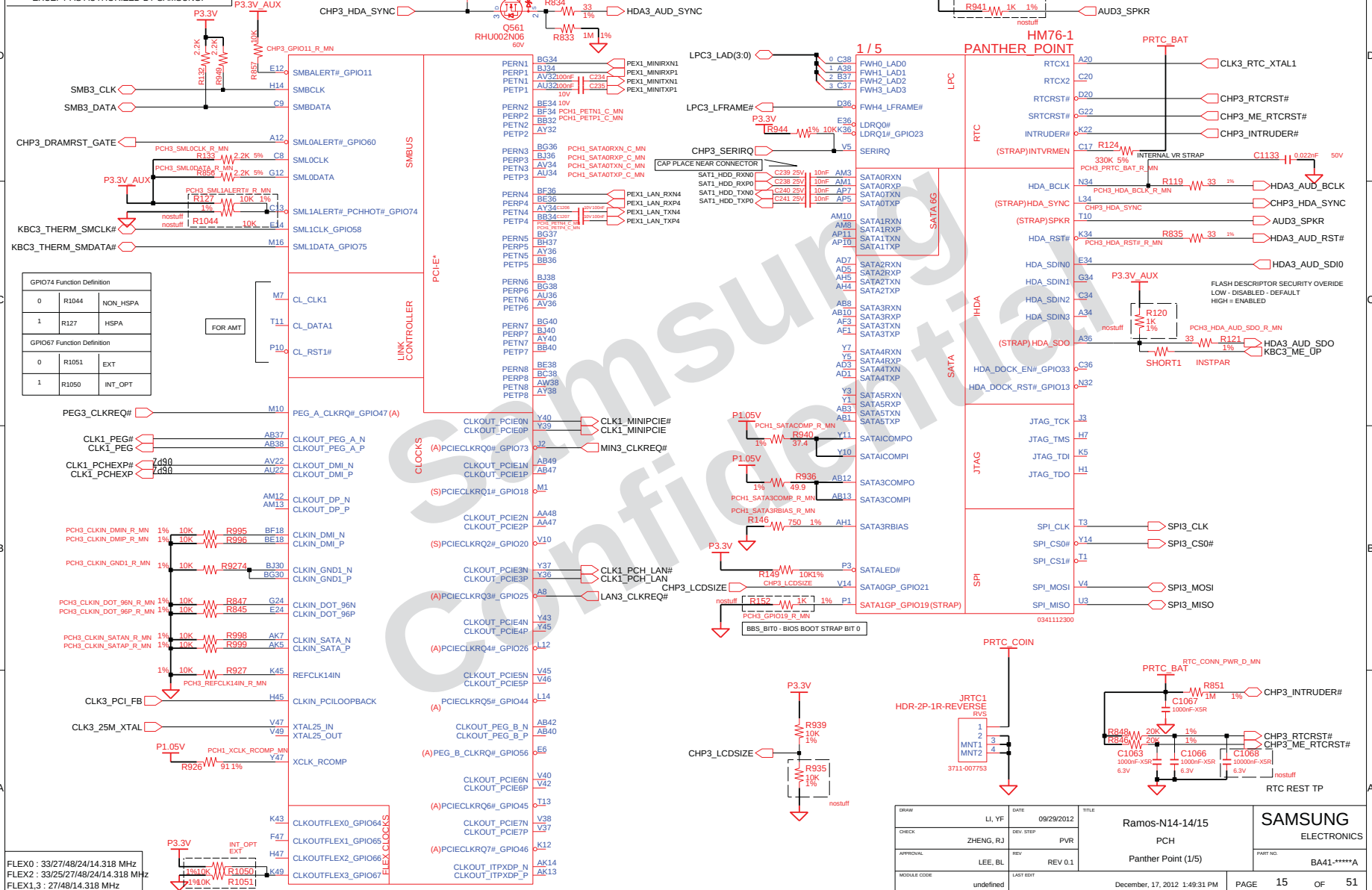
P/N : 3709-001615 (FOXCONN)

P/N : 3709-001622 (CONCRAFT)

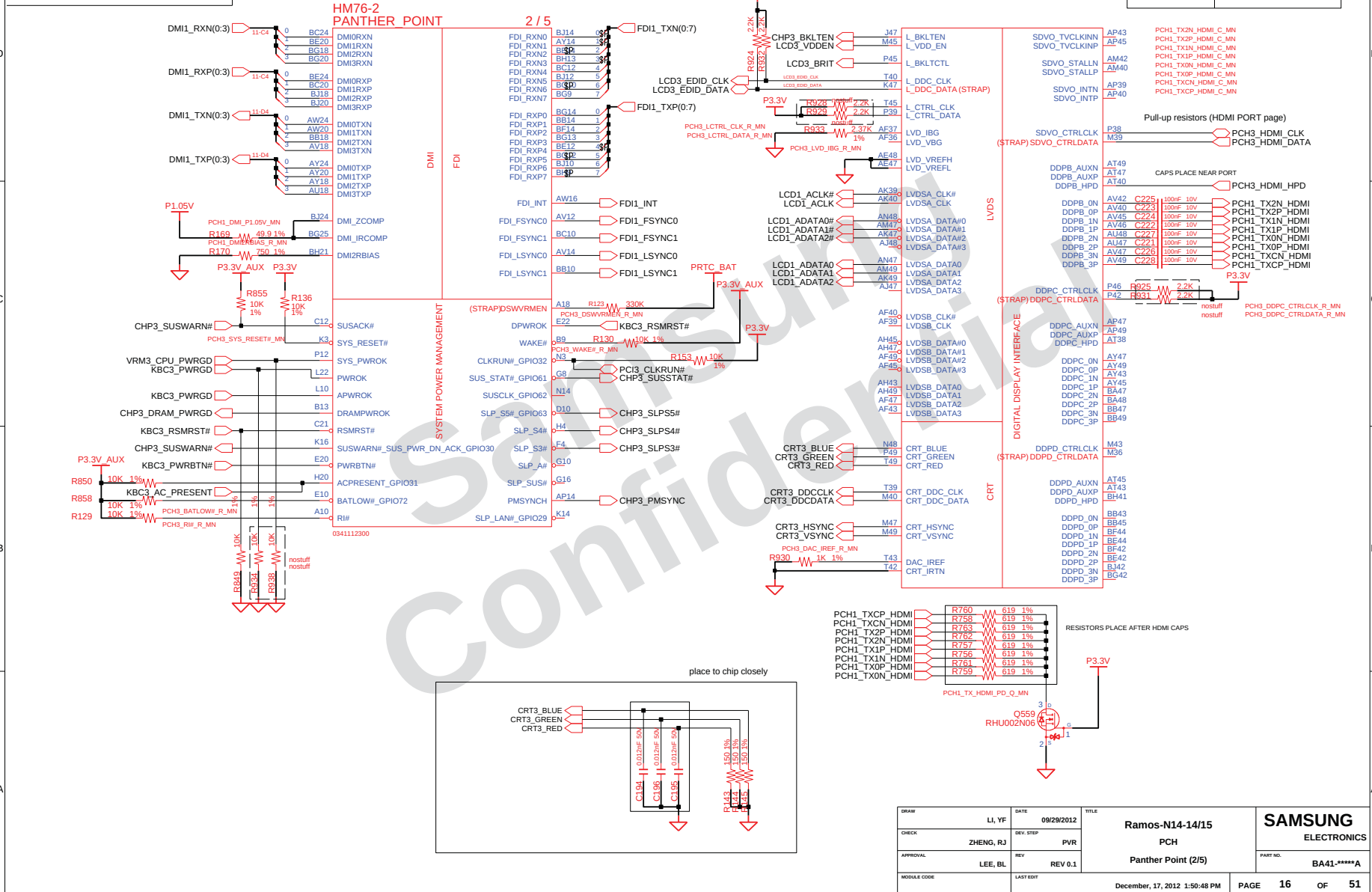


DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR		SODIMM B	
APPROVAL	LEE, BL	REV	REV 0.1		DDR3 2Gb	
MODULE CODE	undefined	LAST DRT				
December, 17, 2012 1:48:00 PM						PAGE 14 OF 51

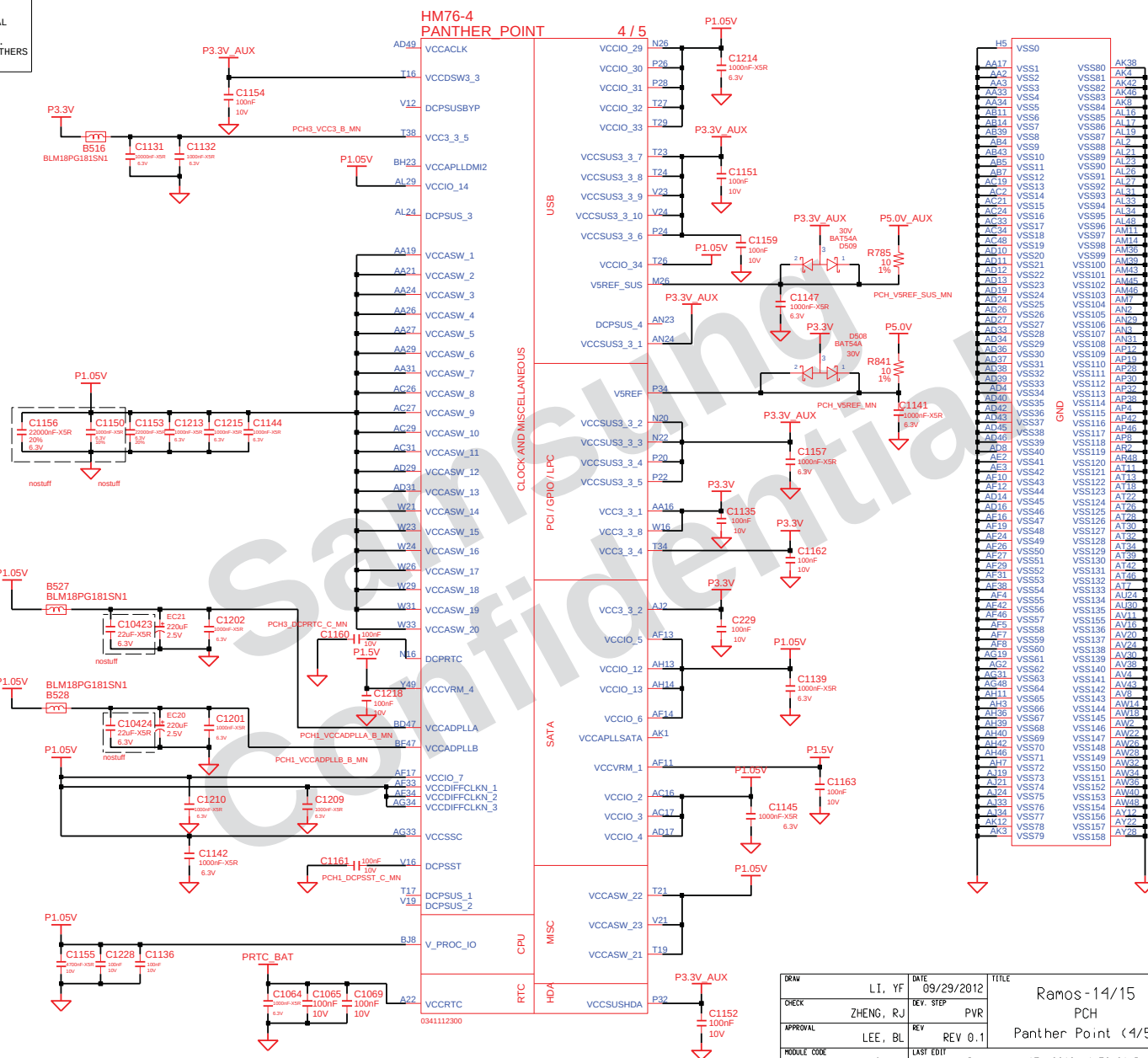
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



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



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.



