

# 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

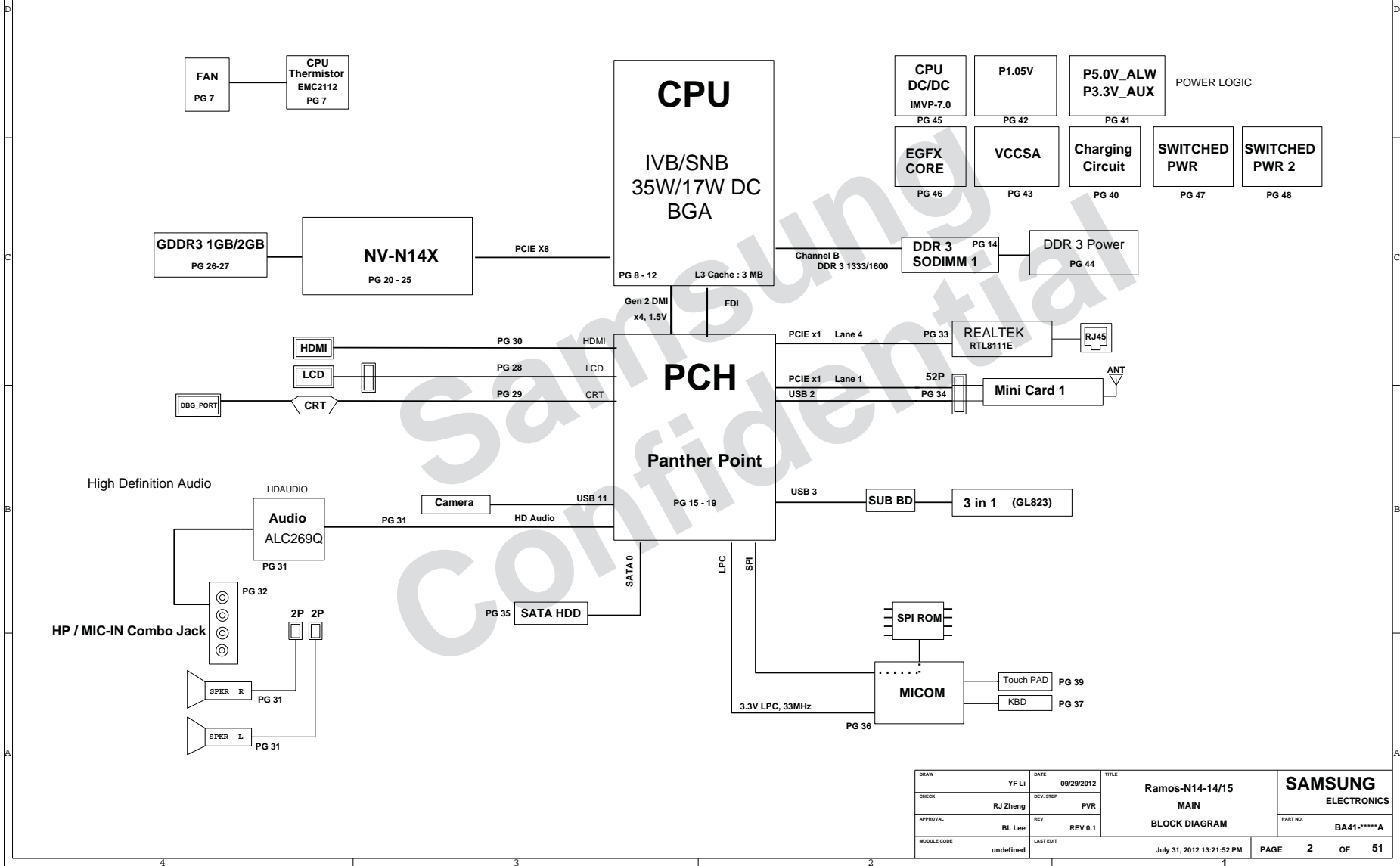
Owner : SEC Mobile R & D Signature : X

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sheet51 : SUB (TOUCHPAD)

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

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# 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	S4 - S5
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)	S3
VCC_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for GPU VCC for PANTHERPOINT	
		S0

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

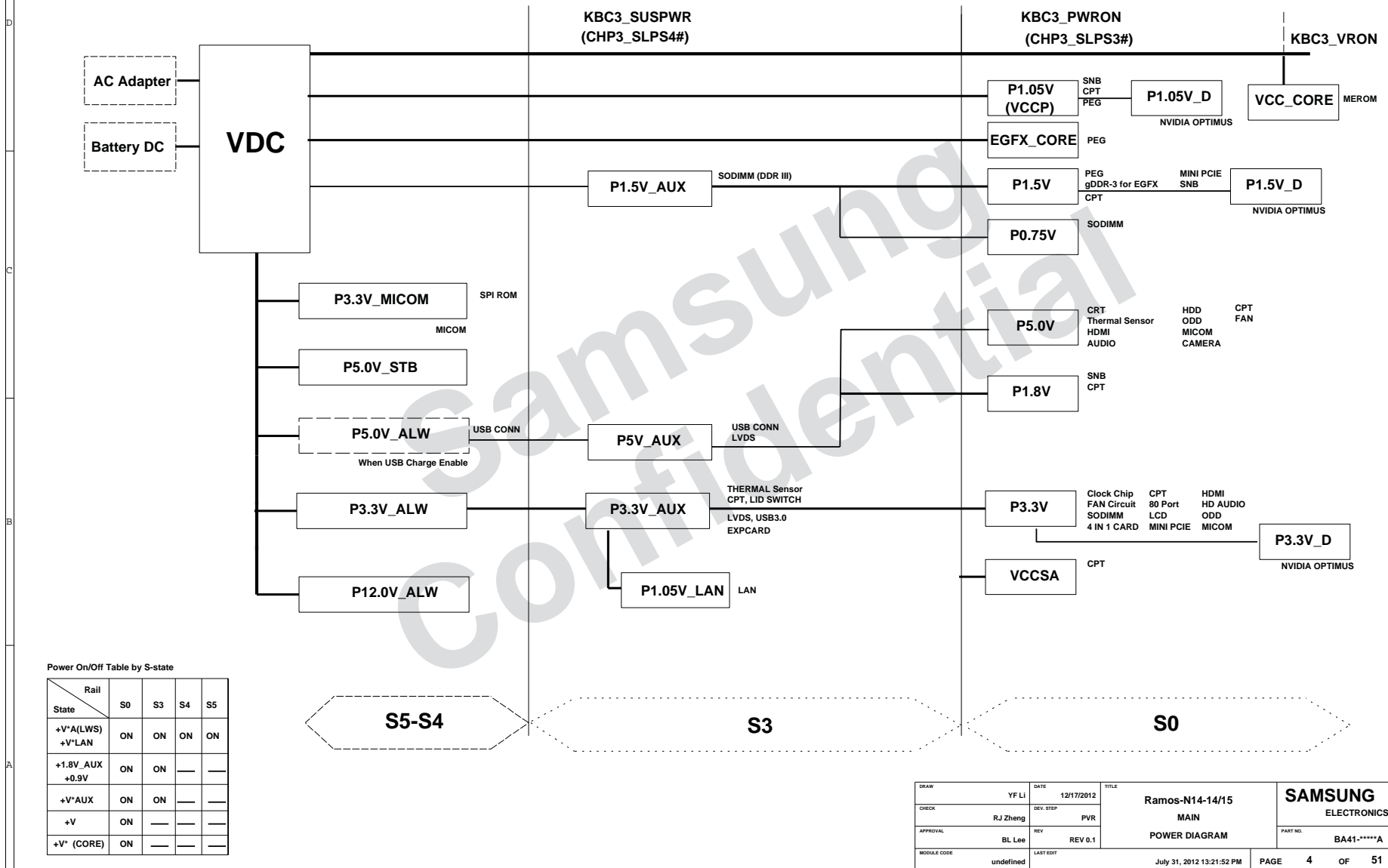
I <sup>2</sup> C / SMB Address			
Devices	Address	Hex	Bus
PANTHERPOINT	Master	-	SMBUS Master
CPU Thermal Sensor	0011 000x	30h	Thermal Sensor
SODIMM0	1010 000x	A0h	-
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
on board DDR3 thermal Sensor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

DRAW	YF Li	DATE	12/17/2012	TITLE	Ramos-N14-14/15	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-*****A
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APPROVAL	BL Lee	REV	REV 0.1		BOARD INFO	
MODULE CODE	undefined	LAST EDIT		July 31, 2012 13:21:52 PM		
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# POWER DIAGRAM

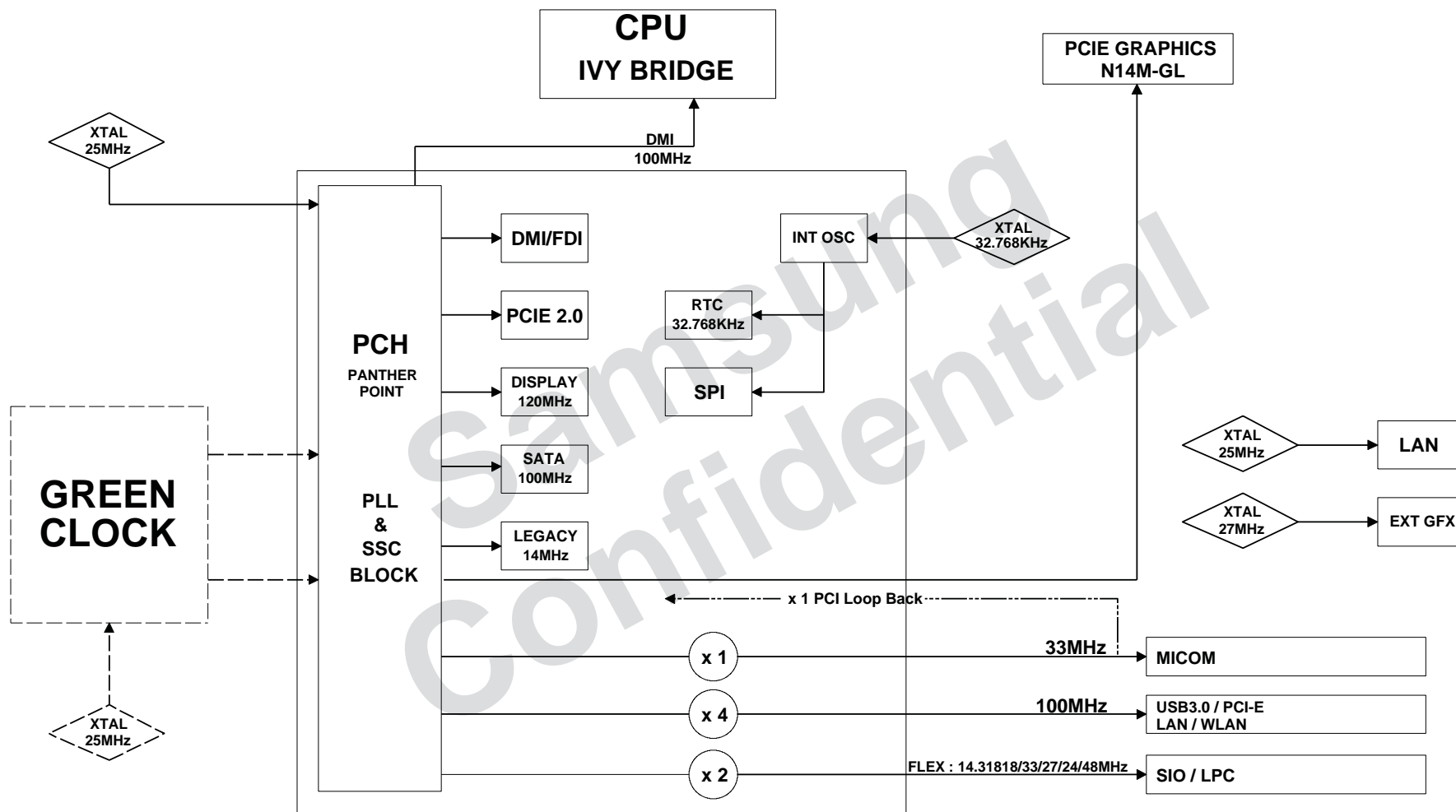
Rev 0.7



DRAW	YF Li	DATE	12/17/2012	TITLE	Ramos-N14-14/15	SAMSUNG
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APPROVAL	BL Lee	REV	REV 0.1			PART NO.
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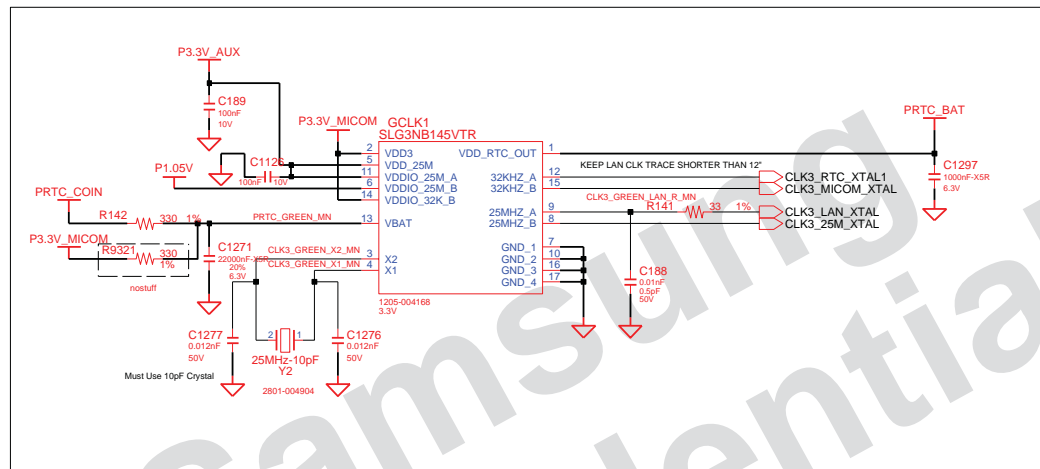
## CLOCK DISTRIBUTION Rev. 0.8



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APPROVAL	LEE, L	REV	REV 0.1			
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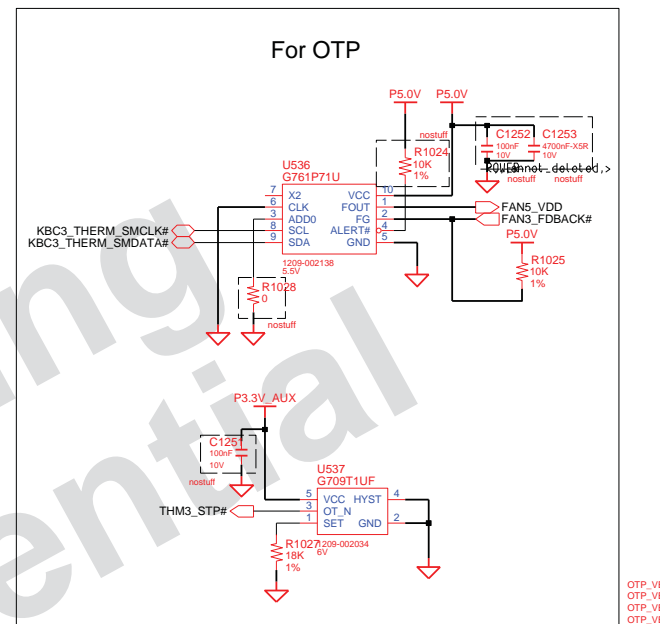
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## CLOCK DISTRIBUTOR



