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# Scala2-R

CPU : Sandy Bridge PGA  
 Chip Set : Intel Cougar Point  
 GFX : N12P-GV/N12M-GE  
 Remarks : Huron River Platform

Model Name : Scala2-R  
 PBA Name : MAIN  
 PCB Code : BA41-01609A (GCE)  
                   BA41-01608A (NY)  
                   BA41-01610A (HAN)  
                   BA41-01XXXXA (GBM)  
 Dev. Step : ADV  
 Revision : 0.1  
 T.R. Date : 2011.01.20

Design	CHECK	APPROVAL
<i>GU HUI</i>	<i>SJ WU</i>	<i>BC LEE</i>

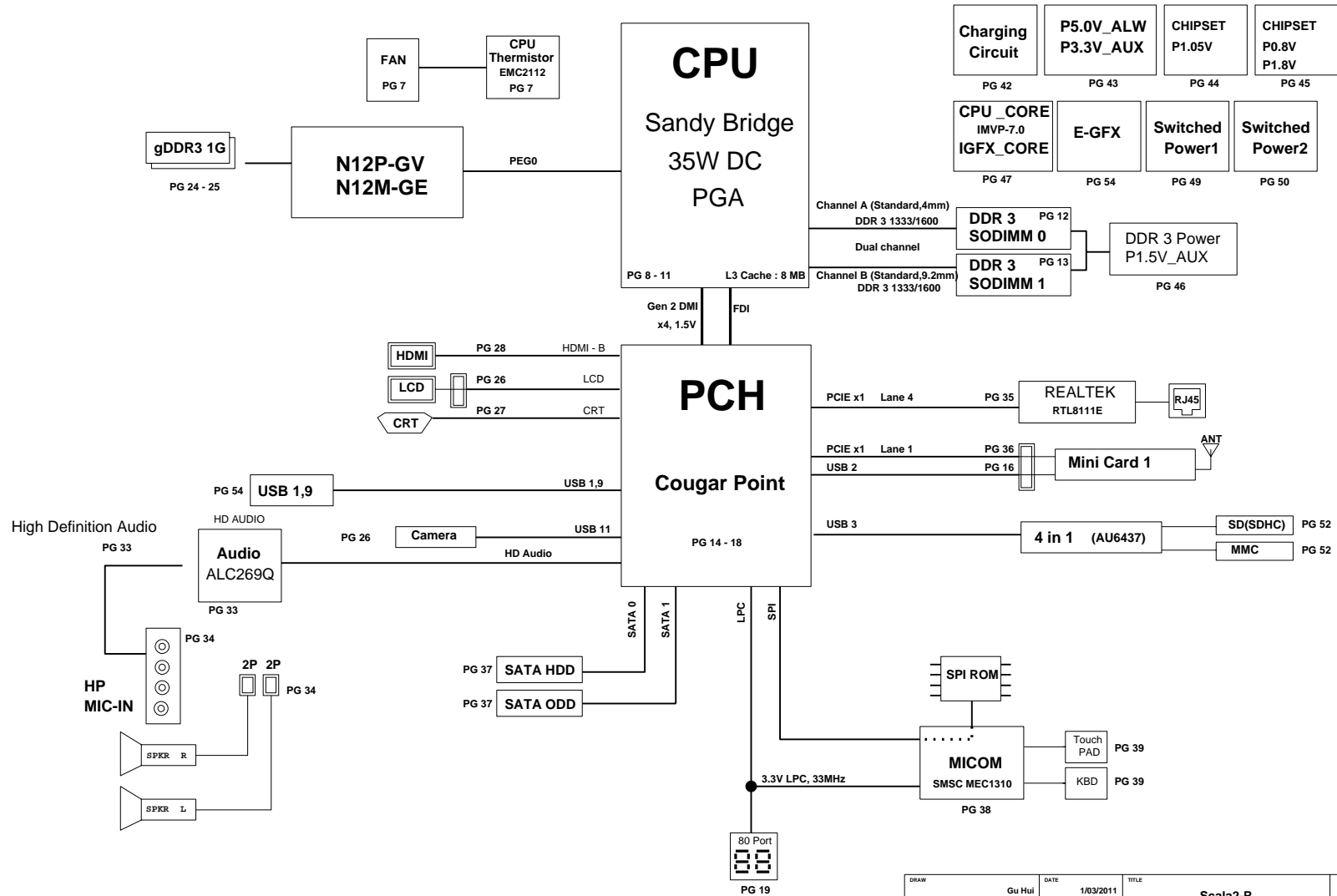
■ Owner : SRDC PD3

Signature : *GUHUI*

- |                              |  |
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| sheet15 : PCH-CougarPoint    | sheet39 : Power - P0.8V (Chipset Power)  |
| sheet16 : PCH-CougarPoint    | sheet40 : Power - DDR3                   |
| sheet17 : PCH-CougarPoint    | sheet41 : Power - CPU VRM                |
| sheet18 : 80 port            | sheet42 : Power - EGM CORE               |
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| sheet23 : GFX memory         | sheet47 : Touchpad & LED                 |
| sheet24 : GFX memory         | sheet48 : Mount Hole                     |

DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	MAIN		
APPROVAL	BC LEE	REV	rev. 0.1	COVER		PART NO. BA41-01XXXXA
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	1	OF 48

# BLOCK DIAGRAM



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	MAIN		
APPROVAL	BC LEE	REV	rev. 0.1	BLOCK DIAGRAM	PART NO.	BA41-01XXA
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	2	OF 48

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# BOARD INFORMATION

## SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails		Active in
VDC P3.3V_MICOM P5.0V_STB P5.0V_ALW P3.3V_ALW P12.0V_ALW	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 3.3V always power rail 12.0V always power rail	<b>S4 - S5</b>
P5.0V_AUX P3.3V_AUX P1.5V_AUX	5.0V switched on power rail (off in S4-S5) 3.3V switched on power rail (off in S4-S5) 1.5V power rail for DDR3 (off in S4-S5)	<b>S3</b>
P5.0V P3.3V P1.8V P1.5V P0.75V P0.8V	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) 0.8V switched power rail (off in S3-S5)	<b>S0</b>
VCC_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for GPU VCC for COUGARPOINT	<b>S0</b>
P3.3V_D P1.5V_D P1.05V_D	3.3V discrete power rail for N12X 1.5V discrete power rail for N12X 1.05V discrete power rail for N12X	

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	HM65	Real Time Clock
Crystal	25MHz	LAN	Intel LAN
Crystal	24MHz	USB 3.0	
Crystal	25MHz	HM65	INTEL
Crystal	27MHz	N12P-LP	NVIDIA

LCD Pannel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

I <sup>2</sup> C / SMB Address			
Devices	Address	Hex	Bus
HM65	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	-
SODIMM0	1010 000x	A0h	Thermal Sensor
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
Thermal Sensor on board	1101 100x	98h	-
Power thermal management TS	1101 011x	96h	-

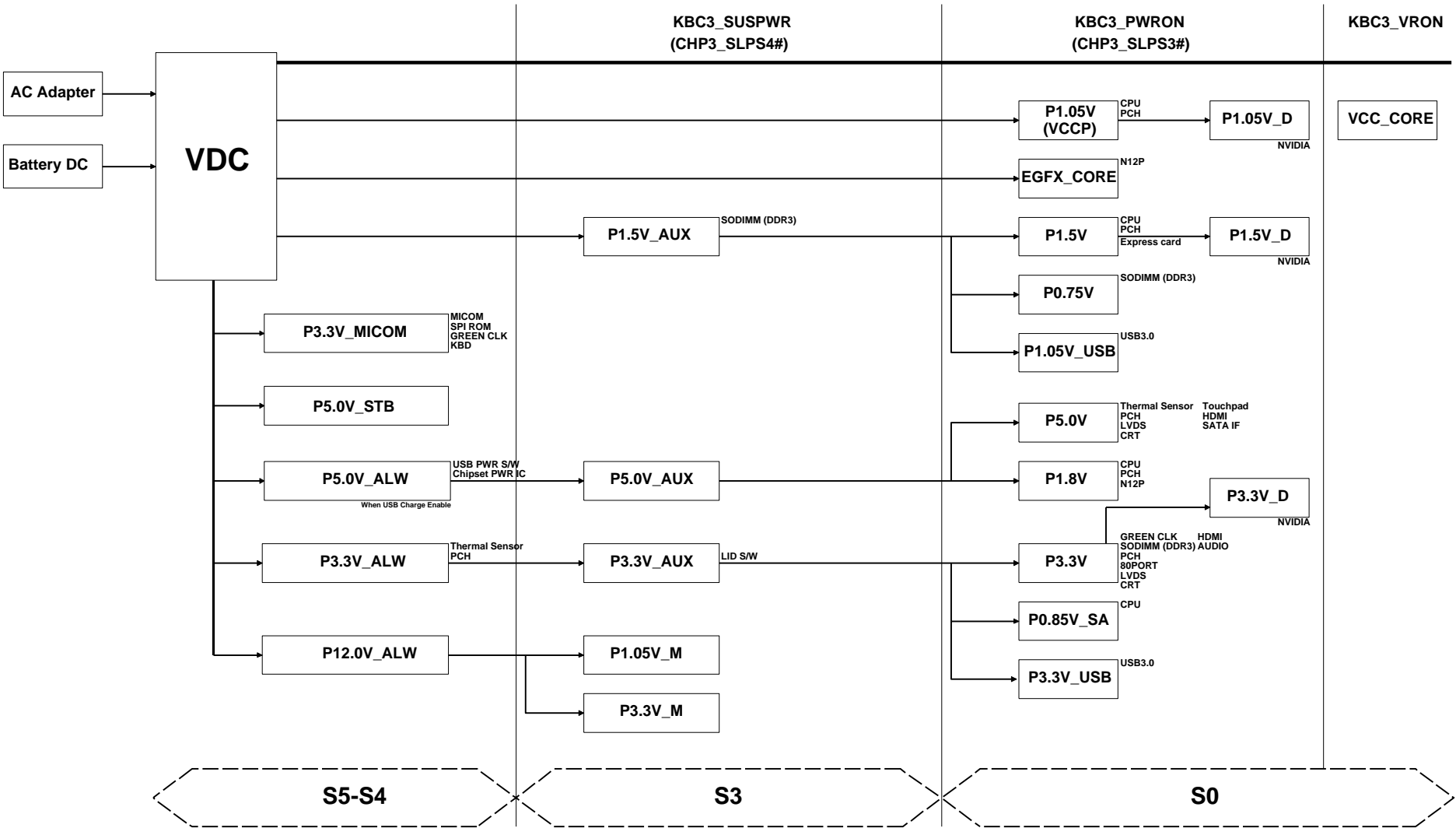
USB PORT Assign		PCI Express Assign	
PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	NC	1	Mini Card 1 (WLAN)
1	SYSTEM PORT 0	2	NC
2	Mini PCI Express	3	NC
3	Multi Memory Card Controller	4	LAN CONTROLLER
4	NC	5	USB 3.0
5	NC	6	NC
6	NC (N/A WITH HM55)	7	NC
7	NC (N/A WITH HM55)	8	NC
8	Camera		
9	SYSTEM PORT 1		
10	NC		
11	Camera(LCD Cable)		
12	NC		
13	NC		

SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD
1	ODD
2	(N/A WITH HM65)
3	(N/A WITH HM65)
4	
5	

DRAW	Gu Hui	DATE	1/03/2011	TITLE	<b>Scala2-R MAIN BOARD INFO</b>	<b>SAMSUNG ELECTRONICS</b>
CHECK	SJ Wu	DEV. STEP	ADV			
APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE 3 OF 48		

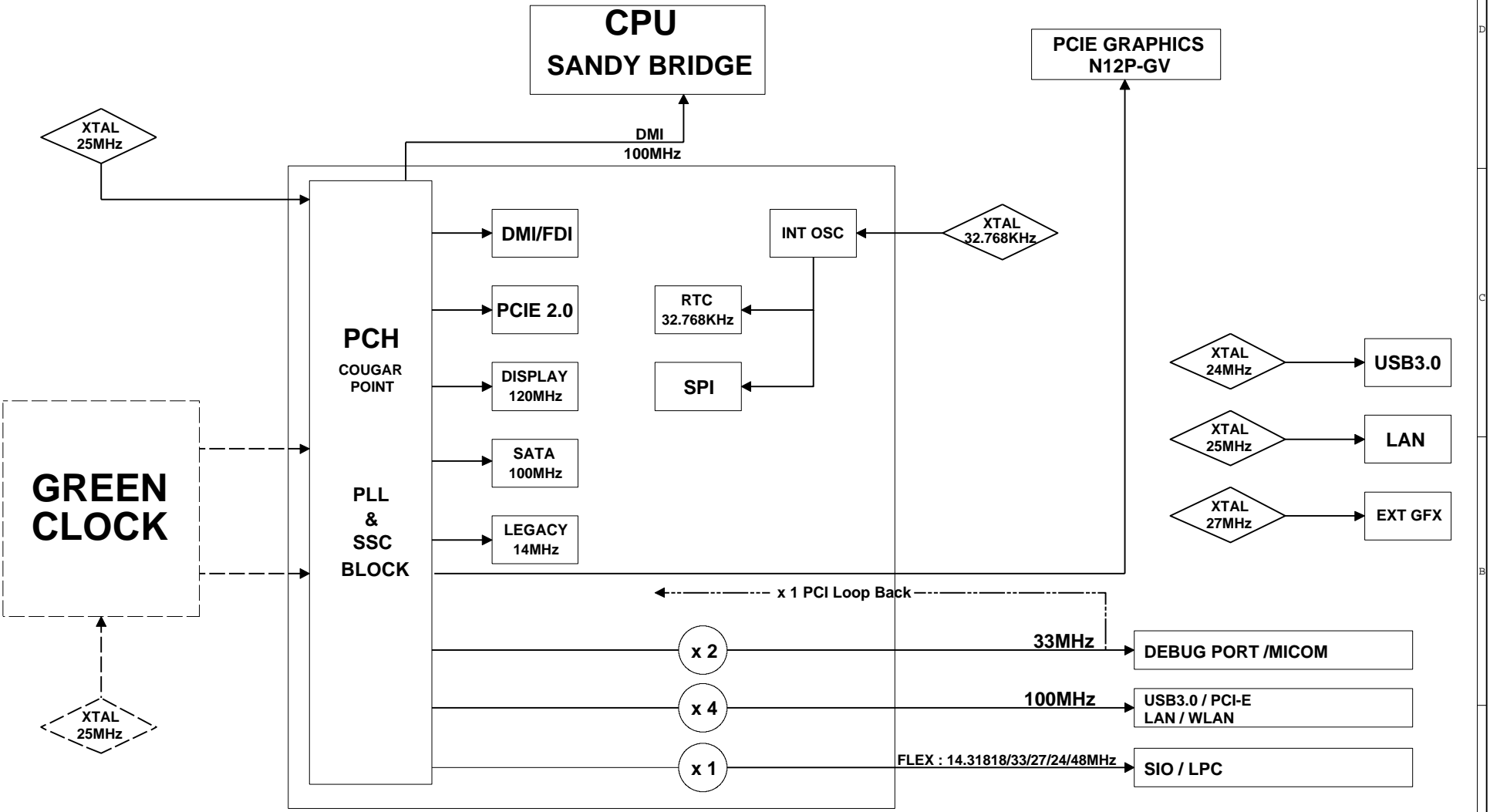
# POWER DIAGRAM

Rev 0.8



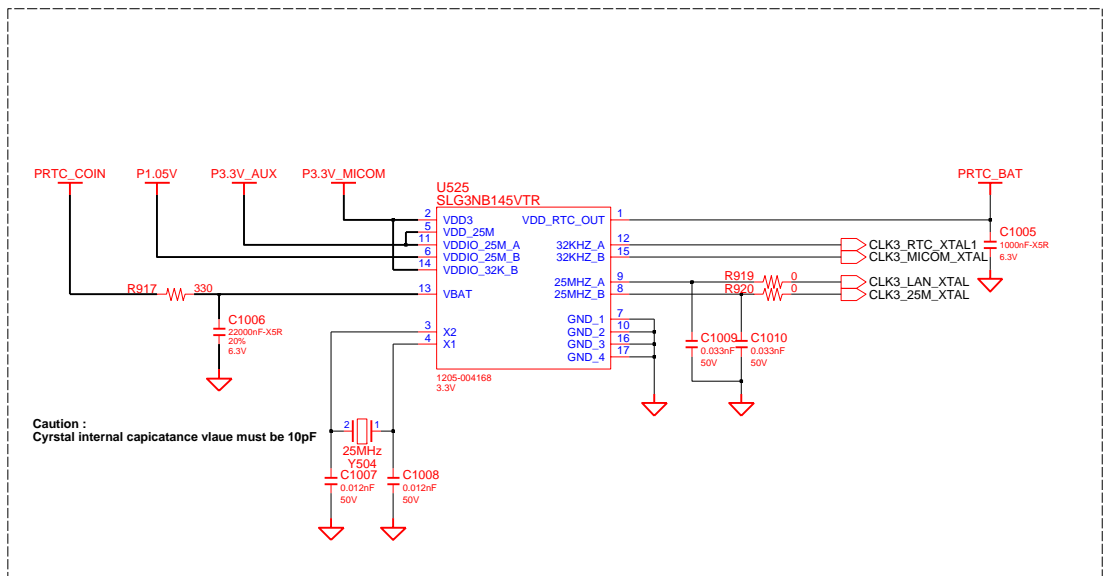
DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	MAIN		
APPROVAL	BC LEE	REV	rev. 0.1	POWER DIAGRAM		PART NO. BA41-01XXA
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	4	OF 48

**CLOCK DISTRIBUTION** Rev. 0.8



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	MAIN		
APPROVAL	BC LEE	REV	rev. 0.1	CLOCK DIAGRAM		PART NO. BA41-01XXA
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	5	OF 48

# CLOCK DISTIBUTOR

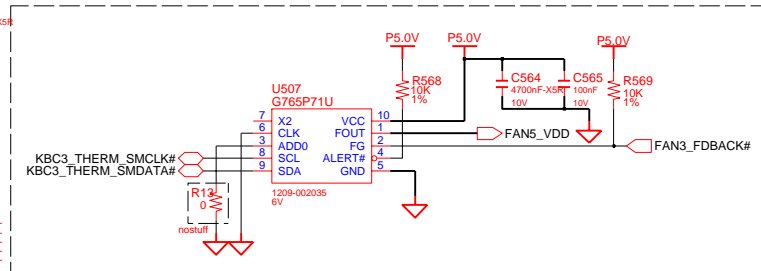
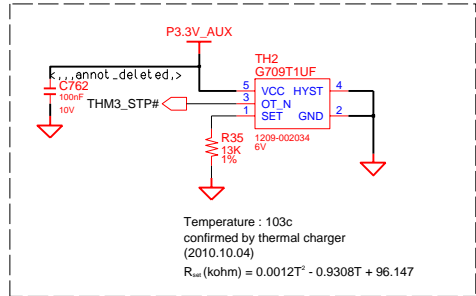
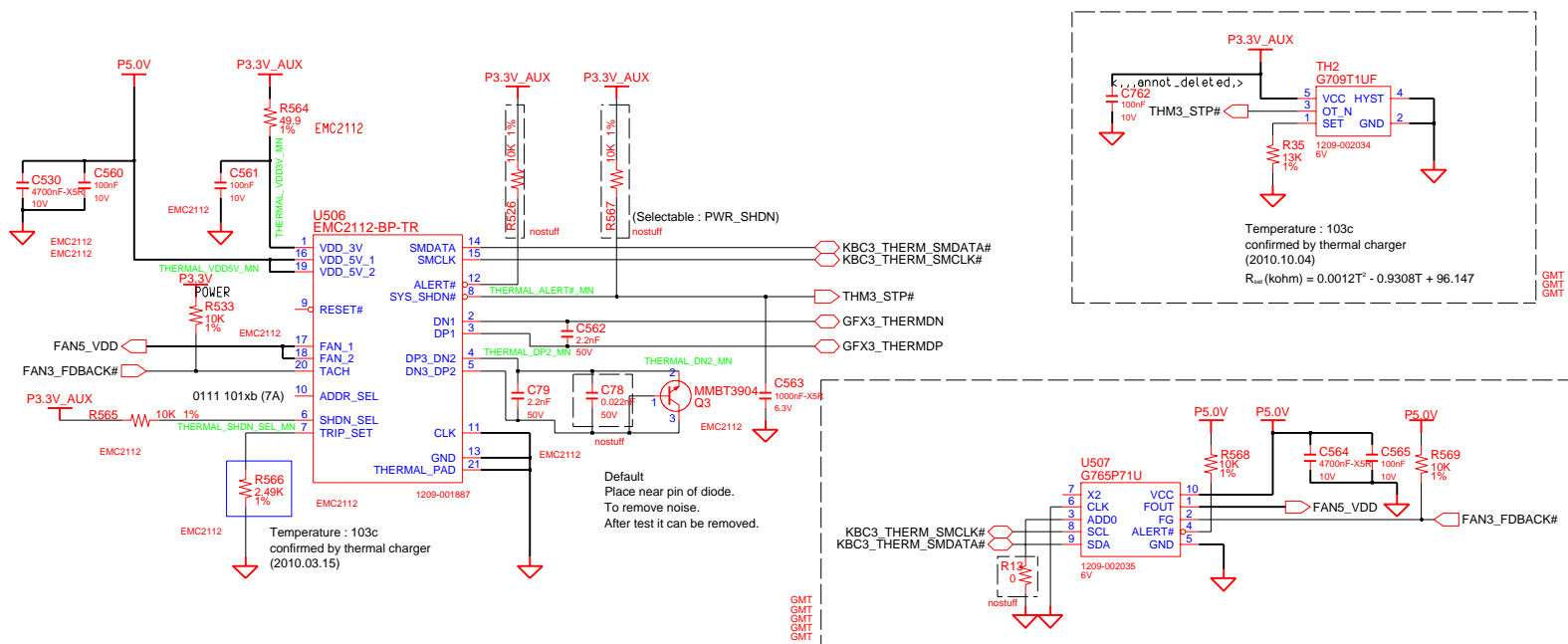


GREENCLK  
 GREENCLK  
 GREENCLK  
 GREENCLK  
 GREENCLK  
 GREENCLK  
 GREENCLK  
 GREENCLK  
 GREENCLK  
 GREENCLK

ENGINEER	DATE	TITLE	<b>SAMSUNG</b> ELECTRONICS
DESIGNED BY	short_date	SCALA2-R_PV_MAIN	
	DEV. STEP	Module Name	PART NO. BA41-XXXXXX
CHANGED BY	REV	1.0	
PG. CHK	LAST EDIT	last_edit	PAGE 6 OF XX

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# THERMAL SENSOR & FAN CONTROL

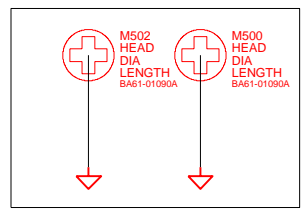
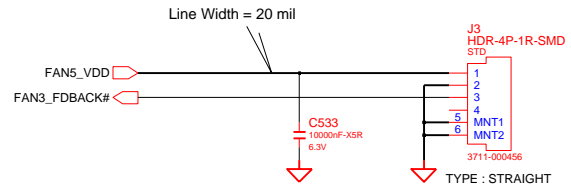


ADDRESS_SEL MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

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

Temperature : 103c  
 confirmed by thermal charger  
 (2010.03.15)

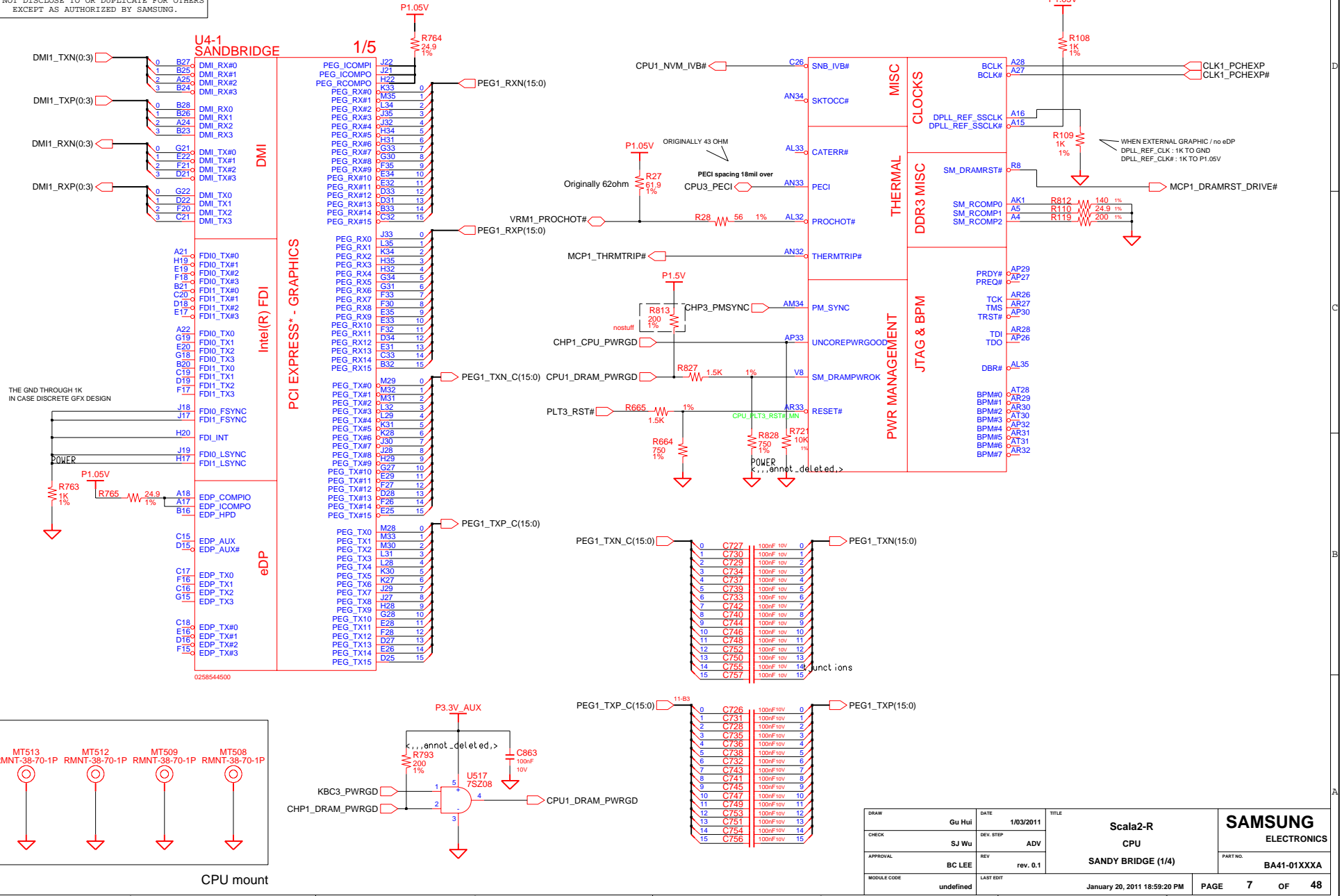
Default  
 Place near pin of diode.  
 To remove noise.  
 After test it can be removed.