DRWN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	
CHECK	ZHENG, RJ	REV. 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	

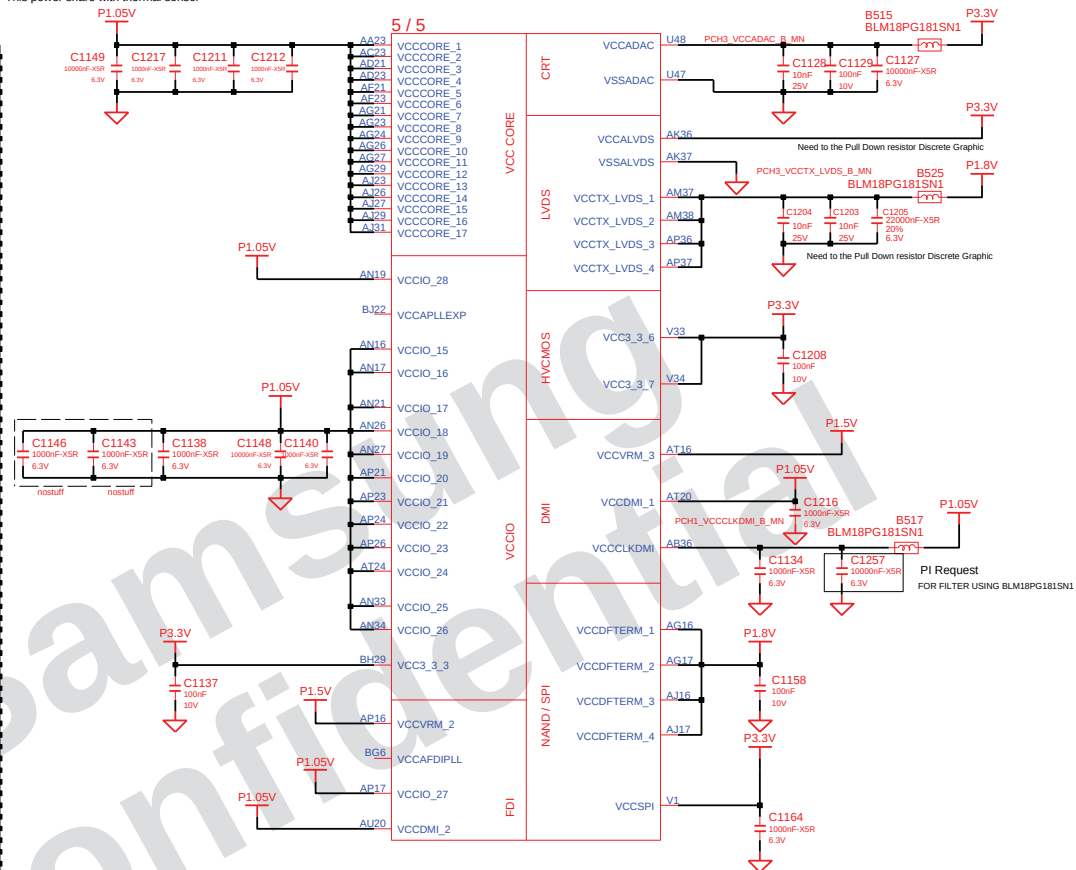
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

HM76-5 PANTHER POINT

This power share with thermal sensor

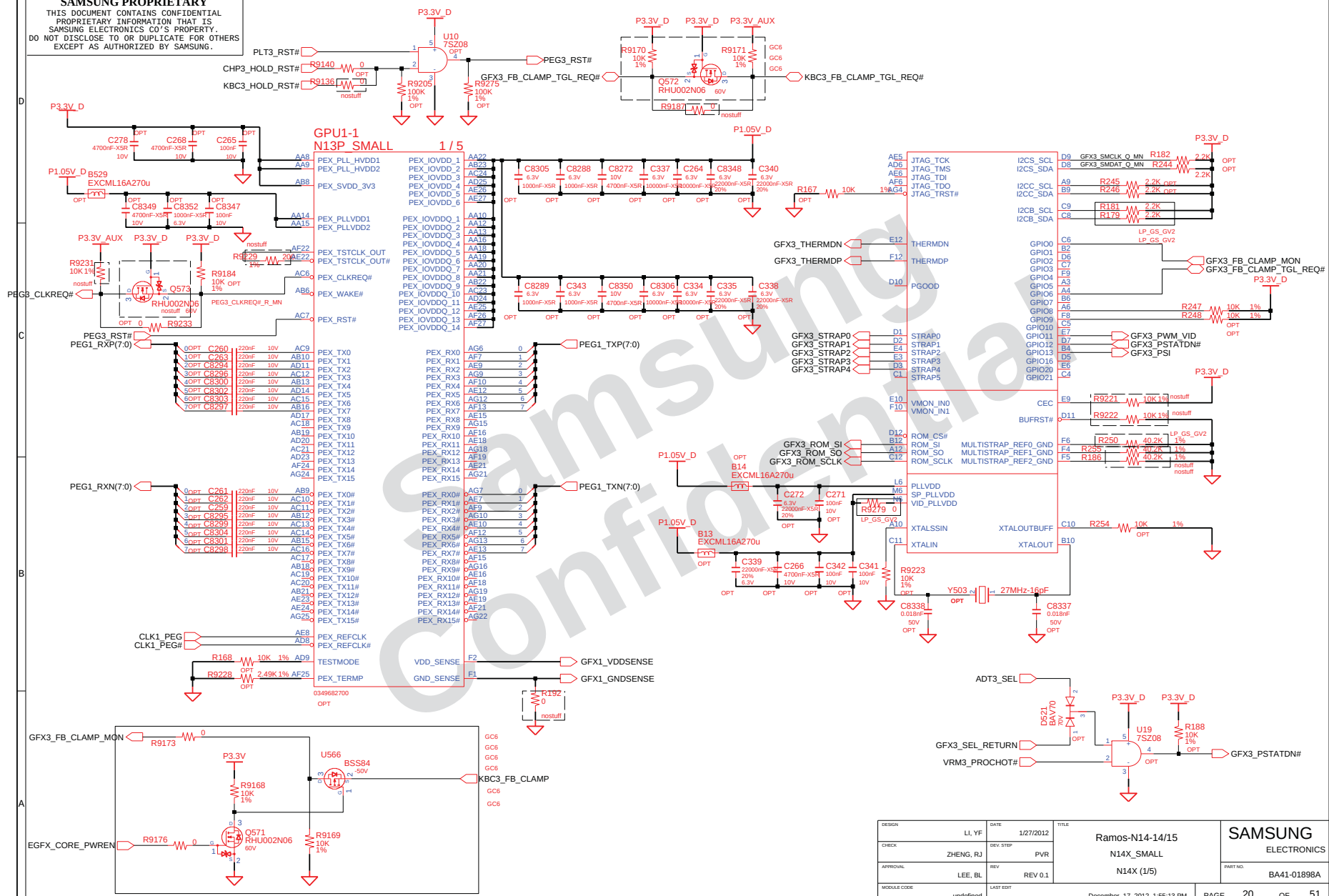
AV4	VSS159	VSS299	K18
AV42	VSS160	VSS260	K26
AV46	VSS161	VSS261	K26
AV48	VSS162	VSS262	K39
B11	VSS163	VSS263	K7
B15	VSS163	VSS263	K7
B19	VSS164	VSS264	L18
B23	VSS165	VSS265	L2
B27	VSS166	VSS266	L20
B31	VSS167	VSS267	L26
B35	VSS168	VSS268	L36
B39	VSS169	VSS269	L36
B43	VSS170	VSS270	L48
B47	VSS171	VSS271	M12
E45	VSS172	VSS272	M12
BB12	VSS173	VSS273	P16
BB16	VSS174	VSS274	M22
BB20	VSS175	VSS275	M24
BB22	VSS176	VSS276	M30
BB24	VSS177	VSS277	M32
BB28	VSS178	VSS278	M34
BB30	VSS179	VSS279	M38
BB38	VSS180	VSS280	M38
BB4	VSS181	VSS281	M4
BB46	VSS182	VSS282	M46
BC14	VSS183	VSS283	M46
BC18	VSS184	VSS284	M8
BC2	VSS185	VSS285	P30
BC22	VSS185	VSS285	P30
BC26	VSS186	VSS286	N47
BC32	VSS187	VSS287	P11
BC34	VSS188	VSS288	P16
BC36	VSS189	VSS289	T33
BC40	VSS190	VSS290	P40
BC42	VSS191	VSS291	P43
BC48	VSS192	VSS292	P43
BD46	VSS193	VSS293	P7
BD5	VSS194	VSS294	R2
BE22	VSS195	VSS295	R4
BE26	VSS196	VSS296	T19
BE40	VSS197	VSS297	T31
BE46	VSS198	VSS298	T37
BE10	VSS199	VSS299	T4
BE12	VSS200	VSS300	W34
BE16	VSS201	VSS301	VSS302
BE20	VSS202	VSS302	T46
BE22	VSS203	VSS303	T47
BE24	VSS204	VSS304	V11
BE26	VSS205	VSS305	V17
BE28	VSS206	VSS306	V26
BE30	VSS207	VSS307	V27
BE38	VSS208	VSS308	V29
BE40	VSS209	VSS309	V36
BF3	VSS210	VSS310	V36
BG17	VSS211	VSS311	V39
BG21	VSS212	VSS312	V43
BG33	VSS213	VSS313	W7
BG44	VSS215	VSS315	W19
BG8	VSS216	VSS316	W17
BH11	VSS217	VSS317	W2
BH15	VSS218	VSS318	W27
BH17	VSS219	VSS319	W48
BH19	VSS220	VSS320	Y38
LI10	VSS221	VSS321	Y4
LI27	VSS222	VSS322	Y42
LI31	VSS223	VSS323	Y46
LI33	VSS224	VSS324	Y8
LI35	VSS225	VSS325	Y8
LI39	VSS226	VSS326	Y8
LI43	VSS227	VSS327	Y8
LI47	VSS228	VSS328	Y8
D3	VSS229	VSS329	Y8
D12	VSS230	VSS330	Y8
D16	VSS231	VSS331	Y8
D18	VSS232	VSS332	Y8
D22	VSS233	VSS333	Y8
D26	VSS234	VSS334	Y8
D30	VSS235	VSS335	Y8
D32	VSS236	VSS336	Y8
D34	VSS237	VSS337	Y8
D38	VSS238	VSS338	Y8
D42	VSS239	VSS339	Y8
D8	VSS240	VSS340	Y8
E18	VSS241	VSS341	Y8
E26	VSS242	VSS342	Y8
E30	VSS243	VSS343	Y8
E32	VSS244	VSS344	Y8
E36	VSS245	VSS345	Y8
E38	VSS246	VSS346	Y8
E42	VSS247	VSS347	Y8
E46	VSS248	VSS348	Y8
E48	VSS249	VSS349	Y8
E50	VSS250	VSS350	Y8
E52	VSS251	VSS351	Y8
E54	VSS252	VSS352	Y8
E56	VSS253	VSS353	Y8
E58	VSS254	VSS354	Y8
E60	VSS255	VSS355	Y8
E62	VSS256	VSS356	Y8
E64	VSS257	VSS357	Y8
F3	VSS258	VSS358	Y8

0341112300



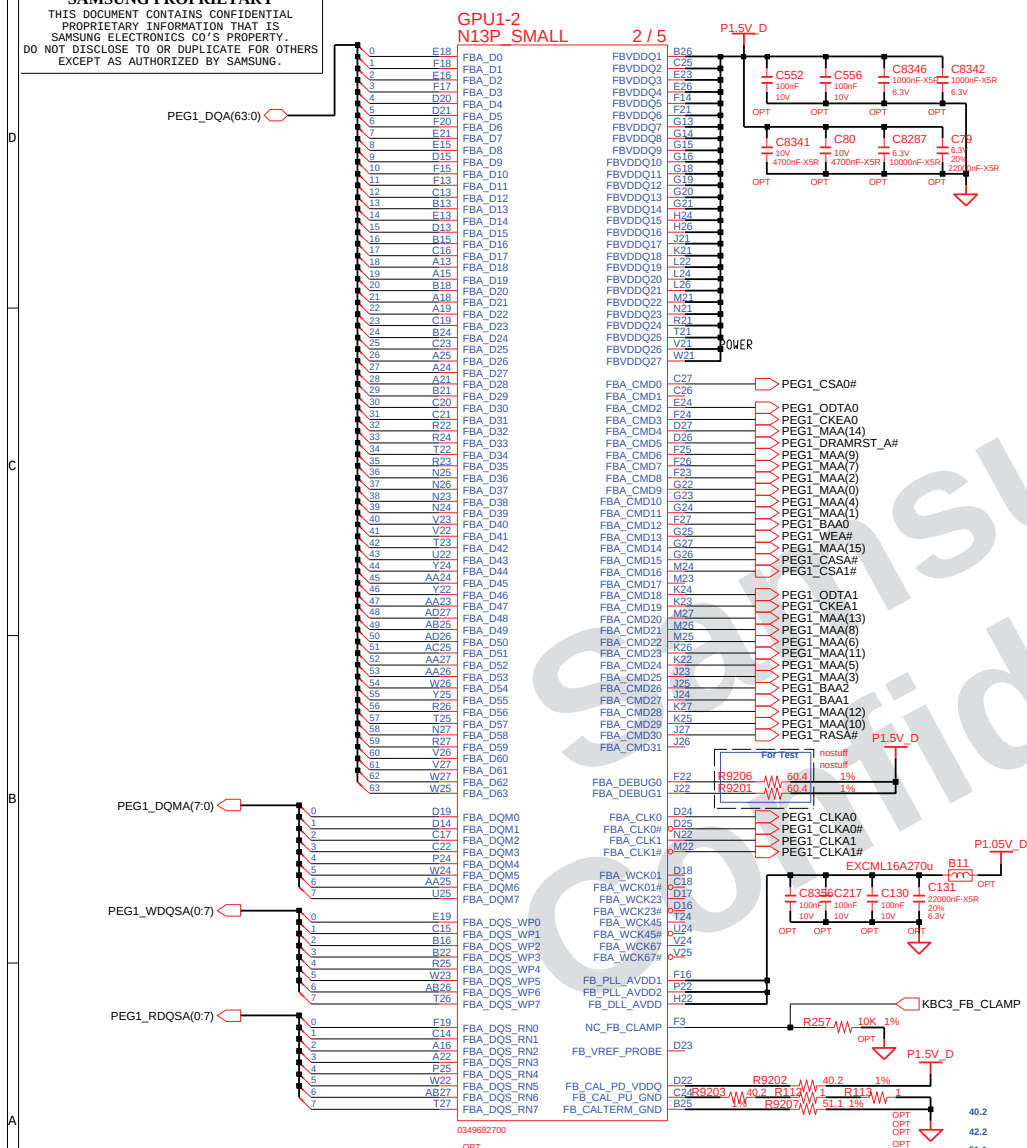
DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS
CHECK	ZHENG, RJ	REV. STEP	PVR	PCH		
APPROVAL	LEE, BL	REV	REV 0.1	Cougar Point (5/5)		PART NO. BA41-****A
MODULE CODE	undefined	LAST EDIT		December, 17, 2012 1:53:01 PM	PAGE	19 OF 51

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	LI, YF	DATE	1/27/2012	Ramos-N14-14/15 N14X_SMALL N14X (1/5)	SAMSUNG ELECTRONICS		
CHECK	ZHENG, RJ	DEV. STEP	PVR		PART NO.	BA41-01898A	
APPROVAL	LEE, BL	REV	REV 0.1				
MODULE CODE	undefined		LAST EDIT				
				PAGE	20	OF	51

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	LI, YF	DATE	1/27/2012	Ramos-N14-14/15 N14X_SMALL N14X (2/5)			
CHECK	ZHENG, RJ	REV. STEP	PVR				
APPROVAL	LEE, BL	REV	REV 0.1				
MODULE CODE		LAST EDIT		December 17, 2012 1:56:51 PM		PAGE	21 OF 51

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.