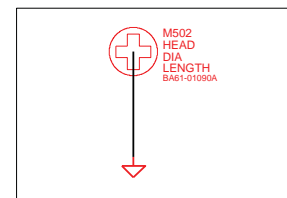
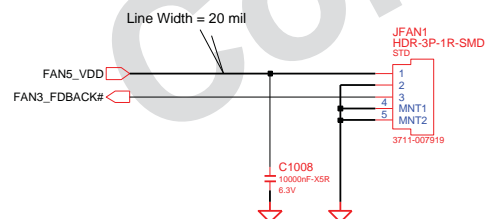
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CHECK	ZHENG, RJ	REV. STEP	PVR			PART NO. BA41-*****A
APPROVAL	LEE, BL	REV	REV 0.1			
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 12:17:51 PM	PAGE	6	OF 51

# THERMAL SENSOR & FAN CONTROL



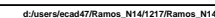
Temperature : 95.78c  
confirmed by thermal charger  
(2011.05.02)  
 $R \text{ (kohm)} = 0.0012T - 0.9308T + 96.147$

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



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

## IVYBRIDGE PROCESSOR (DMI,PEG, FDI)





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CPU1-2  
IVY BGA DC 2/5

AG6	SA_DQ_0	AU36
AJ6	SA_DQ_1	AV36
AP11	SA_DQ_2	AT26
AL6	SA_DQ_3	
AJ10	SA_DQ_4	
AJ8	SA_DQ_5	
AL6	SA_DQ_6	
AL7	SA_DQ_7	
ART11	SA_DQ_8	AT40
AP6	SA_DQ_9	AD40
AU6	SA_DQ_10	BB26
AV9	SA_DQ_11	
AR6	SA_DQ_12	
AP8	SA_DQ_13	
AT13	SA_DQ_14	
AT13	SA_DQ_15	
BC7	SA_DQ_16	
B87	SA_DQ_17	BB40
BA13	SA_DQ_18	BC41
BB11	SA_DQ_19	
BA7	SA_DQ_20	
BA9	SA_DQ_21	
B69	SA_DQ_22	
AY13	SA_DQ_23	
AV14	SA_DQ_24	AY40
AR14	SA_DQ_25	BA41
AY17	SA_DQ_26	
AR19	SA_DQ_27	
BA14	SA_DQ_28	
AUT6	SA_DQ_29	
BB14	SA_DQ_30	
BB17	SA_DQ_31	AL11
BA45	SA_DQ_32	AR8
AR43	SA_DQ_33	AV11
AW48	SA_DQ_34	AT17
BC48	SA_DQ_35	AV45
BC45	SA_DQ_36	AY51
AR45	SA_DQ_37	AT55
AT48	SA_DQ_38	AK55
AY48	SA_DQ_39	
BA49	SA_DQ_40	
AY49	SA_DQ_41	
BB51	SA_DQ_42	
AY53	SA_DQ_43	
BB49	SA_DQ_44	
AU49	SA_DQ_45	AJ11
BA53	SA_DQ_46	AR10
BB55	SA_DQ_47	AY11
BA55	SA_DQ_48	AD17
AV56	SA_DQ_49	AW45
AP50	SA_DQ_50	AV51
AP53	SA_DQ_51	AT56
AY54	SA_DQ_52	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	BG35
AN52	SA_DQ_61	BB34
AG55	SA_DQ_62	BE35
AK56	SA_DQ_63	BD36
		AT34
		AU34
		BB32
		AT32
		AY32
		AV32
		BE37
		BA30
		BC30
		AV41
		AY28
		AU26

0340027100

MEM1\_BDQ(63:0) 19-D4

0	AL4	SB_DQ_0
1	AL1	SB_DQ_1
2	AN3	SB_DQ_2
3	AR4	SB_DQ_3
4	AK4	SB_DQ_4
5	AK3	SB_DQ_5
6	AN4	SB_DQ_6
7	AR1	SB_DQ_7
8	AL4	SB_DQ_8
9	AT2	SB_DQ_9
10	AV4	SB_DQ_10
11	BA4	SB_DQ_11
12	AU3	SB_DQ_12
13	AR3	SB_DQ_13
14	AY2	SB_DQ_14
15	BA3	SB_DQ_15
16	BE9	SB_DQ_16
17	BD9	SB_DQ_17
18	BD13	SB_DQ_18
19	BE12	SB_DQ_19
20	BF8	SB_DQ_20
21	BD10	SB_DQ_21
22	BD14	SB_DQ_22
23	BE13	SB_DQ_23
24	BF16	SB_DQ_24
25	BE17	SB_DQ_25
26	BE18	SB_DQ_26
27	BE21	SB_DQ_27
28	BE14	SB_DQ_28
29	BE14	SB_DQ_29
30	BG18	SB_DQ_30
31	BF19	SB_DQ_31
32	BD50	SB_DQ_32
33	BF48	SB_DQ_33
34	BD53	SB_DQ_34
35	BF52	SB_DQ_35
36	BD49	SB_DQ_36
37	BE49	SB_DQ_37
38	BD54	SB_DQ_38
39	BE53	SB_DQ_39
40	BF56	SB_DQ_40
41	BE57	SB_DQ_41
42	BC59	SB_DQ_42
43	AY60	SB_DQ_43
44	BE54	SB_DQ_44
45	BC54	SB_DQ_45
46	BA58	SB_DQ_46
47	AW59	SB_DQ_47
48	AU58	SB_DQ_48
49	AU58	SB_DQ_49
50	AN61	SB_DQ_50
51	AN59	SB_DQ_51
52	AU59	SB_DQ_52
53	AL61	SB_DQ_53
54	AN58	SB_DQ_54
55	AK58	SB_DQ_55
56	AK58	SB_DQ_56
57	AL58	SB_DQ_57
58	AG58	SB_DQ_58
59	AG59	SB_DQ_59
60	AM60	SB_DQ_60
61	AL59	SB_DQ_61
62	AF61	SB_DQ_62
63	AN60	SB_DQ_63

DDR SYSTEM MEMORY B

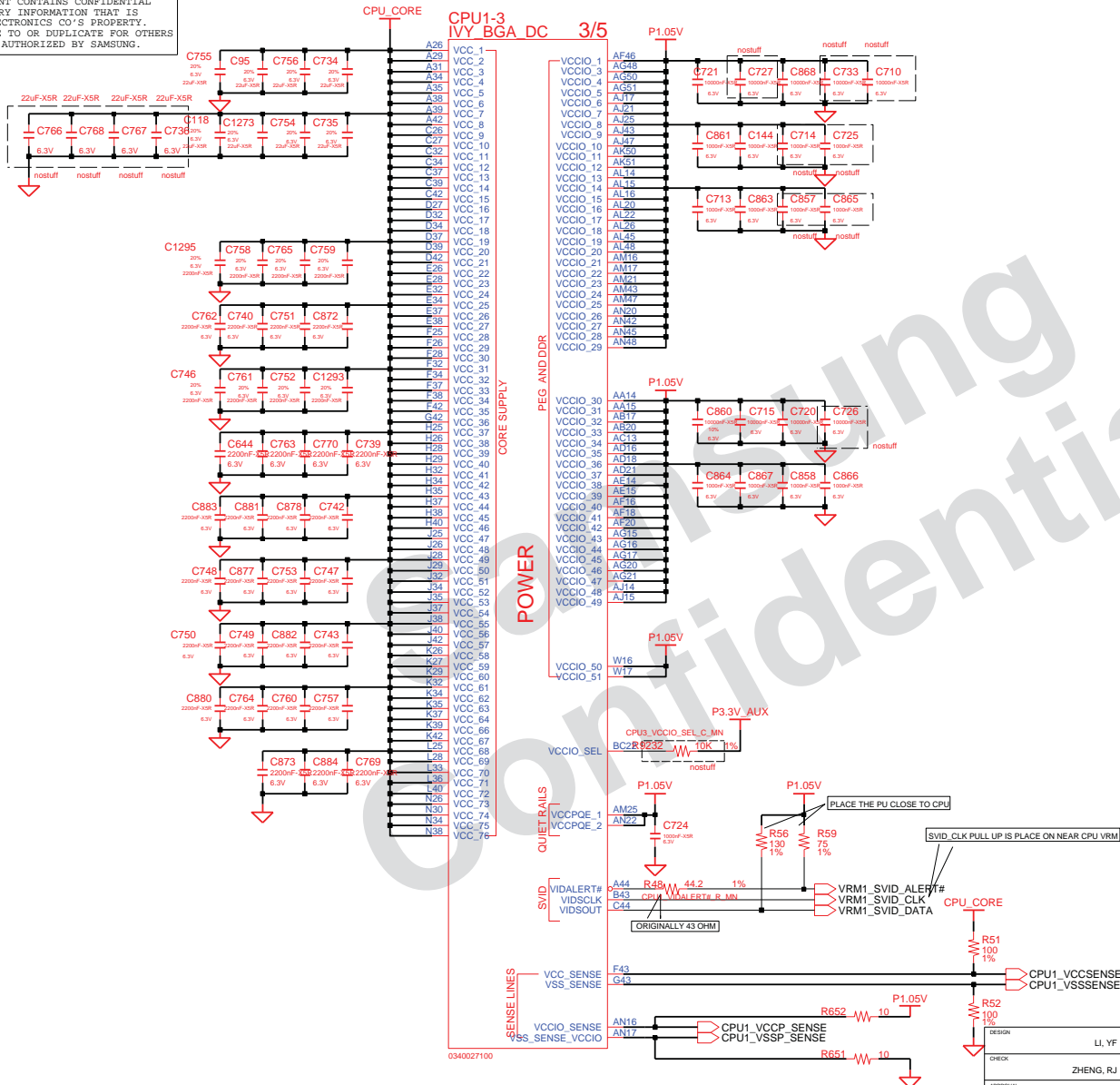
SB_CLK_0	BA34	CLK1_B_MCLK0
SB_CLK_1	AY34	CLK1_B_MCLK0#
SB_CKE_0	AR22	MEM1_B_CKE0
SB_CLK_1	BA36	CLK1_B_MCLK1
SB_CLK_1	BB36	CLK1_B_MCLK1#
SB_CKE_1	BF27	MEM1_B_CKE1
SB_CS#_0	BE41	MEM1_B_CS0#
SB_CS#_1	BE47	MEM1_B_CS1#
SB_ODT_0	AT43	MEM1_B_ODT0
SB_ODT_1	BC47	MEM1_B_ODT1
SB_DQS#_0	AL3	MEM1_BDQS(7:0)
SB_DQS#_1	AV3	
SB_DQS#_2	BC11	
SB_DQS#_3	BD17	
SB_DQS#_4	BC51	
SB_DQS#_5	BA59	
SB_DQS#_6	AT60	
SB_DQS#_7	AK59	
SB_DQS_0	AM2	MEM1_BDQS(7:0)
SB_DQS_1	AV1	
SB_DQS_2	BE11	
SB_DQS_3	BD18	
SB_DQS_4	BE51	
SB_DQS_5	BA61	
SB_DQS_6	AR59	
SB_DQS_7	AK61	
SB_MA_0	BF32	MEM1_BMA(15:0)
SB_MA_1	BE33	
SB_MA_2	BD33	
SB_MA_3	AU30	
SB_MA_4	BD30	
SB_MA_5	AV30	
SB_MA_6	BC30	
SB_MA_7	BD29	
SB_MA_8	BE30	
SB_MA_9	BE28	
SB_MA_10	BD43	
SB_MA_11	AT28	
SB_MA_12	AV28	
SB_MA_13	BD46	
SB_MA_14	AT26	
SB_MA_15	AU22	

MEM1\_BBS(2:0) 19-C4

MEM1\_BCAS# 19-B4  
MEM1\_BRAS# 19-B4  
MEM1\_BWE# 19-B4

DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	<b>SAMSUNG</b> 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	

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DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15
CHECK	ZHENG, RJ	DEV. STEP	PVR	CPU	
APPROVAL	LEE, BL	REV	REV 0.1	BGA CPU (3/5)	
MODULE CODE	undefined	LAST EDIT			

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PART NO. BA41-*****A

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**CPU1-4 IVY BGA DC 4/5**

**VCCSA**  
HuronRiver - P0.9V Fix  
ChiefRiver - Variable

**POWER**

**IGFX\_CORE**

**SM\_VREF**

**PULL DOWN RESISTORS ARE LOCATED ON POWER VCCSA.FOR CRV POWER**

**FOR TEST**

**DESIGN** LI, YF DATE 09/29/2012 TITLE Ramos-14/15 CPU

**CHECK** ZHENG, RJ DEV. STEP PVR

**APPROVAL** LEE, BL REV REV 0.1

**MODULE CODE** undefined LAST EDIT

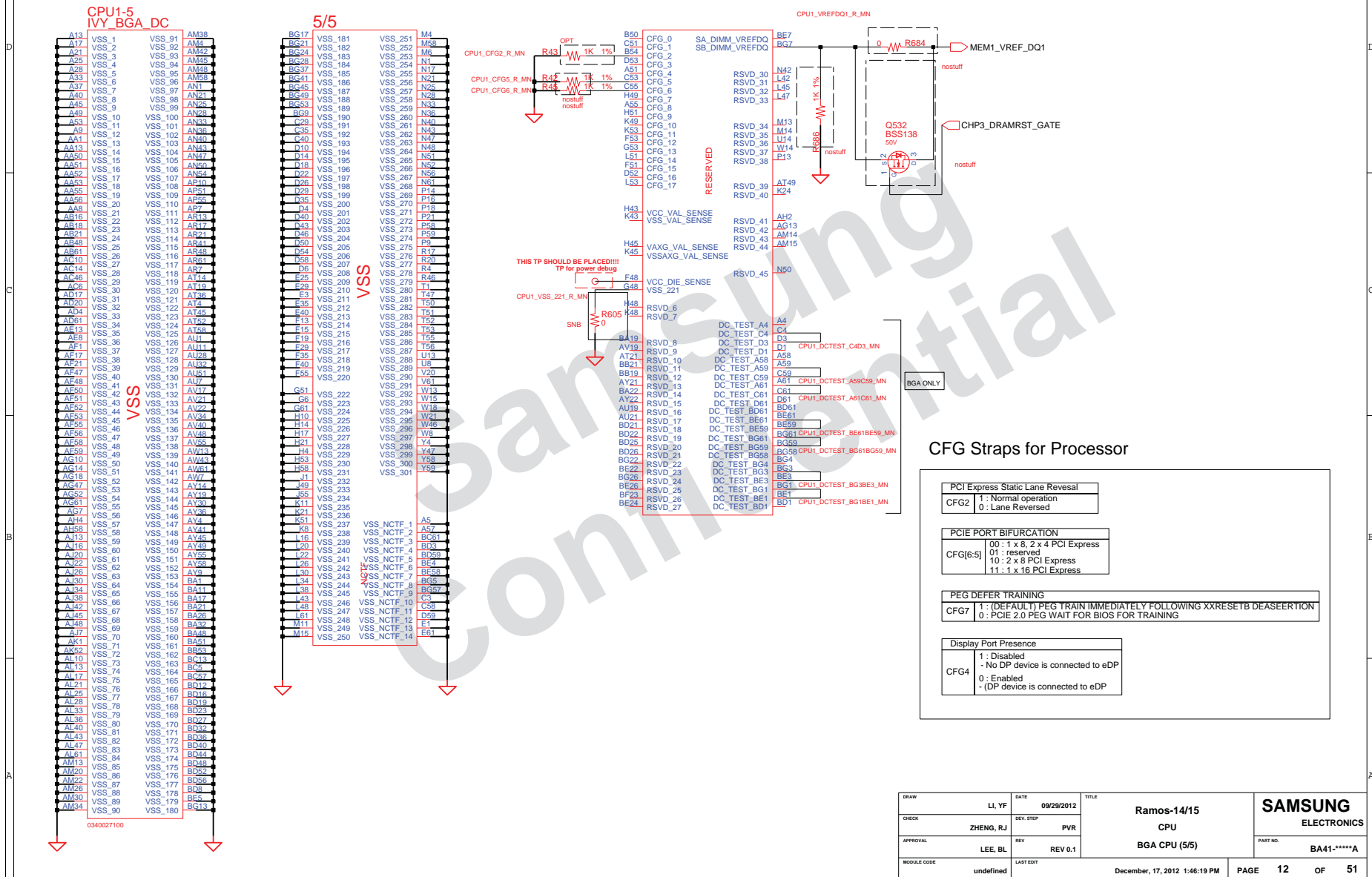
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**PART NO. BA41-\*\*\*\*\*A**