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		THERMAL SENSOR	
APPROVAL	BC LEE	REV	rev. 0.1		THERMAL SENSOR EMC2112	PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT			January 20, 2011 18:59:20 PM	PAGE 6 OF 48

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# SANDYBRIDGE PROCESSOR (DMI,PEG, FDI)

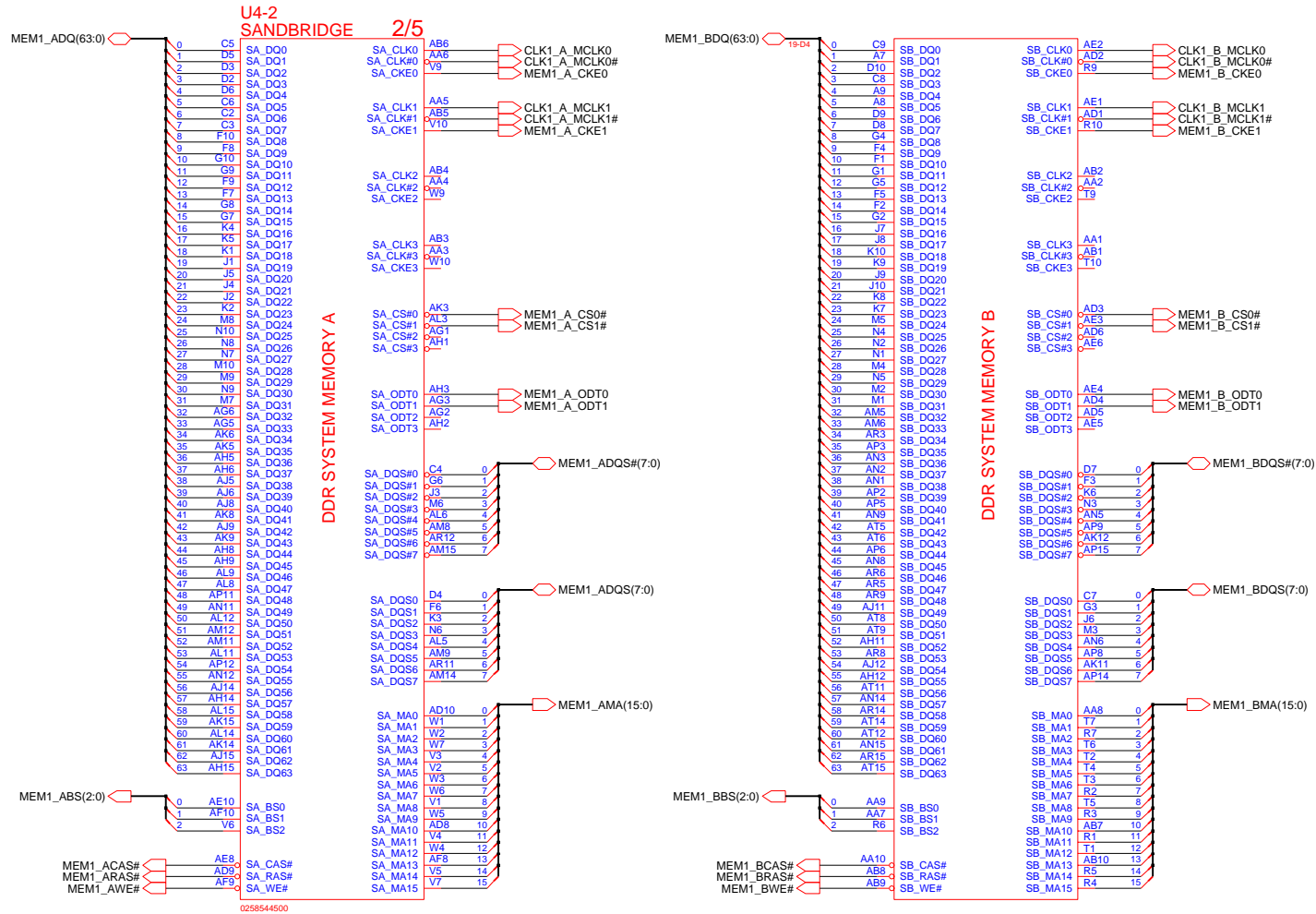


DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R
CHECK	SJ Wu	DEV. STEP	ADV		CPU
APPROVAL	BC LEE	REV	rev. 0.1		SANDY BRIDGE (1/4)
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	7 OF 48

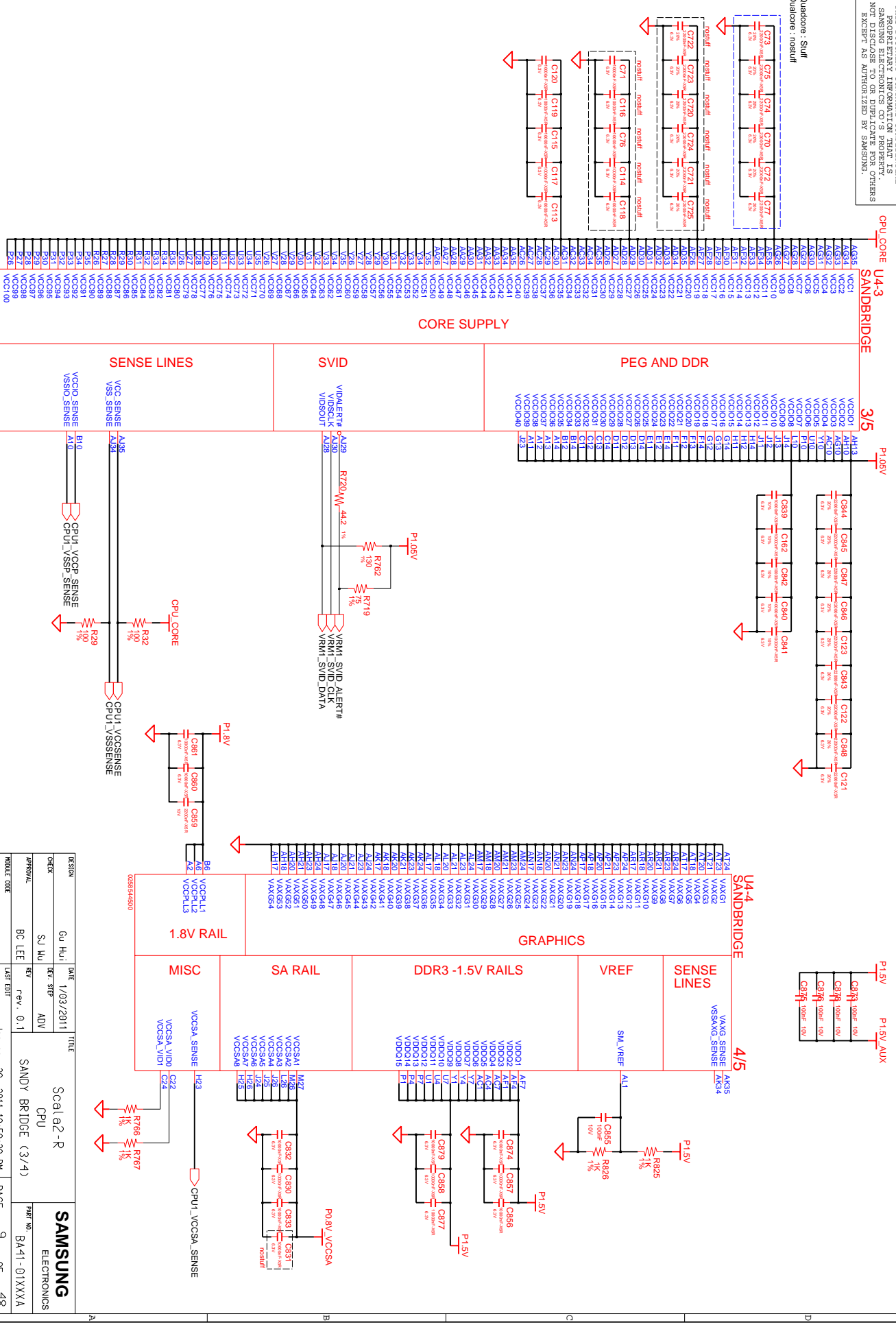
<b>SAMSUNG</b>	
ELECTRONICS	
PART NO.	BA41-01XXXX



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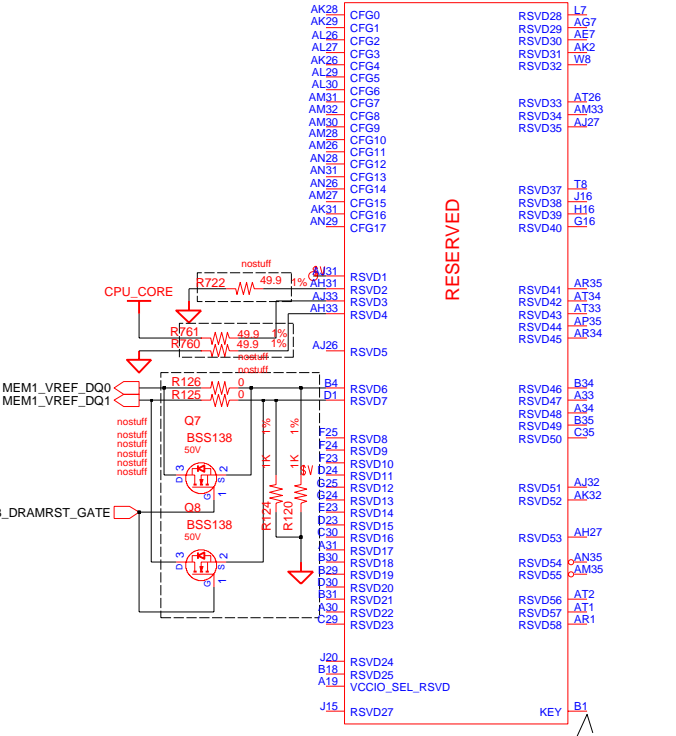
DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		CPU	
APPROVAL	BC LEE	REV	rev. 0.1		SANDY BRIDGE (2/4)	PART NO. BA41-01XXXA
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM		PAGE	8 OF 48



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**U4-5  
 SANDBRIDGE 5/5**

AT35	VSS1	VSS81	AJ22	T35	VSS161	VSS234	F22
AT32	VSS2	VSS82	AJ19	T34	VSS162	VSS235	F19
AT29	VSS3	VSS83	AJ16	T33	VSS163	VSS236	E30
AT27	VSS4	VSS84	AJ13	T32	VSS164	VSS237	E27
AT26	VSS5	VSS85	AJ10	T31	VSS165	VSS238	E24
AT22	VSS6	VSS86	AJ7	T30	VSS166	VSS239	E21
AT19	VSS7	VSS87	AJ4	T29	VSS167	VSS240	E18
AT16	VSS8	VSS88	AJ3	T28	VSS168	VSS241	E15
AT13	VSS9	VSS89	AJ2	T27	VSS169	VSS242	E13
AT10	VSS10	VSS90	AJ1	T26	VSS170	VSS243	E10
AT7	VSS11	VSS91	AH35	P9	VSS171	VSS244	E9
AT4	VSS12	VSS92	AH34	P8	VSS172	VSS245	E8
AT3	VSS13	VSS93	AH32	P6	VSS173	VSS246	E7
AR26	VSS14	VSS94	AH30	P5	VSS174	VSS247	E6
AR22	VSS15	VSS95	AH28	P2	VSS175	VSS248	E5
AR19	VSS16	VSS96	AH26	N33	VSS176	VSS249	E4
AR16	VSS17	VSS97	AH25	N34	VSS177	VSS250	E3
AR13	VSS18	VSS98	AH22	N33	VSS178	VSS251	E2
AR10	VSS19	VSS99	AH19	N32	VSS179	VSS252	E1
AR7	VSS20	VSS100	AH16	N31	VSS180	VSS253	D35
AR4	VSS21	VSS101	AH7	N30	VSS181	VSS254	D32
AP24	VSS22	VSS102	AH4	N29	VSS182	VSS255	D28
AP31	VSS23	VSS103	AG9	N28	VSS183	VSS256	D20
AP28	VSS24	VSS104	AG8	N27	VSS184	VSS257	D26
AP25	VSS25	VSS105	AG9	N27	VSS185	VSS258	D17
AP22	VSS26	VSS106	AG4	N26	VSS186	VSS259	C34
AP19	VSS27	VSS107	AF6	N26	VSS187	VSS260	C31
AP16	VSS28	VSS108	AF3	N26	VSS188	VSS261	C27
AP13	VSS29	VSS109	AF3	N26	VSS189	VSS262	C28
AP10	VSS30	VSS110	AF2	L27	VSS190	VSS263	C25
AP7	VSS31	VSS111	AE35	L9	VSS191	VSS264	C23
AP4	VSS32	VSS112	AE34	L8	VSS192	VSS265	C10
AP1	VSS33	VSS113	AE33	L6	VSS193	VSS266	C1
AN30	VSS34	VSS114	AE32	L5	VSS194	VSS267	B22
AN25	VSS35	VSS115	AE31	L4	VSS195	VSS268	B19
AN22	VSS36	VSS116	AE29	L2	VSS196	VSS269	B15
AN19	VSS37	VSS117	AE28	L1	VSS197	VSS270	B13
AN16	VSS38	VSS118	AH4	N29	VSS198	VSS271	B17
AN13	VSS39	VSS119	AH27	K35	VSS199	VSS272	B11
AN10	VSS40	VSS120	AH26	K32	VSS200	VSS273	B9
AN7	VSS41	VSS121	AD7	K26	VSS201	VSS274	B7
AN4	VSS42	VSS122	AC9	J34	VSS202	VSS275	B5
AM29	VSS43	VSS123	AC8	J31	VSS203	VSS276	B3
AM25	VSS44	VSS124	AC8	H30	VSS204	VSS277	B2
AM22	VSS45	VSS125	AC6	H30	VSS205	VSS278	A35
AM19	VSS46	VSS126	AC3	H27	VSS206	VSS279	A32
AM16	VSS47	VSS127	AC2	H24	VSS207	VSS280	A29
AM13	VSS48	VSS128	AC2	H24	VSS208	VSS281	A29
AM10	VSS49	VSS129	AB35	H21	VSS209	VSS282	A26
AM7	VSS50	VSS130	AB34	H18	VSS210	VSS283	A23
AM4	VSS51	VSS131	AB33	H15	VSS211	VSS284	A20
AM3	VSS52	VSS132	AB32	H13	VSS212	VSS285	A3
AM2	VSS53	VSS133	AB31	H10	VSS213		
AM1	VSS54	VSS134	AB29	H8	VSS214		
AL34	VSS55	VSS135	AB28	H7	VSS215		
AL28	VSS56	VSS136	AB27	H6	VSS216		
AL25	VSS57	VSS137	AB26	H5	VSS217		
AL22	VSS58	VSS138	AB25	H4	VSS218		
AL19	VSS59	VSS139	AB24	H3	VSS219		
AL16	VSS60	VSS140	AB23	H2	VSS220		
AL13	VSS61	VSS141	AB22	H1	VSS221		
AL10	VSS62	VSS142	AB21	G35	VSS222		
AL7	VSS63	VSS143	AB20	G32	VSS223		
AL4	VSS64	VSS144	AB19	G29	VSS224		
AL2	VSS65	VSS145	AB18	G26	VSS225		
AK33	VSS66	VSS146	AB17	G23	VSS226		
AK30	VSS67	VSS147	AB16	G20	VSS227		
AK27	VSS68	VSS148	AB15	G17	VSS228		
AK25	VSS69	VSS149	AB14	G11	VSS229		
AK22	VSS70	VSS150	AB13	F34	VSS230		
AK19	VSS71	VSS151	AB12	F31	VSS231		
AK16	VSS72	VSS152	AB11	F29	VSS232		
AK13	VSS73	VSS153	AB10	F29	VSS233		
AK10	VSS74	VSS154	AB9	F29	VSS233		
AK7	VSS75	VSS155	AB8	F29	VSS233		
AK4	VSS76	VSS156	AB7	F29	VSS233		
AL25	VSS77	VSS157	AB6	F29	VSS233		
	VSS78	VSS158	AB5	F29	VSS233		
	VSS79	VSS159	AB4	F29	VSS233		
	VSS80	VSS160	AB3	F29	VSS233		



**CFG Straps for Processor**

PEG STATIC LANE REVERSAL - CFG2 IS FOR THE 16X	
CFG2	1 : (DEFAULT) NORMAL OPERATION 0 : LANE REVERSED
PCIe PORT BIFURCACTION STRAPS	
CFG{6:5}	11 : (DEFAULT) X16 - DEVICE 1 FUNCTIONS 1 AND 2 DISABLED 10 : X8, X8 - DEVICE 1 FUNCTION 1 ENABLED - FUNCTION 2 DISABLED 01 : RESERVED - (DEVICE 1 FUNCTION 1 DISABLED - FUNCTION 2 ENABLED) 00 : X8, X4, X4 - DEVICE 1 FUNCTIONS 1 AND 2 ENABLED
Display Port Presence	
CFG4	1 : Disabled - No DP device is connected to eDP 0 : Enabled - (DP device is connected to eDP)
PEG DEFER TRAINING	
CFG7	1 : (DEFAULT) PEG TRAIN IMMEDIATELY FOLLOWING XRES/SETB DEASSERTION 0 : PEG WAIT FOR BIOS FOR TRAINING

FOR RPGA SOCKET  
 RSDV59 PIN SHOULD BE LEFT NC

DESIGN	Gu Hu	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		CPU	
APPROVAL	BC LEE	REV	rev. 0.1		SANDY BRIDGE (4/4)	PART NO. BA41-01XXXXA
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	10	OF 48

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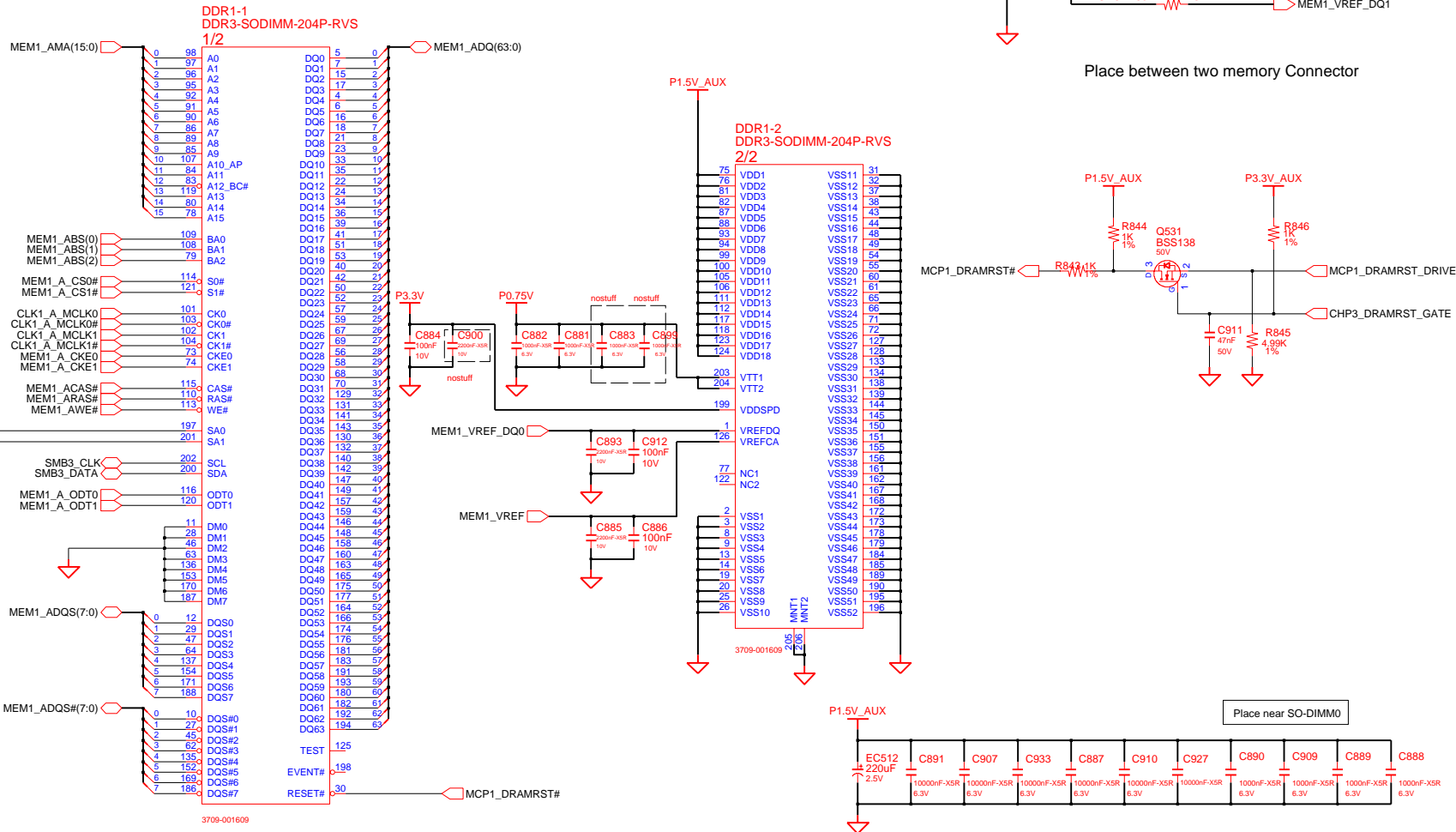
## SO-DIMM#0 : 2nd SO-DIMM

### DDR SO-DIMM #0

Height : 9.2 mm (REVERSE)