GPU1-3
N13P SMALL 3 / 5

T6	IFPC_RSET	IFPC_AUX# IFPC_AUX	N5 N4
M7 N7	IFPC_PLLVDD1 IFPC_PLLVDD2	IFPC_L3# IFPC_L3	N3 N2
P6	IFPC_IOVDD	IFPC_L2# IFPC_L2	R3 R2
		IFPC_L1# IFPC_L1	R1 T1
		IFPC_L0# IFPC_L0	T3 T2
		GPIO15	C3

U6	IFPD_RSET	IFPD_AUX#	P4
		IFPD_AUX	P3
T7	IFPD_PLLVDD1	IFPD_L3#	R5
R7	IFPD_PLLVDD2	IFPD_L3	R4
R6	IFPD_IOVDD	IFPD_L2#	T5
		IFPD_L2	T4
		IFPD_L1#	U4
		IFPD_L1	U3
		IFPD_L0#	V4
		IFPD_L0	V3
		GPIO17	D4

J7	IFPEF_PLLVDD1	IFPE_AUX#	J3
K7	IFPEF_PLLVDD2	IFPE_AUX	J2
K6	IFPEF_RSET	IFPE_L3#	J1
		IFPE_L3	K1
		IFPE_L2#	K3
		IFPE_L2	K2
		IFPE_L1#	M3
		IFPE_L1	M2
		IFPE_L0#	M1
		IFPE_L0	N1
		GPIO18	C2

H6	IFPE_IOVDD	IPPF_AUX#	H4
		IPPF_AUX	H3
J6	IFPF_L3#	IPPF_L3#	J5
		IPPF_L3	J4
		IPPF_L2#	K5
		IPPF_L2	K4
		IPPF_L1#	L4
		IPPF_L1	L3
		IPPF_L0#	M5
		IPPF_L0	M4
		GPIO19	F7

0349682700
OPT

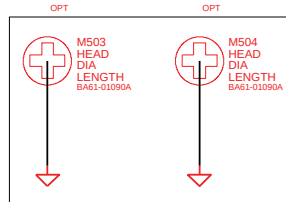
DESIGN	LI, FY	DATE	1/27/2012	Ramos-N14-14/15 N14X_SMALL N14X(3/5)	SAMSUNG ELECTRONICS		
CHECK	ZHENG, RJ	DEV. STEP	PVR		PART NO.	BA41-xxxxxx	
APPROVAL	LEE, BL	REV	REV 0.1				
MODULE CODE	undefined		LAST EDIT		December, 17, 2012 1:58:24 PM	PAGE	22

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

A



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

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

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

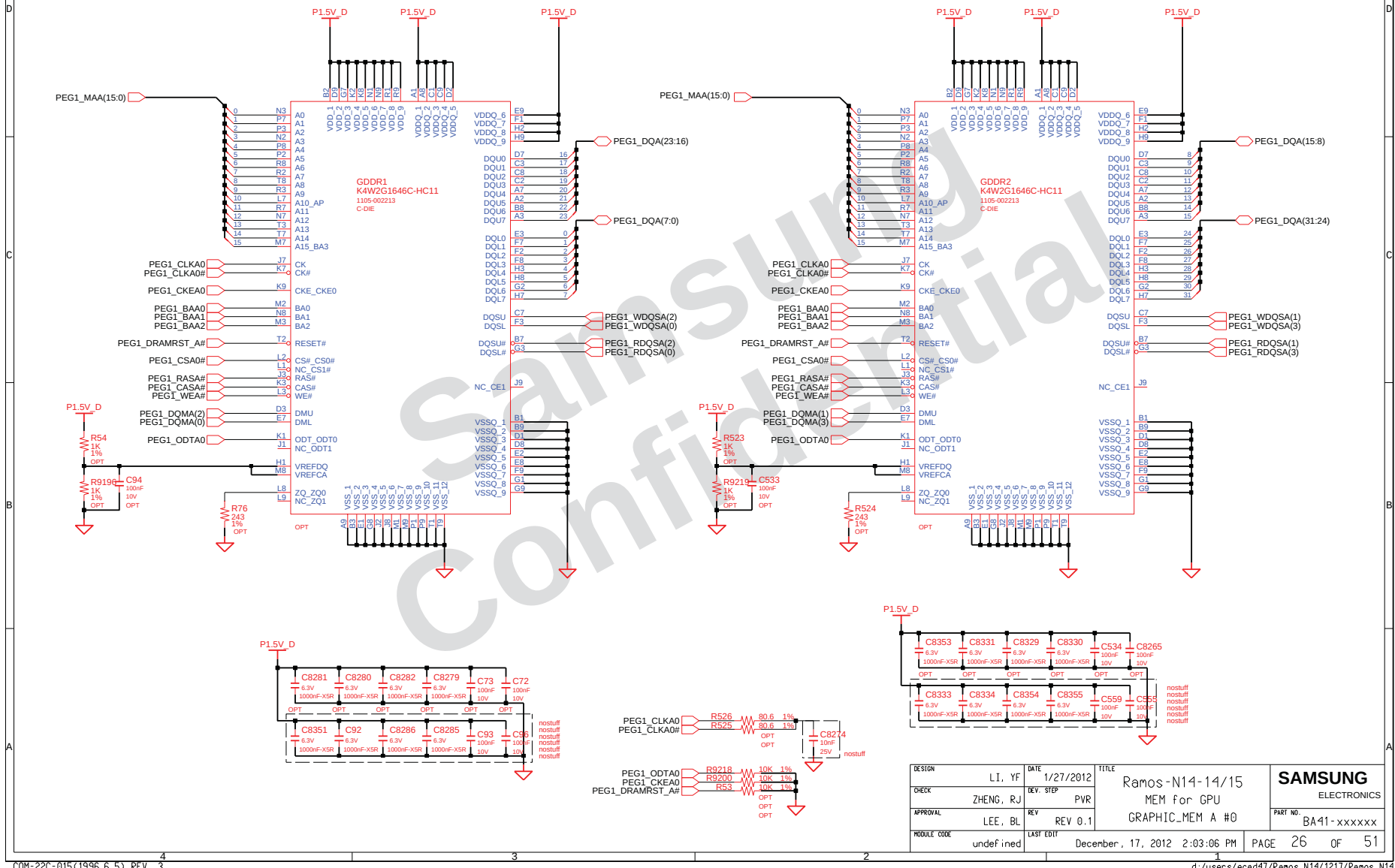
VRAM STRAP TABLE

	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

DESIGN	LI_YR	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		GRAPHIC STRAP	PART NO.
MODULE CODE	undefined	LAST EDIT				BA41-xxxxxx
				December, 17, 2012 2:02:10 PM	PAGE	25 OF 51

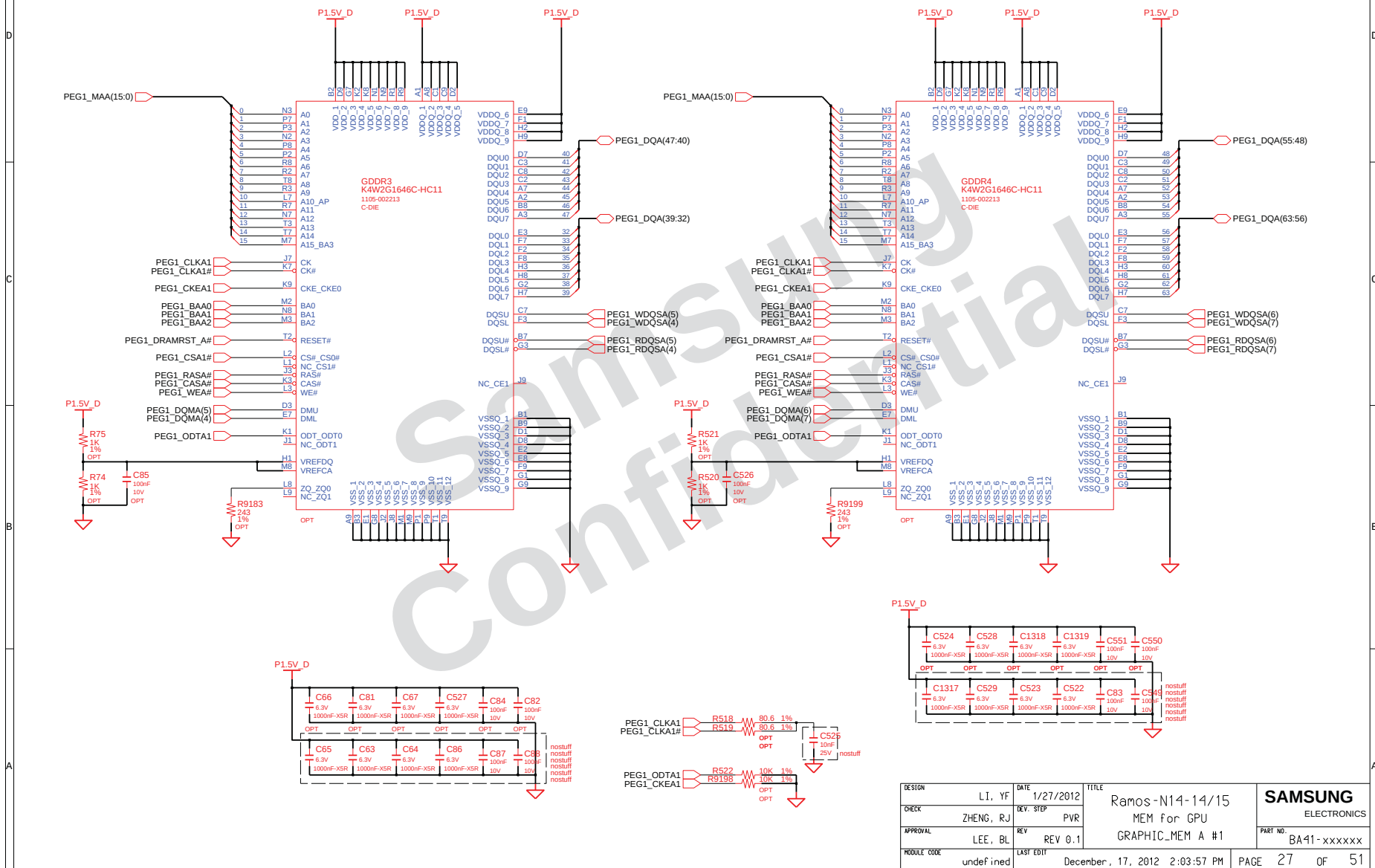
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

A-Channel #0 (D-mode)



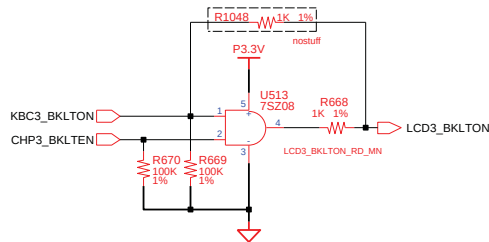
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

A-Channel #1 (D-mode)