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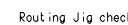
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DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG
CHECK	ZHENG, RJ	DEV. STEP	PVR	MEMORY #0 2 RANK(4/4)		ELECTRONICS
APPROVAL	LEE, L	REV	REV 0.1	DDR3 2Gb	PART NO.	BA41-*****A
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:47:16 PM	PAGE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

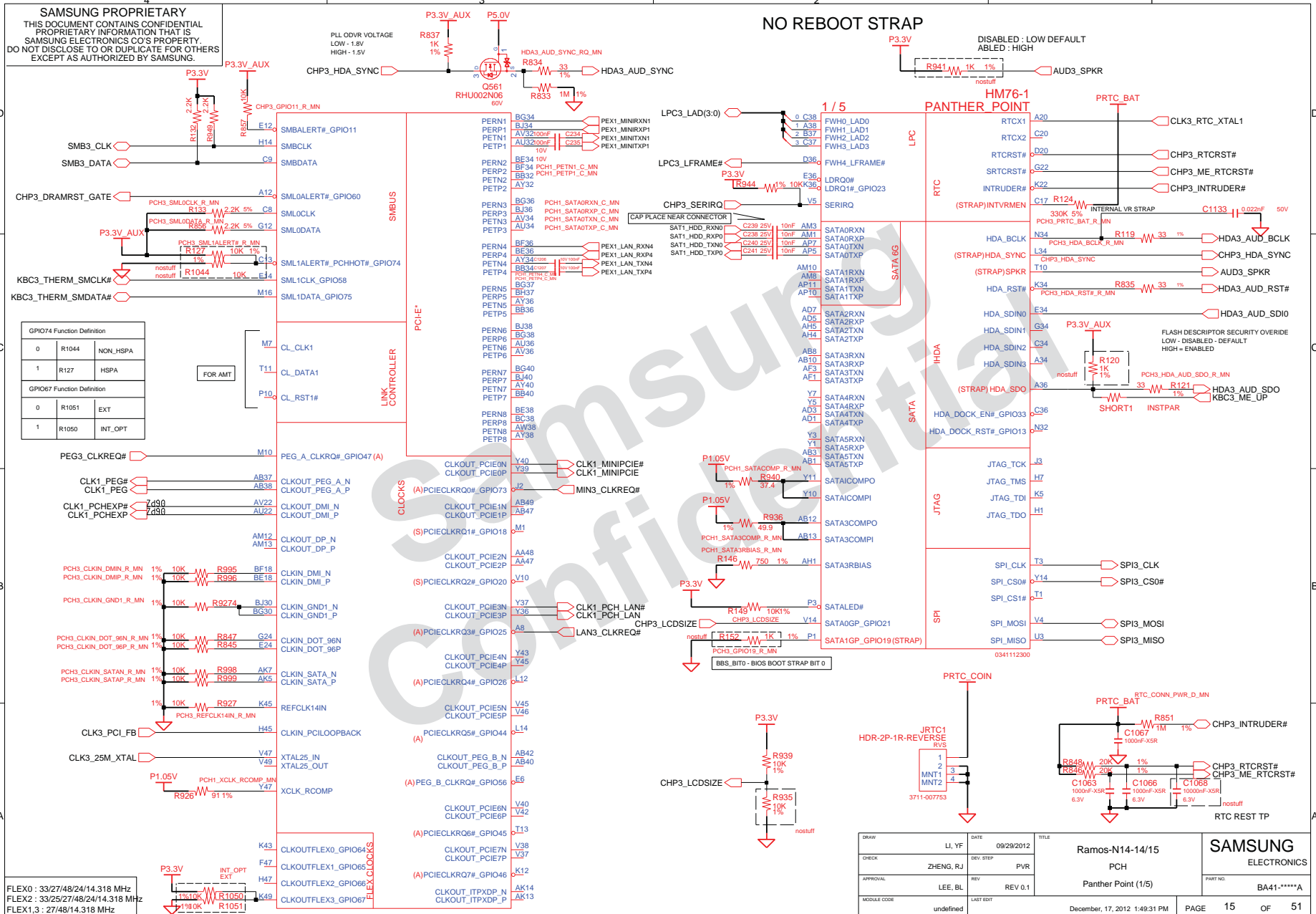
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P/N : 3709-001622 (CONCRAFT)



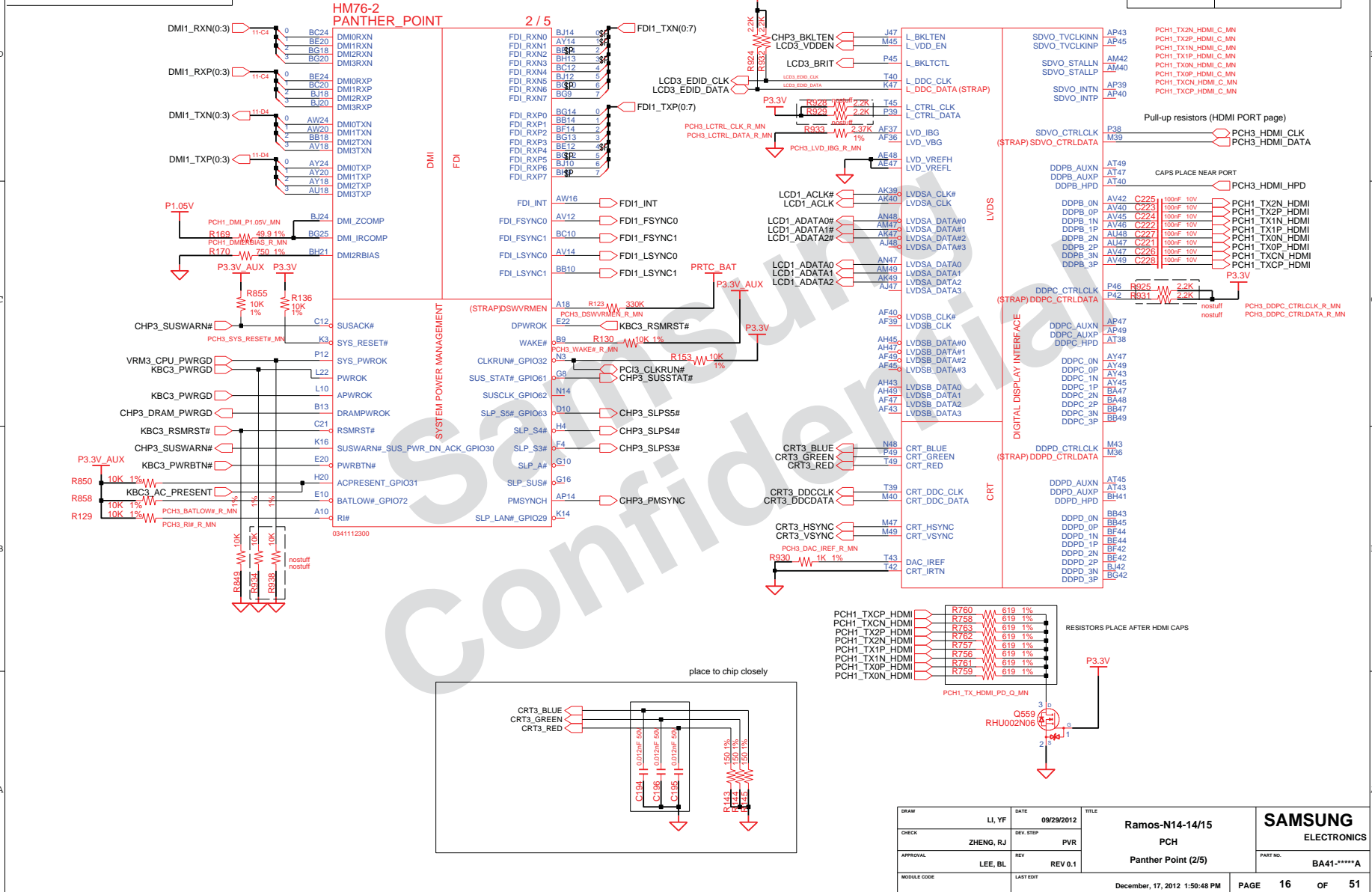
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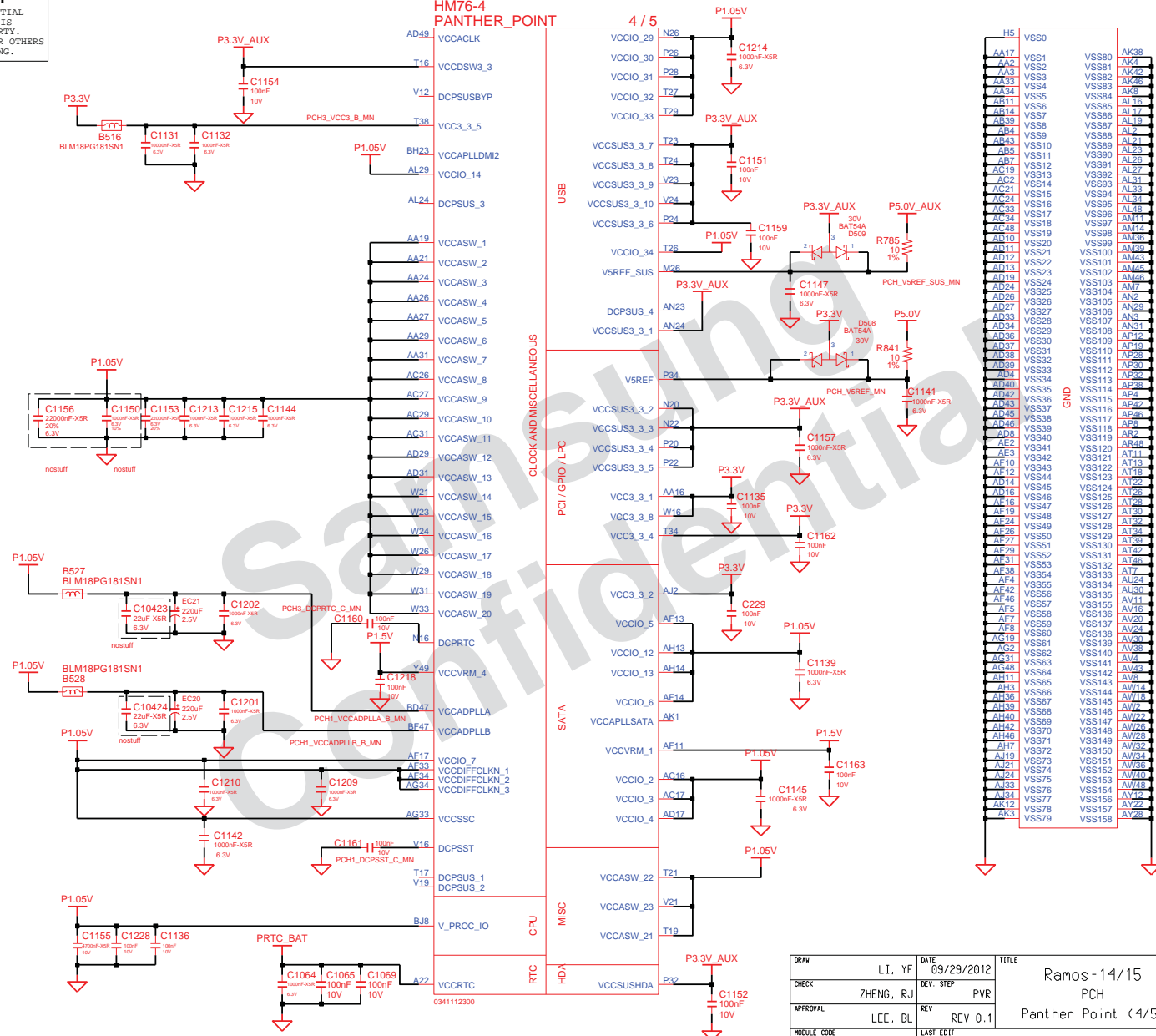




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# HM76-4 PANTHER POINT

4 / 5



DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-*****A
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	

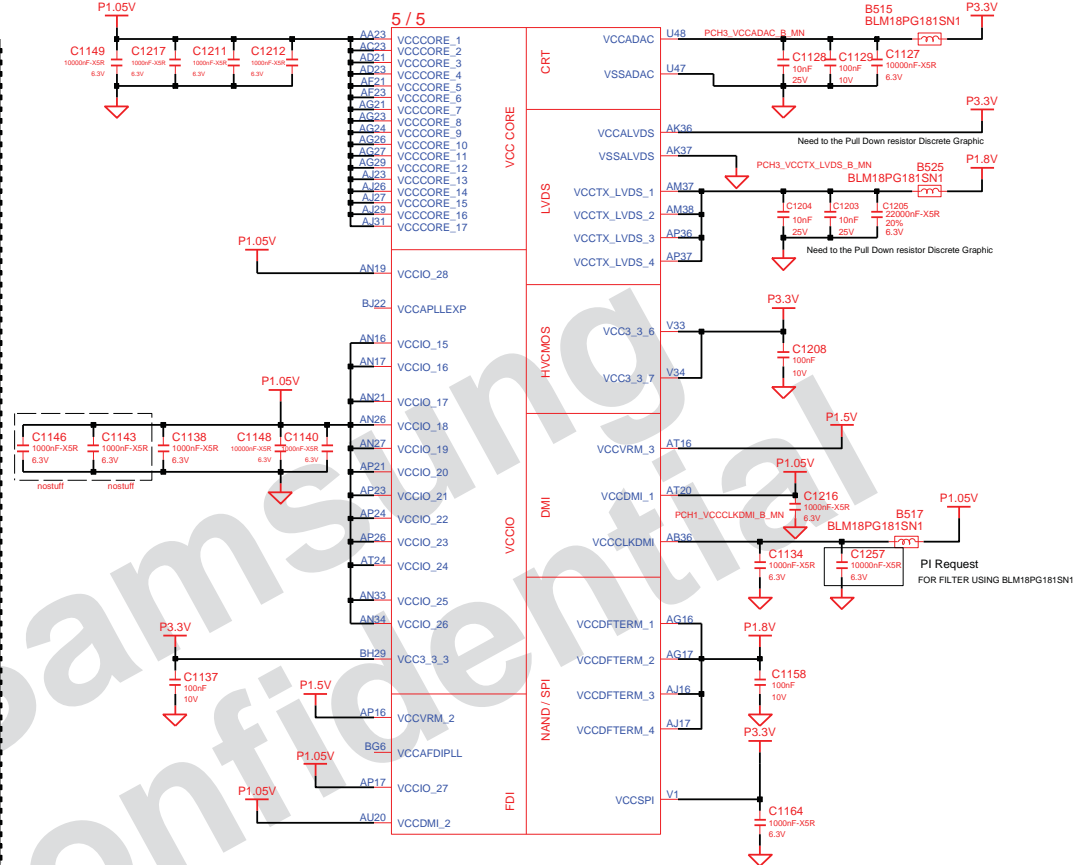
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**HM76-5  
PANTHER POINT**