P/N : 3709-001609 (CONCRAFT)

P/N : 3709-001656 (Foxconn)



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R SODIMM A DDR3	<b>SAMSUNG</b> ELECTRONICS PART NO. <b>BA41-01XXXXA</b>
CHECK	SJ Wu	DEV. STEP	ADV			
APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	11 OF 48	

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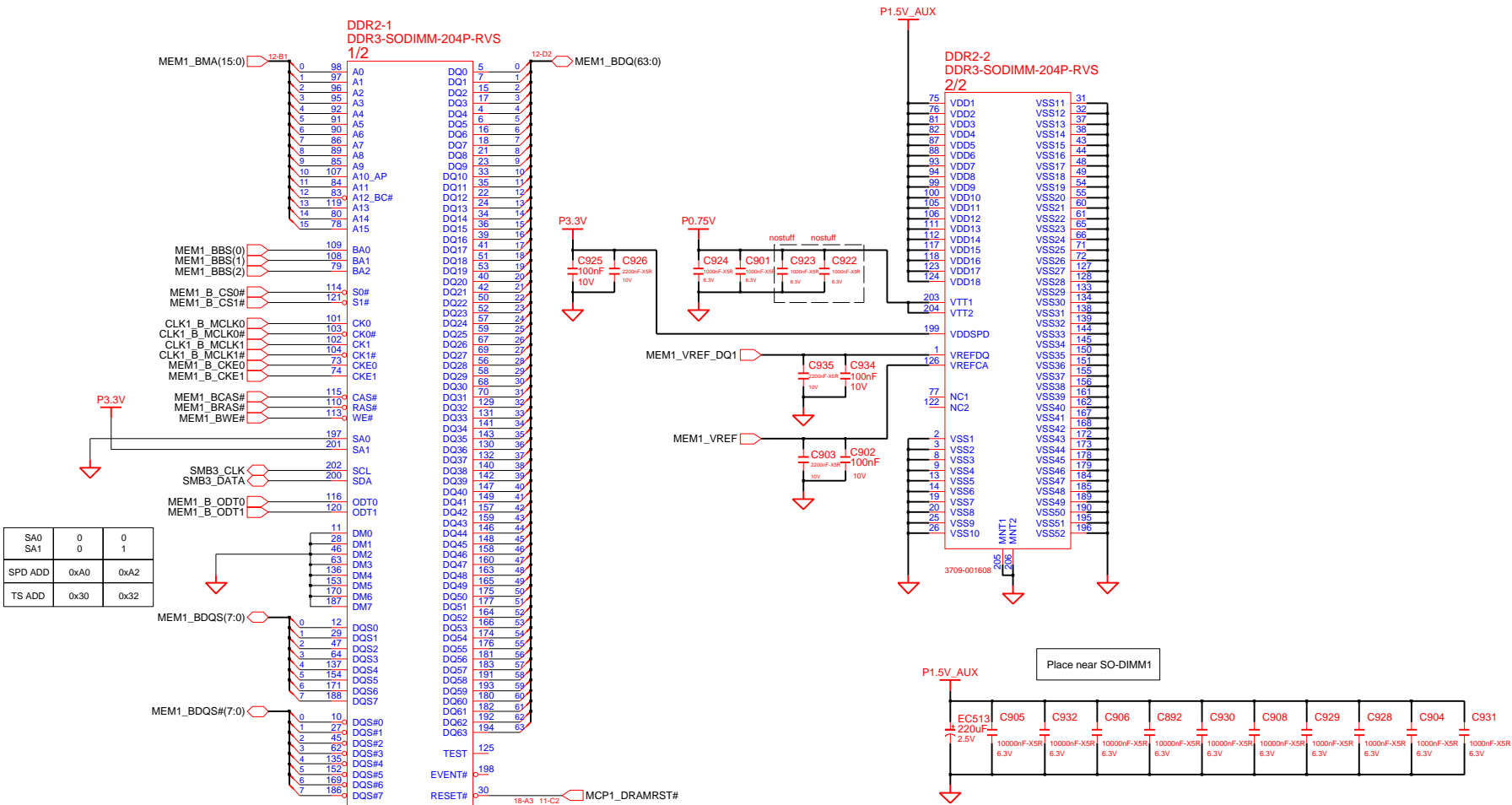
## SO-DIMM#1 : 1st SO-DIMM

### DDR SO-DIMM #1

Height : 4 mm (REVERSE)

P/N : 3709-001608 (CONCRAFT)

P/N : 3709-001654 (Foxconn)

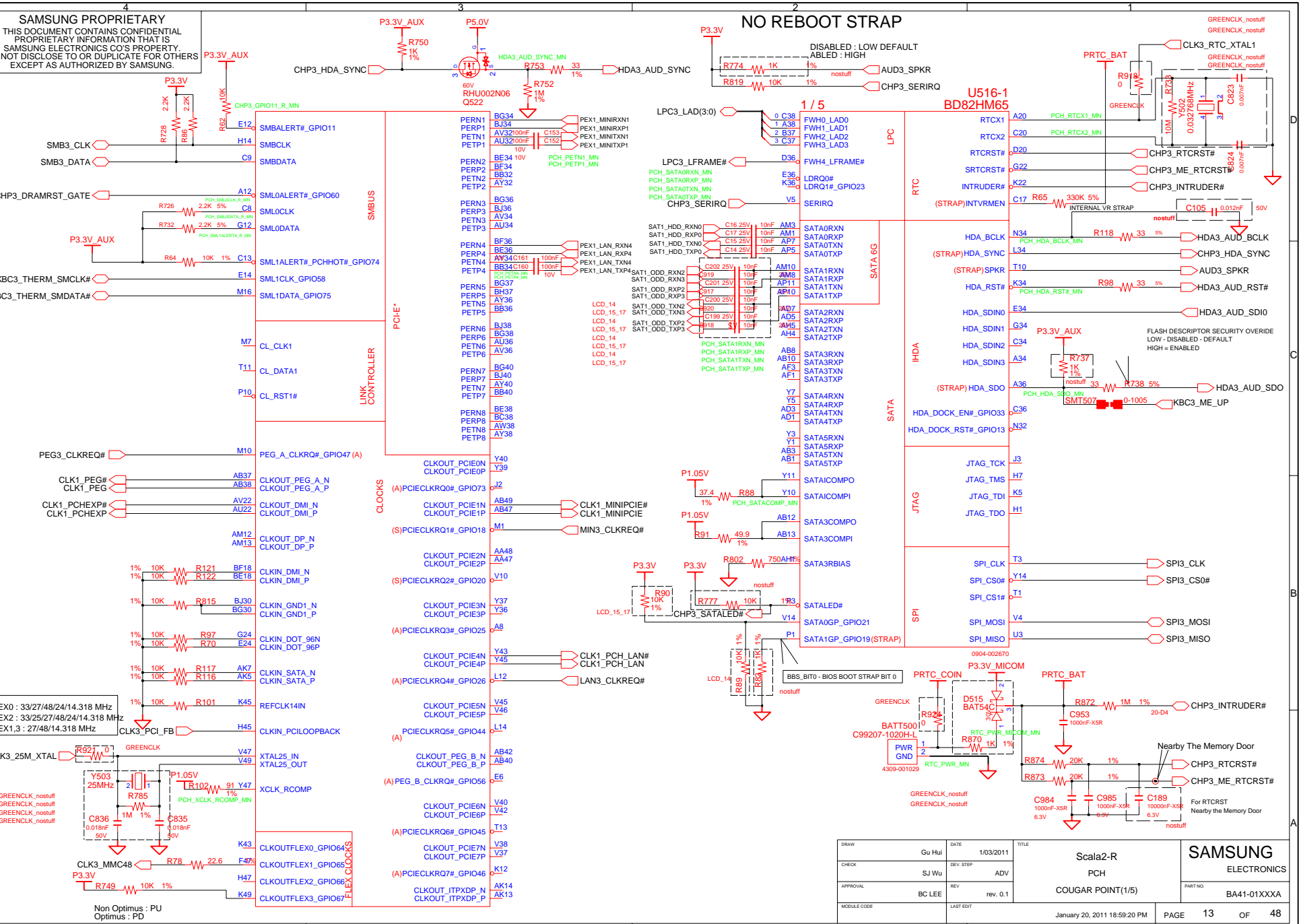


3709-001608

Drawn	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		SODIMM B	
APPROVAL	BC LEE	REV	rev. 0.1		DDR3	PART NO. BA41-01XXXX
MODULE CODE		LAST EDIT				PAGE 12 OF 48

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**NO REBOOT STRAP**



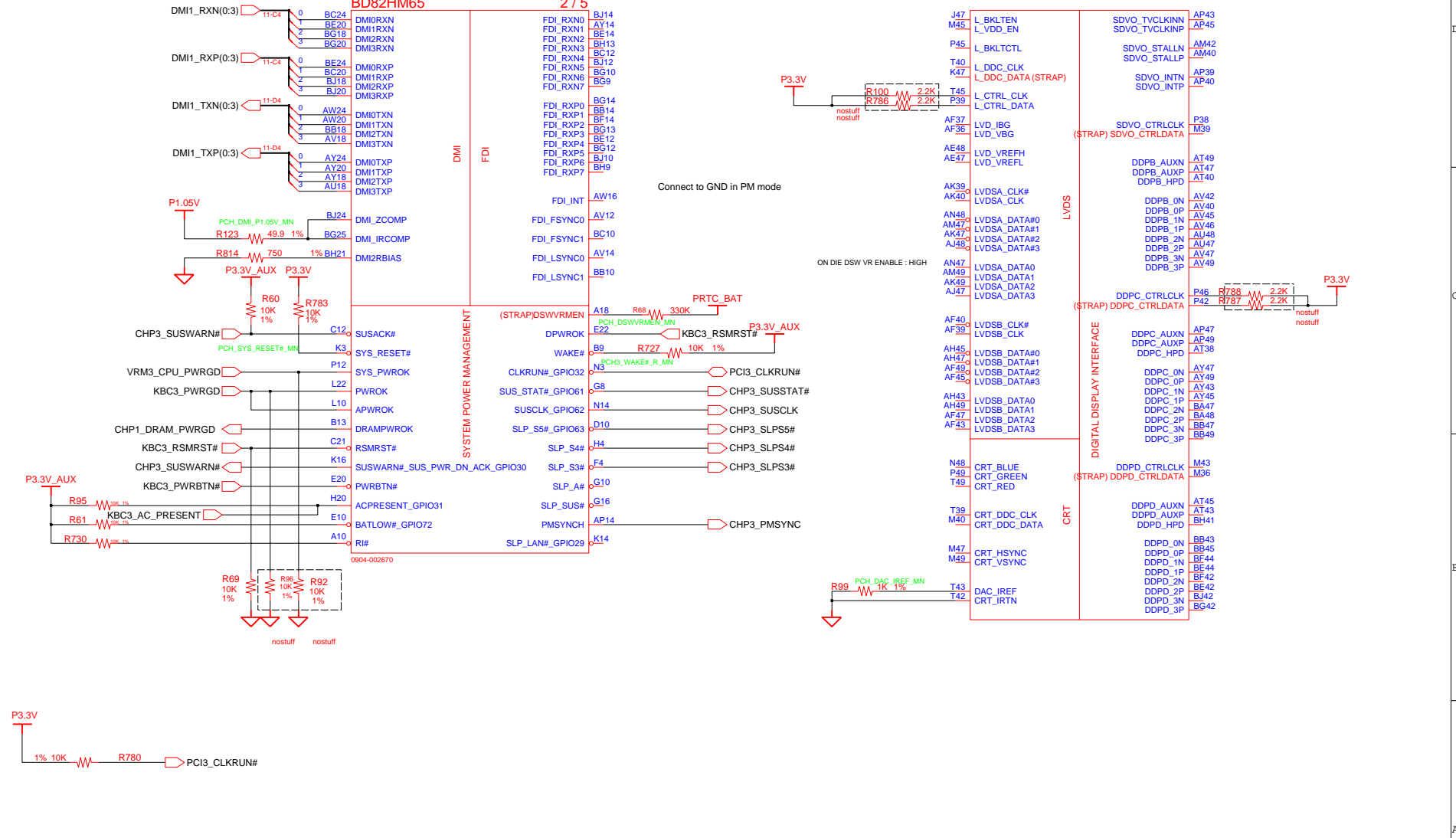
Non Optimus : PU  
Optimus : PD

DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R PCH COUGAR POINT(1/5)	SAMSUNG
CHECK	SJ Wu	DEV_STEP	ADV			ELECTRONICS
APPROVAL	BC LEE	REV	rev. 0.1			PARTNO: BA41-01XXXX
MODULE CODE		LAST EDIT				
				January 20, 2011 18:59:20 PM	PAGE	13 OF 48

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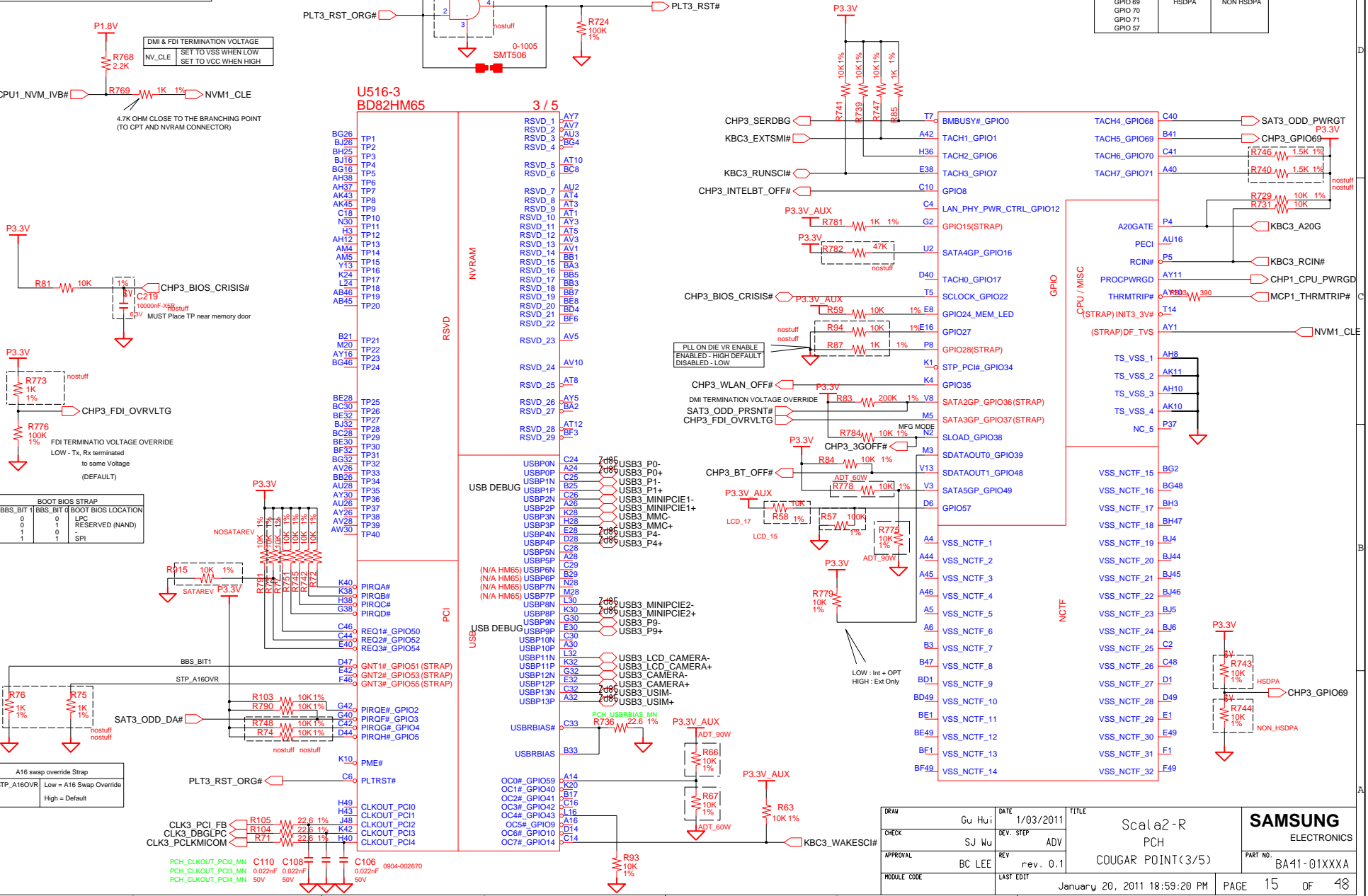
DDI PORT B DETECT	
SDVO_CTRL_DATA	1 PORT B DETECTED 0 PORT B NOT DETECTED

**U516-2  
BD82HM65**



DRAW	DATE	TITLE	<b>Scale2-R</b> <b>PCH</b> <b>COUGAR POINT(2/5)</b>	<b>SAMSUNG</b> <b>ELECTRONICS</b> PART NO. <b>BA41-01XXXA</b>
Gu Hui	1/03/2011			
SJ Wu	ADV			
BC LEE	rev. 0.1			
MODULE CODE	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE <b>14</b> OF <b>48</b>	

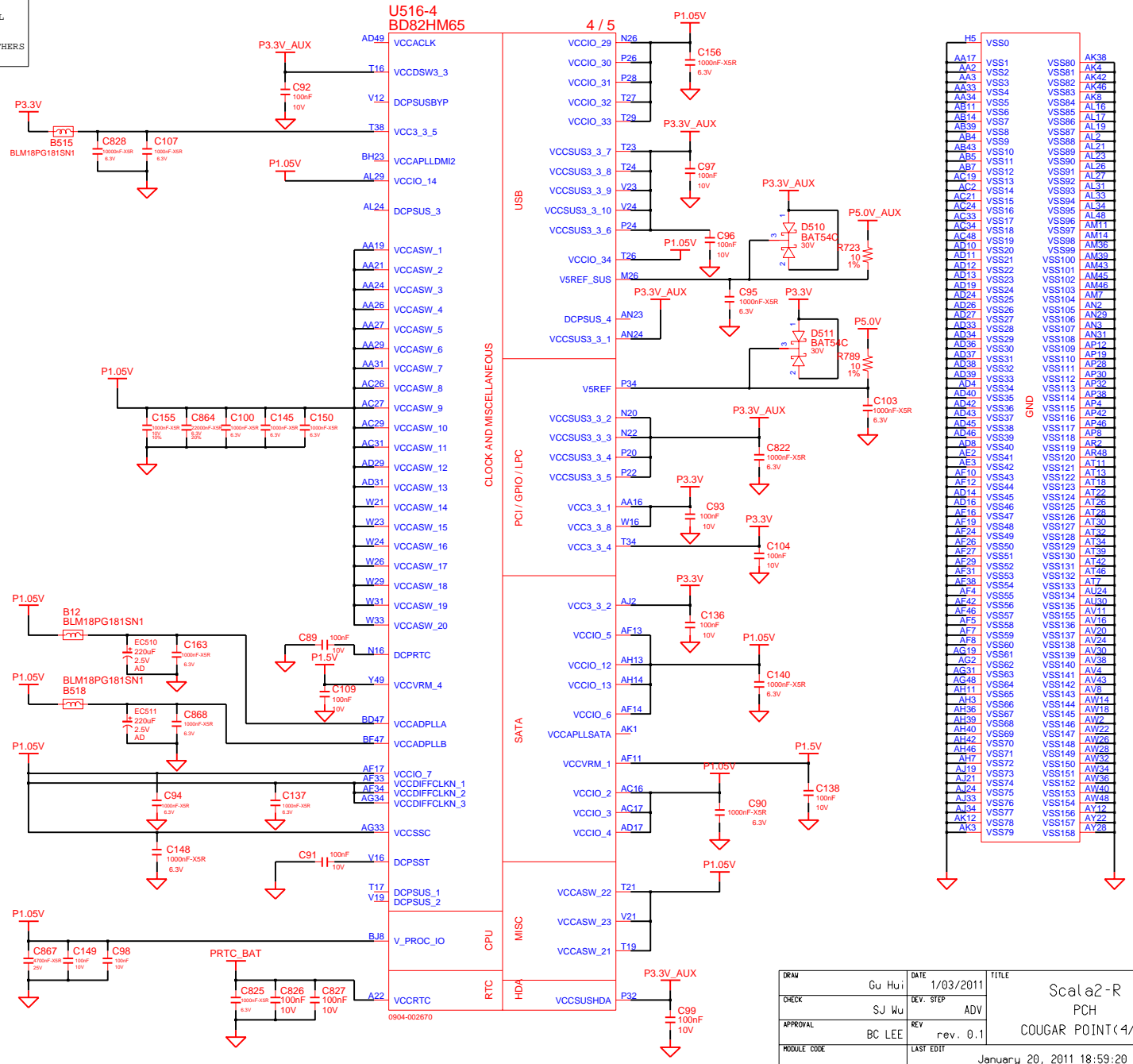
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DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	Scala2-R	PCH	
APPROVAL	BC LEE	REV	rev. 0.1		COUGAR POINT(3/5)	PART NO. BA41-01XXXX
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM			PAGE 15 OF 48



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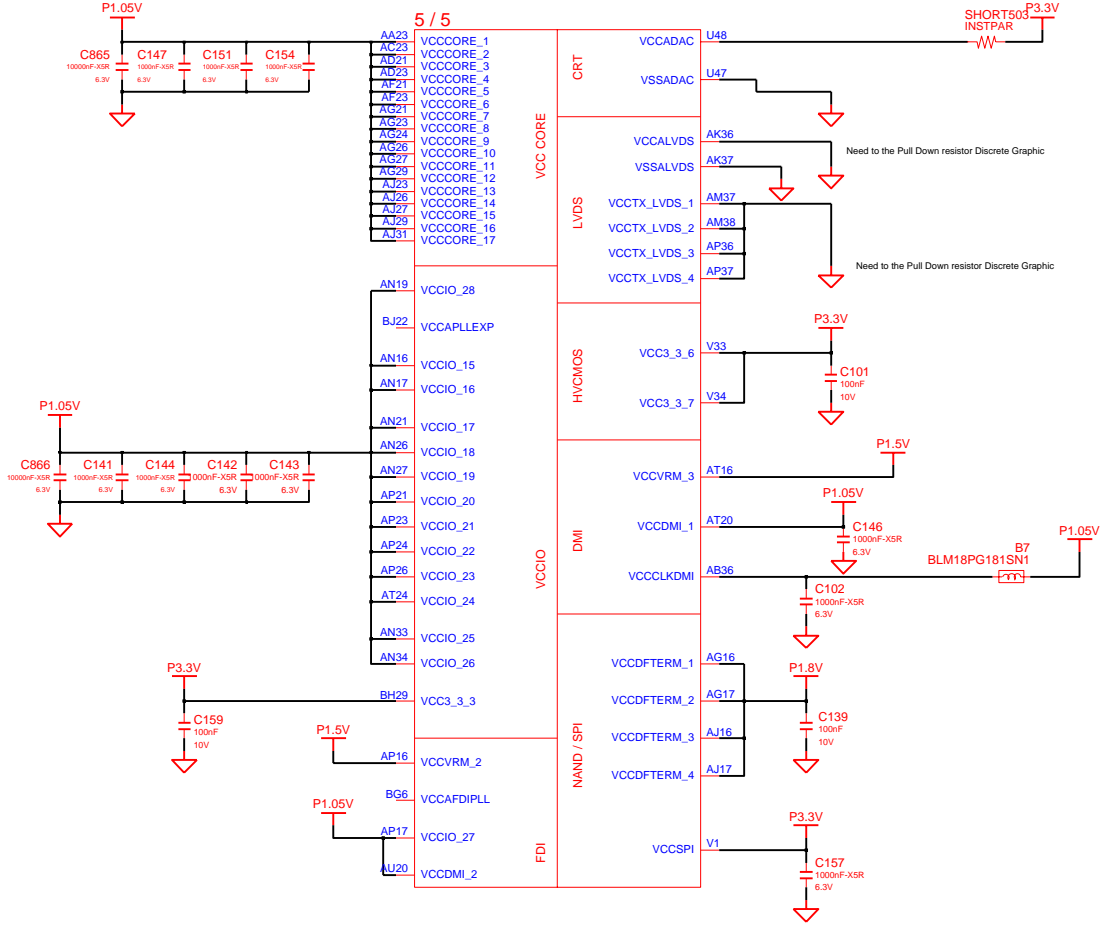
DRAW	Gu Hu	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		PCH	
APPROVAL	BC LEE	REV	rev. 0.1		COUGAR POINT(4/5)	PART NO. BA41-01XXXXA
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM		PAGE 16	OF 60