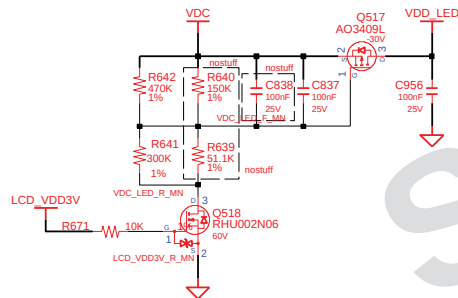


LVDS LOGIC

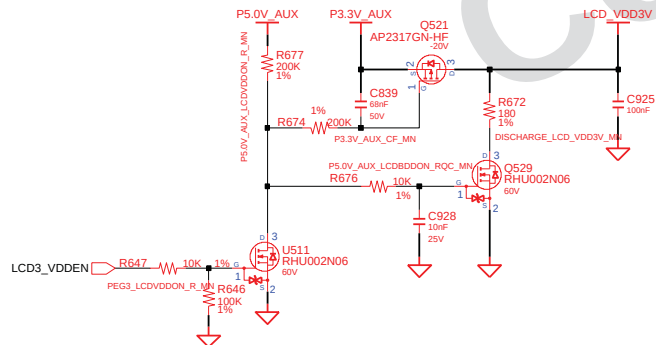
Backlight On



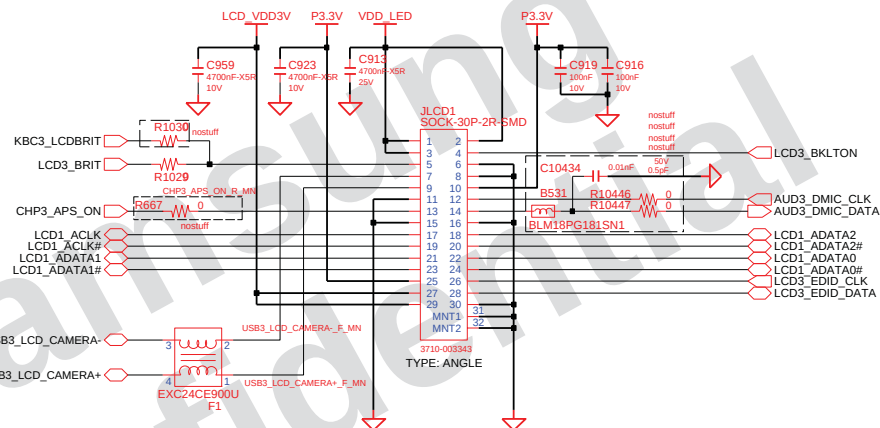
LED Power



LCD Power



1Ch. LCD Connector + CAMERA + INT MIC

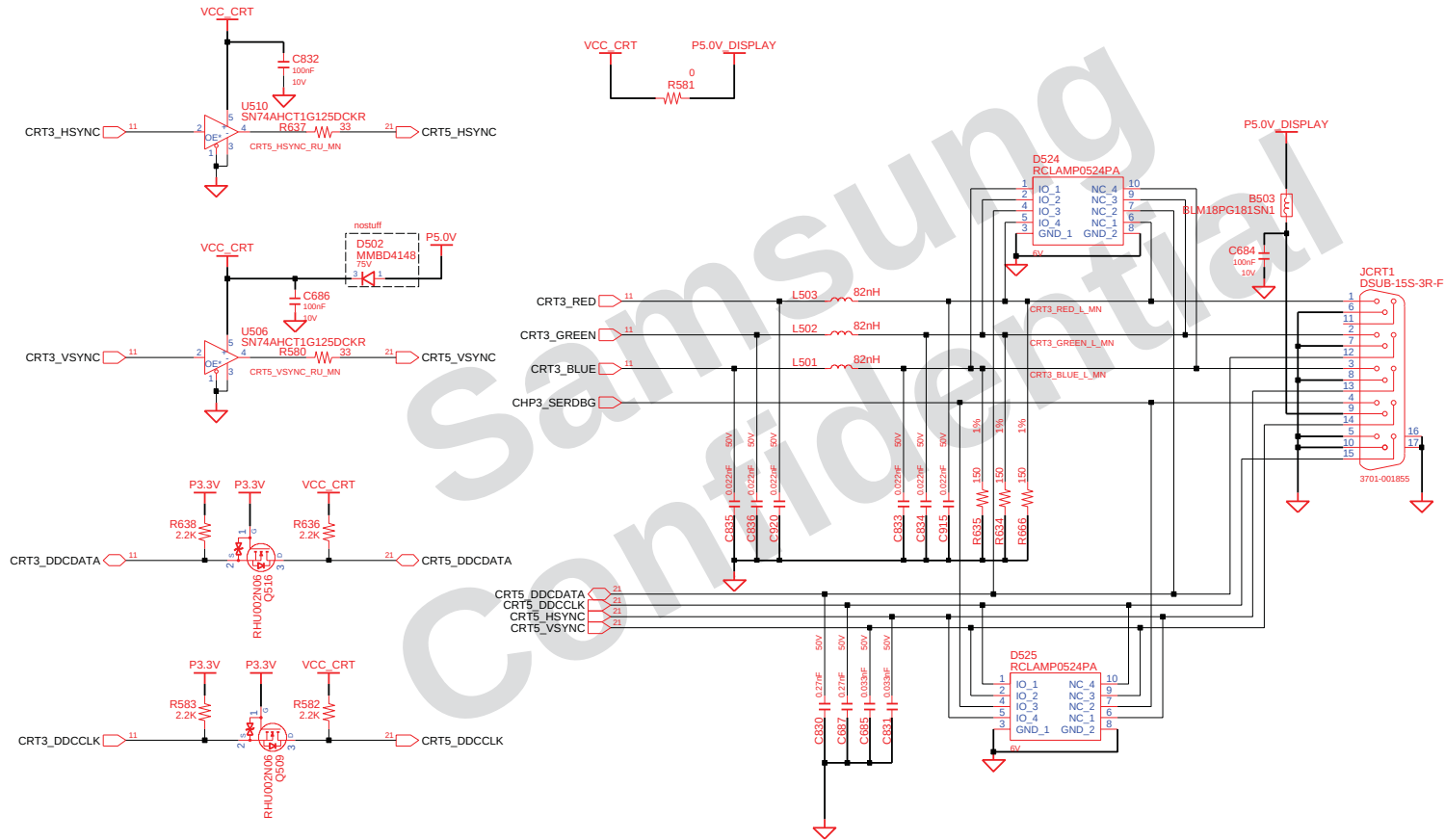


USB signal stub should be less than 100mil

DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS
CHECK	ZHENG, R3	REV. STEP	PVR	GRAPHICS_IF		
APPROVAL	LEE, BL	REV	REV 0.1	LVDS		
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:05:09 PM	PAGE	28	OF 51

VGA

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.

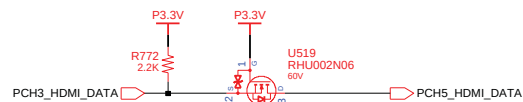
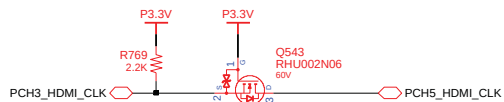


DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR		GRAPHIC_IF	
APPROVAL	LEE, BL	REV	REV 0.1		CRT	
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:05:49 PM	PAGE	29 OF 51	

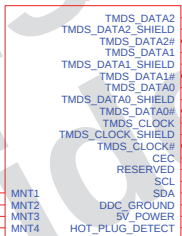
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

HDMI

FOR HDMI VERIFICATION TEST

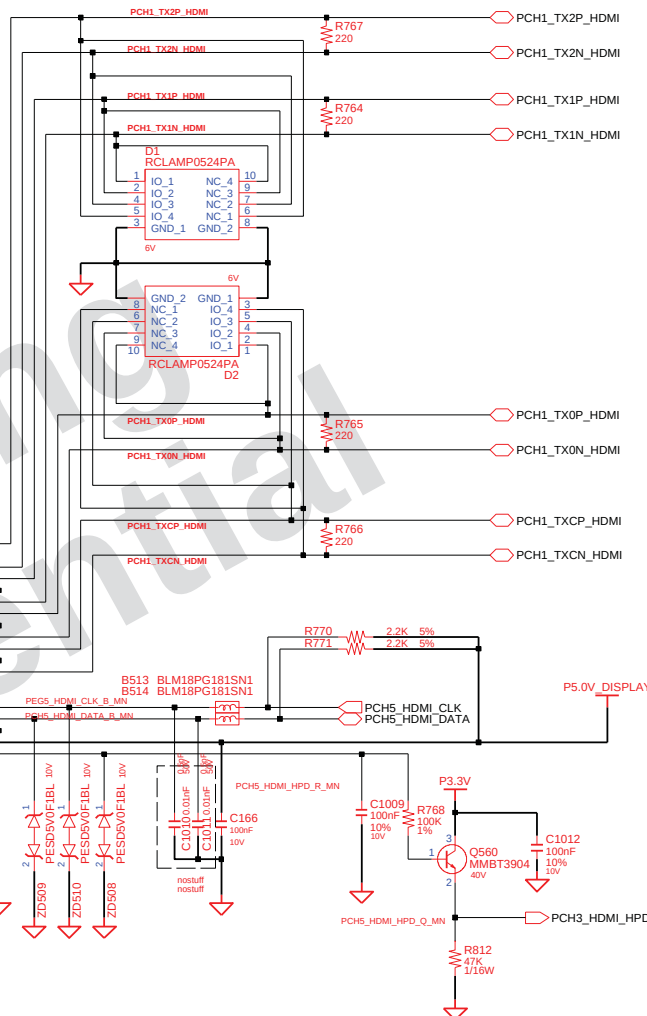


JHDMI1
HDMI-19P-FEMALE



3701-001775

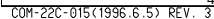
After checking, Houston need to use CMC for each signal.



N10xN11x_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance

DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS
CHECK	ZHENG, RJ	REV. STEP	PVR	GRAPHICS_IF		
APPROVAL	LEE, BL	REV	REV 0.1	HDMI		PART NO.
MODULE CODE	undefined	LAST EDIT				BA41-****A
December, 17, 2012 2:06:34 PM						PAGE 30 OF 51