This power share with thermal sensor

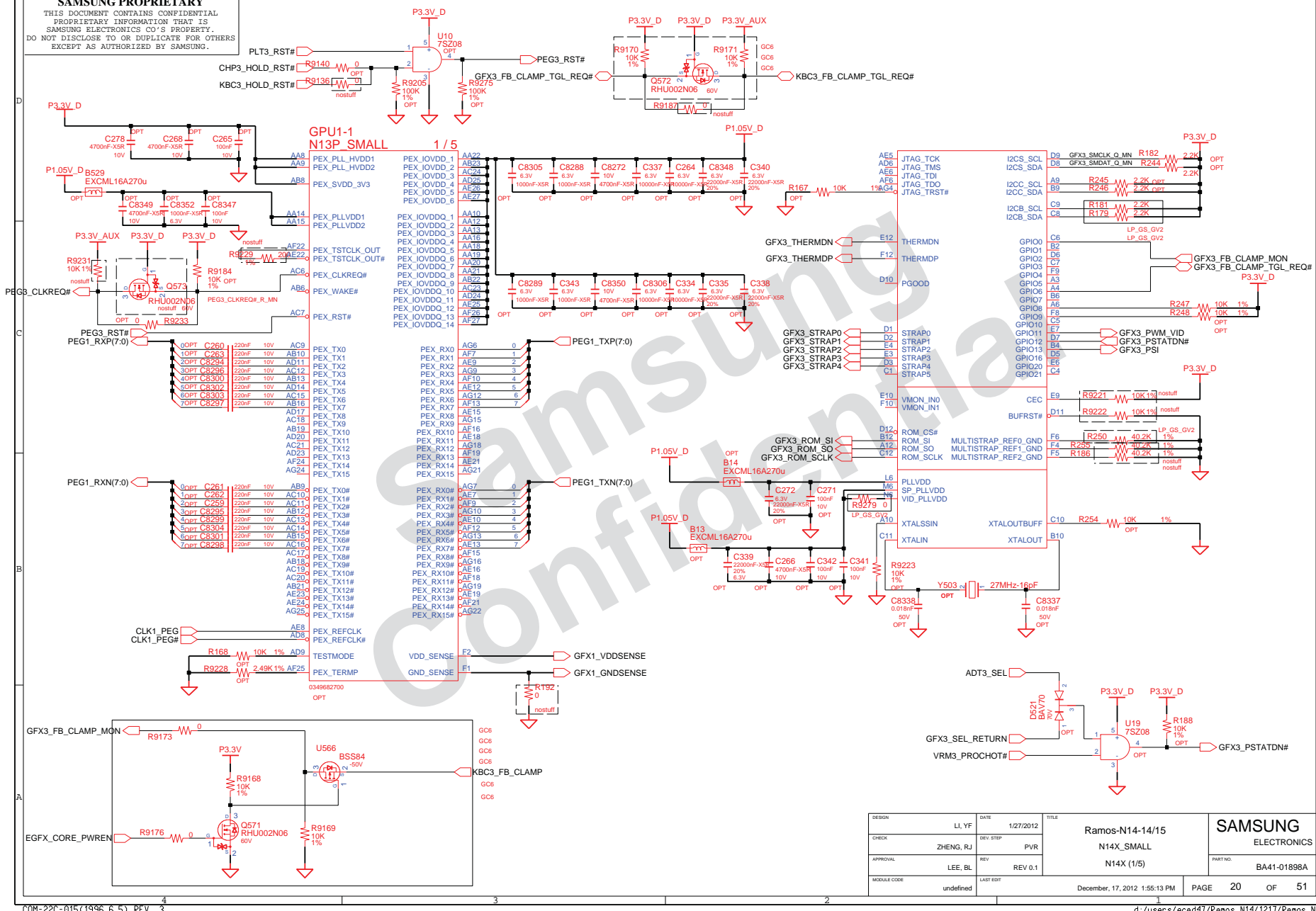
AV4	VSS159	VSS259	K18
AV42	VSS160	VSS260	K26
AV46	VSS161	VSS261	K26
AV48	VSS162	VSS262	K39
B11	VSS163	VSS263	K7
B15	VSS163	VSS263	K7
B19	VSS164	VSS264	L18
B23	VSS165	VSS265	L2
B27	VSS166	VSS266	L20
B31	VSS167	VSS267	L26
B35	VSS168	VSS268	L36
B39	VSS169	VSS269	L36
B43	VSS170	VSS270	L48
B47	VSS171	VSS271	M12
F45	VSS172	VSS272	M12
BB16	VSS173	VSS273	P16
BB18	VSS174	VSS274	M22
BB20	VSS175	VSS275	M24
BB22	VSS176	VSS276	M32
BB24	VSS177	VSS277	M32
BB26	VSS178	VSS278	M34
BB28	VSS179	VSS279	M32
BB30	VSS180	VSS280	M38
BB32	VSS181	VSS281	M4
BB34	VSS182	VSS282	M42
BB36	VSS183	VSS283	M46
BB38	VSS184	VSS284	M6
BB40	VSS185	VSS285	P30
BB42	VSS186	VSS286	N47
BB44	VSS187	VSS287	P11
BB46	VSS188	VSS288	P15
BB48	VSS189	VSS289	T33
BB50	VSS190	VSS290	P40
BB52	VSS191	VSS291	P43
BB54	VSS192	VSS292	P43
BB56	VSS193	VSS293	P7
BB58	VSS194	VSS294	R2
BB60	VSS195	VSS295	R4
BB62	VSS196	VSS296	T12
BB64	VSS197	VSS297	T31
BB66	VSS198	VSS298	T37
BB68	VSS199	VSS299	T4
BB70	VSS200	VSS300	W34
BB72	VSS201	VSS301	T46
BB74	VSS202	VSS302	T46
BB76	VSS203	VSS303	T47
BB78	VSS204	VSS304	V11
BB80	VSS205	VSS305	V17
BB82	VSS206	VSS306	V26
BB84	VSS207	VSS307	V27
BB86	VSS208	VSS308	V29
BB88	VSS209	VSS309	V36
BB90	VSS210	VSS310	V31
BB92	VSS211	VSS311	V39
BB94	VSS212	VSS312	V43
BB96	VSS213	VSS313	W17
BB98	VSS214	VSS314	W19
BB100	VSS215	VSS315	W17
BB102	VSS216	VSS316	W17
BB104	VSS217	VSS317	W27
BB106	VSS218	VSS318	W46
BB108	VSS219	VSS319	Y12
BB110	VSS220	VSS320	Y38
BB112	VSS221	VSS321	Y4
BB114	VSS222	VSS322	Y42
BB116	VSS223	VSS323	Y46
BB118	VSS224	VSS324	Y6
BB120	VSS225	VSS325	BQ29
BB122	VSS226	VSS326	N24
BB124	VSS227	VSS327	AJ3
BB126	VSS228	VSS328	AD47
BB128	VSS229	VSS329	B47
BB130	VSS230	VSS330	BE10
BB132	VSS231	VSS331	BE10
BB134	VSS232	VSS332	BE10
BB136	VSS233	VSS333	G14
BB138	VSS234	VSS334	H16
BB140	VSS235	VSS335	T36
BB142	VSS236	VSS336	BQ22
BB144	VSS237	VSS337	BQ24
BB146	VSS238	VSS338	C22
BB148	VSS239	VSS339	AP13
BB150	VSS240	VSS340	M14
BB152	VSS241	VSS341	AF3
BB154	VSS242	VSS342	AP1
BB156	VSS243	VSS343	BE16
BB158	VSS244	VSS344	BC16
BB160	VSS245	VSS345	BC28
BB162	VSS246	VSS346	BJ28
BB164	VSS247	VSS347	
BB166	VSS248	VSS348	
BB168	VSS249	VSS349	
BB170	VSS250	VSS350	
BB172	VSS251	VSS351	
BB174	VSS252	VSS352	
BB176	VSS253		
BB178	VSS254		
BB180	VSS255		
BB182	VSS256		
BB184	VSS257		
BB186	VSS258		

0341112300



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

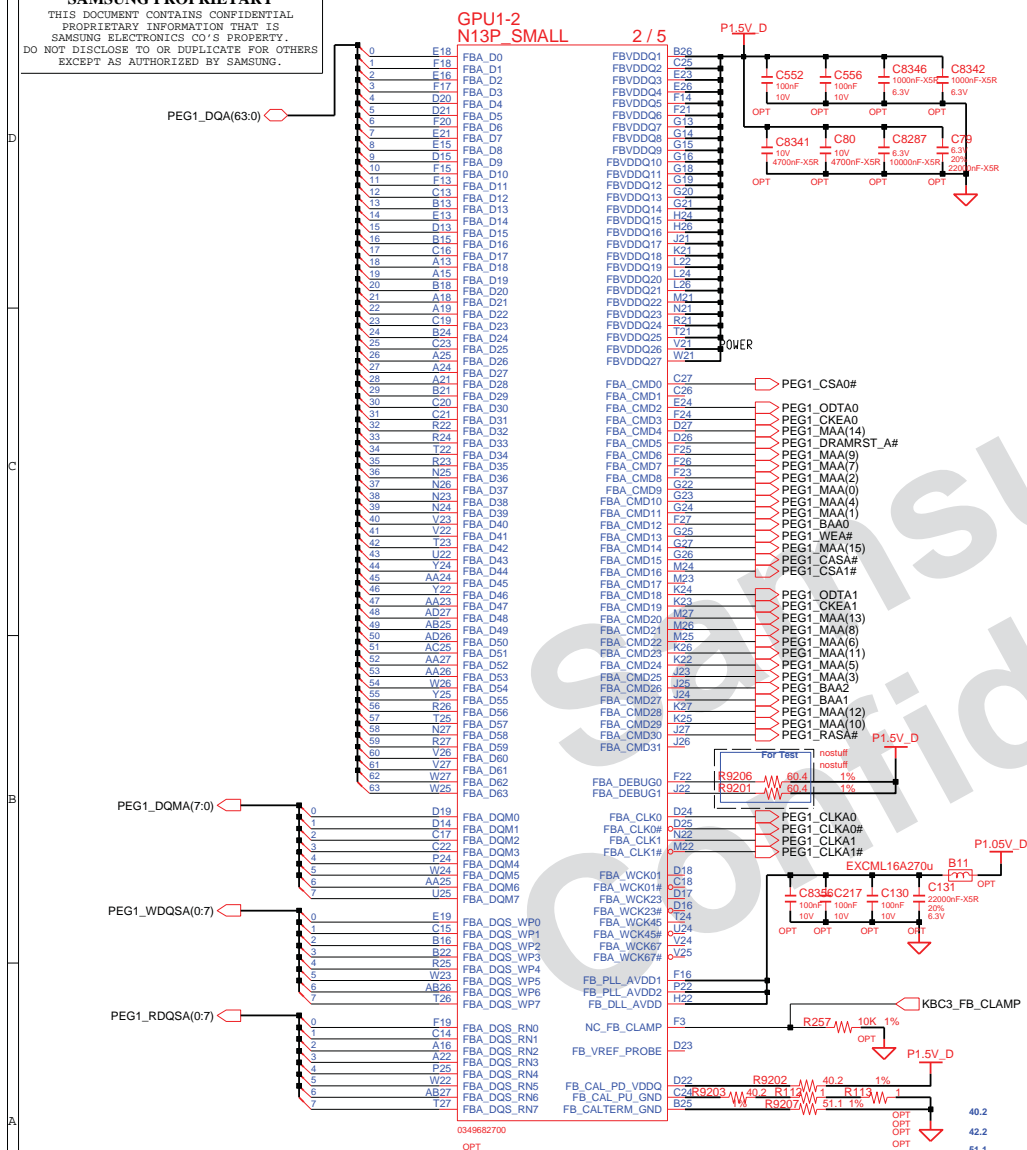
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DESIGN	LI, YF	DATE	1/27/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS
CHECK	ZHENG, RJ	DEV. STEP	PVR		N14X_SMALL	
APPROVAL	LEE, BL	REV	REV 0.1		N14X (1/5)	
MODULE CODE	undefined	LAST EDIT				
December, 17, 2012 1:55:13 PM						PAGE 20 OF 51

d:/users/ecad47/Ramos.N14/1217/Ramos.N14

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DESIGN	LI, YF	DATE	1/27/2012	Ramos-N14-14/15 N14X_SMALL N14X (2/5)	SAMSUNG ELECTRONICS		
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MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:56:51 PM		PAGE	21	OF

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IPFPG_CTL			
B	IPFPG_RSET	IPFPG_AUX# IPFPG_AUX	N5 N4
M7 N7	IPFPG_PLLVDD1 IPFPG_PLLVDD2	IPFPG_L3# IPFPG_L3	N3 N2
P6	IPFPG_IOVDD	IPFPG_L2# IPFPG_L2	R3 R2
		IPFPG_L1# IPFPG_L1	R1 T1
		IPFPG_L0# IPFPG_L0	T3 T2
		GPIO15	C3
U6	IPFPG_RSET	IPFPG_AUX# IPFPG_AUX	P4 P3
T7 R7	IPFPG_PLLVDD1 IPFPG_PLLVDD2	IPFPG_L3# IPFPG_L3	R5 R4
R6	IPFPG_IOVDD	IPFPG_L2# IPFPG_L2	T5 T4
		IPFPG_L1# IPFPG_L1	U4 U3
		IPFPG_L0# IPFPG_L0	V4 V3
		GPIO17	D4
K7 J7	IPFPG_PLLVDD1 IPFPG_PLLVDD2	IPFPG_AUX# IPFPG_AUX	J3 J2
K6	IPFPG_RSET	IPFPG_L3# IPFPG_L3	J1 K1
		IPFPG_L2# IPFPG_L2	K3 K2
		IPFPG_L1# IPFPG_L1	M3 M2
		IPFPG_L0# IPFPG_L0	M1 N1
		GPIO18	C2
H6	IPFPG_IOVDD	IPFPG_AUX# IPFPG_AUX	H4 H3
J6	IPFPG_IOVDD	IPFPG_L3# IPFPG_L3	J5 J4
		IPFPG_L2# IPFPG_L2	K5 K4
		IPFPG_L1# IPFPG_L1	L4 L3
		IPFPG_L0# IPFPG_L0	M5 M4
		GPIO19	F7