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**U516-5**  
**BD82HM65**

AY4	VSS159	VSS259	H46
AY42	VSS160	VSS260	K18
AY46	VSS161	VSS261	K26
AY8	VSS162	VSS262	K39
B11	VSS163	VSS263	K46
B15	VSS163	VSS263	K7
B19	VSS164	VSS264	L18
B23	VSS165	VSS265	L2
B27	VSS166	VSS266	L20
B31	VSS167	VSS267	L26
B35	VSS168	VSS268	L28
B39	VSS169	VSS269	L36
B7	VSS170	VSS270	L36
B7	VSS171	VSS271	L48
B45	VSS172	VSS272	M12
BB12	VSS173	VSS273	M18
BB16	VSS174	VSS274	M18
BB20	VSS175	VSS275	M22
BB24	VSS176	VSS276	M28
BB28	VSS177	VSS277	M32
BB30	VSS178	VSS278	M34
BB38	VSS180	VSS280	M38
BB4	VSS181	VSS281	M4
BB46	VSS182	VSS282	M42
BC14	VSS183	VSS283	M46
BC18	VSS184	VSS284	M8
BC2	VSS185	VSS285	N18
BC22	VSS186	VSS286	N40
BC26	VSS187	VSS287	N47
BC32	VSS188	VSS288	P18
BC34	VSS189	VSS289	P18
BC36	VSS190	VSS290	P40
BC40	VSS191	VSS291	P43
BC42	VSS192	VSS292	P43
BC48	VSS193	VSS293	P47
BD4	VSS194	VSS294	R2
BE22	VSS195	VSS295	R48
BE26	VSS196	VSS296	T12
BE40	VSS198	VSS298	T37
BF10	VSS199	VSS299	T4
BF12	VSS200	VSS300	T47
BF16	VSS201	VSS301	W34
BF20	VSS202	VSS302	T46
BF22	VSS203	VSS303	T8
BF24	VSS204	VSS304	V11
BF26	VSS205	VSS305	V26
BF28	VSS206	VSS306	V27
BF30	VSS207	VSS307	V27
BF38	VSS208	VSS308	V29
BF40	VSS209	VSS309	V31
BF40	VSS210	VSS310	V31
BF8	VSS211	VSS311	V36
BG17	VSS212	VSS312	V43
BG33	VSS213	VSS313	V7
BG44	VSS214	VSS314	V19
BG8	VSS215	VSS315	V19
BH11	VSS216	VSS316	V38
BH15	VSS217	VSS317	W27
BH17	VSS218	VSS318	W46
BH19	VSS219	VSS319	Y12
H10	VSS220	VSS320	Y38
BH27	VSS221	VSS321	Y4
BH31	VSS222	VSS322	Y4
BH31	VSS223	VSS323	Y4
BH33	VSS224	VSS324	Y46
BH35	VSS225	VSS325	Y8
BH39	VSS226	VSS326	Y8
BH43	VSS227	VSS327	N24
BH7	VSS228	VSS328	AJ3
D3	VSS229	VSS329	AD37
D12	VSS230	VSS330	E43
D16	VSS231	VSS331	BE10
D18	VSS232	VSS332	BG11
D22	VSS233	VSS333	G14
D4	VSS234	VSS334	H18
D26	VSS235	VSS335	T36
D30	VSS236	VSS336	BG22
D32	VSS237	VSS337	BG24
D34	VSS238	VSS338	C22
D38	VSS239	VSS339	AP13
D42	VSS240	VSS340	M14
D8	VSS241	VSS341	AP3
E18	VSS242	VSS342	AP1
E38	VSS243	VSS343	BE16
G18	VSS244	VSS344	BC18
G20	VSS245	VSS345	BG28
G26	VSS246	VSS346	BJ28
G28	VSS247	VSS347	
G36	VSS248	VSS348	
G48	VSS249	VSS349	
H12	VSS250	VSS350	
H18	VSS251	VSS351	
H22	VSS252	VSS352	
H24	VSS253	VSS353	
H26	VSS254	VSS354	
H30	VSS255	VSS355	
H32	VSS256	VSS356	
H34	VSS257	VSS357	
F3	VSS258	VSS358	

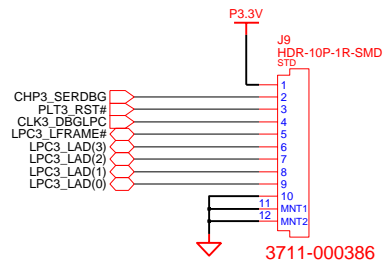
This power share with thermal sensor



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		PCH	
APPROVAL	BC LEE	REV	rev. 0.1		COUGAR POINT(5/5)	PART NO. BA41-01XXXX
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	17	OF 48

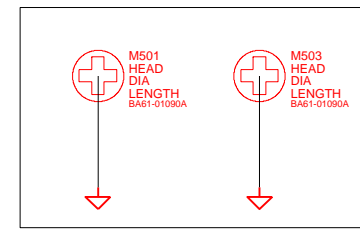
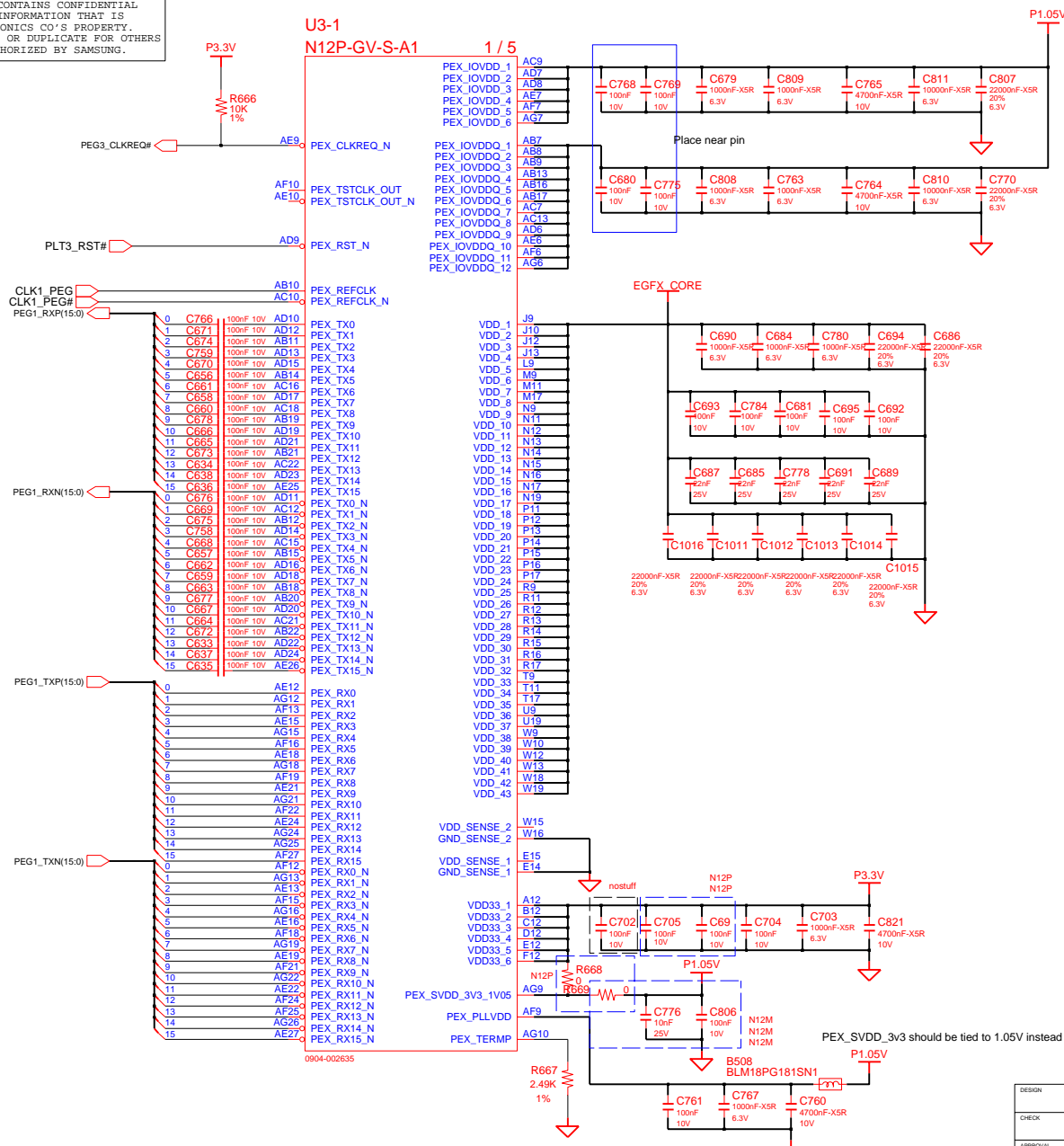
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# 80H PORT DEBUG



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R DEBUG PORT 80H DECODER	<b>SAMSUNG</b> ELECTRONICS	
CHECK	SJ Wu	DEV. STEP	ADV	PART NO.			BA41-01XXXA
APPROVAL	BC LEE	REV	rev. 0.1	PAGE			18 OF 48
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM				

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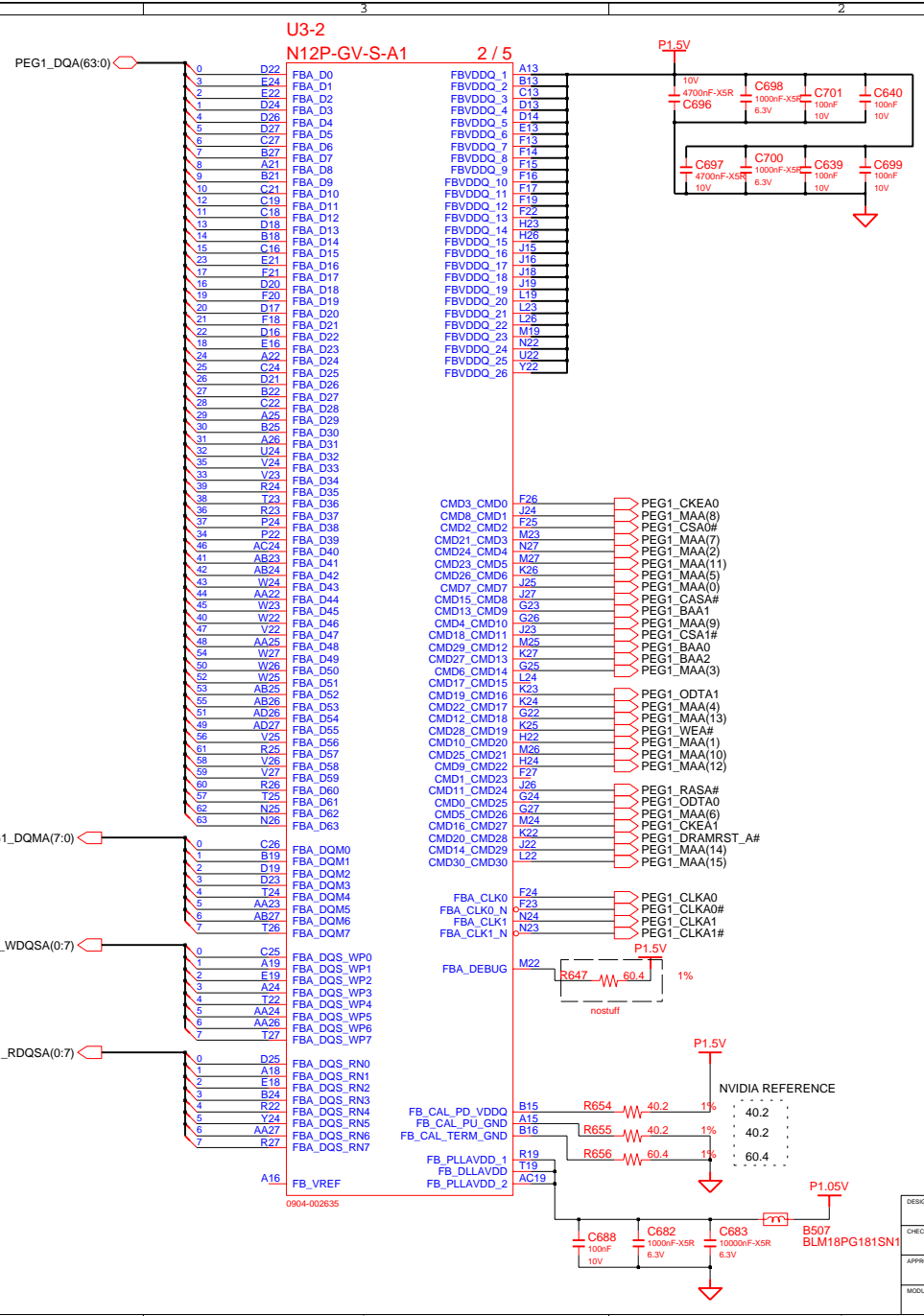


Graphic PEM

DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		N12P_40NM(1/4)	
APPROVAL	BC LEE	REV	rev. 0.1		N12P_40NM(1/4)	PART NO. BA41-01XXXX
MODULE CODE		LAST EDIT				PAGE 19 OF 48

January 20, 2011 18:59:20 PM

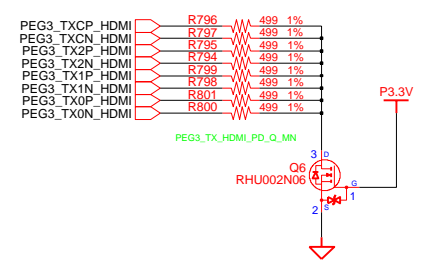
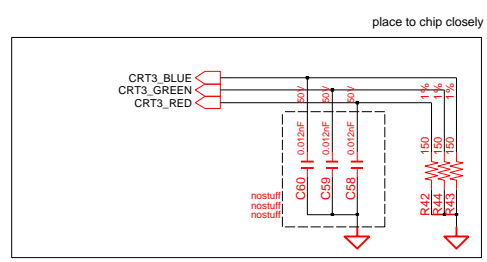
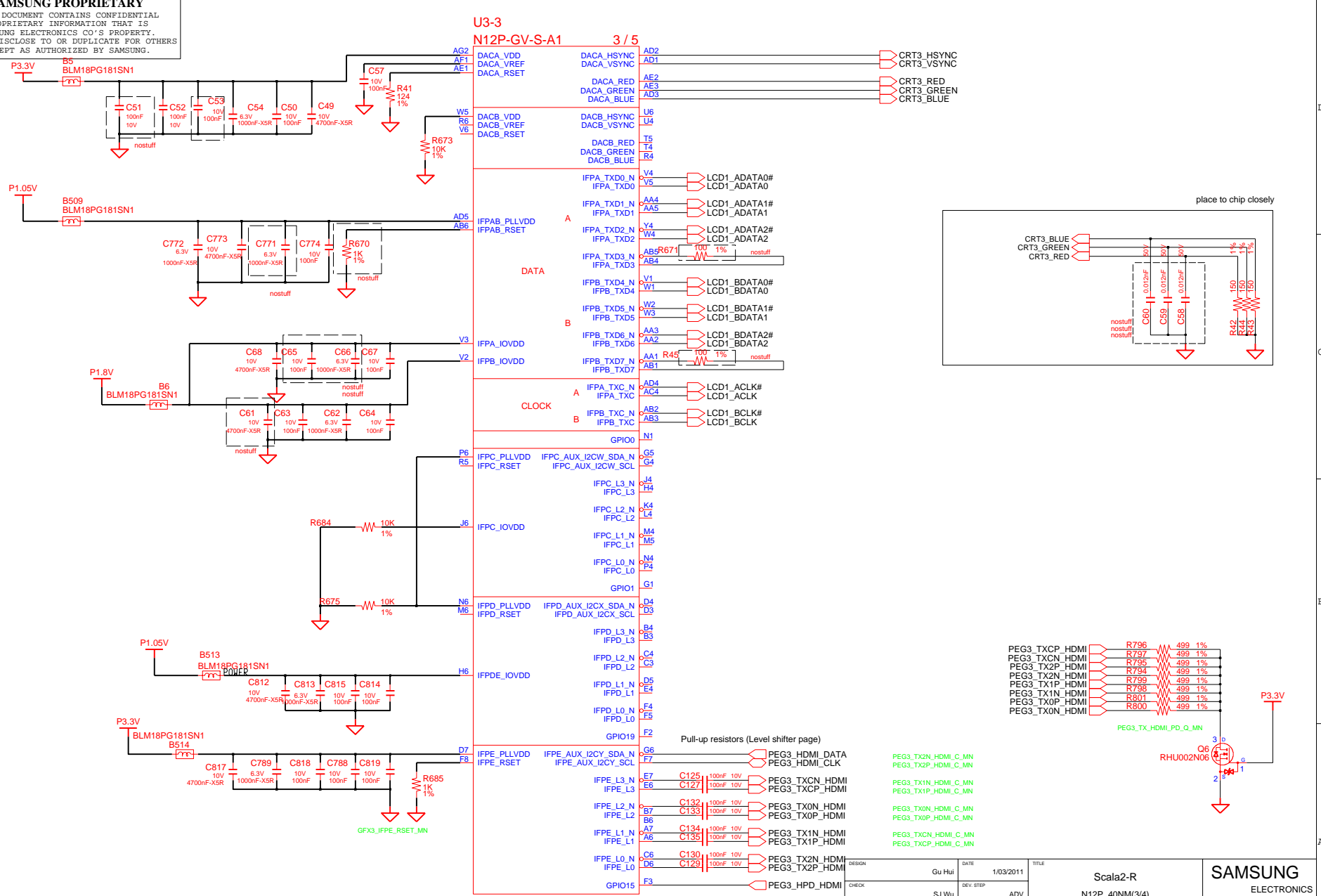
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N12M-GE : CMD MODE C  
 N12P-GV : CMD MODE E

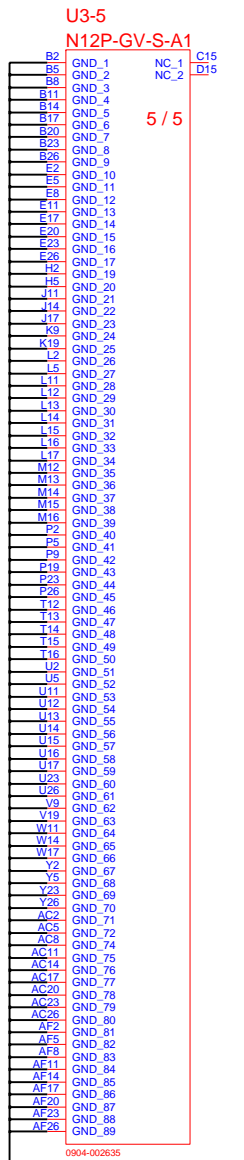
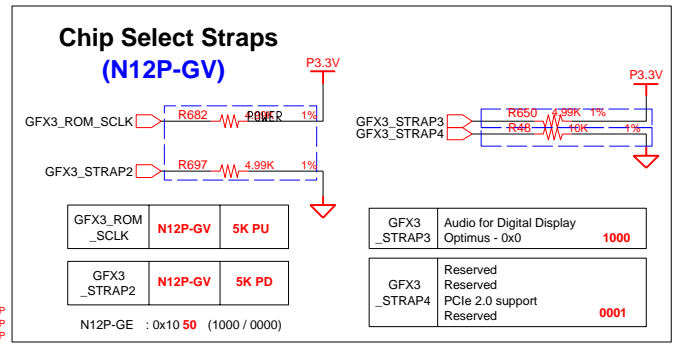
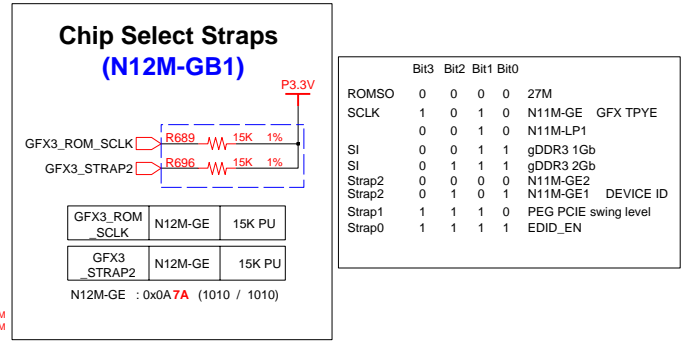
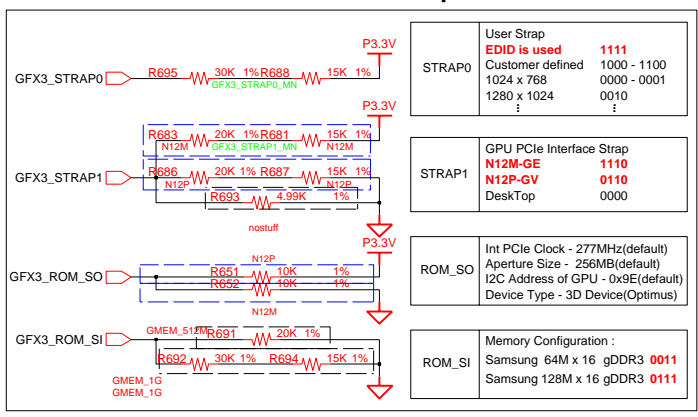
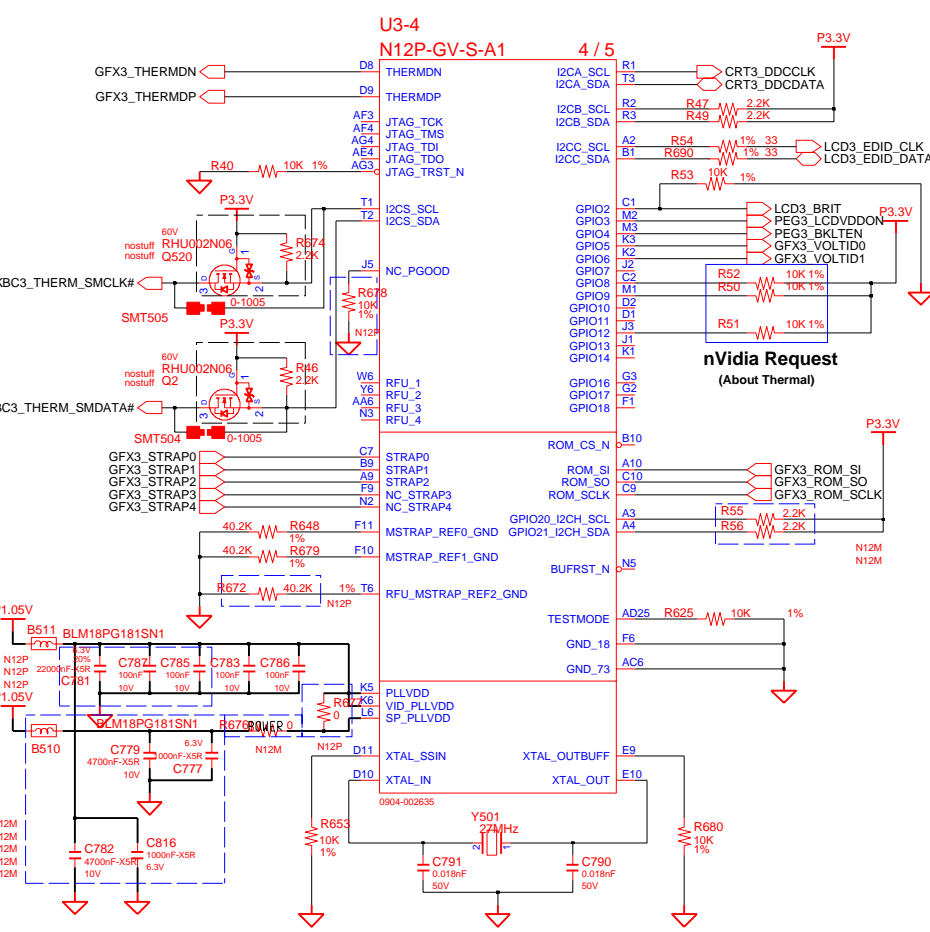
DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		N12P_40NM(2/4)	
APPROVAL	BC LEE	REV	rev. 0.1		N12P_40NM(2/4)	PART NO. BA41-01XXXX
MODULE CODE		LAST EDIT				
				January 20, 2011 18:59:20 PM	PAGE	20 OF 48