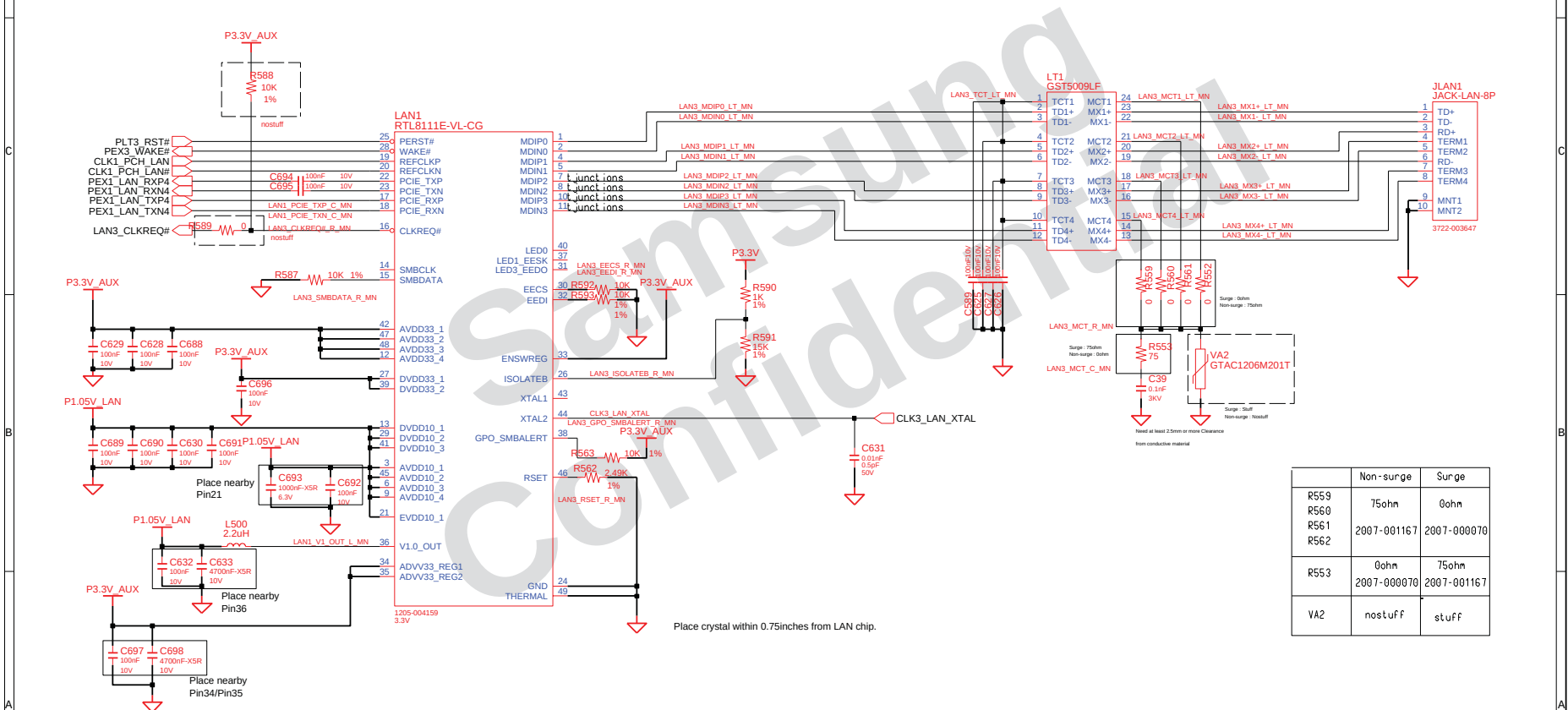
HD AUDIO



d:/users/ecad47/Ramos_N14/1217/Ramos_N14

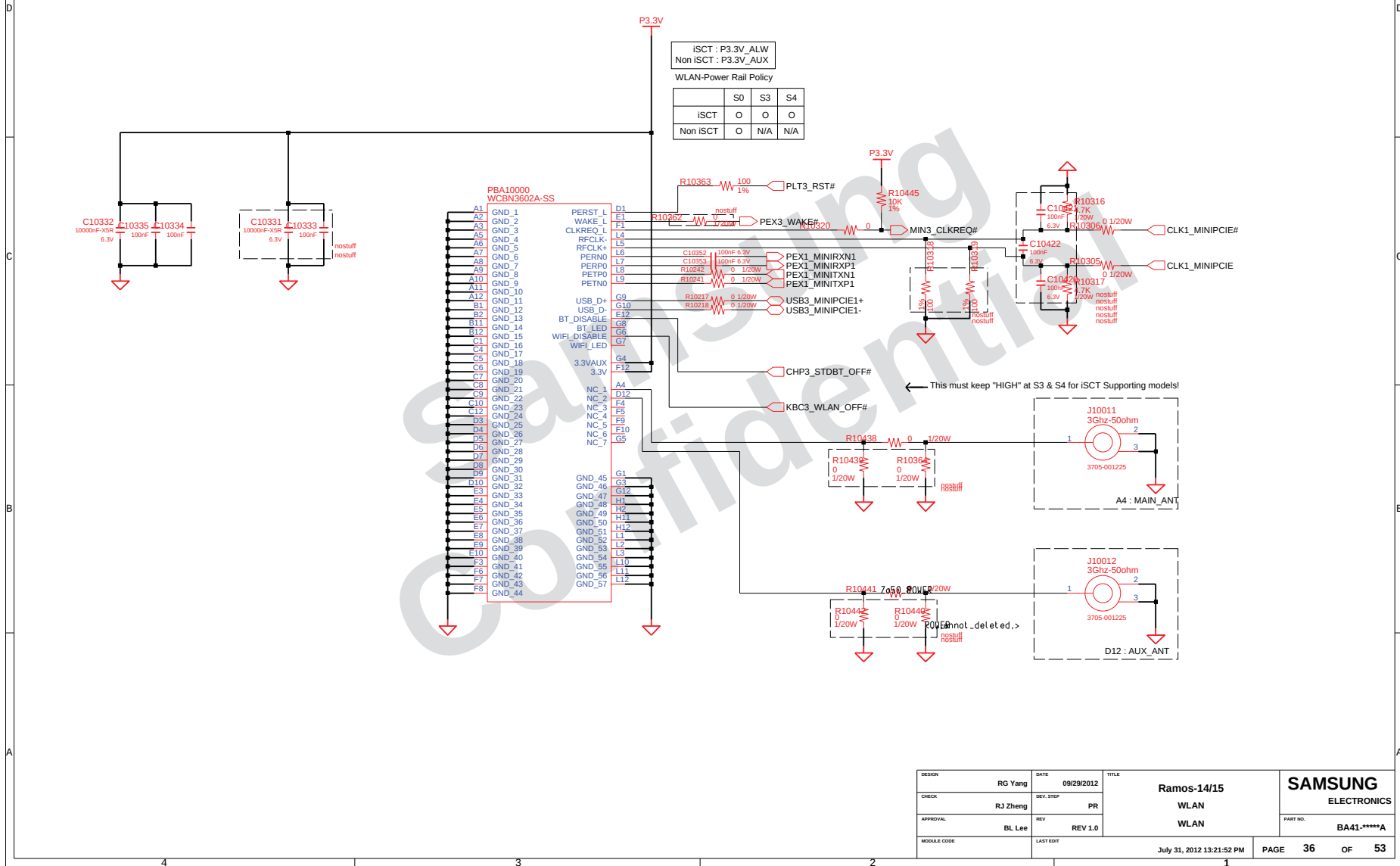
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

Realtek RTL8111E (GigaBit)



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_MOB(MD335)

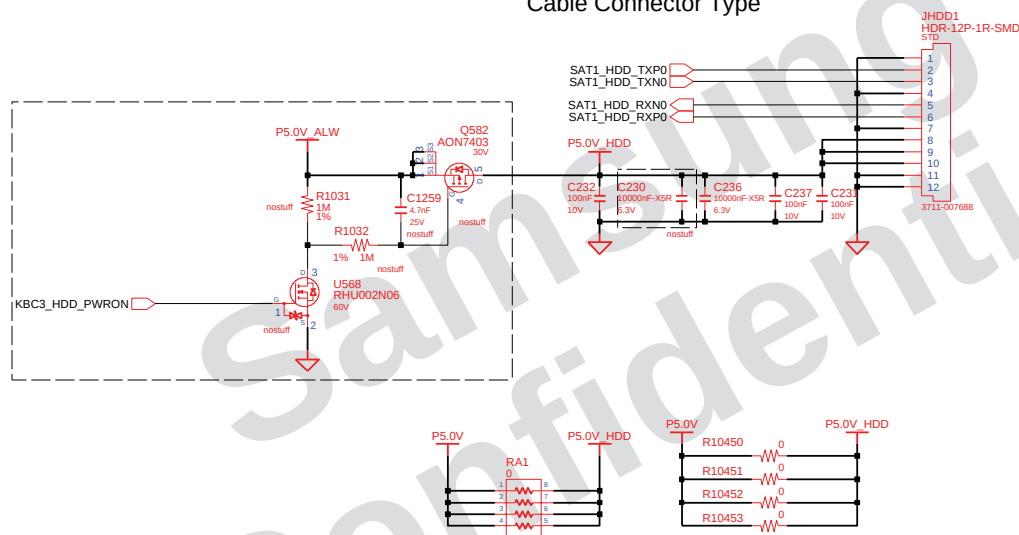


SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

SATA I/F CONN

SATA HDD CONN

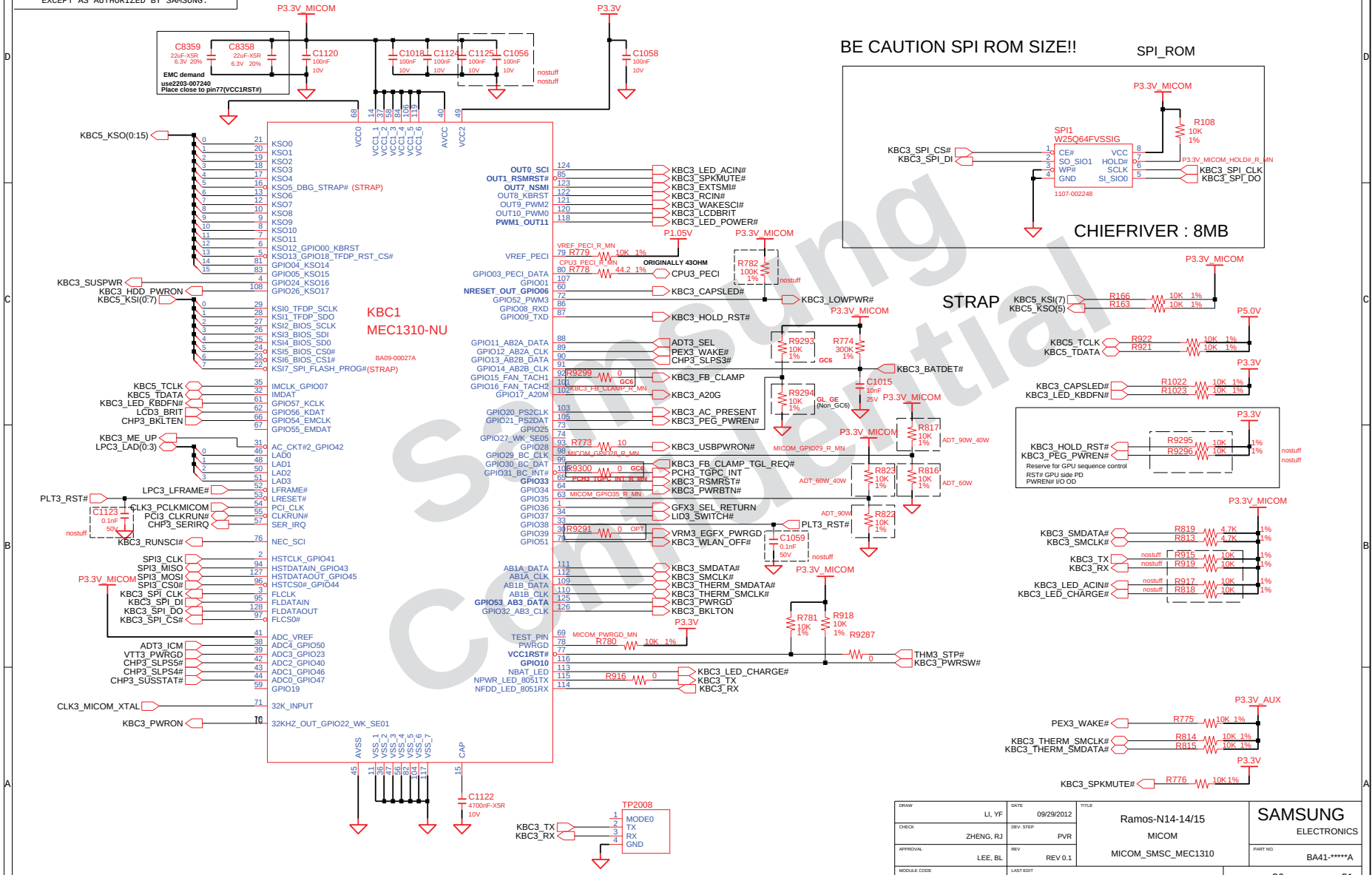
Cable Connector Type



DESIGN	LI, YF	DATE	09/29/2012	Ramos-N14-14/15 SATA I/F SATA I/F		SAMSUNG ELECTRONICS			
CHECK	ZHENG, RJ	DEV. STEP	PVR						
APPROVAL	LEE, BL	REV	REV 0.1						
				PART NO.		BA41-*****A			
MODULE CODE	undefined			December, 17, 2012 2:10:21 PM		PAGE	35	OF	51

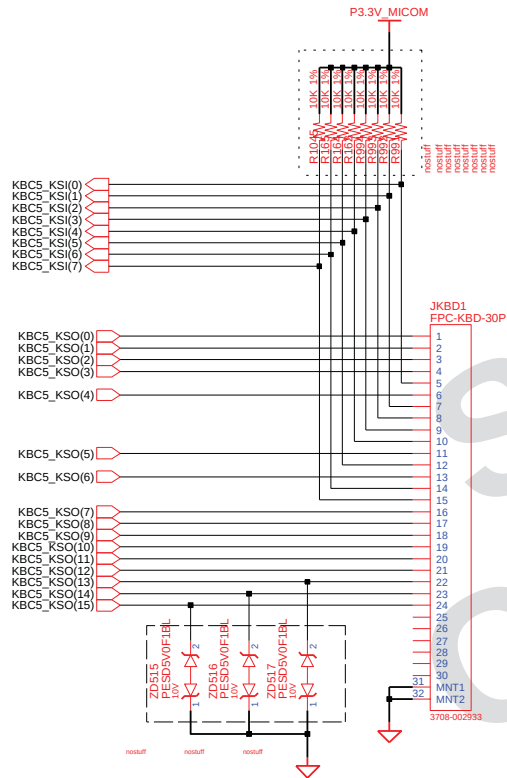
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

MAIN BOARD (MICOM)