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

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DESIGN	LI, YF	DATE	1/27/2012	Ramos-N14-14/15 N14X_SMALL N14X(4/5)	<div>SAMSUNG</div> <div>ELECTRONICS</div>
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APPROVAL	LEE, BL	REV	REV 0.1		
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 1:59:42 PM		
				PAGE	23 OF 51



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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			VRAM	GPU
	N14P_GV2	N14M_GS	N14M_LP	N14M_GE	N14M_GL	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	10K PD GL_GE	SAM1G	N14M-GL
ROM_SI	refer to RAM strap	refer to RAM strap	refer to RAM strap	10K PD GL_GE	10K PD GL_GE	10K PD GL_GE	SAM2G	N14M-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	10K PD GL_GE	HY1G	N14M-LP
STRAP0	45K PU LP_GS_GV2	45K PU LP_GS_GV2	45K PU LP_GS_GV2	refer to RAM strap	refer to RAM strap	refer to RAM strap	HY2G	N14M-GS
STRAP1	45K PD LP_GS_GV2	45K PD LP_GS_GV2	45K PD LP_GS_GV2	refer to RAM strap	refer to RAM strap	refer to RAM strap	MICRO1G	N14P-GV2
STRAP2	15K PD GV2	5K PD GS	10K PD LP	refer to RAM strap	refer to RAM strap	refer to RAM strap	MICRO2G	
STRAP3	5K PD LP_GS_GV2	5K PD LP_GS_GV2	5K PD LP_GS_GV2	refer to RAM strap	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	10K PD GL_GE		

### MULTI-LEVEL MODE STRAPPING

STRAP PIN	BIT 3	BIT 2	BIT 1	BIT0	STRAP PIN	STRAP MAPPING	RESISTANCE	POLARITY
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	PCI_DEVID[5]	PEX_PLL_EN_TERM	ROM_SCLK	SMB_ALT_ADDR	10K	PD
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]	ROM_SI	SUB_VENDOR	10K	PU TO 3V3 IF VBIOS ROM EXISTS PD IF NO VBIOS ROM EXISTS
ROM_SO	FB[1]	FB[0]	SMB_ALT_ADDR	VGA_DEVICE	ROM_SO	VGA_DEVICE	10K	PD(NO DISPLAY)
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]	STRAP0	RAM_CFG[0]	10K	NA
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]	STRAP1	RAM_CFG[1]	10K	NA
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]	STRAP2	RAM_CFG[2]	10K	NA
STRAP3	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED	STRAP3	RAM_CFG[3]	10K	NA
STRAP4	RESERVED	PCIE_SPEED_CHANGE_GEN	PCIE_MAX_SPEED	DP_PLL_VDD33V	STRAP4	PCIE_MAX_SPEED	10K	PD

### BINARY STRAP

### VRAM STRAP TABLE

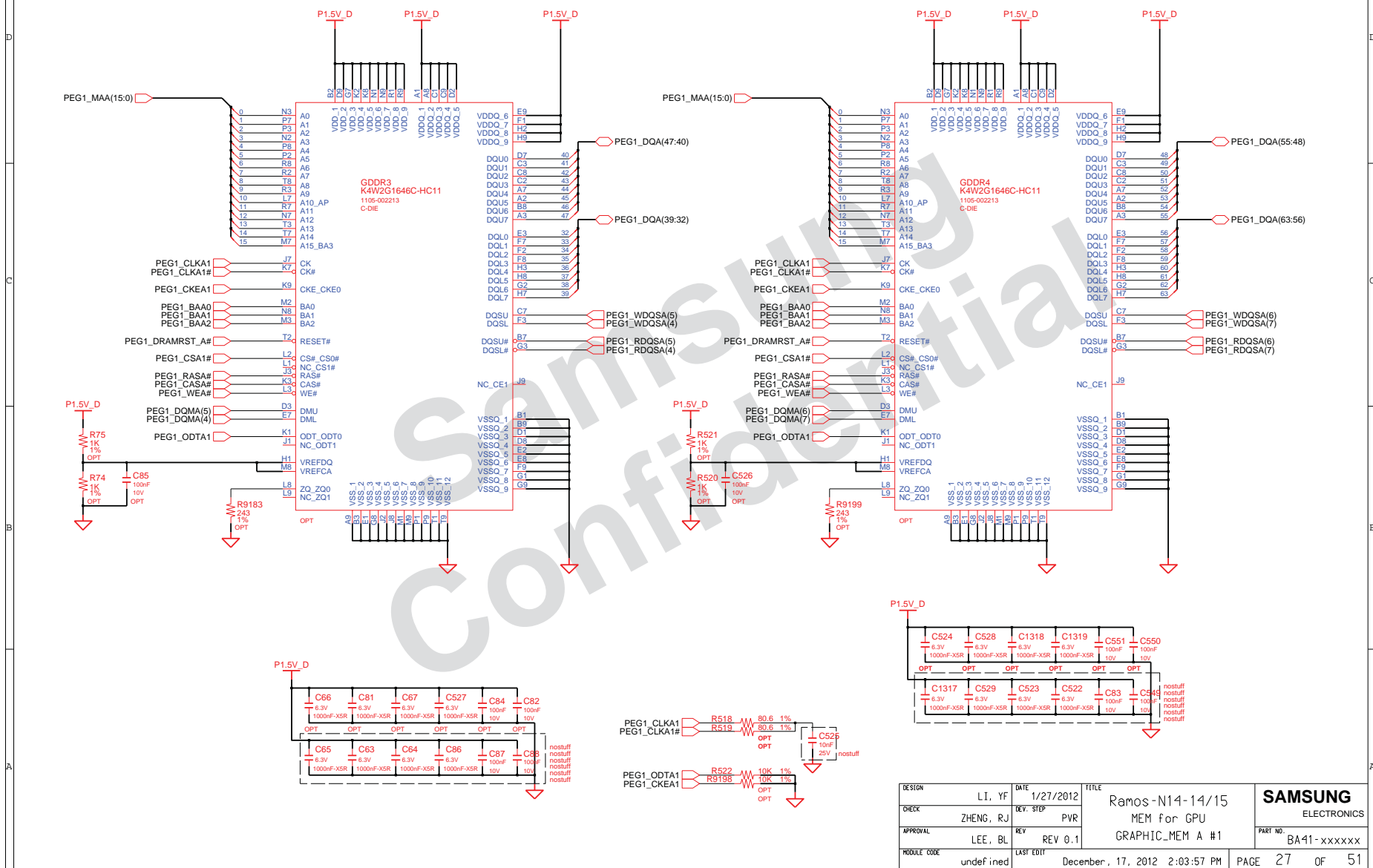
	SAM 1G	SAM 2G	HY 1G	HY 2G	MICRO 1G	MICRO 2G
GK208 ROM_SI	LP_GS_GV2_1G 45K PD	LP_GS_GV2_2G 20K PD	LP_GS_GV2_1G 35K PD	NA	LP_GS_GV2_1G 30K PD	LP_GS_GV2_2G 10K PD
GF117 STRAP0	SAM_MICRO_1G 10K PU	SAM_HY_MICRO_2G 10K PU	HY_1G 10K PD	SAM_HY_MICRO_2G 10K PU	SAM_MICRO_1G 10K PU	SAM_HY_MICRO_2G 10K PU
GF117 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_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		GRAPHIC STRAP	PART NO.
MODULE CODE	undefined	LAST EDIT				BA41-xxxxxx
				December, 17, 2012 2:02:10 PM	PAGE	25 OF 51



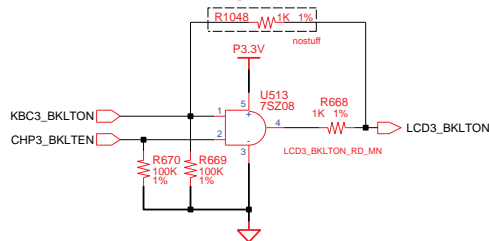
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## A-Channel #1 (D-mode)

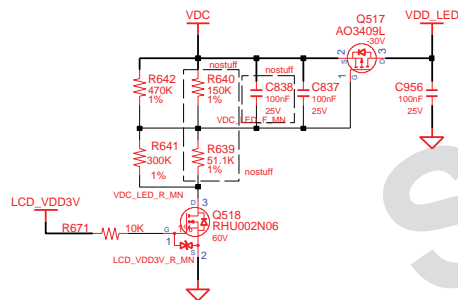


# LVDS LOGIC

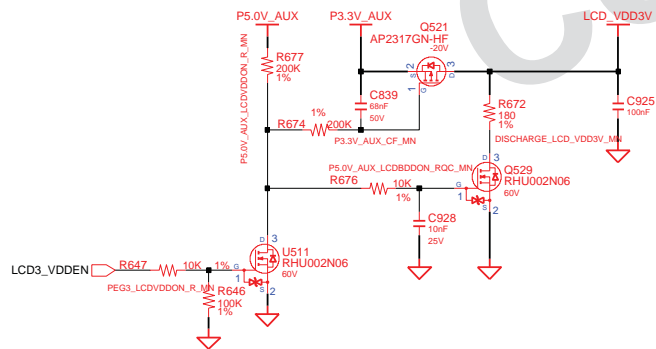
## Backlight On



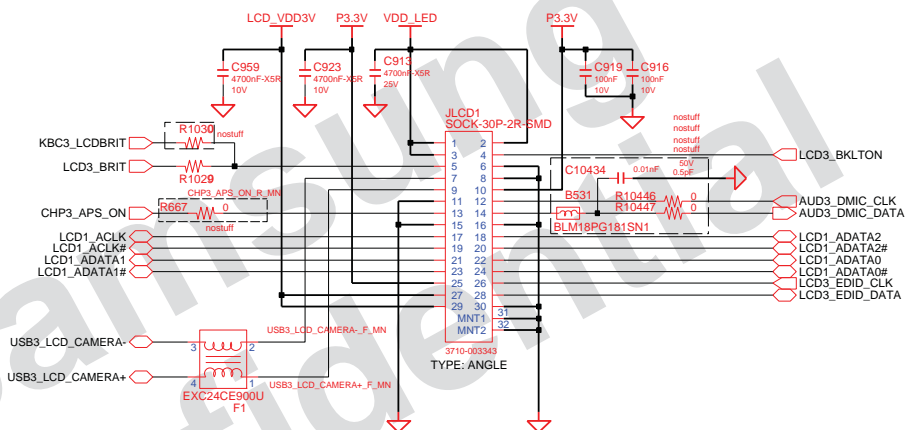
## LED Power



## LCD Power



## 1Ch. LCD Connector + CAMERA + INT MIC

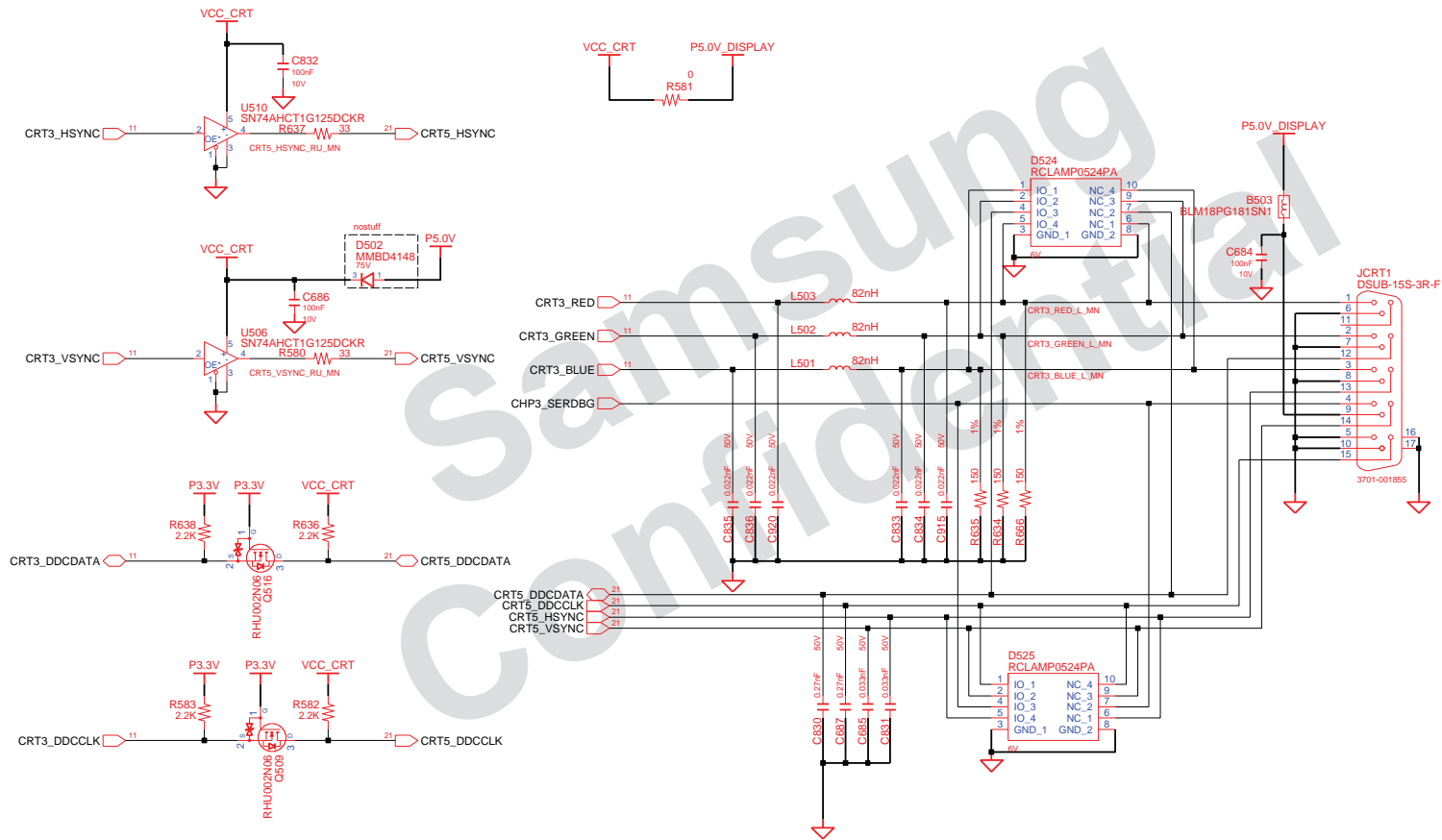


USB signal stub should be less than 100mil

DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	SAMSUNG ELECTRONICS
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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

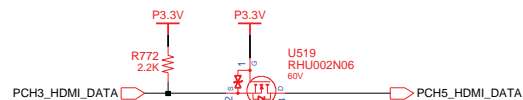
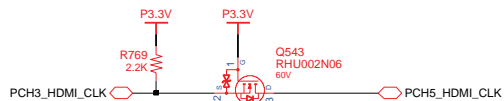


DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-14/15	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR	GRAPHIC_IF	CRT	
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MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:05:49 PM	PAGE	29 OF 51	