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DESIGN	DATE	TITLE	<b>SAMSUNG</b> ELECTRONICS PARTNO BA41-01XXXX PAGE 21 OF 48
Gu Hui	1/03/2011	Scala2-R	
SJ Wu	ADV	N12P_40NM(3/4)	
BC LEE	rev. 0.1	N12P_40NM(3/4)	
		January 20, 2011 18:59:20 PM	

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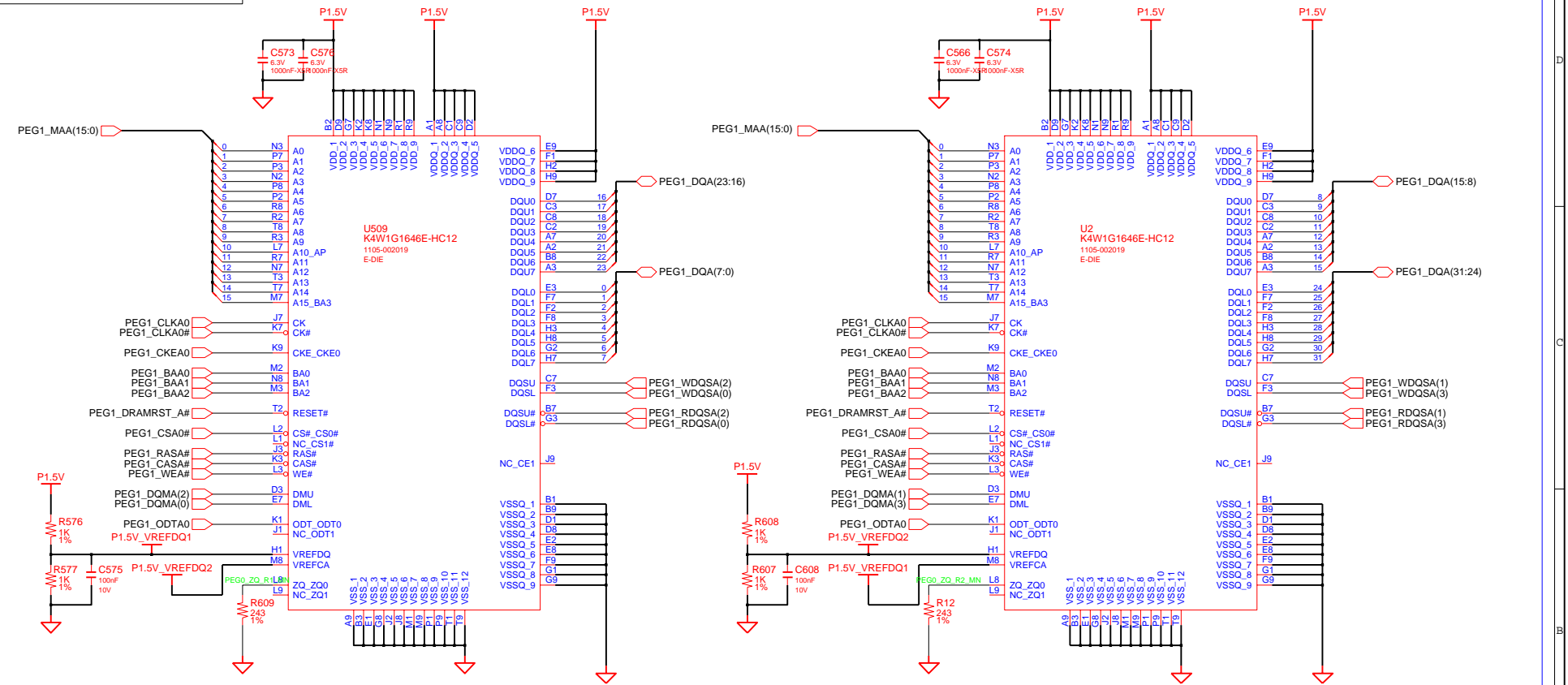


DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R
CHECK	SJ Wu	DEV. STEP	ADV	N12M_40NM(4/4)	
APPROVAL	BC LEE	REV	rev. 0.1	N12P_40NM(4/4)	
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	22 OF 48

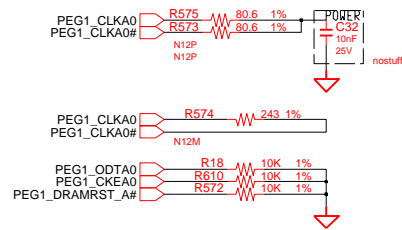
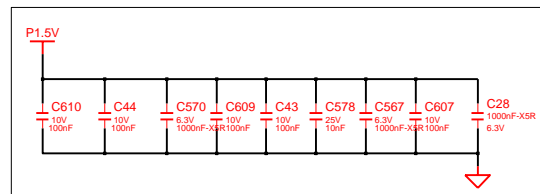
**SAMSUNG ELECTRONICS**  
 PARTNO: BA41-01XXXX

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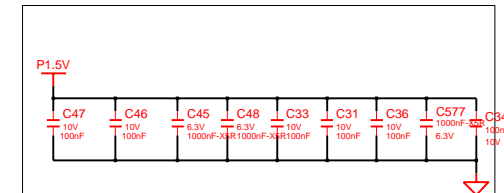
# A-Channel #0



Place near to VDDQ



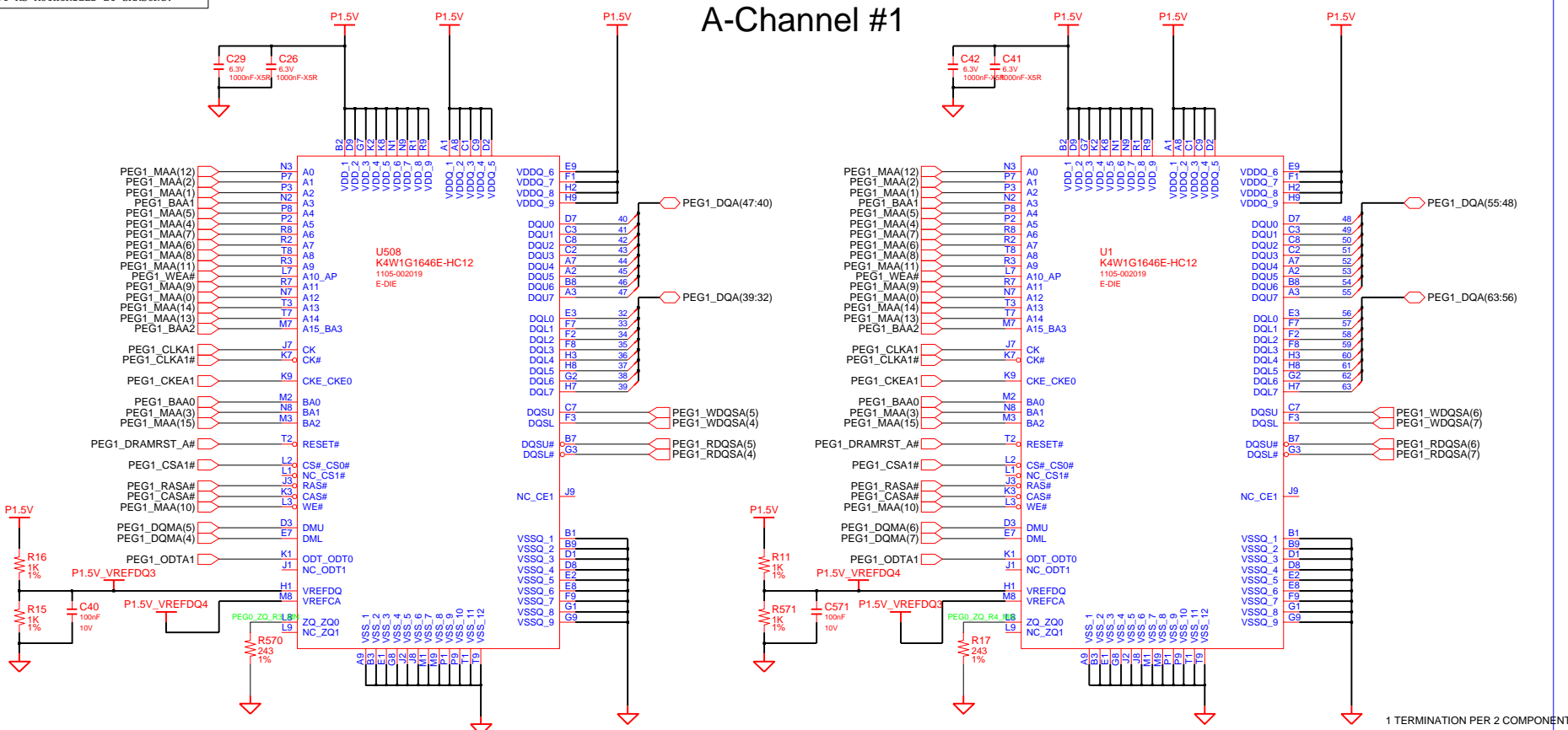
Place near to VDDQ



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		GRAPHIC_MEM A#0	
APPROVAL	BC LEE	REV	rev. 0.1		GRAPHIC_MEM A#0	PART NO. BA41-01XXXX
MODULE CODE		LAST EDIT				PAGE 23 OF 48

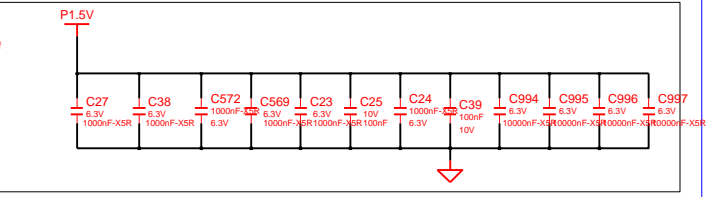
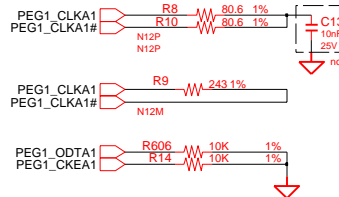
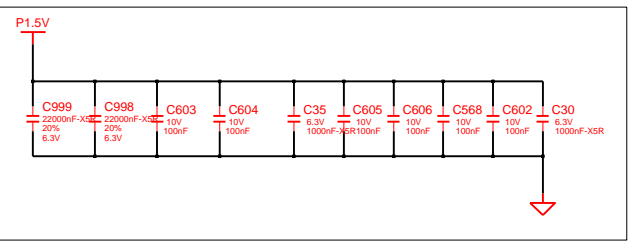


# A-Channel #1



Place near to VDDQ

Place near to VDDQ



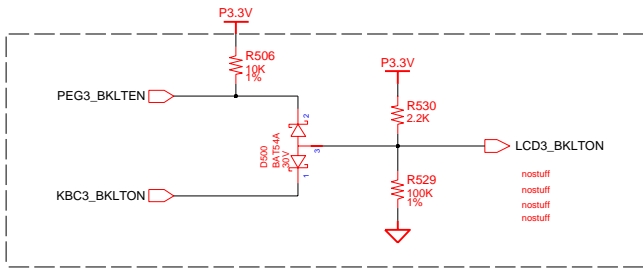
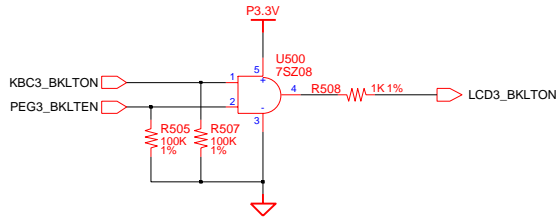
1 TERMINATION PER 2 COMPONENT

DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R
CHECK	SJ Wu	DEV. STEP	ADV	GRAPHIC_MEM A#1	SAMSUNG ELECTRONICS
APPROVAL	BC LEE	REV	rev. 0.1	GRAPHIC_MEM A#1	
MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE 24 OF 48

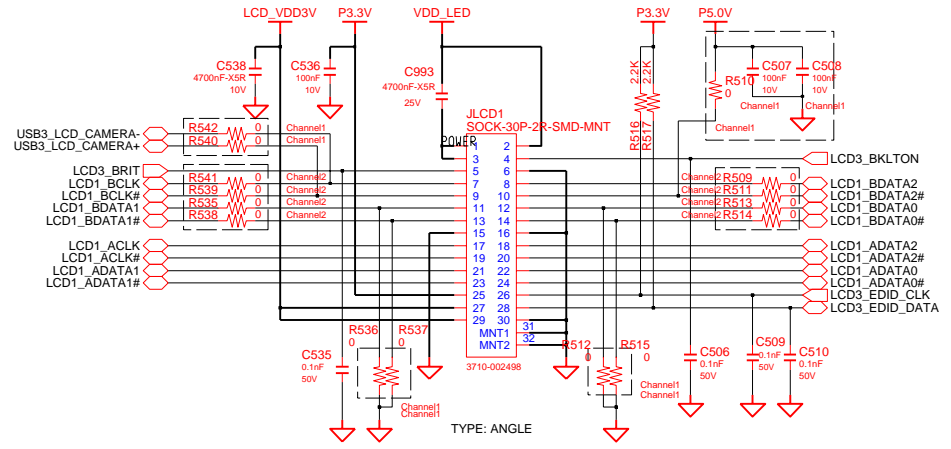
# LVDS LOGIC

## 1Ch. LCD Connector + CAMERA

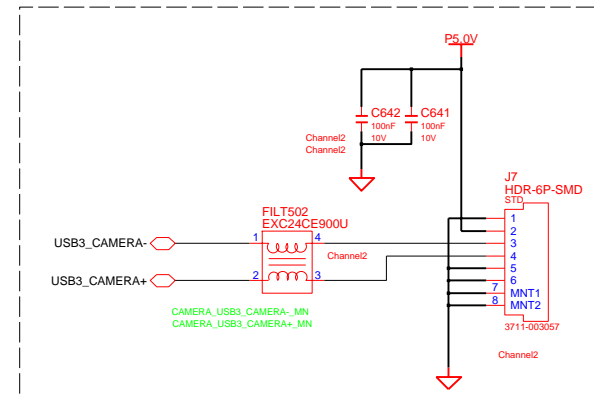
### Backlight On



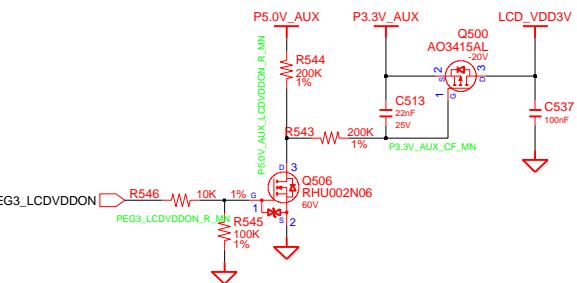
NOTE : Place R20 close to connector to minimize stub



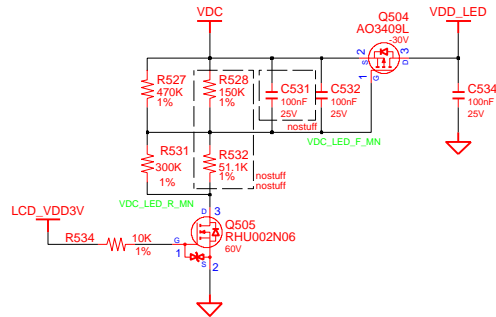
### CAMERA CONN FOR 2ch LVDS



### LCD Power



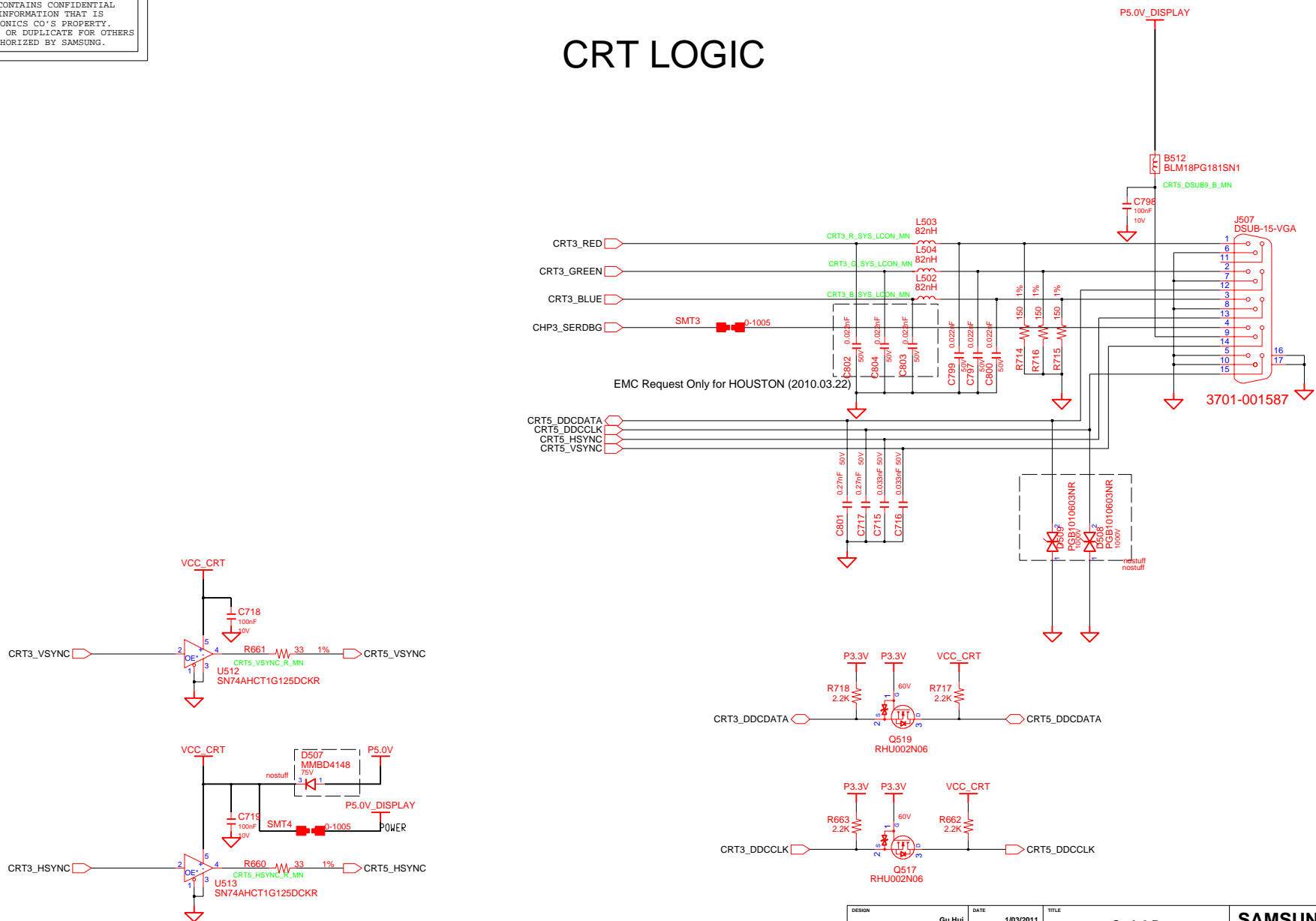
### LED Power



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	GRAPHICS_IF		
APPROVAL	BC LEE	REV	rev. 0.1	LVDS		PART NO. BA41-01XXXXA
MODULE CODE		LAST EDIT				PAGE 25 OF 48
				January 20, 2011 18:59:20 PM		

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# CRT LOGIC

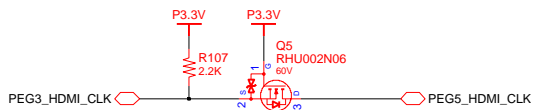


DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R GRAPHICS_IF CRT	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		PART NO.	
APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE		LAST EDIT				
				January 20, 2011 18:59:20 PM	PAGE	26 OF 48

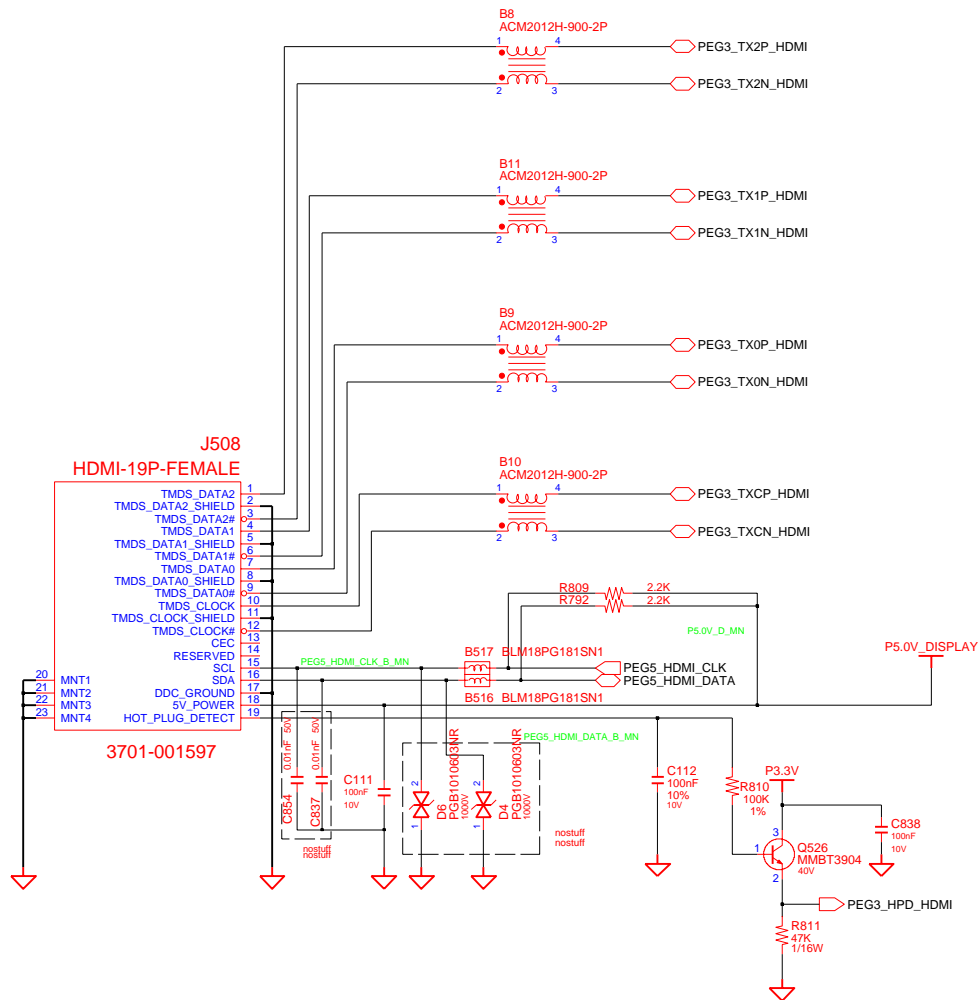
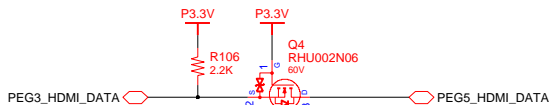
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# HDMI Graphic