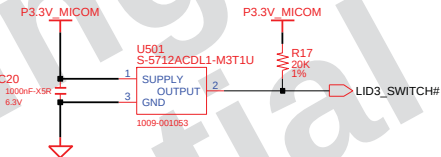


Micom Glue

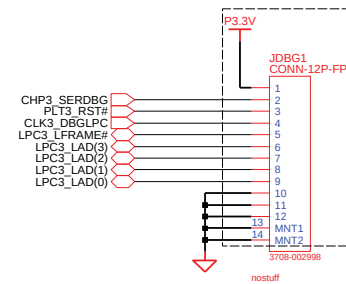
KEYBOARD



LID3_SWITCH



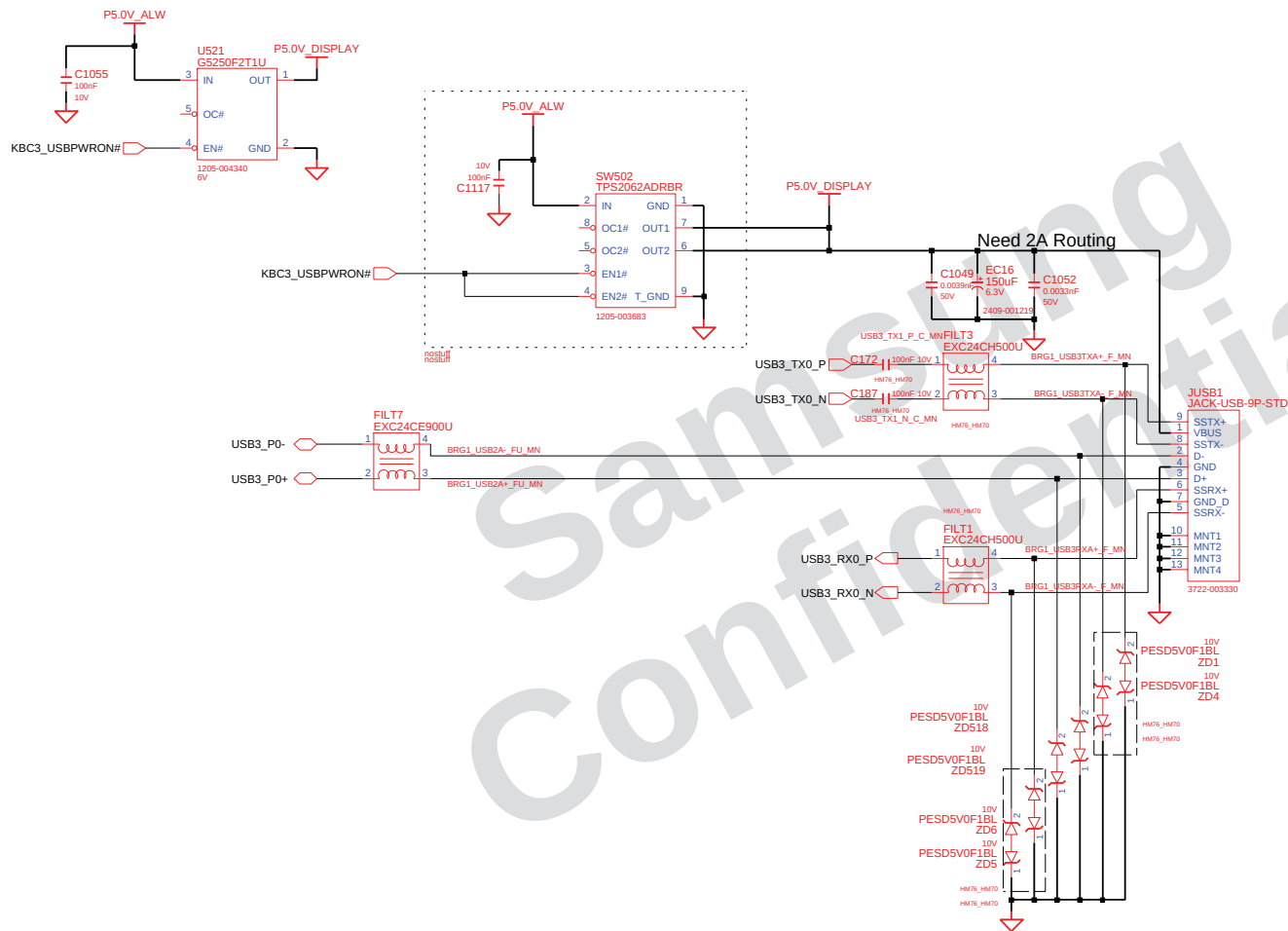
80H PORT DEBUG



DRAW	LI, YR	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS
CHECK	ZHENG, RJ	REV. 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

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 3.0 CONNECTOR



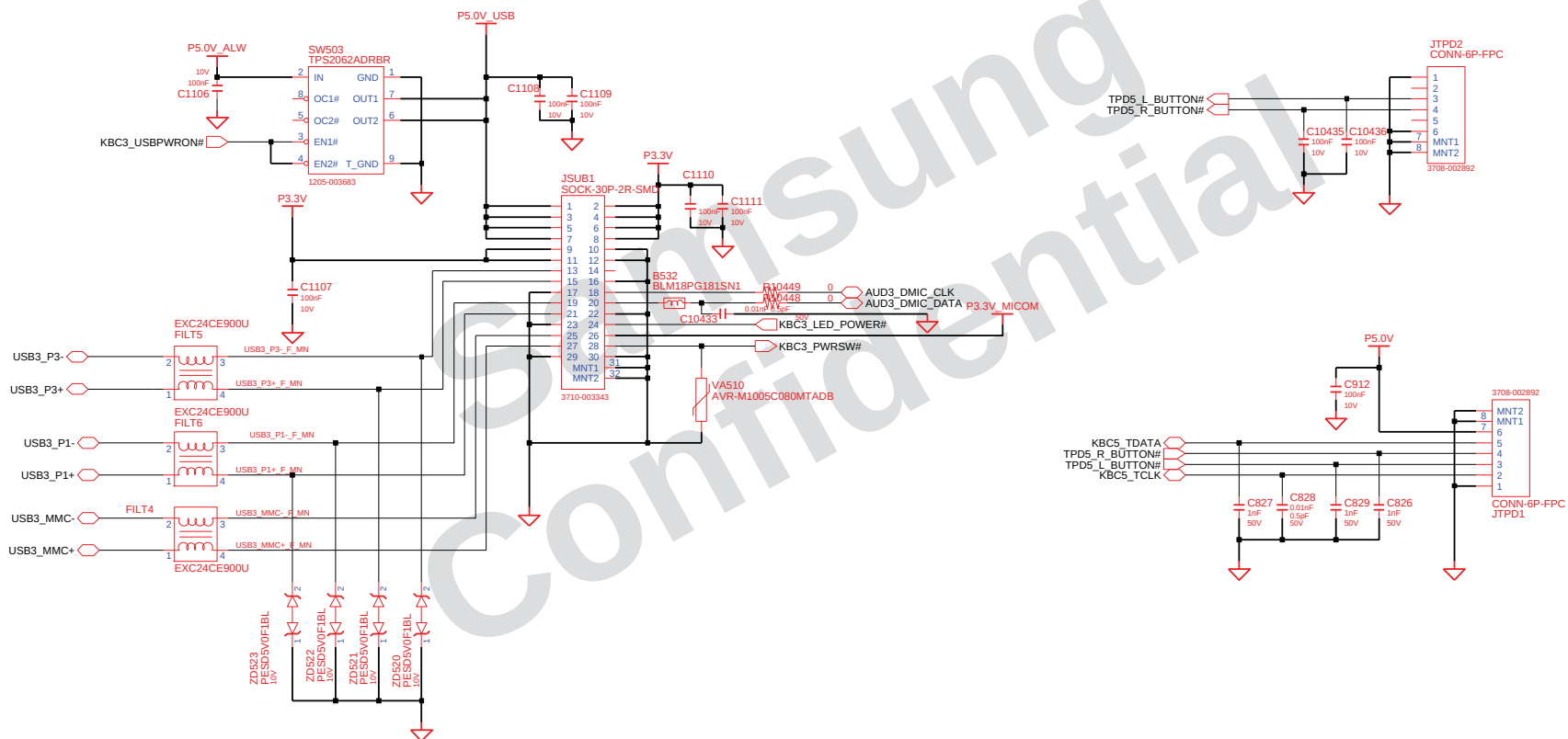
DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXXX
CHECK	ZHENG, RJ	DEV. STEP	PVR	USB3.0		
APPROVAL	LEE, BL	REV	REV 0.1	USB 3.0 CONNECTOR		
MODULE CODE		LAST EDIT				
				December, 17, 2012 2:12:44 PM	PAGE 38 OF 51	

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

MAIN TO SUB

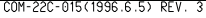
MAIN to 3-in-1 / USB SUB

TOUCHPAD BUTTON MAIN TO SUB

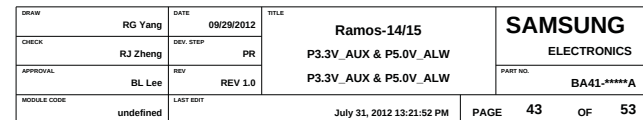


DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS PART NO. BA41-****A
CHECK	ZHENG, RJ	REV. STEP	PVR	SUB BOARD CONNECTOR		
APPROVAL	LEE, BL	REV	REV 0.1	MAIN TO SUB		
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:13:27 PM			

CHARGER & POWER MANAGEMENT



P3.3V_AUX & P5.0V_ALW



A

The schematic diagram illustrates the power management section of the STM32MP137, showing the connection of the PMIC (P884) to the microcontroller. The diagram includes various power pins (BST, SW, DL, PGND, VNSNS, COMP, VREF, REFIN, GSNS) and their connections to the PMIC and other components like capacitors, resistors, and MOSFETs. A dashed box highlights the adjustable voltage regulator section.

Key Components and Connections:

- PMIC (P884):** Connected to the microcontroller pins BST, SW, DL, PGND, VNSNS, COMP, VREF, REFIN, and GSNS.
- Capacitors:** C1083 (100nF), C1081 (100nF), C1082 (100nF), C1179 (10nF), C1177 (10nF), C1176 (100nF), C1182 (100nF).
- Resistors:** R887 (100K), R886 (10), R885 (10), R794 (1), R967 (100K), R969 (150K), R974 (470K), R975 (80.6K), R971 (13K), R970 (100K), R968 (10K), R156 (0).
- MOSFETs:** Q564 (AP9402GYT-HF), Q570 (RHU002N06), Q580 (RHU002N06).
- Diodes:** D1 (Schottky diode), D2 (Schottky diode).
- Inductor:** L11 (1.5uH).
- Other Components:** R792 (10), R791 (10), R793 (150K), R794 (1), R795 (80.6K), R796 (100K), R797 (100K), R798 (100K), R799 (100K), R800 (100K), R801 (100K), R802 (100K), R803 (100K), R804 (100K), R805 (100K), R806 (100K), R807 (100K), R808 (100K), R809 (100K), R810 (100K), R811 (100K), R812 (100K), R813 (100K), R814 (100K), R815 (100K), R816 (100K), R817 (100K), R818 (100K), R819 (100K), R820 (100K), R821 (100K), R822 (100K), R823 (100K), R824 (100K), R825 (100K), R826 (100K), R827 (100K), R828 (100K), R829 (100K), R830 (100K), R831 (100K), R832 (100K), R833 (100K), R834 (100K), R835 (100K), R836 (100K), R837 (100K), R838 (100K), R839 (100K), R840 (100K), R841 (100K), R842 (100K), R843 (100K), R844 (100K), R845 (100K), R846 (100K), R847 (100K), R848 (100K), R849 (100K), R850 (100K), R851 (100K), R852 (100K), R853 (100K), R854 (100K), R855 (100K), R856 (100K), R857 (100K), R858 (100K), R859 (100K), R860 (100K), R861 (100K), R862 (100K), R863 (100K), R864 (100K), R865 (100K), R866 (100K), R867 (100K), R868 (100K), R869 (100K), R870 (100K), R871 (100K), R872 (100K), R873 (100K), R874 (100K), R875 (100K), R876 (100K), R877 (100K), R878 (100K), R879 (100K), R880 (100K), R881 (100K), R882 (100K), R883 (100K), R884 (100K), R885 (100K), R886 (100K), R887 (100K), R888 (100K), R889 (100K), R890 (100K), R891 (100K), R892 (100K), R893 (100K), R894 (100K), R895 (100K), R896 (100K), R897 (100K), R898 (100K), R899 (100K), R900 (100K), R901 (100K), R902 (100K), R903 (100K), R904 (100K), R905 (100K), R906 (100K), R907 (100K), R908 (100K), R909 (100K), R910 (100K), R911 (100K), R912 (100K), R913 (100K), R914 (100K), R915 (100K), R916 (100K), R917 (100K), R918 (100K), R919 (100K), R920 (100K), R921 (100K), R922 (100K), R923 (100K), R924 (100K), R925 (100K), R926 (100K), R927 (100K), R928 (100K), R929 (100K), R930 (100K), R931 (100K), R932 (100K), R933 (100K), R934 (100K), R935 (100K), R936 (100K), R937 (100K), R938 (100K), R939 (100K), R940 (100K), R941 (100K), R942 (100K), R943 (100K), R944 (100K), R945 (100K), R946 (100K), R947 (100K), R948 (100K), R949 (100K), R950 (100K), R951 (100K), R952 (100K), R953 (100K), R954 (100K), R955 (100K), R956 (100K), R957 (100K), R958 (100K), R959 (100K), R960 (100K), R961 (100K), R962 (100K), R963 (100K), R964 (100K), R965 (100K), R966 (100K), R967 (100K), R968 (100K), R969 (100K), R970 (100K), R971 (100K), R972 (100K), R973 (100K), R974 (100K), R975 (100K), R976 (100K), R977 (100K), R978 (100K), R979 (100K), R980 (100K), R981 (100K), R982 (100K), R983 (100K), R984 (100K), R985 (100K), R986 (100K), R987 (100K), R988 (100K), R989 (100K), R990 (100K), R991 (100K), R992 (100K), R993 (100K), R994 (100K), R995 (100K), R996 (100K), R997 (100K), R998 (100K), R999 (100K), R1000 (100K).