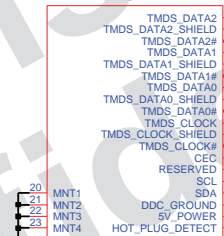
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# HDMI

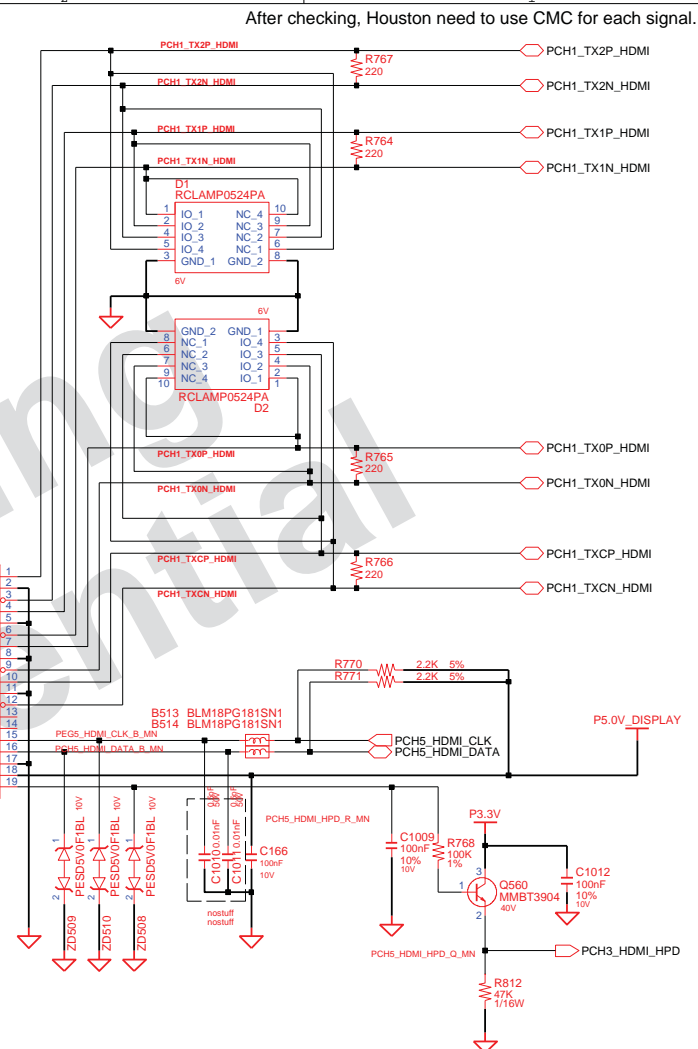
FOR HDMI VERIFICATION TEST



## JHDMI1 HDMI-19P-FEMALE



3701-001775

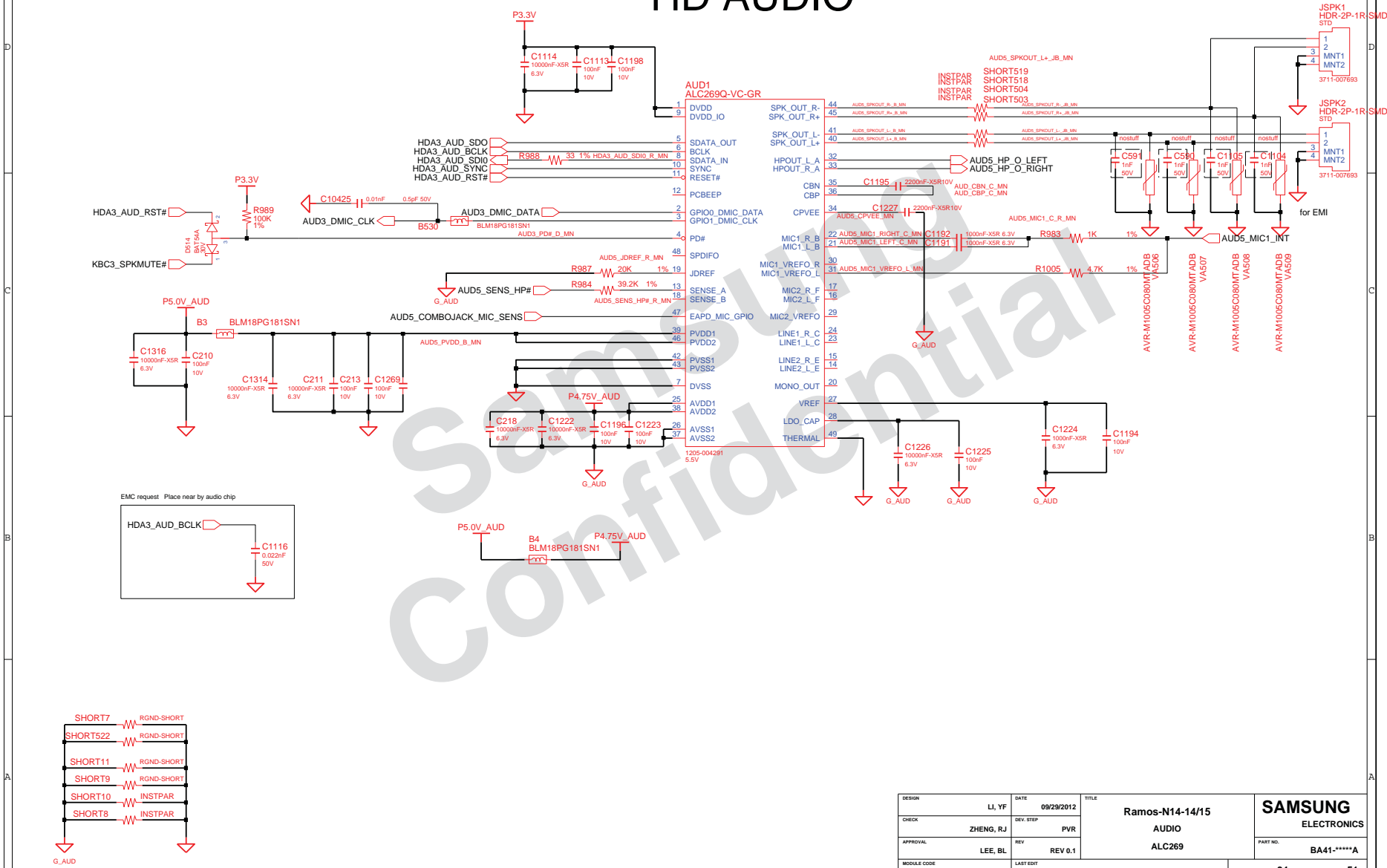


N10xN11x\_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance

DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR	GRAPHICS_IF		
APPROVAL	LEE, BL	REV	REV 0.1	HDMI		
MODULE CODE	undefined	LAST EDIT				
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# HD AUDIO



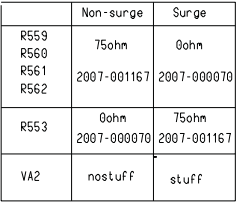
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CHECK	ZHENG, RJ	REV. STEP	PVR			
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DESIGN	LI, YF	DATE	09/29/2012	Ramos-N14-14/15 AUDIO AUDIO COMBO JACK	SAMSUNG ELECTRONICS			
CHECK	ZHENG, RJ	REV. STEP	PVR					
APPROVAL	LEE, BL	REV	REV 0.1					
MODULE CODE			undefined					
LAST EDIT				December, 17, 2012 2:08:12 PM	PAGE	32	OF	51



A



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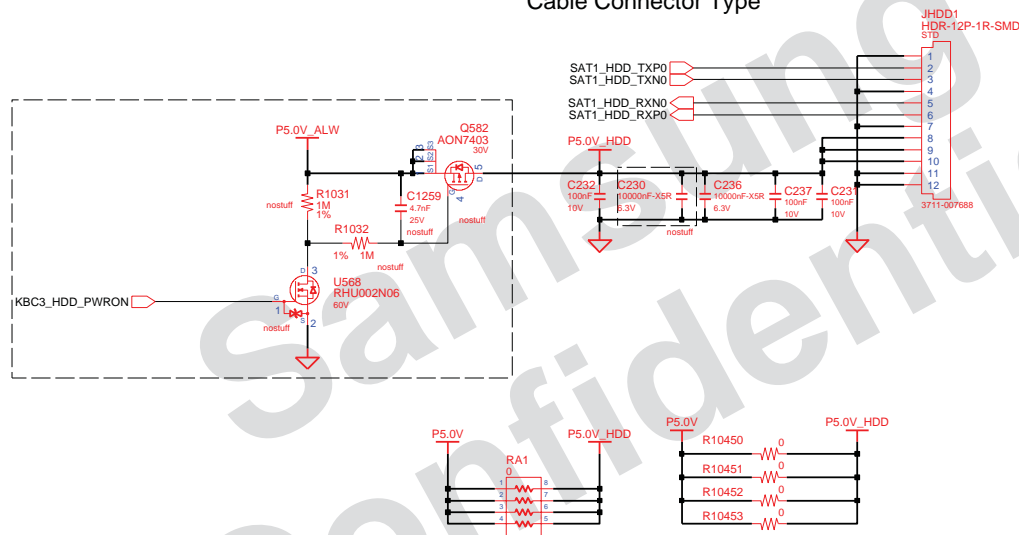
# WLAN\_MOB(MD335)

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# SATA I/F CONN

## SATA HDD CONN

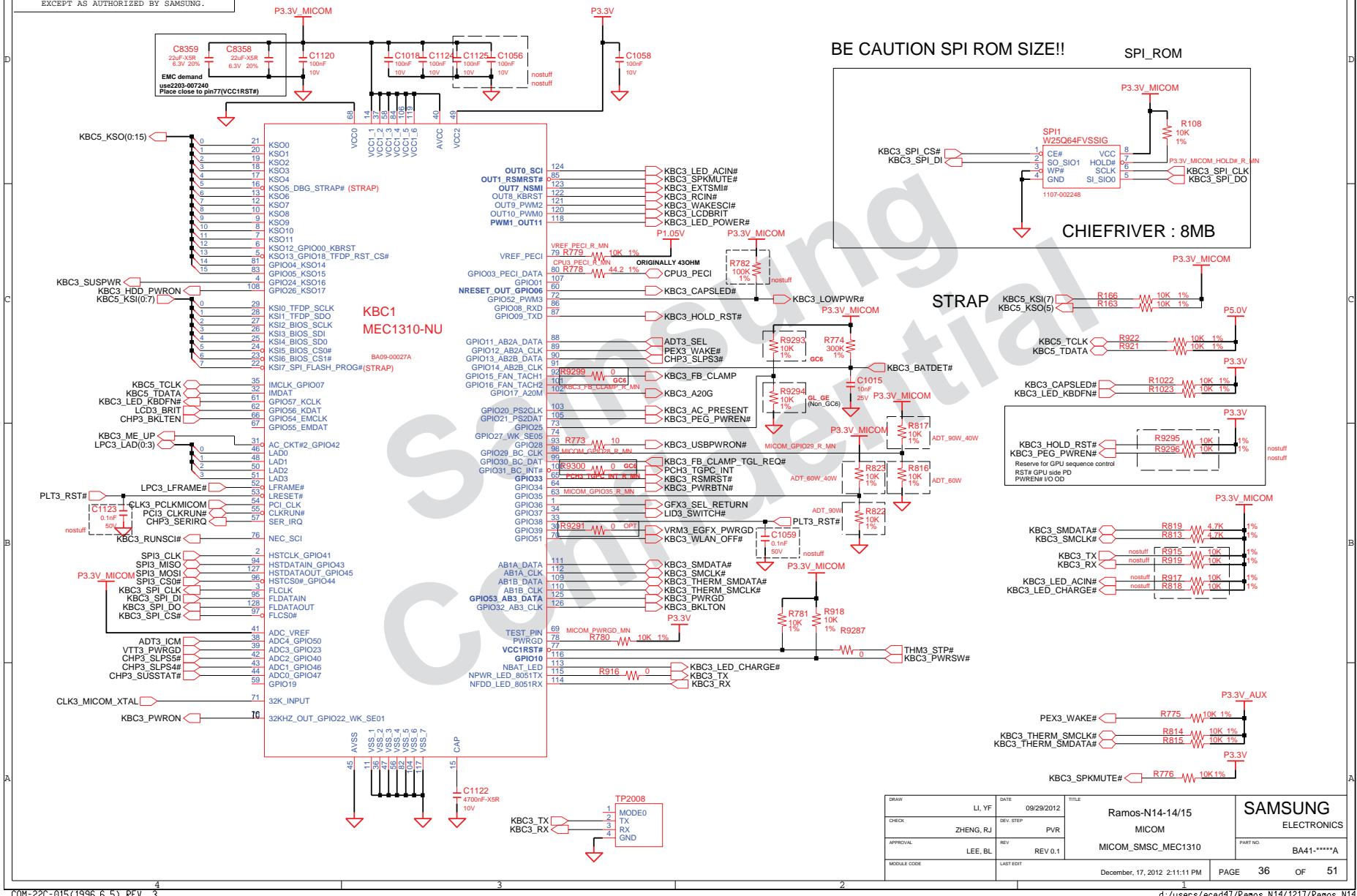
Cable Connector Type



DESIGN	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR	SATA I/F		
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

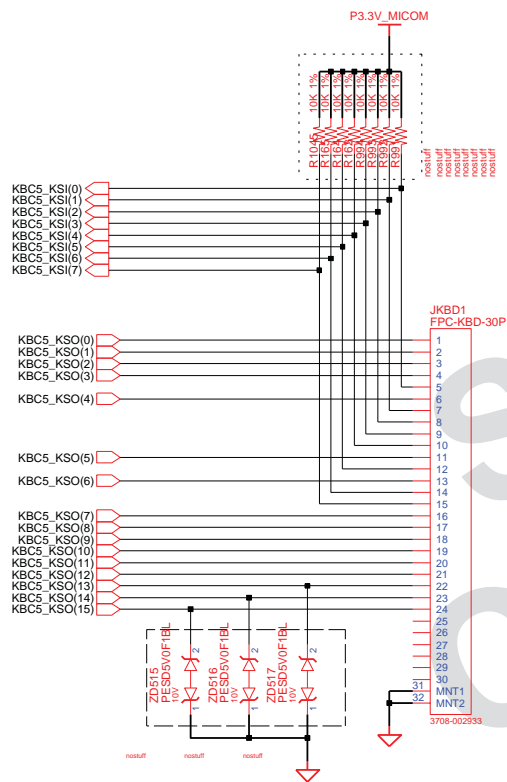
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# MAIN BOARD (MICOM)

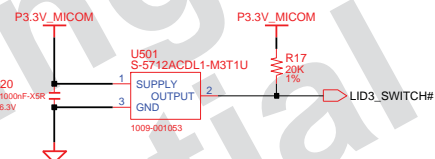


# Micom Glue

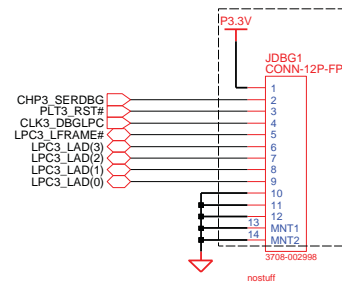
## KEYBOARD



## LID3\_SWITCH



## 80H PORT DEBUG



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DRAW	LI, YF	DATE	09/29/2012	TITLE	Ramos-N14-14/15	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR	MICOM		
APPROVAL	LEE, BL	REV	REV 0.1	MICOM GLUE LOGIC		
MODULE CODE		LAST EDIT				