FOR HDMI VERIFICATION TEST



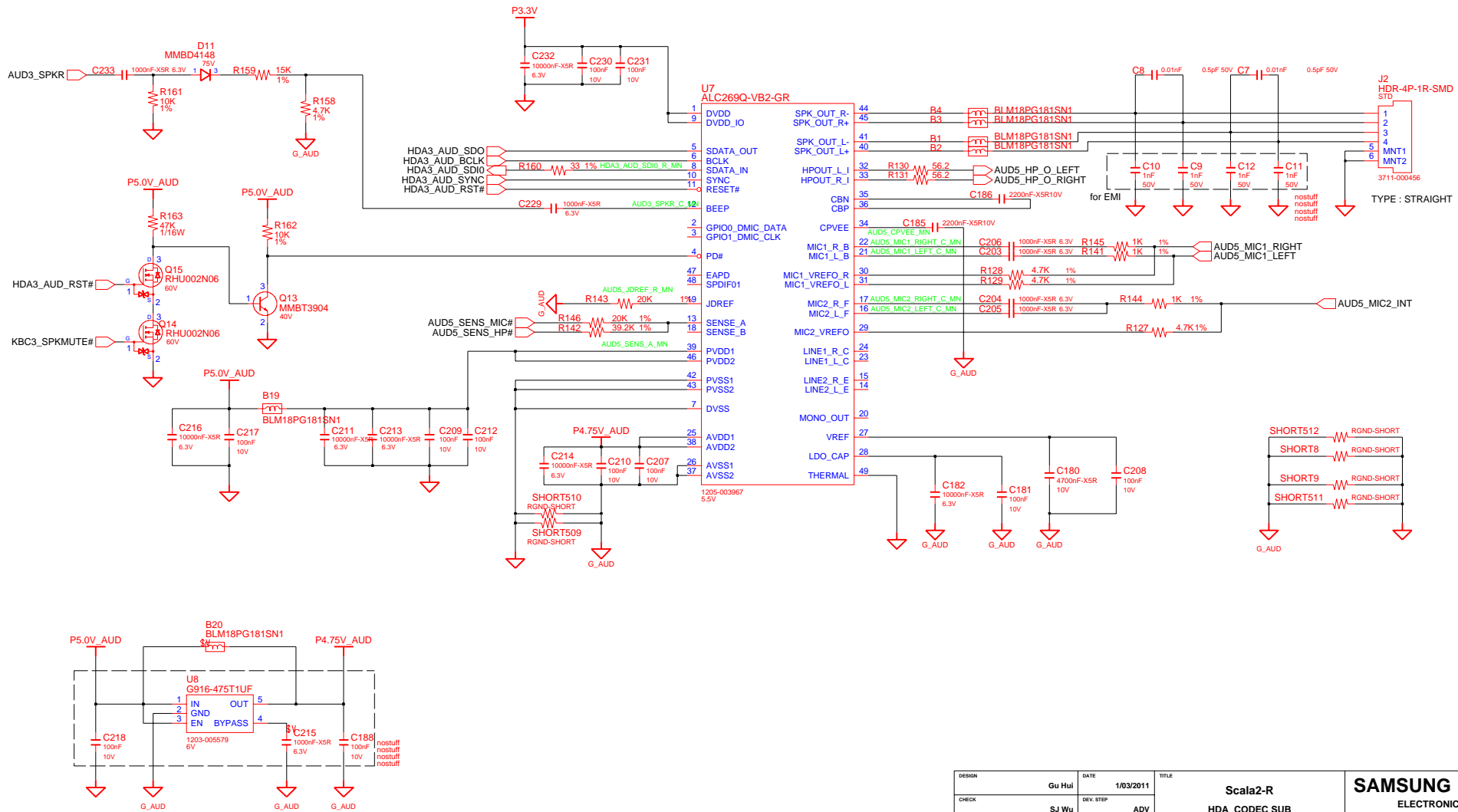
N10x/N11x\_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	GRAPHICS_IF		
APPROVAL	BC LEE	REV	rev. 0.1	HDMI		PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	27	OF 48

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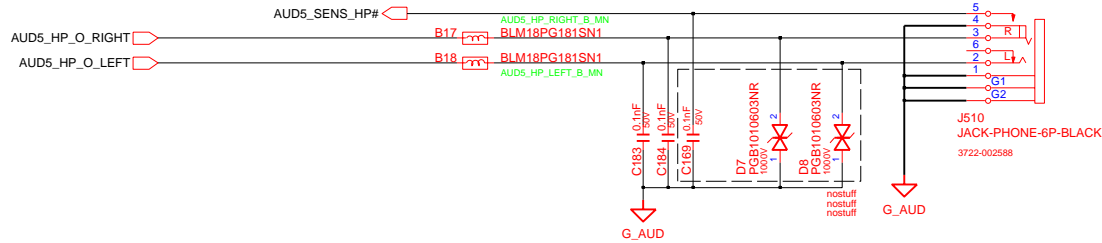
# HD AUDIO



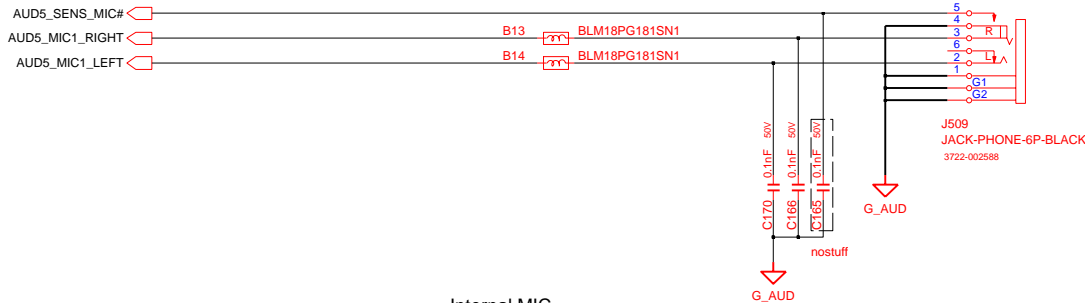
DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R HDA_CODEC SUB AUDIO CODEC ALC269 SUB	<b>SAMSUNG</b> ELECTRONICS PART NO. <b>BA41-01XXXXA</b>
CHECK	SJ Wu	DEV. STEP	ADV			
APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE		LAST EDIT				
				January 20, 2011 18:59:20 PM	PAGE 28 OF 48	

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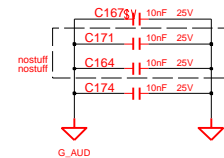
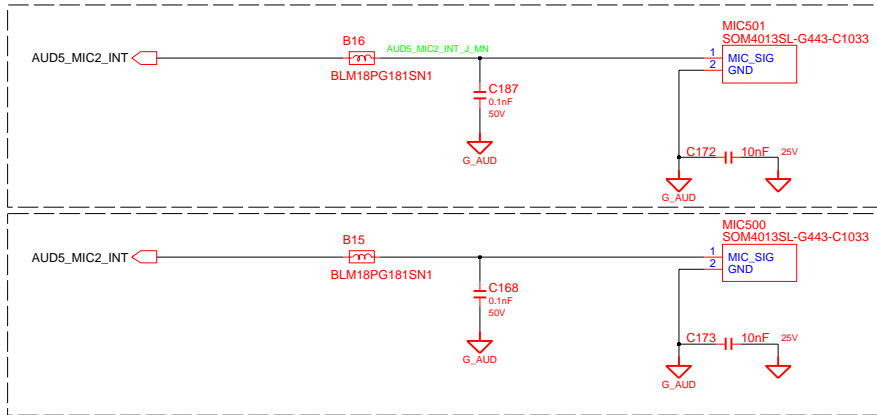
### HEADPHONE



### MIC JACK



### Internal MIC

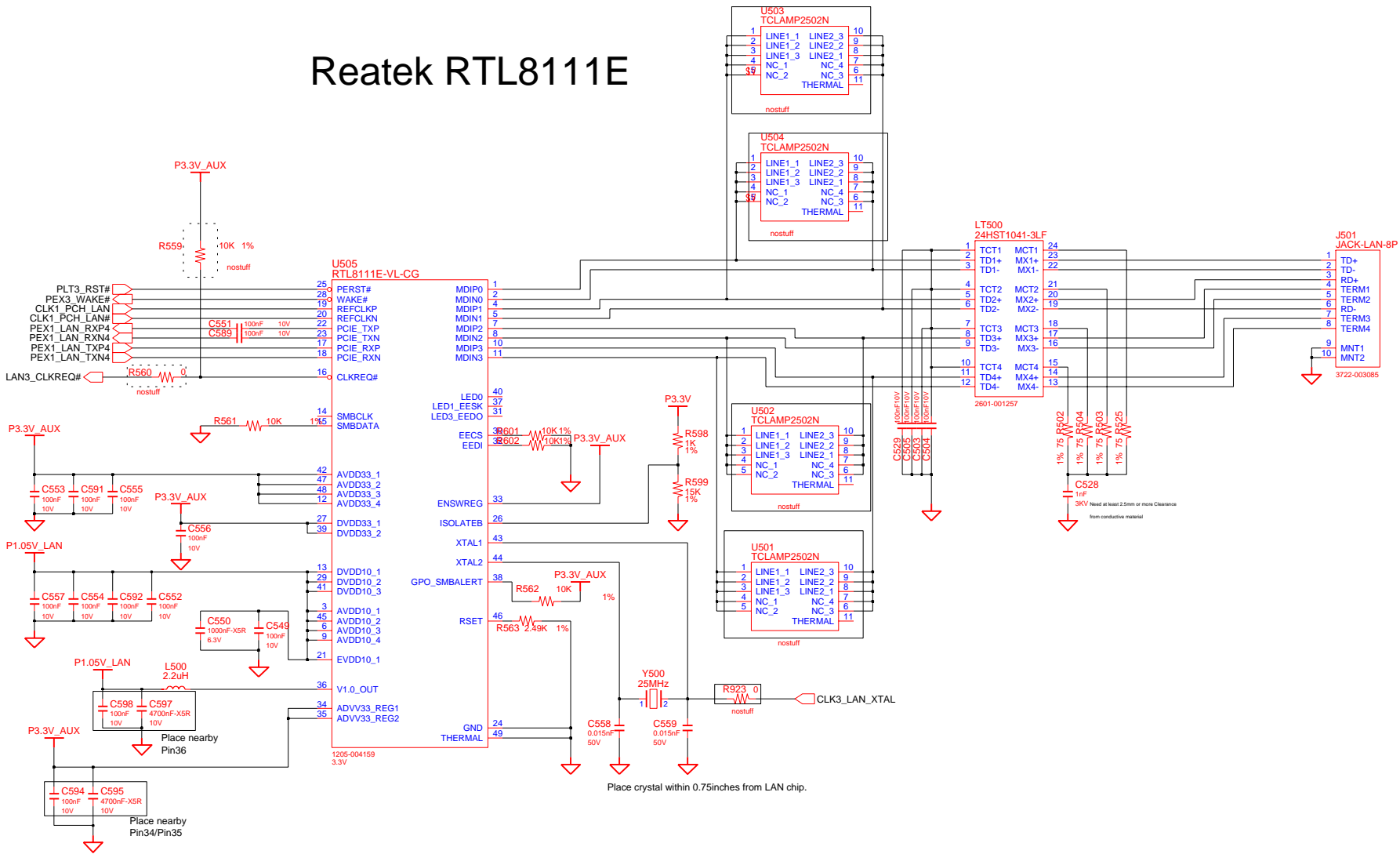


LCD\_15\_17  
 LCD\_15\_17  
 LCD\_15\_17

LCD\_14  
 LCD\_14  
 LCD\_14

DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	HDA_CODEC & LED SUB		
APPROVAL	BC LEE	REV	rev. 0.1	AUDIO JACK & LED SUB		PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE 29	OF 48

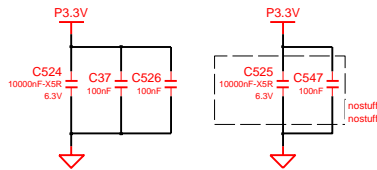
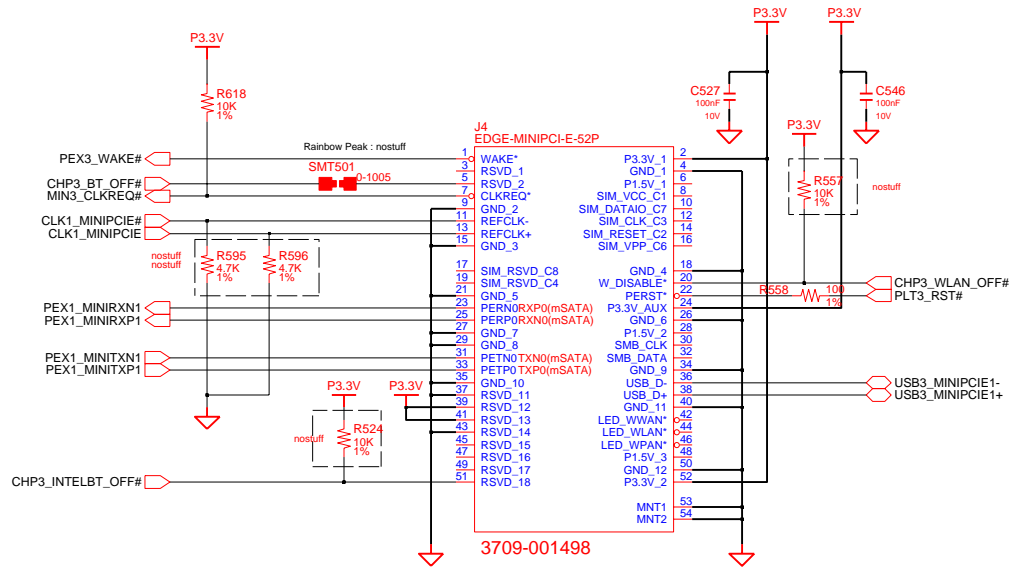
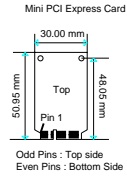
# Reatek RTL8111E



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R LAN LAN_Reatek_RTL8111	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-01XXXXA
CHECK	SJ Wu	DEV. STEP	ADV			
APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE		LAST EDIT				
			January 20, 2011 18:59:20 PM	PAGE	30 OF 48	

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# WLAN, 4mm



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	MINI_PCIE_CONN		
APPROVAL	BC LEE	REV	rev. 0.1	WLAN		PART NO. BA41-01XXA
MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE 31 OF 48	

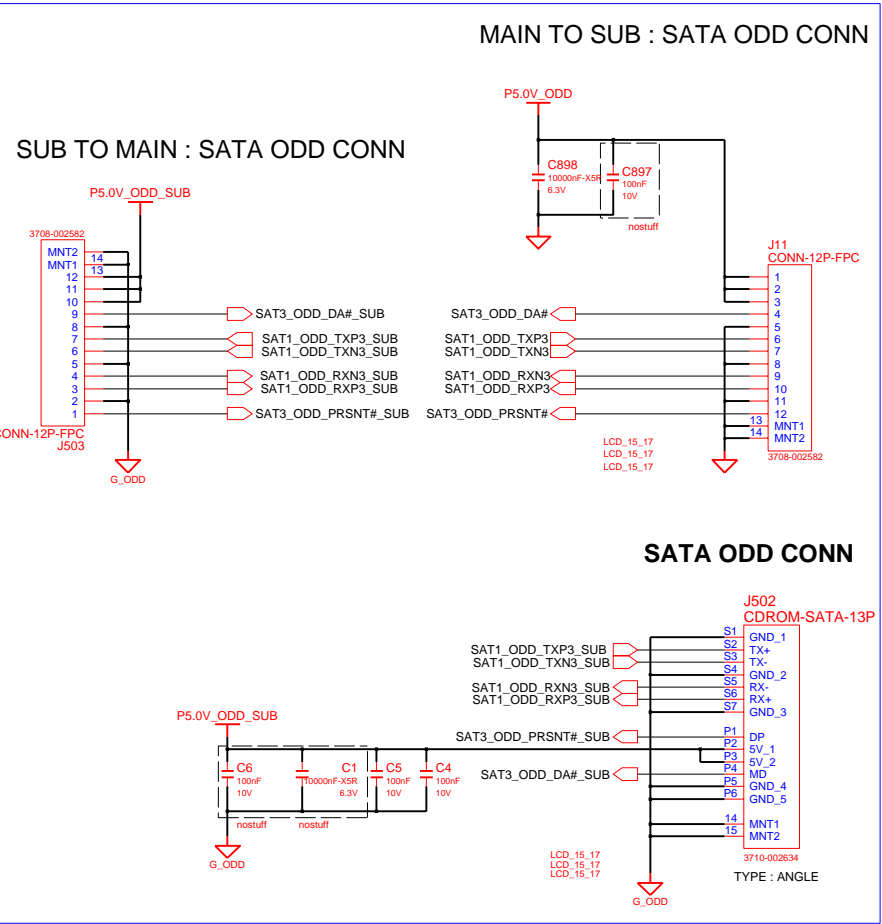
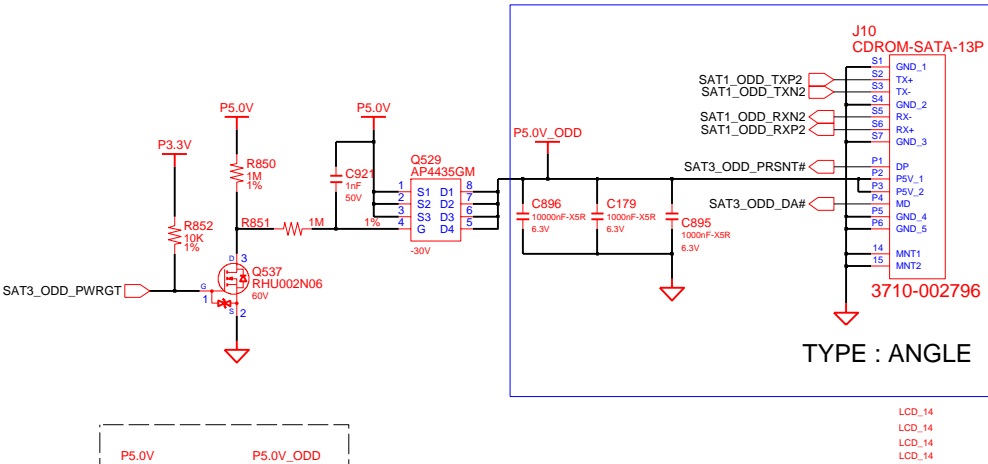


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# SATA I/F CONN

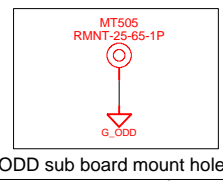
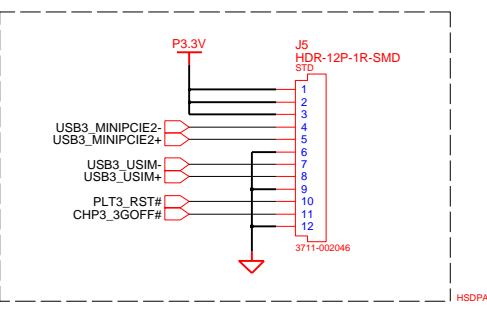
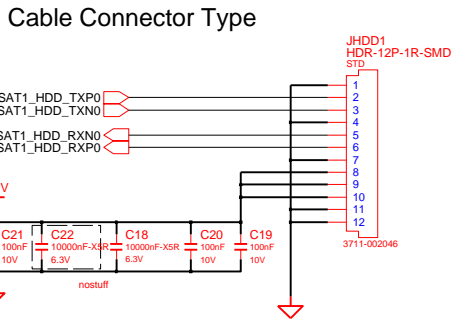
## SATA ODD CONN

15.6" / 17.3"



## SATA HDD CONN

## MAIN to HSDPA SUB

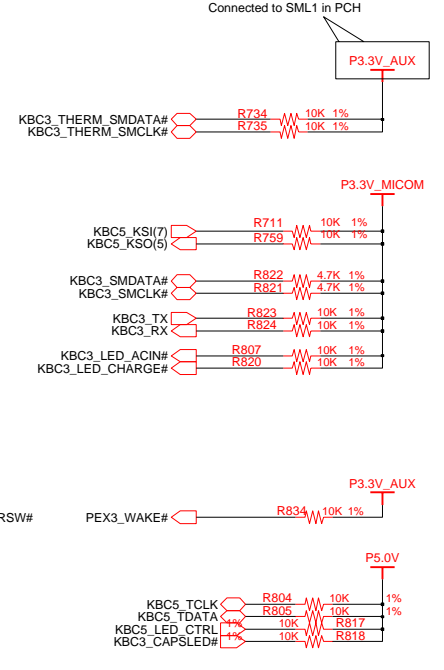
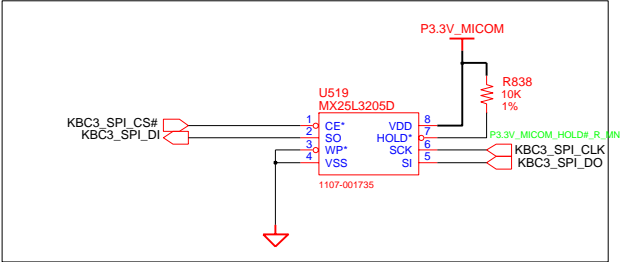
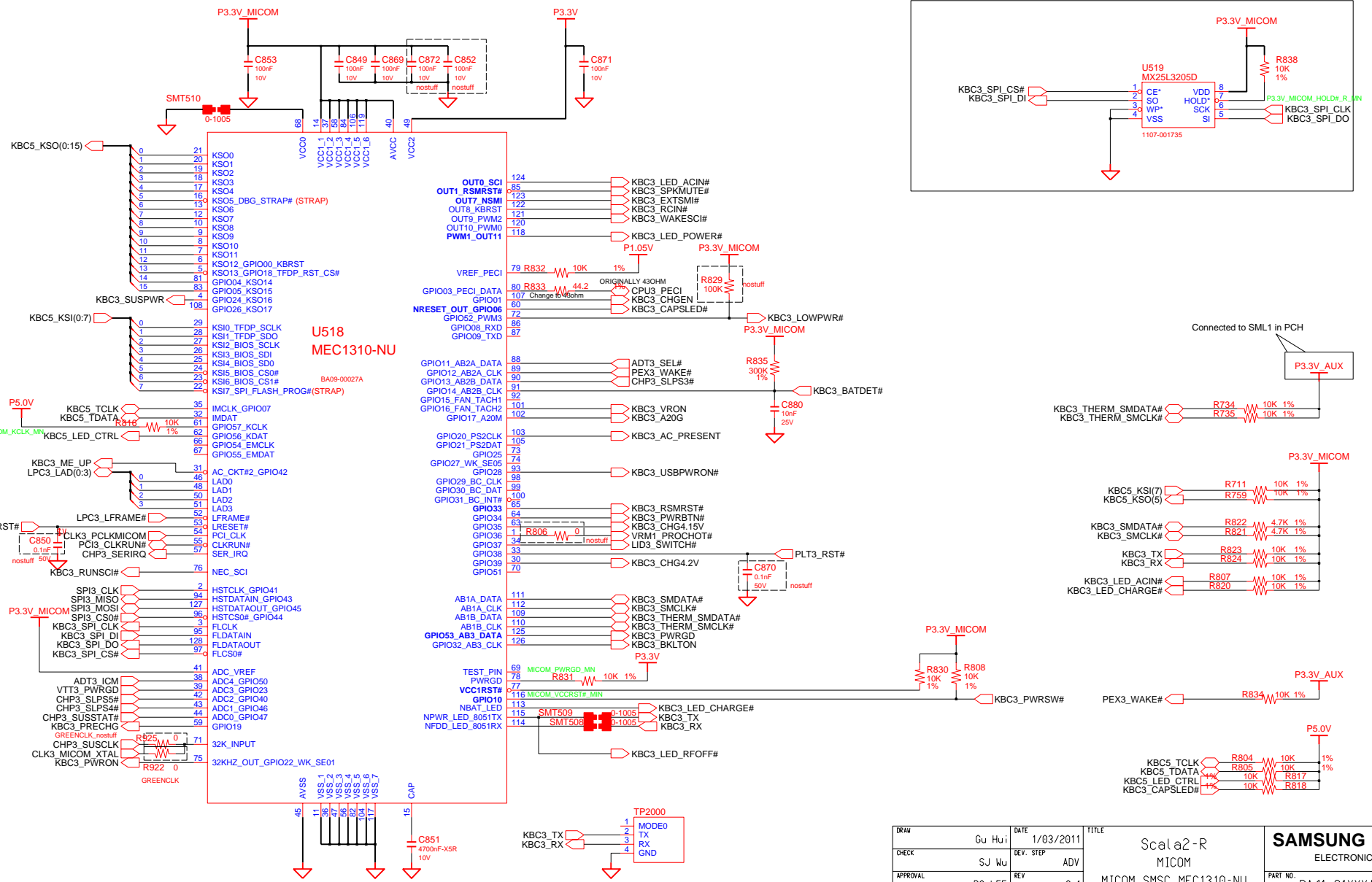


DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R SATA DEVICES	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV			
APPROVAL	BC LEE	REV	rev. 0.1		SATA I/F Conn	PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE	32 OF 48

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# MAIN BOARD (MICOM)