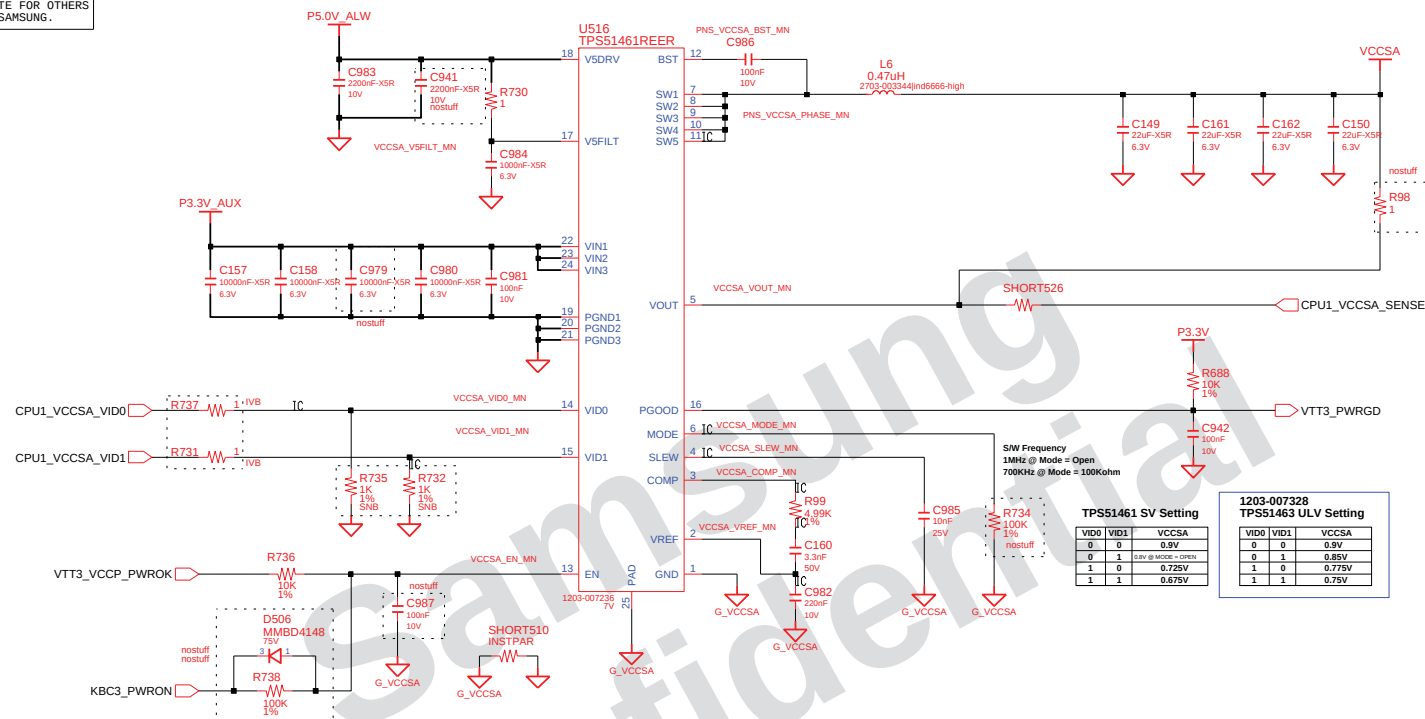
Adjustable Voltage Regulator Section:

- Q570 (RHU002N06):** MOSFET used for the adjustable voltage regulator.
- Q580 (RHU002N06):** MOSFET used for the adjustable voltage regulator.
- R974 (470K):** Resistor used for the adjustable voltage regulator.
- R975 (80.6K):** Resistor used for the adjustable voltage regulator.
- C1182 (100nF):** Capacitor used for the adjustable voltage regulator.
- R967 (100K):** Resistor used for the adjustable voltage regulator.
- R969 (150K):** Resistor used for the adjustable voltage regulator.
- R971 (13K):** Resistor used for the adjustable voltage regulator.
- R970 (100K):** Resistor used for the adjustable voltage regulator.
- R972 (10):** Resistor used for the adjustable voltage regulator.
- R973 (150K):** Resistor used for the adjustable voltage regulator.
- R974 (470K):** Resistor used for the adjustable voltage regulator.
- R975 (80.6K):** Resistor used for the adjustable voltage regulator.
- C1182 (100nF):** Capacitor used for the adjustable voltage regulator.
- R967 (100K):** Resistor used for the adjustable voltage regulator.
- R969 (150K):** Resistor used for the adjustable voltage regulator.
- R971 (13K):** Resistor used for the adjustable voltage regulator.
- R970 (100K):** Resistor used for the adjustable voltage regulator.
- R972 (10):** Resistor used for the adjustable voltage regulator.
- R973 (150K):** Resistor used for the adjustable voltage regulator.
- R974 (470K):** Resistor used for the adjustable voltage regulator.
- R975 (80.6K):** Resistor used for the adjustable voltage regulator.
- C1182 (100nF):** Capacitor used for the adjustable voltage regulator.
- R967 (100K):** Resistor used for the adjustable voltage regulator.
- R969 (150K):** Resistor used for the adjustable voltage regulator.
- R971 (13K):** Resistor used for the adjustable voltage regulator.
- R970 (100K):** Resistor used for the adjustable voltage regulator.
- R972 (10):** Resistor used for the adjustable voltage regulator.
- R973 (150K):** Resistor used for the adjustable voltage regulator.
- R974 (470K):** Resistor used for the adjustable voltage regulator.
- R975 (80.6K):** Resistor used for the adjustable voltage regulator.
- C1182 (100nF):** Capacitor used for the adjustable voltage regulator.
- R967 (100K):** Resistor used for the adjustable voltage regulator.
- R969 (150K):** Resistor used for the adjustable voltage regulator.
- R971 (13K):** Resistor used for the adjustable voltage regulator.
- R970 (100K):** Resistor used for the adjustable voltage regulator.
- R972 (10):** Resistor used for the adjustable voltage regulator.
- R973 (150K):** Resistor used for the adjustable voltage regulator.
- R974 (470K):** Resistor used for the adjustable voltage regulator.
- R975 (80.6K):** Resistor used for the adjustable voltage regulator.
- C1182 (100nF):** Capacitor used for the adjustable voltage regulator.
- R967 (100K):** Resistor used for the adjustable voltage regulator.
- R969 (150K):** Resistor used for the adjustable voltage regulator.
- R971 (13K):** Resistor used for the adjustable voltage regulator.
- R970 (100K):** Resistor used for the adjustable voltage regulator.
- R972 (10):** Resistor used for the adjustable voltage regulator.
- R973 (150K):** Resistor used for the adjustable voltage regulator.
- R974 (470K):** Resistor used for the adjustable voltage regulator.
- R975 (8**

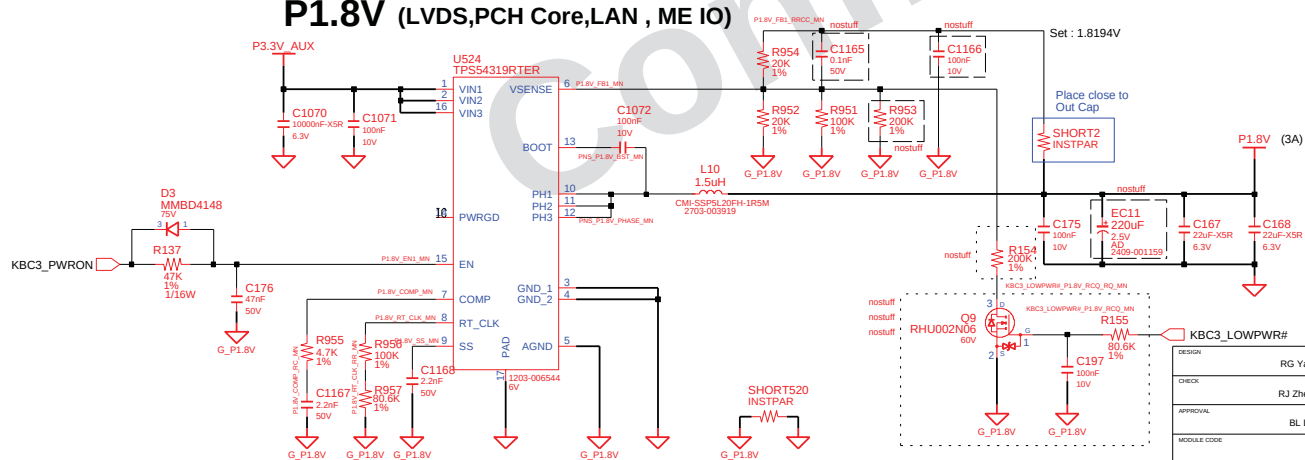
COM-22C-015(1996.6.5) REV. 3

A

CHIPSET POWER(VCCSA)



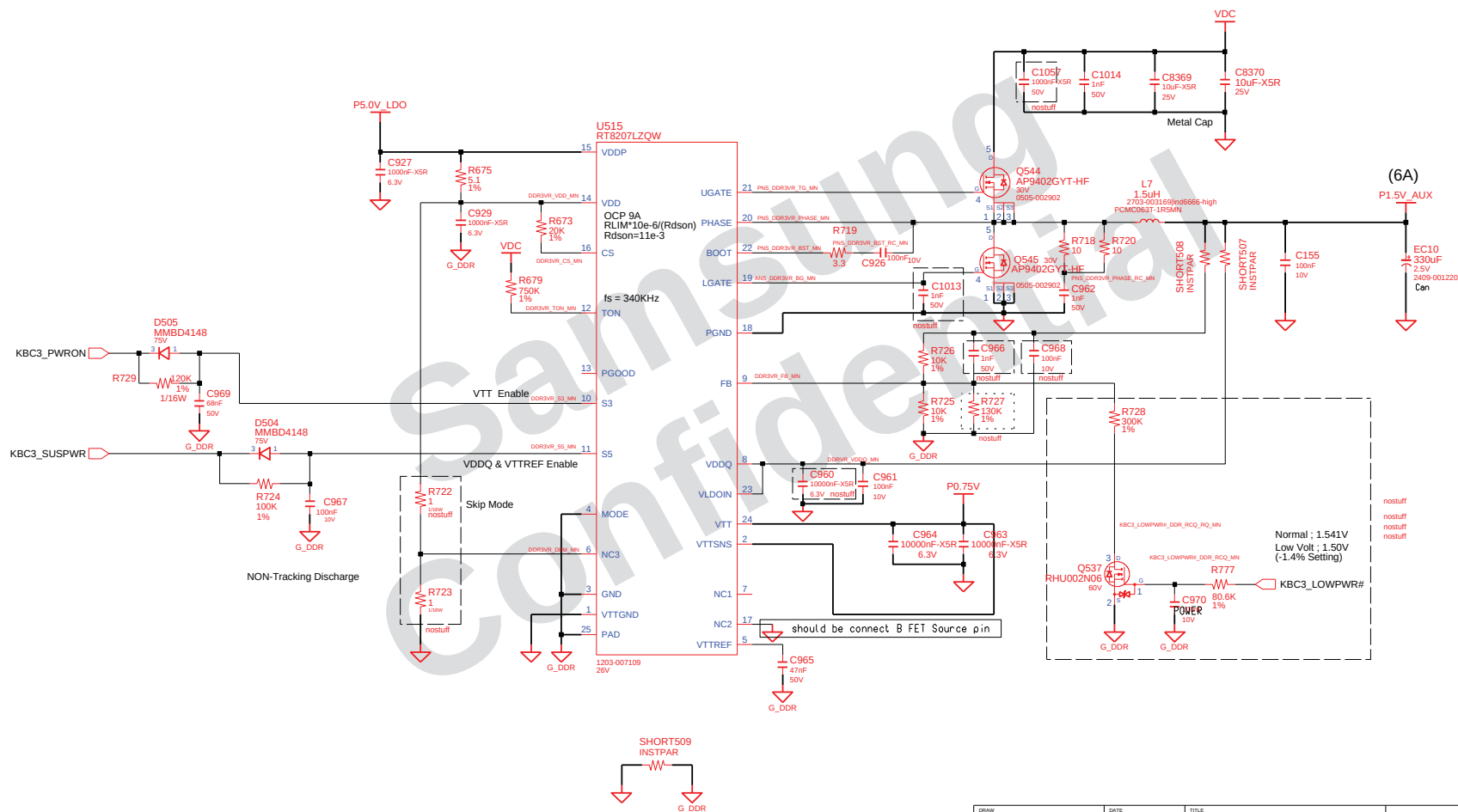
P1.8V (LVDS,PCH Core,LAN , ME IO)



DESIGN	RG Yang	DATE	09/29/2012	Ramos-14/15 VCCSA VCCSA		SAMSUNG ELECTRONICS	
CHECK	RJ Zheng	DEV. STEP	PR				
APPROVAL	BL Lee	REV	REV 1.0				
MODULE CODE		LAST EDIT		July 31, 2012 13:21:52 PM		PAGE	45 OF 53

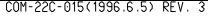
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

DDR3 Power



DRAW	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS
CHECK	RJ Zheng	DEV. STEP	PR		P1.05V	
APPROVAL	BL Lee	REV	REV 1.0		VT386FCX	
MODULE CODE	undefined	LAST EDIT	July 31, 2012 13:21:52 PM	PAGE	46 OF 53	