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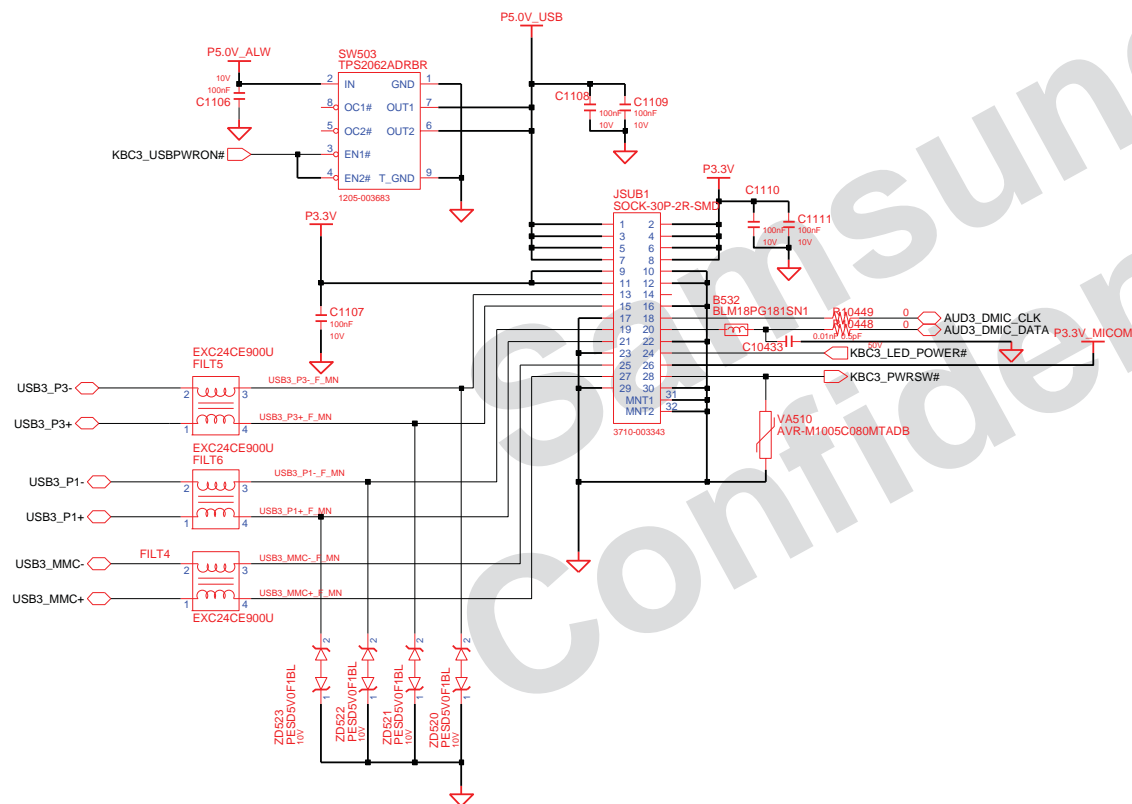
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COM-22C-015(1996.6.5) REV. 3

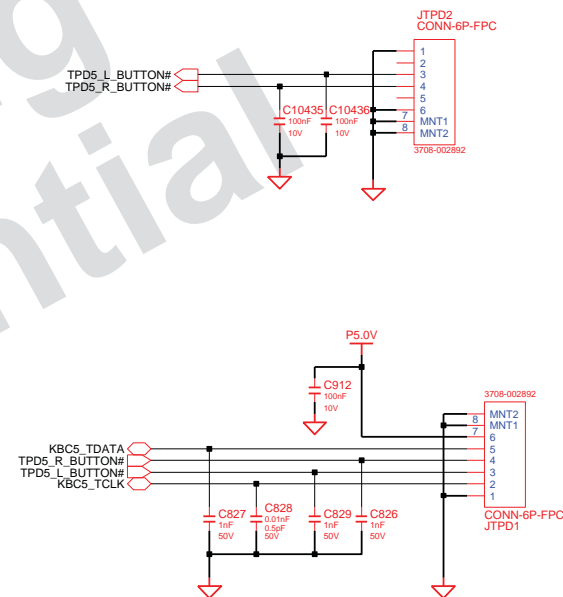
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## MAIN TO SUB

### MAIN to 3-in-1 / USB SUB

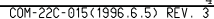


### TOUCHPAD BUTTON MAIN TO SUB



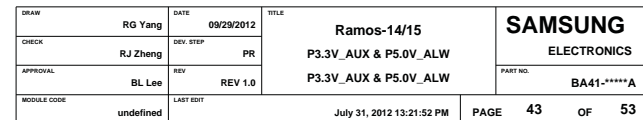
DESIGN	LI, YF	DATE	09/29/2012	TITLE  Ramos-N14-14/15  SUB BOARD CONNECTOR  MAIN TO SUB	<b>SAMSUNG</b>  ELECTRONICS  PART NO. BA41-*****A
CHECK	ZHENG, RJ	DEV. STEP	PVR		
APPROVAL	LEE, BL	REV	REV 0.1		
MODULE CODE	undefined	LAST EDIT	December, 17, 2012 2:13:27 PM		
				PAGE 39	OF 51

## CHARGER & POWER MANAGEMENT



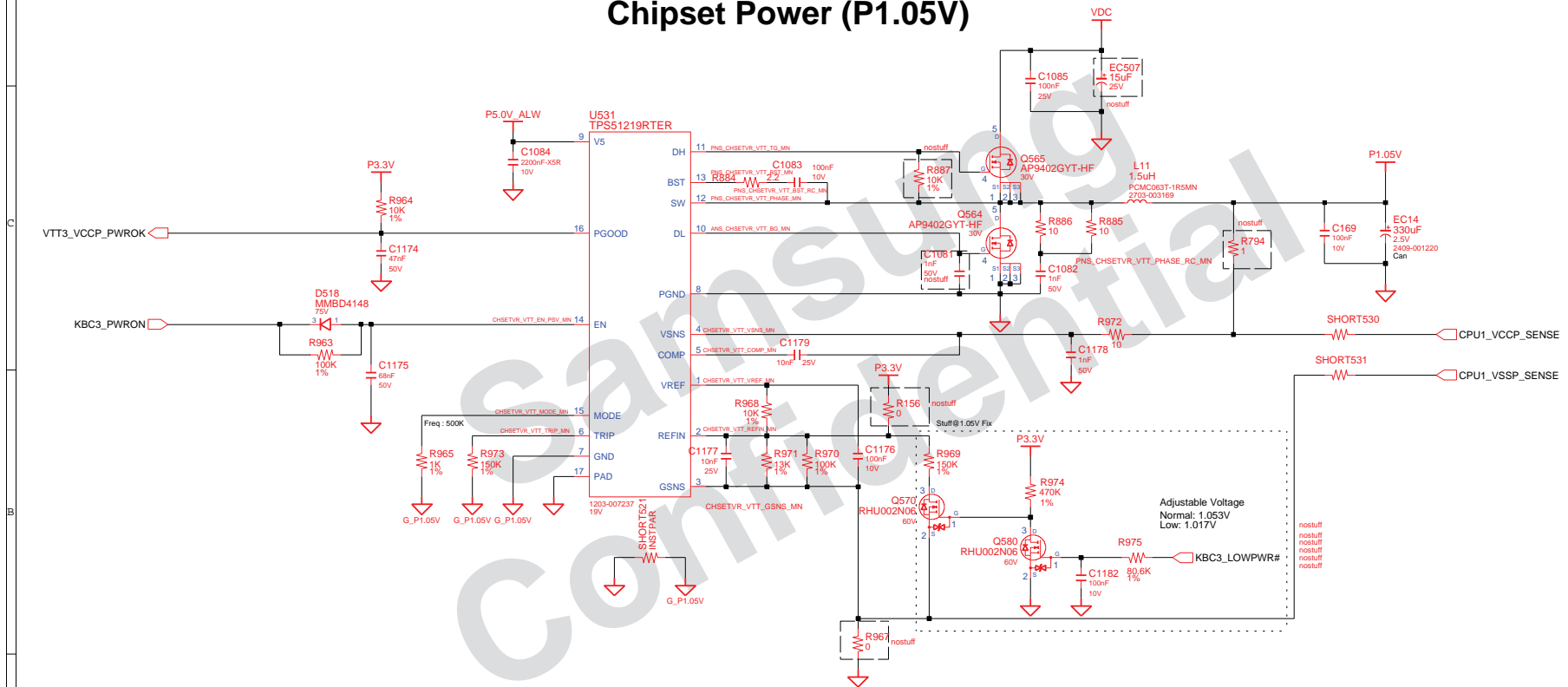


## P3.3V\_AUX & P5.0V\_ALW



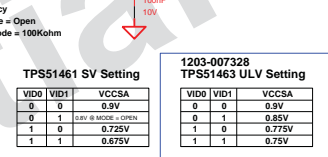
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## Chipset Power (P1.05V)



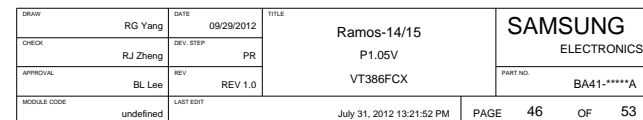
DESIGN	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	SAMSUNG ELECTRONICS
CHECK	RJ Zheng	DEV. STEP	PR		CHIPSET PWR	
APPROVAL	BL Lee	REV	REV 1.0		P1.05V	
MODULE CODE		LAST EDIT				
July 31, 2012 13:21:52 PM						PAGE 44 OF 53

## CHIPSET POWER(VCCSA)



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

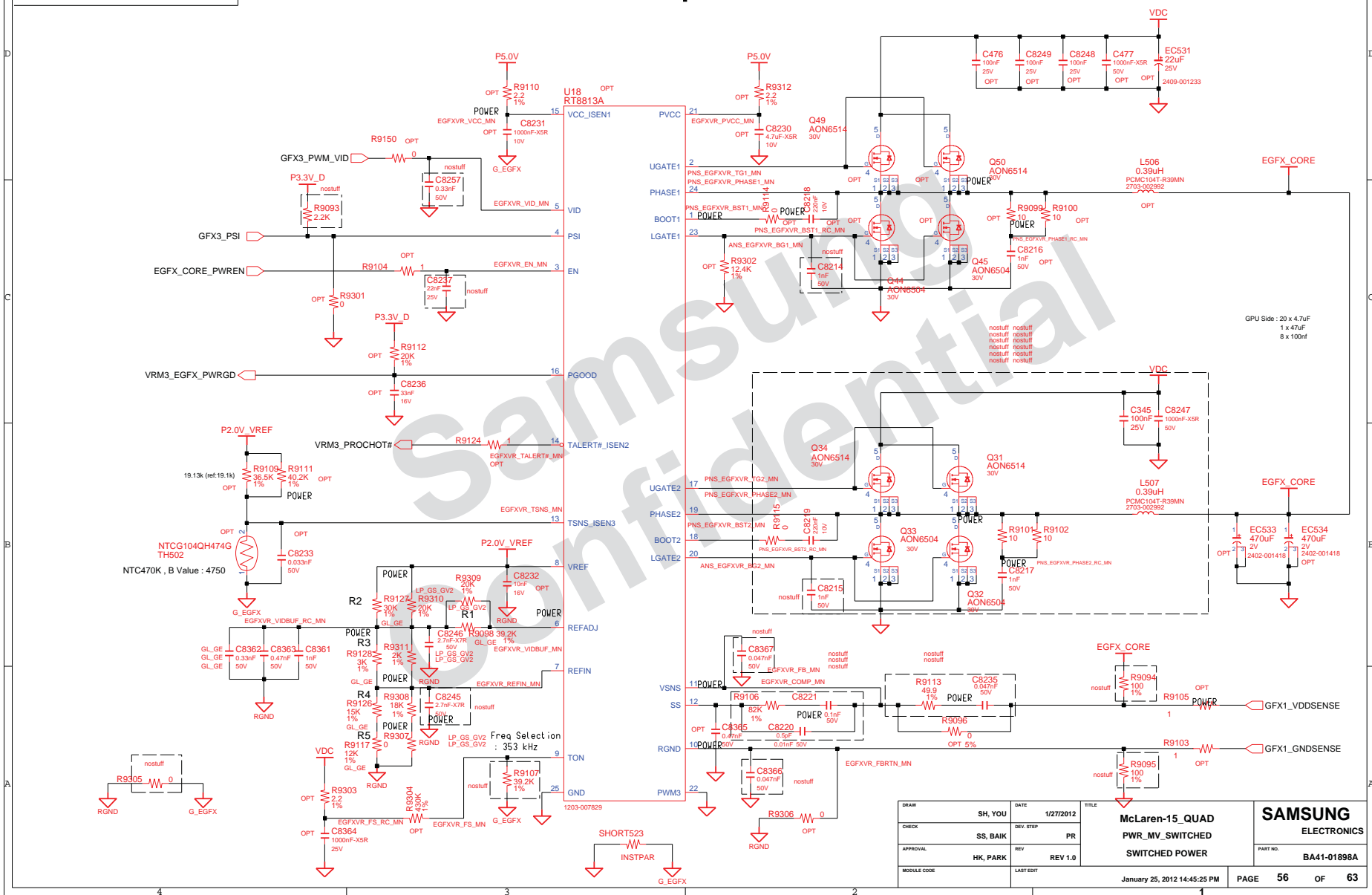
## DDR3 Power





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# External Graphic Core Power



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

D:\users\mobile\McLaren\PR\0125\McLaren-15\_MAIN

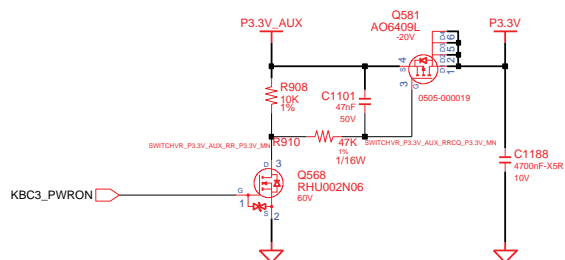
DRAW	SH, YOU	DATE	1/27/2012	TITLE	McLaren-15_Quad
CHECK	SS, BAIK	DEV. STEP	PR	PWR_MV_SWITCHED	
APPROVAL	HK, PARK	REV	REV 1.0	SWITCHED POWER	
MODULE CODE		LAST EDIT			
				January 25, 2012 14:45:25 PM	PAGE 56 OF 63

**SAMSUNG**  
ELECTRONICS  
PART NO.  
BA41-01898A

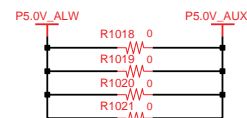
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## Switched Power

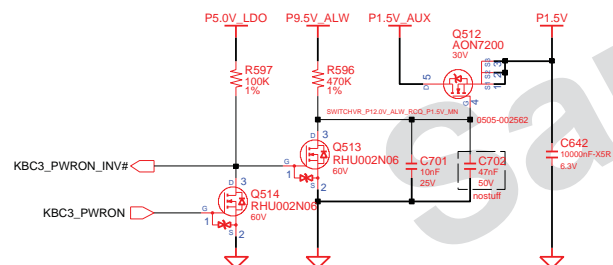
### Switched Power On (P3.3V)