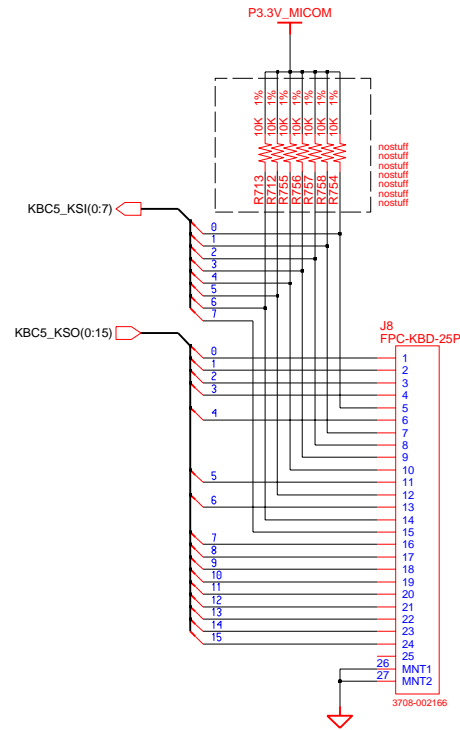
BE CAUTION SPI ROM SIZE!! SPI\_ROM\_SOCKET



DRAW	Gu Hu	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		MICOM	
APPROVAL	BC LEE	REV	rev. 0.1		MICOM_SMSC_MEC1310-NU	PART NO. BA41-01XXA
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	33	OF 48

# Micom Glue Logic

## KEYBOARD

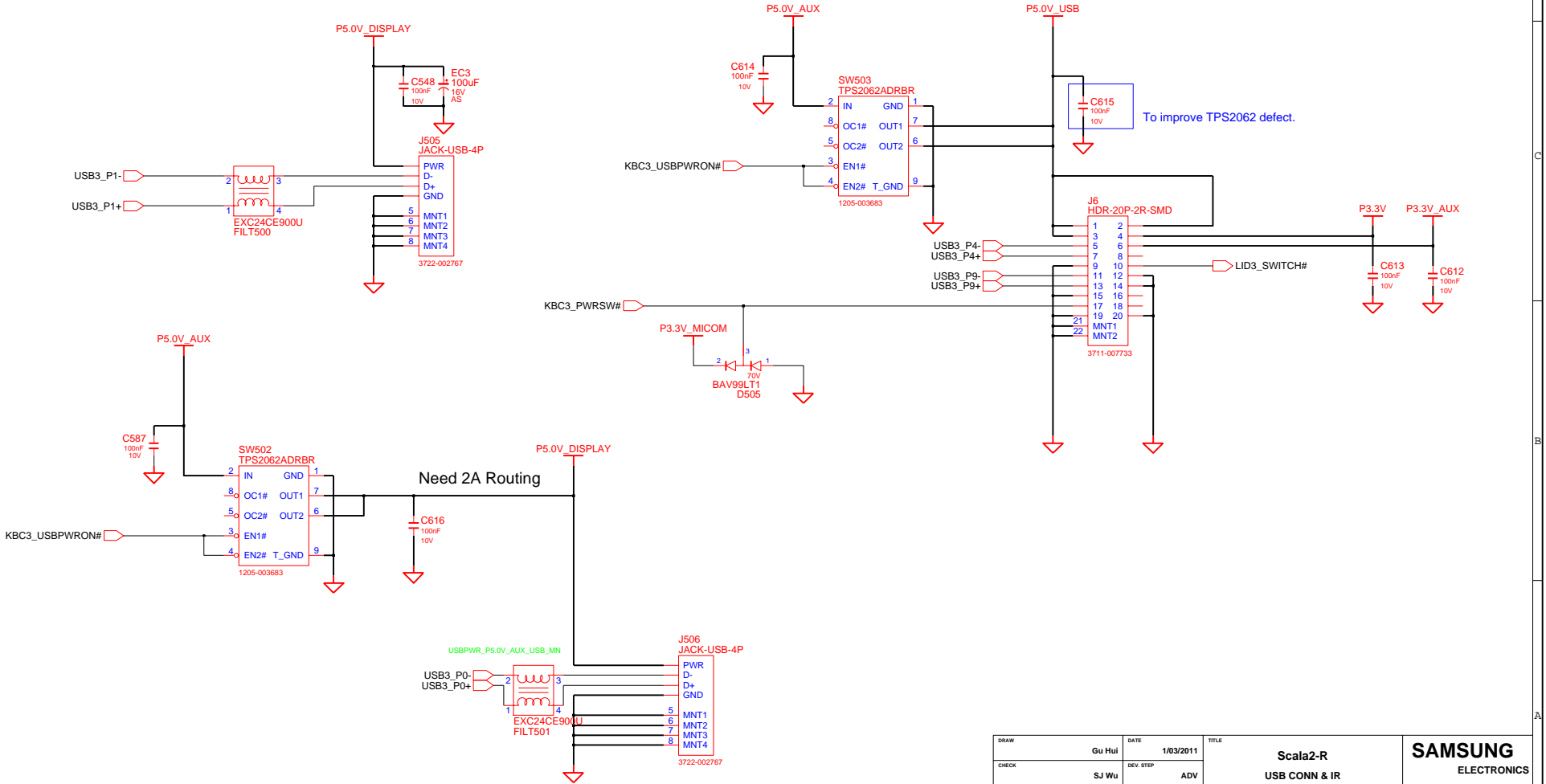


DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	MICOM GLUE LOGIC		
APPROVAL	BC LEE	REV	rev. 0.1	MICOM GLUE LOGIC		PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE	34 OF 48

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# POWER S/W SUB B'D CONNECTOR

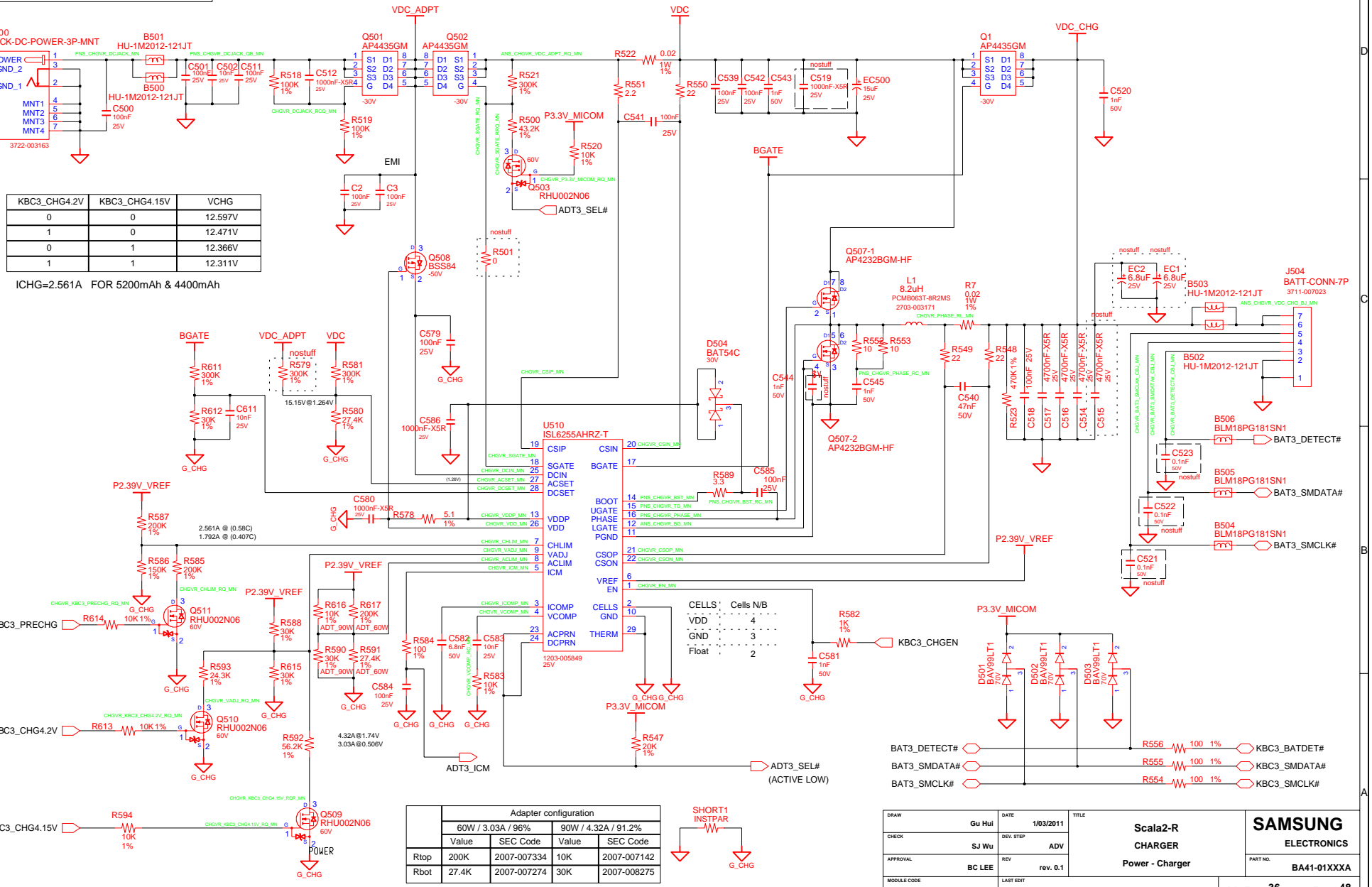
## MAIN to SUB



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	USB CONN & IR		
APPROVAL	BC LEE	REV	rev. 0.1	USB & IR		PART NO.
MODULE CODE		LAST EDIT				BA41-01XXA
				January 20, 2011 18:59:20 PM	PAGE	35 OF 48

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# CHARGER & POWER MANAGEMENT



KBC3_CHG4.2V	KBC3_CHG4.15V	VCHG
0	0	12.597V
1	0	12.471V
0	1	12.366V
1	1	12.311V

ICHG=2.561A FOR 5200mAh & 4400mAh

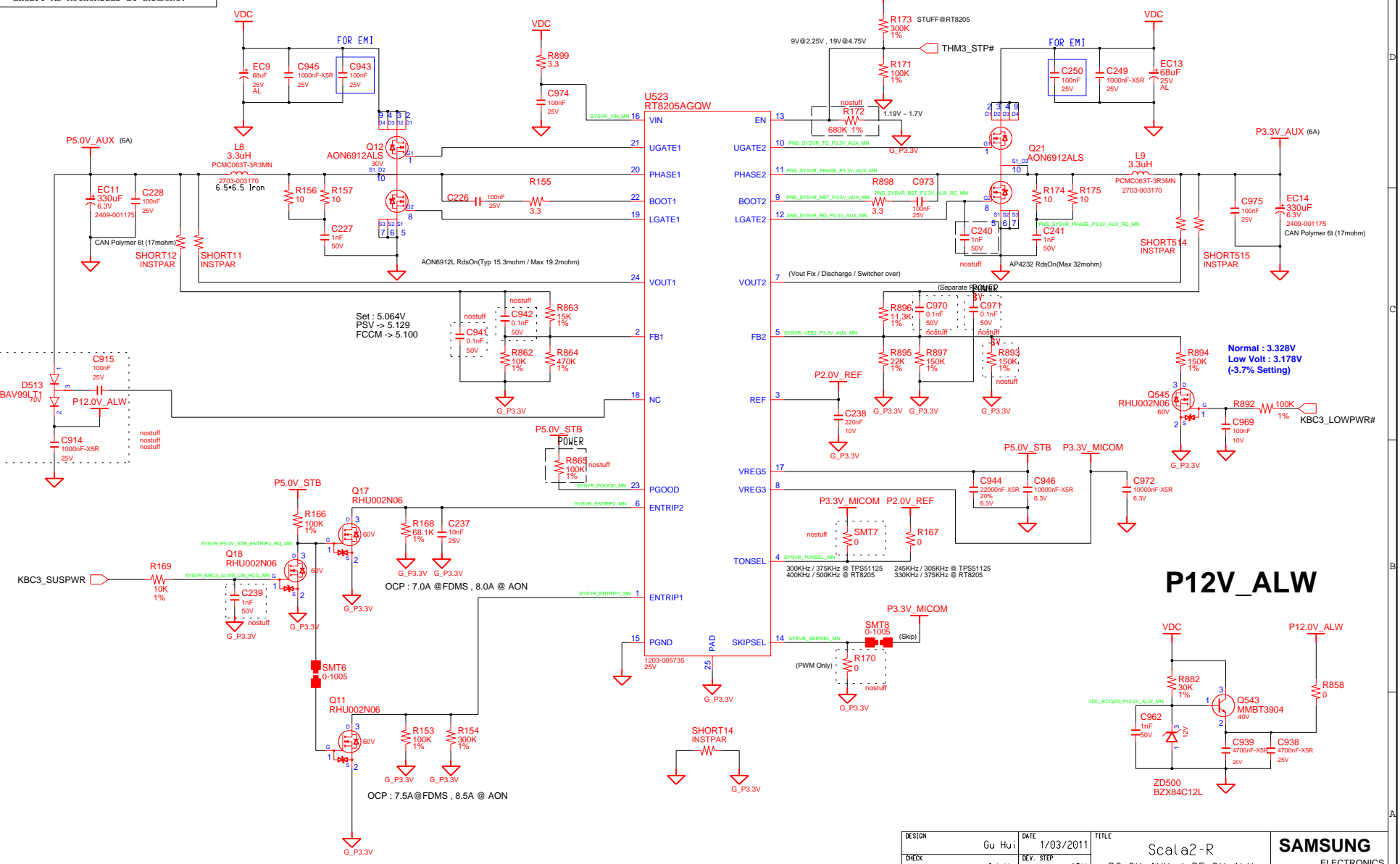
Adapter configuration			
60W / 3.03A / 96%		90W / 4.32A / 91.2%	
Value	SEC Code	Value	SEC Code
Rtop	200K 2007-007334	10K 2007-007142	
Rbot	27.4K 2007-007274	30K 2007-008275	

DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R
CHECK	SJ Wu	DEV_STEP	ADV		CHARGER
APPROVAL	BC LEE	REV	rev. 0.1		Power - Charger
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM		

SAMSUNG	
ELECTRONICS	
PART NO.	BA41-01XXXXA
PAGE	36 OF 48

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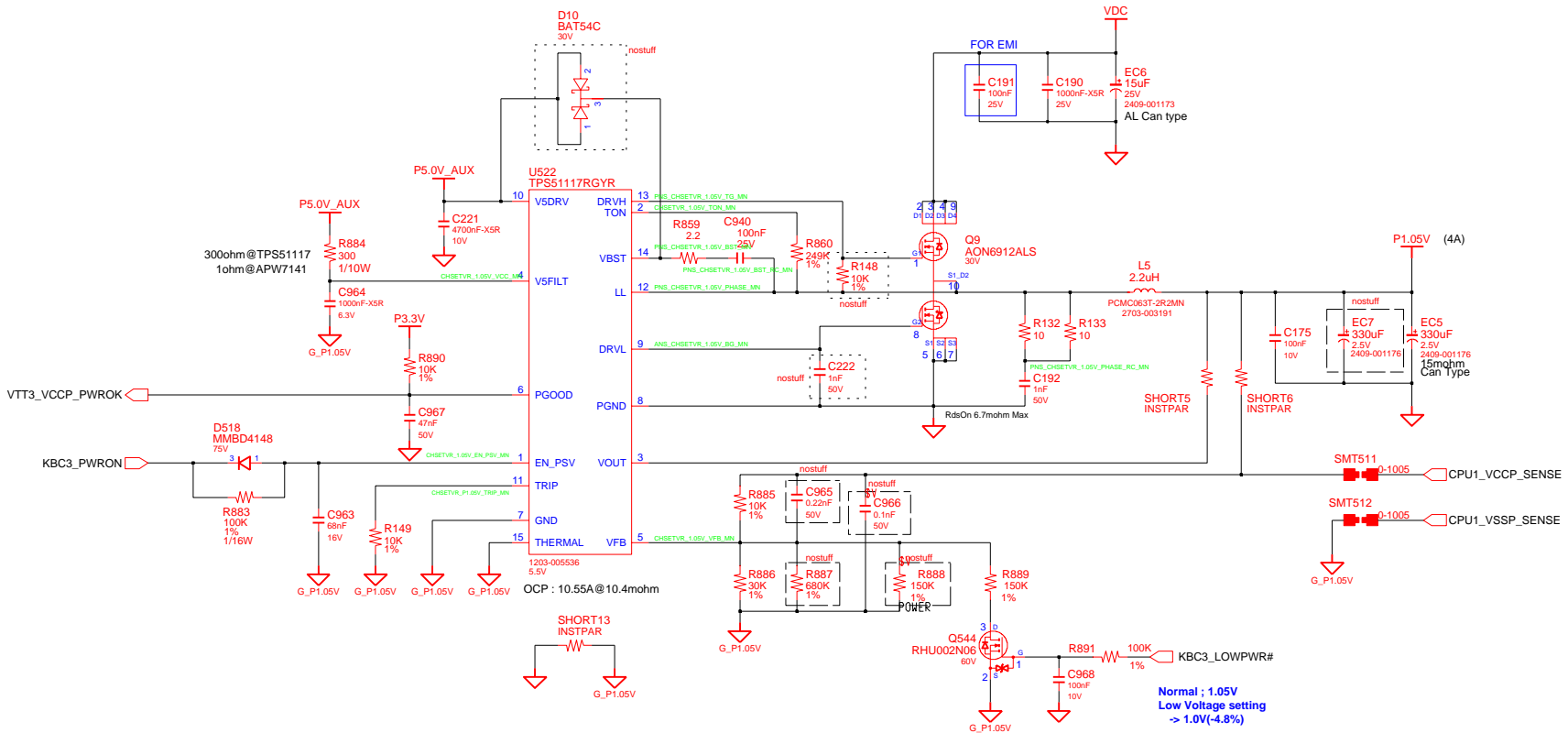
# P3.3V\_AUX & P5.0V\_AUX



## P12V\_ALW

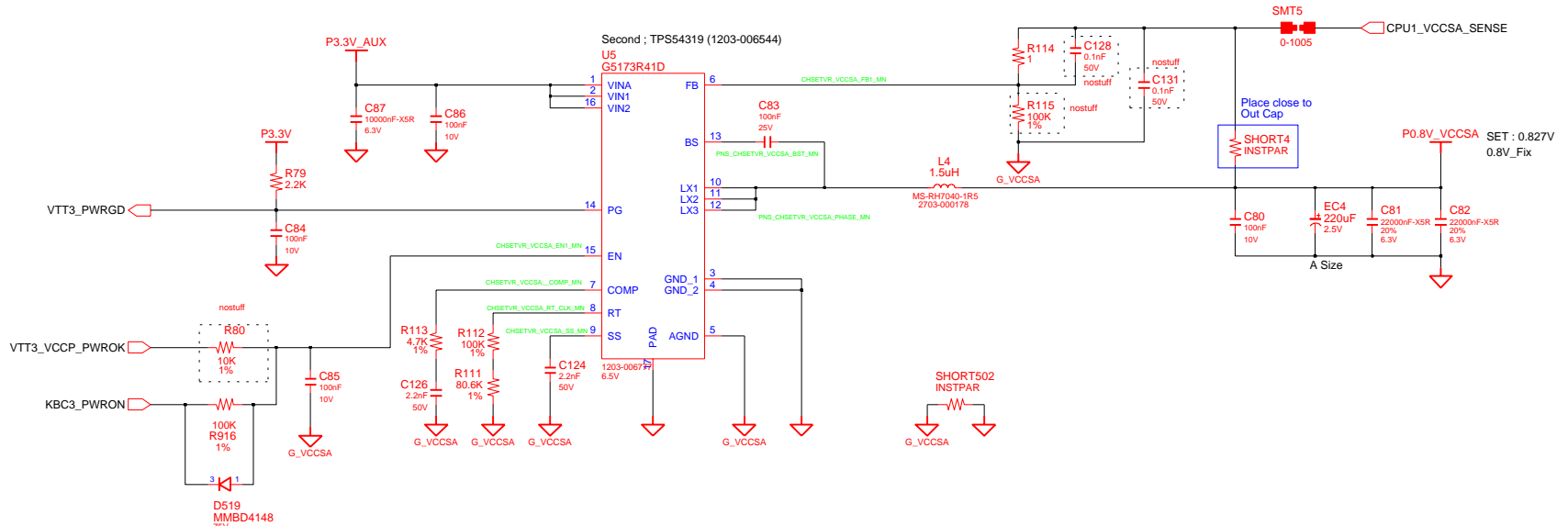
DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	P3.3V_AUX / P5.0V_AUX		
APPROVAL	BC LEE	REV	rev. 0.1	P3.3V_AUX / P5.0V_AUX		PART NO.
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	37	OF
						48

# CHIPSET POWER(P1.05V)

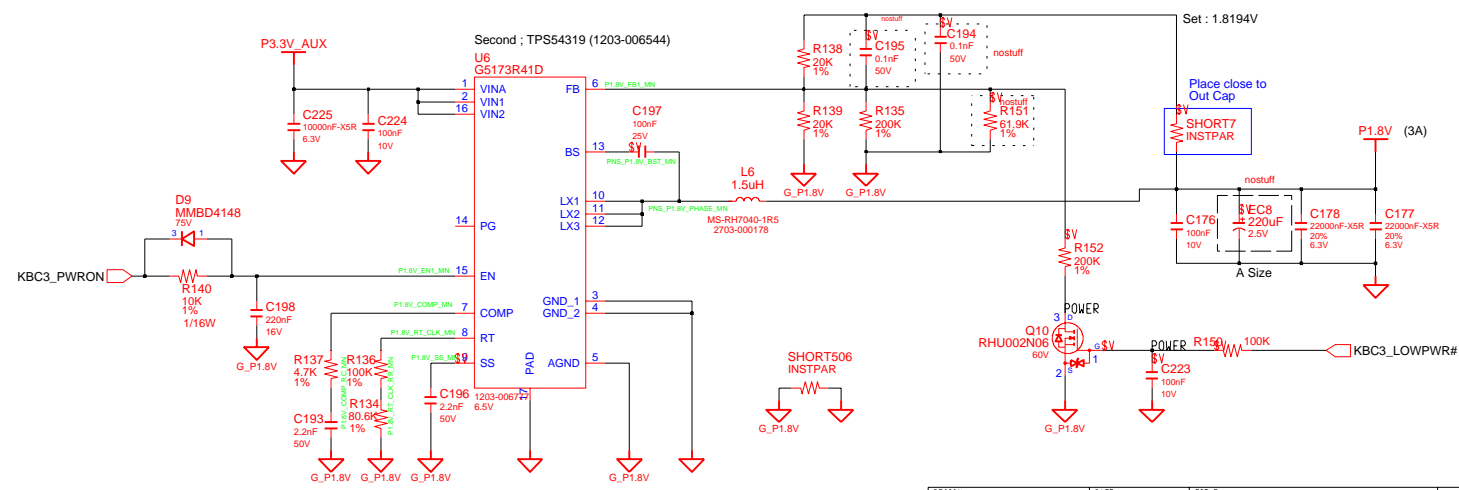


DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R P1.05V P1.05V(Chipset Power)	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV			
APPROVAL	BC LEE	REV	rev. 0.1			PART NO. BA41-01XXXXA
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	38	OF 48