External Graphic Core Power

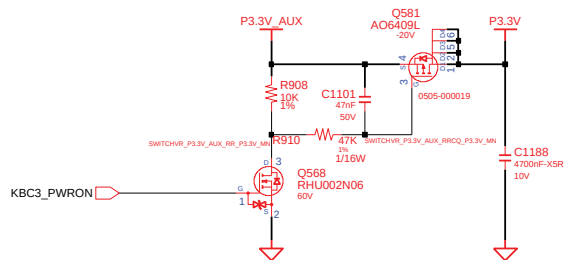


DESIGN	SH, YOU	DATE	1/27/2012	 McLaren_15_QUAD PWR_MV_SWITCHED SWITCHED POWER	SAMSUNG ELECTRONICS			
CHECK	SS, BAIK	DEV. STEP	PR					PART NO.
APPROVAL	HK, PARK	REV	REV 1.0					
MODULE CODE	LAST EDIT				January 25, 2012 14:45:25 PM	PAGE	56	OF

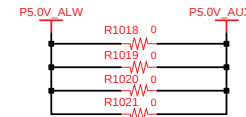
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

Switched Power

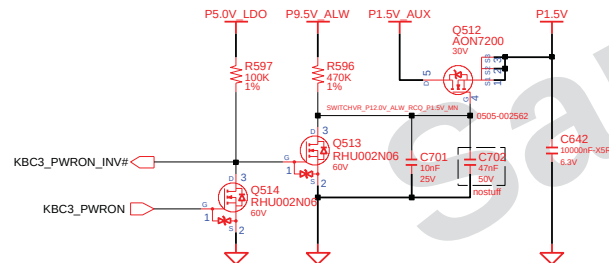
Switched Power On (P3.3V)



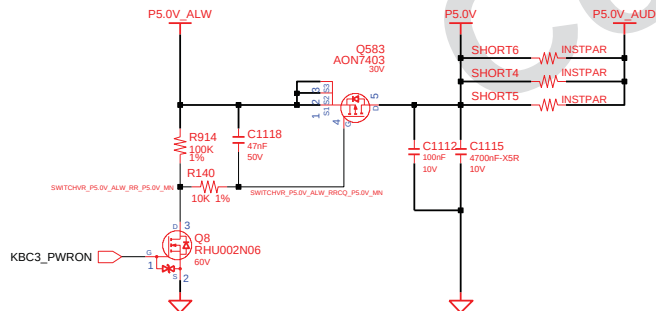
P5.0V_AUX



Switched Power On (P1.5V)



Switched Power On (P5.0V)

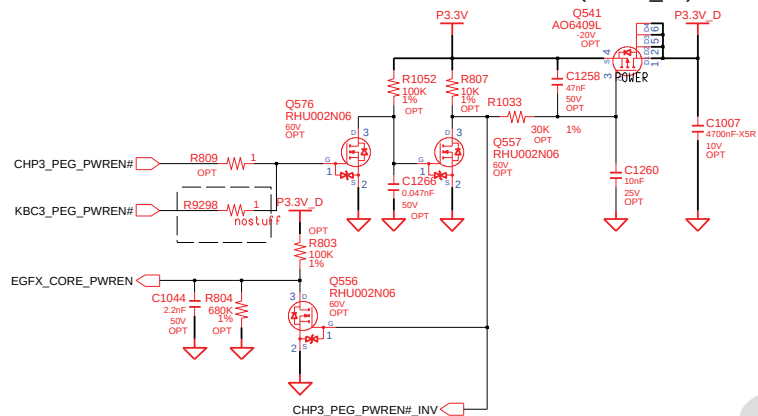


DRAW	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	RJ Zheng	DEV. STEP	PR		PWR_MV_SWITCHED	
APPROVAL	BL Lee	REV	REV 1.0		SWITCHED POWER	
MODULE CODE		LAST EDIT		July 31, 2012 13:21:52 PM	PAGE 49 OF 53	

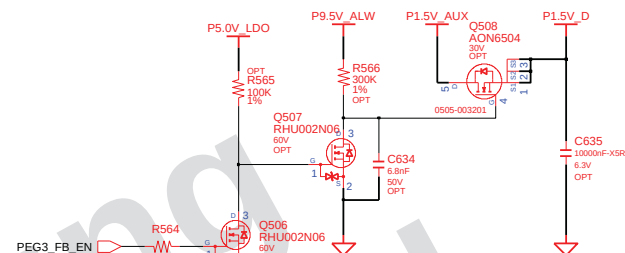
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

Switched Power 2

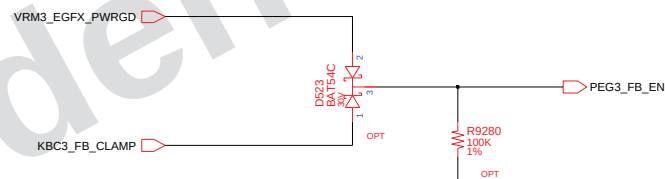
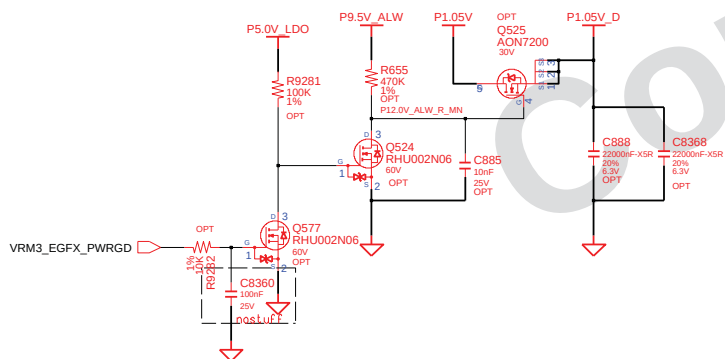
Discrete Switched Power (P3.3V_D)



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



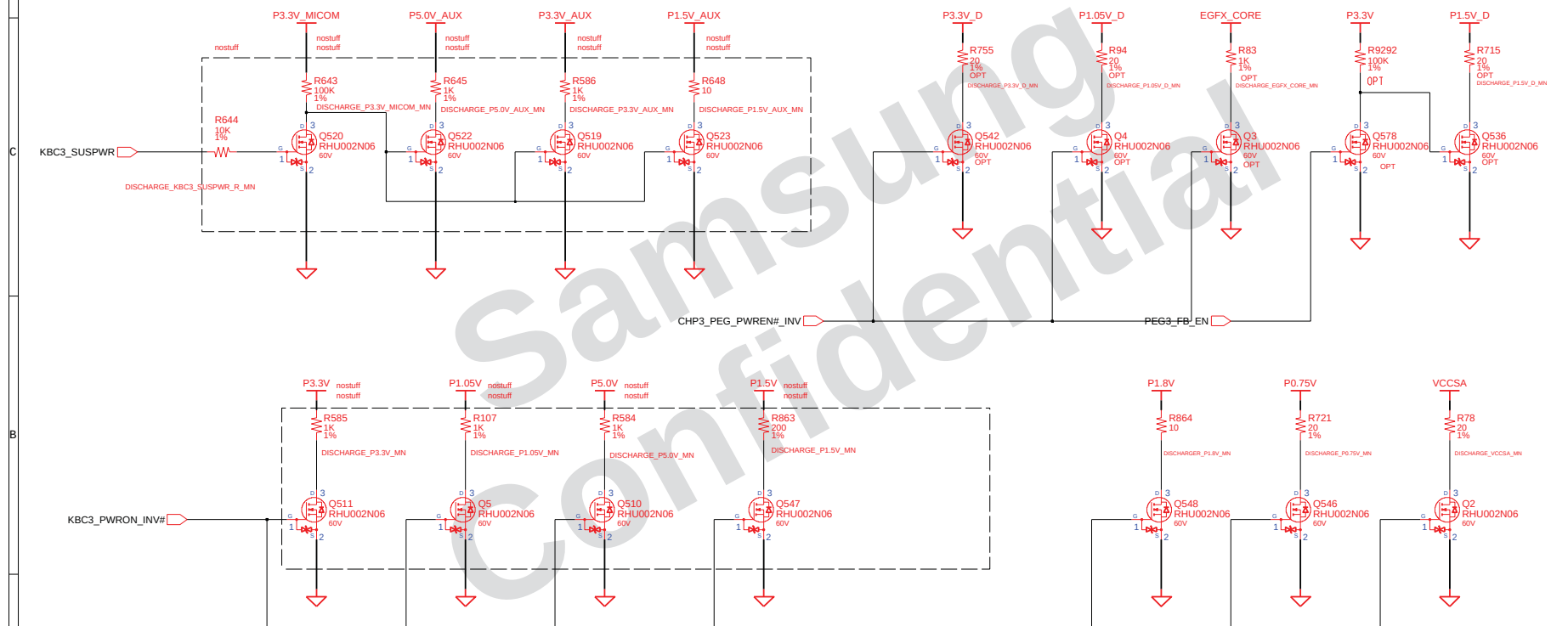
Discrete Switched Power (P1.05V_D)



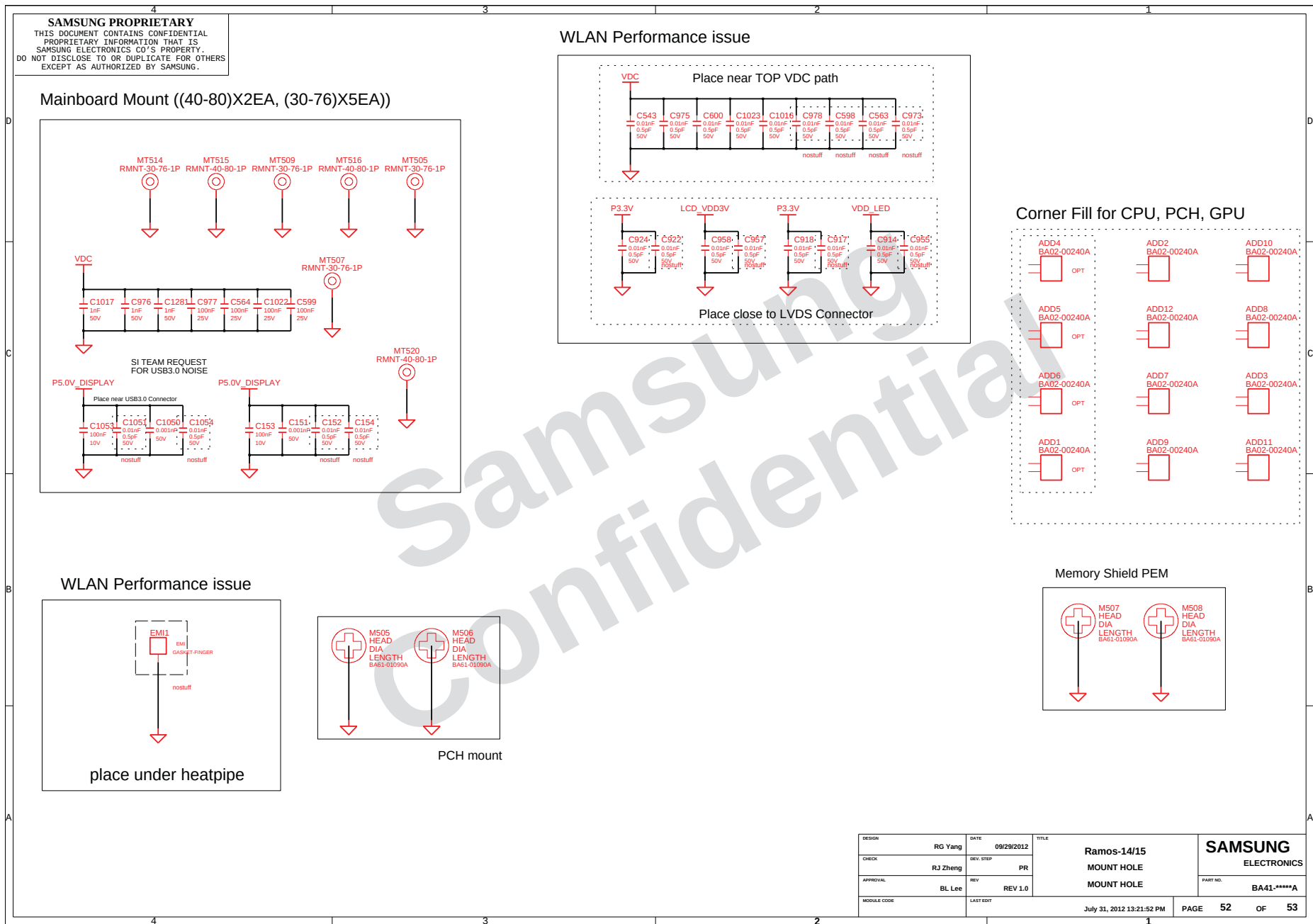
DRAW	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS PART NO. BA41-*****A
CHECK	RJ Zheng	DEV. STEP	PR		Switched PWR 2	
APPROVAL	BL Lee	REV	REV 1.0		Switched PWR 2	
MODULE CODE		LAST EDIT		July 31, 2012 13:21:52 PM	PAGE 50 OF 53	

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



TP SUB BOARD