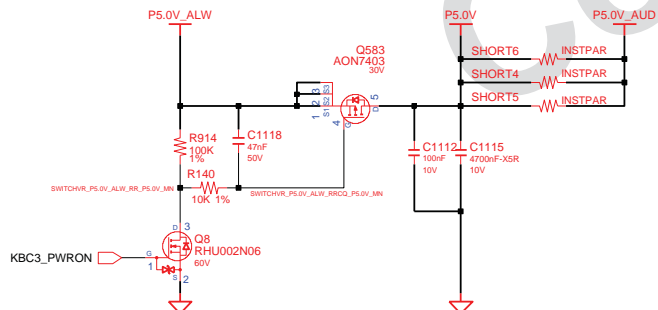
### P5.0V\_AUX



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



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



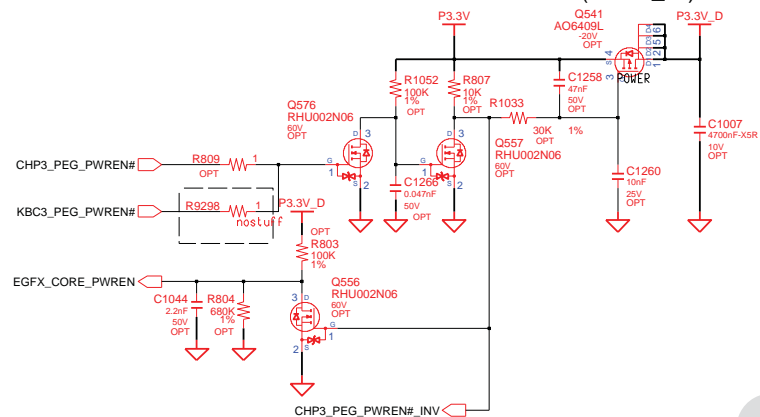
DRAW	RG Yang	DATE	09/29/2012	TITLE  Ramos-14/15  PWR_MV_SWITCHED  SWITCHED POWER	<b>SAMSUNG</b>  ELECTRONICS  PART NO.  BA41-*****A
CHECK	RJ Zheng	DEV. STEP	PR		
APPROVAL	BL Lee	REV	REV 1.0		
MODULE CODE	LAST EDIT				
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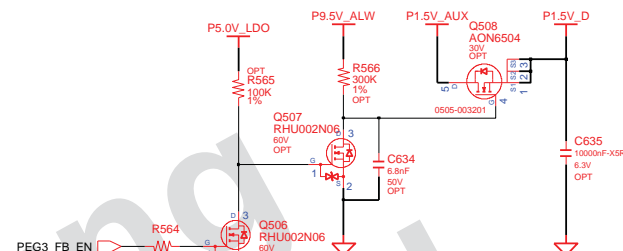
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## Switched Power 2

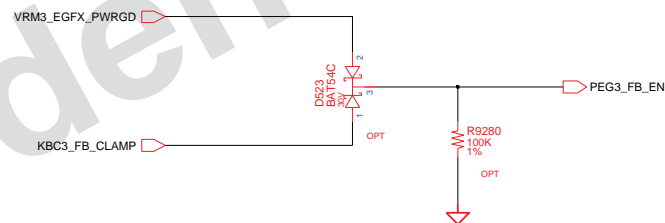
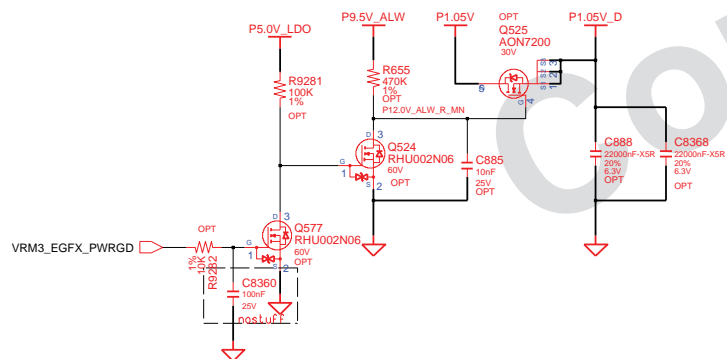
### Discrete Switched Power (P3.3V\_D)



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



### Discrete Switched Power (P1.05V\_D)

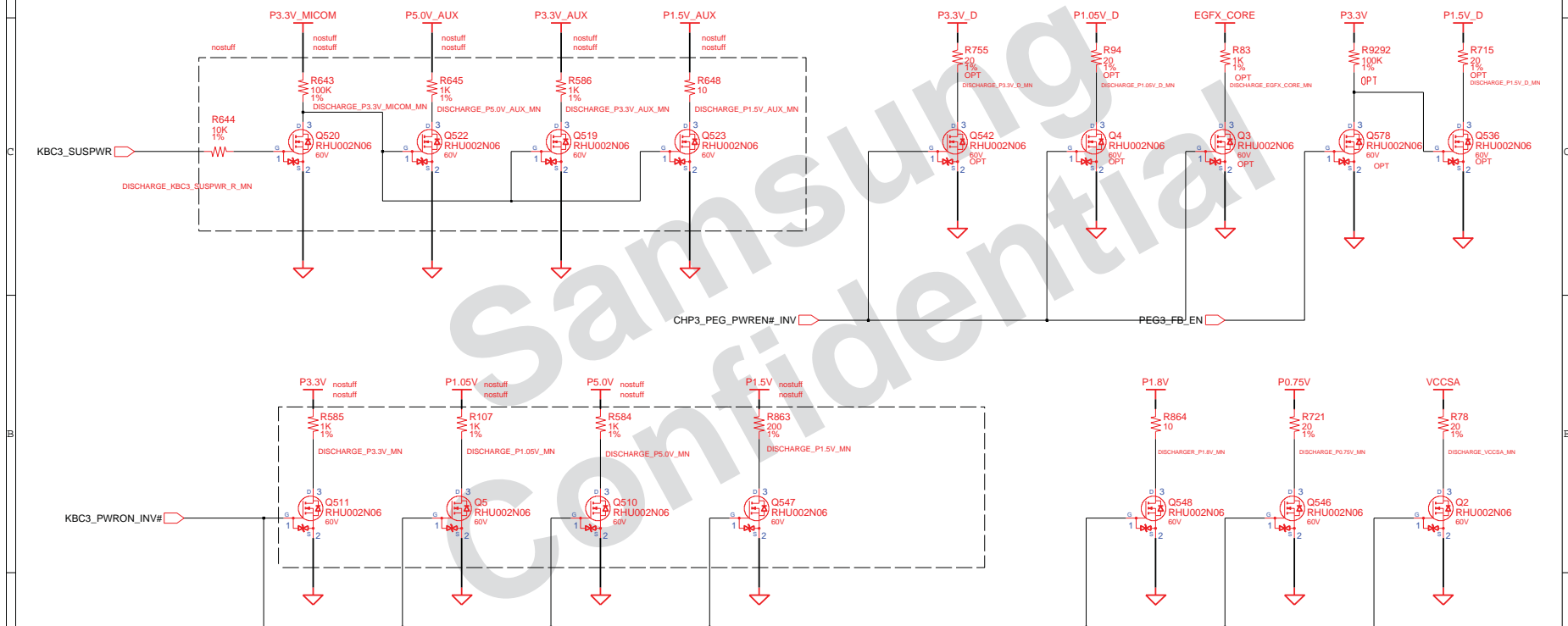


DRAW	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-*****A
CHECK	RJ Zheng	DEV. STEP	PR	Switched PWR 2		
APPROVAL	BL Lee	REV	REV 1.0	Switched PWR 2		
MODULE CODE		LAST EDIT				
				July 31, 2012 13:21:52 PM	PAGE	50 OF 53

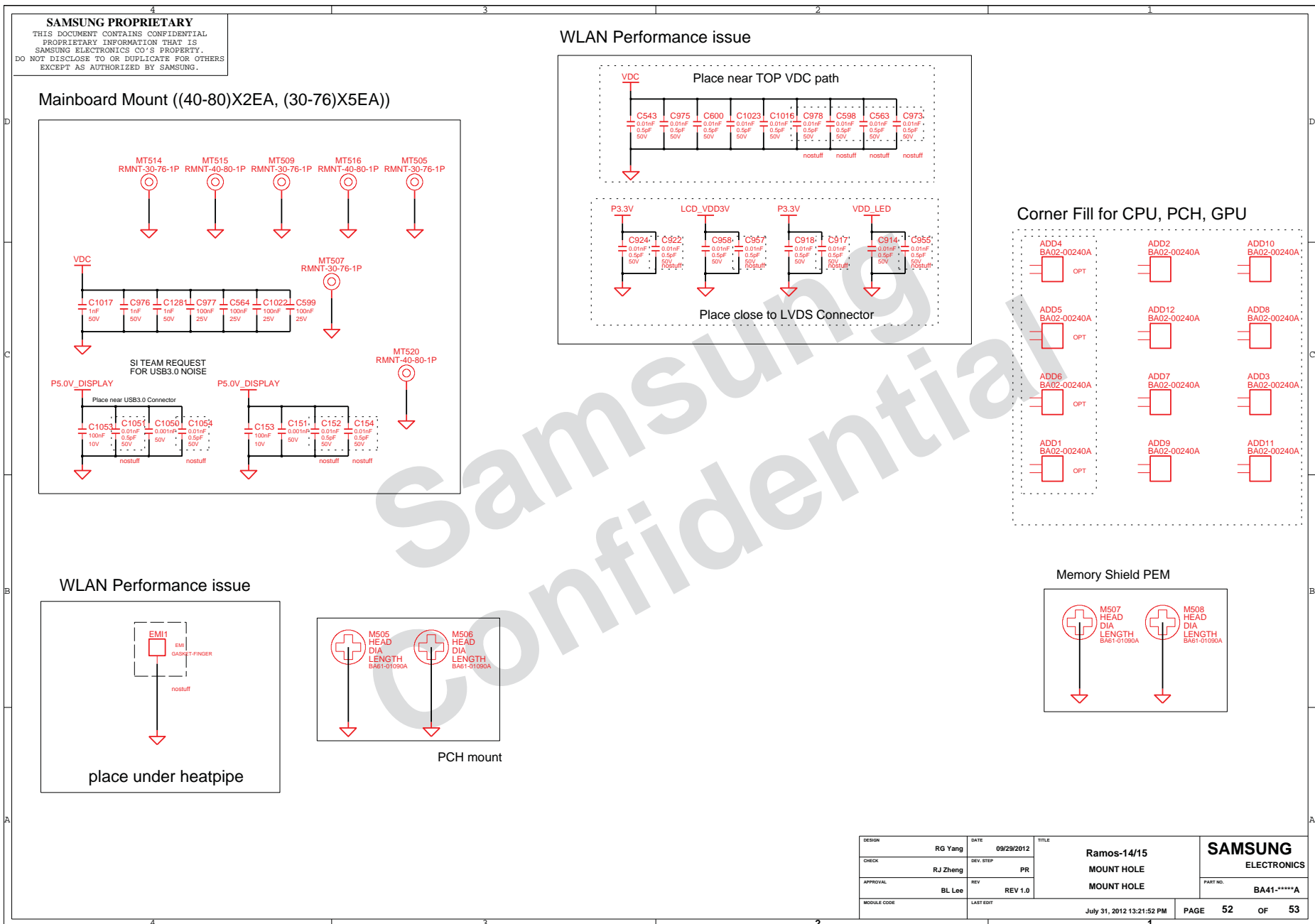


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## POWER DISCHARGER

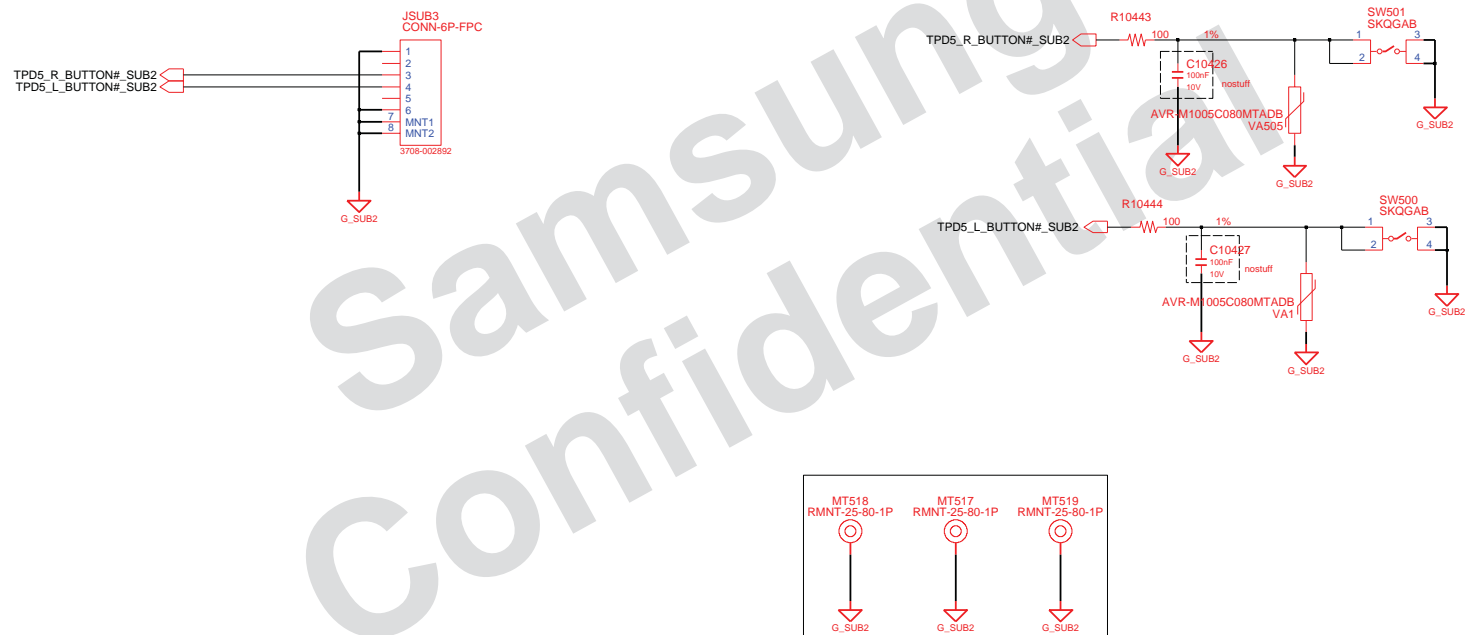


DRAW	RG Yang	DATE	09/29/2012	TITLE  Ramos-14/15  PWR_MV_DISCHARGER  DISCHARGING LOGIC		SAMSUNG ELECTRONICS  PART NO. BA41-*****A			
CHECK	RJ Zheng	REV. STEP	PR						
APPROVAL	BL Lee	REV	REV 1.0						
MODULE CODE		LAST EDIT		July 31, 2012 13:21:52 PM				PAGE	51



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# TP SUB BOARD



DRAW	RG Yang	DATE	09/29/2012	TITLE	Ramos-14/15 SUB2 TOUCHPAD & LED	SAMSUNG ELECTRONICS PART NO. BA41-*****A
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	53 OF 53	