## CHIPSET POWER(VCCSA)



## CHIPSET POWER(P1.8V)

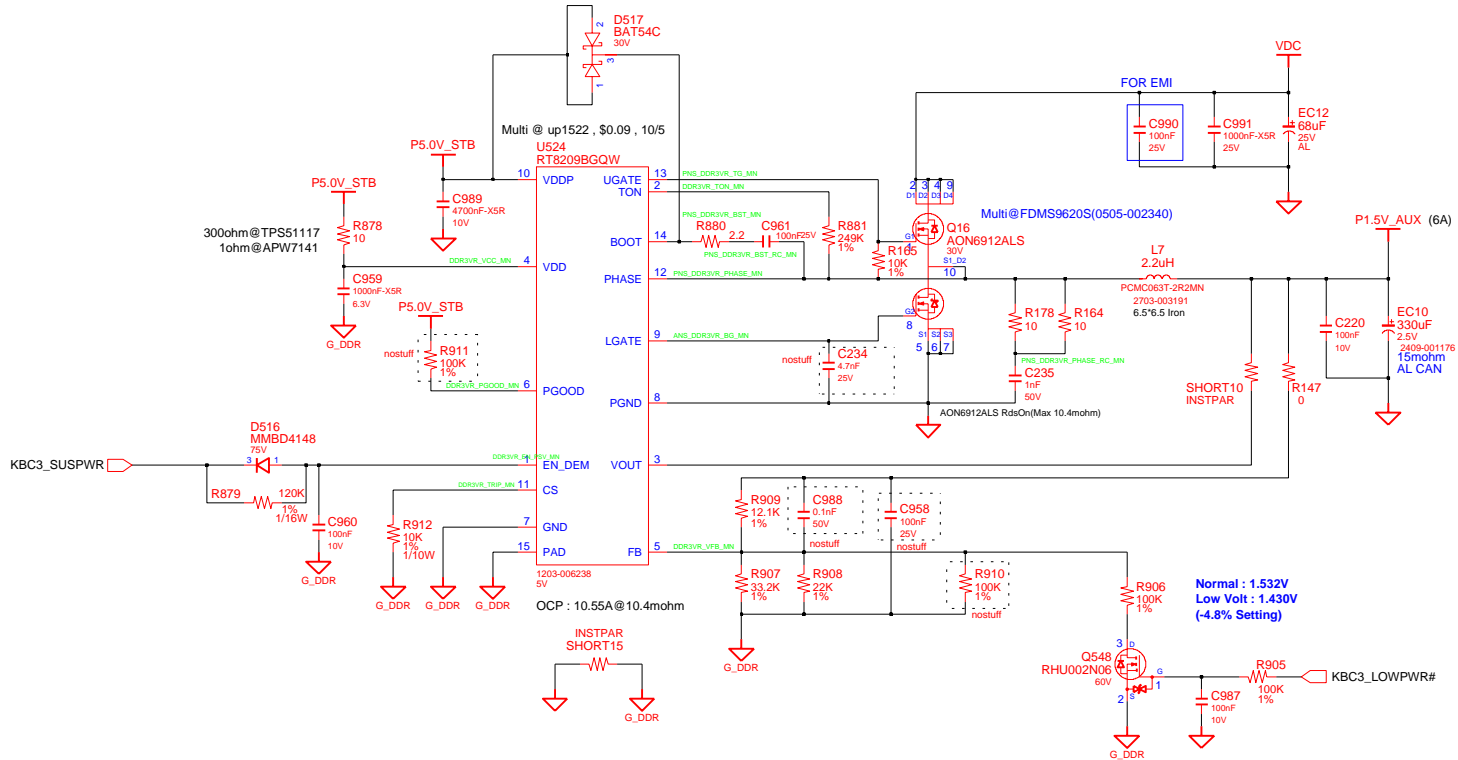


DESIGN	Gu Hu	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	P1.1V_VTT	PART NO.	
APPROVAL	BC LEE	REV	rev. 0.1	P0.8V(Chipset Power)	BA41-01XXA	
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	39 OF 48	

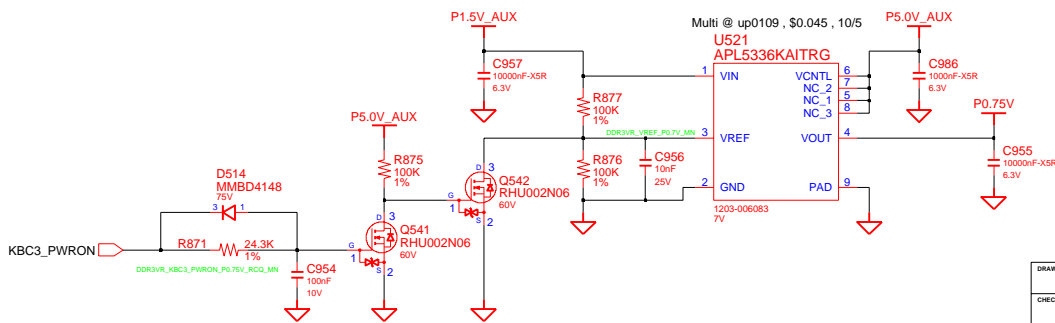


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# DDR3 Power



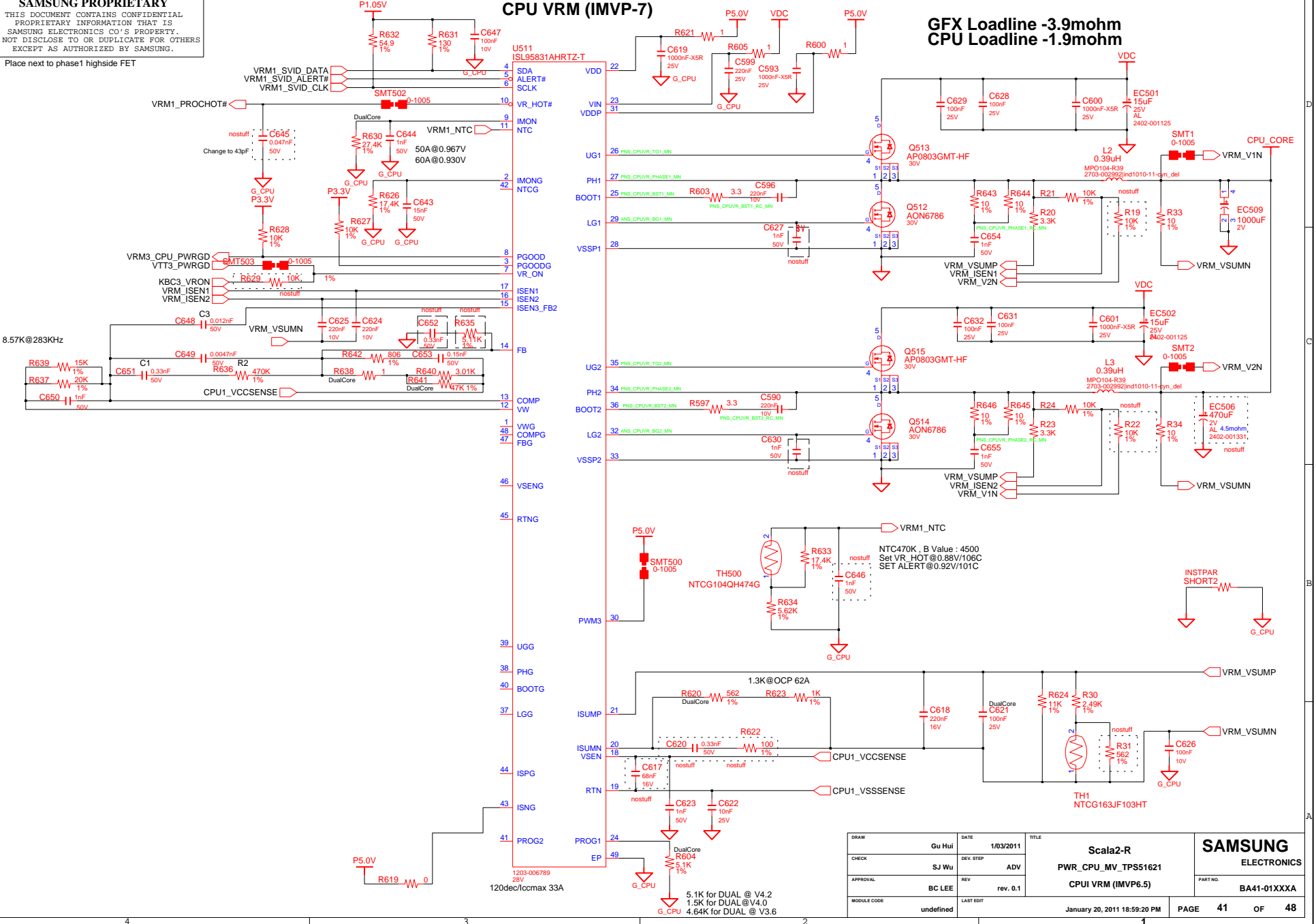
# DDR3 VTT(0.75V)



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS	
CHECK	SJ Wu	DEV. STEP	ADV		PWR_MEMORY		
APPROVAL	BC LEE	REV	rev. 0.1		DDR3 POWER		
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM				
						PART NO.	BA41-01XXA
						PAGE	40 OF 48

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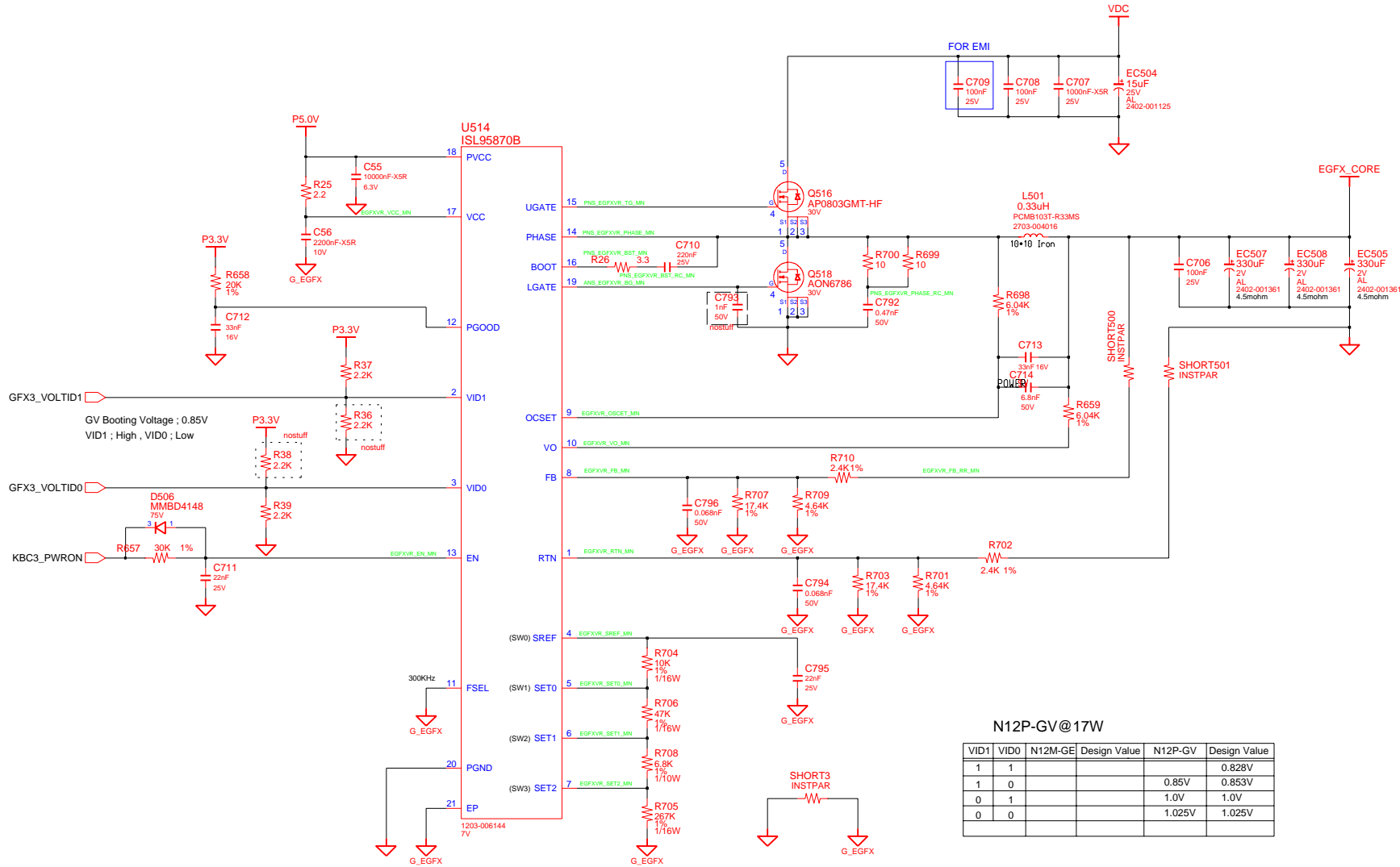
Place next to phase1 highside FET



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R
CHECK	SJ Wu	DEV. STEP	ADV		PWR_CPU_MV_TPS51621
APPROVAL	BC LEE	REV	rev. 0.1		CPU1 VRM (IMVP6.5)
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	41 OF 48

**SAMSUNG**  
 ELECTRONICS  
 PART NO. BA41-01XXXA

# External GFX Core Power

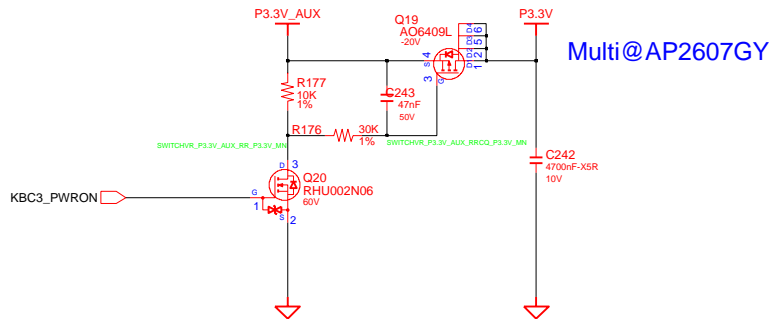


DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	PWR_MV_SWITCHED		
APPROVAL	BC LEE	REV	rev. 0.1	Power-EGFX_CORE		PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE	42 OF 48

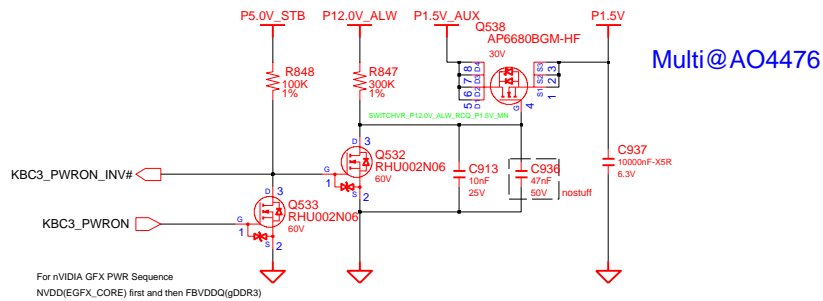
# Switched Power

P5.0V -> P3.3V -> EGFX\_CORE -> P1.8V -> P1.5V -> P0.75V -> P1.05V -> P0.8V\_VCCSA -> CPU\_CORE

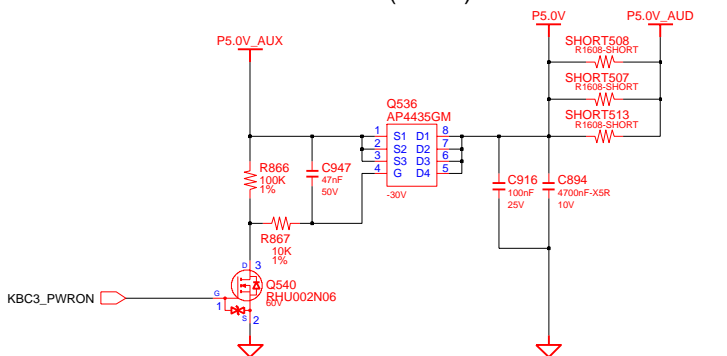
## Switched Power On (P3.3V)



## Switched Power On (P1.5V)



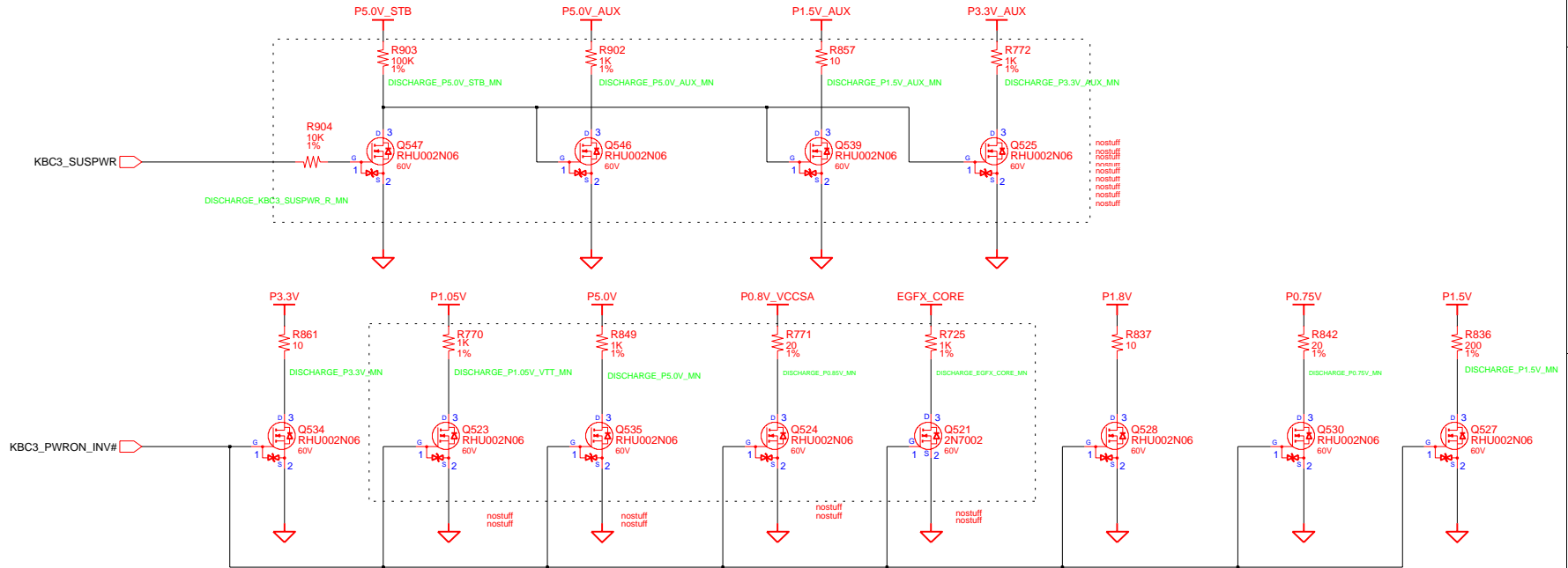
## Switched Power On (P5.0V)



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	PWR_MV_DISCHARGER	PART NO.	
APPROVAL	BC LEE	REV	rev. 0.1	SWITCHED POWER	BA41-01XXXXA	
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	43	OF 48

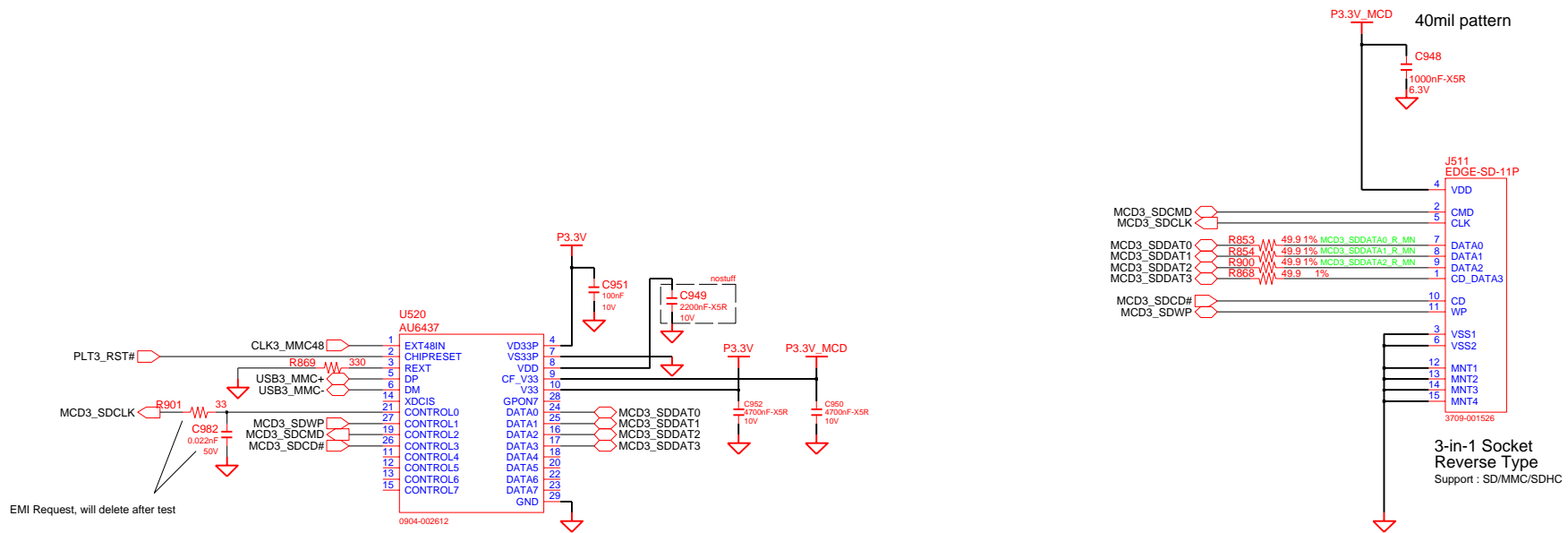
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# POWER DISCHARGER



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	<b>Scala2-R</b> <b>SUB BOARD1</b> <b>Power Discharger</b>	<b>SAMSUNG</b> <b>ELECTRONICS</b> PART NO. <b>BA41-01XXXA</b>	
CHECK	SJ Wu	DEV. STEP	ADV				
APPROVAL	BC LEE	REV	rev. 0.1				
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM				
				PAGE	45	OF	48

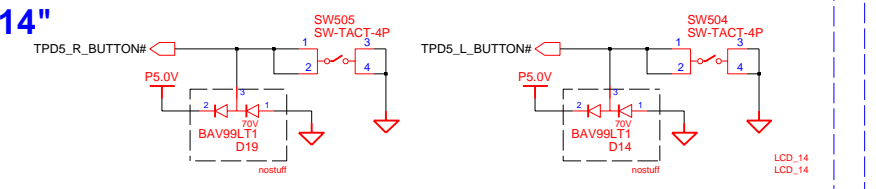
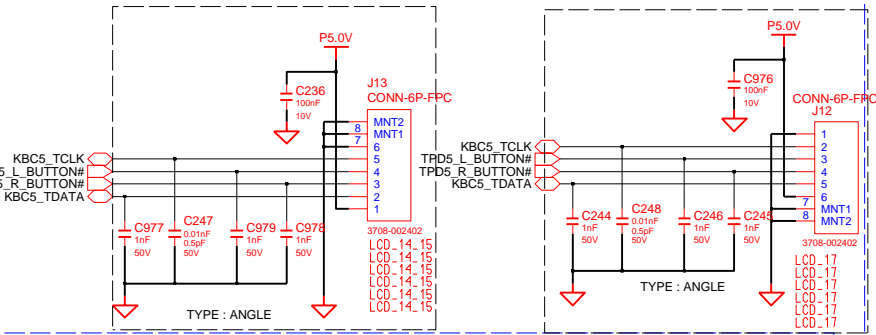
# AU6437 (4-in-1)



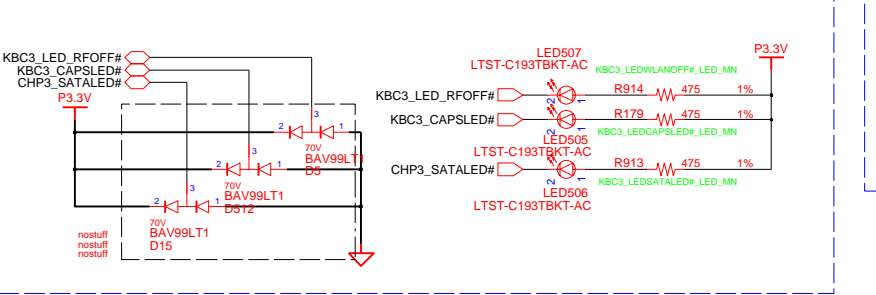
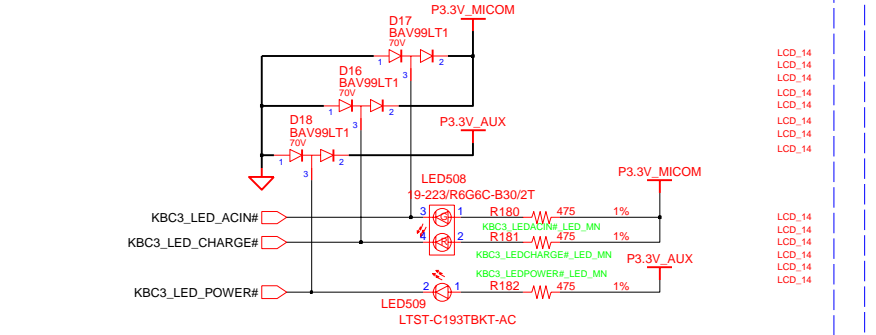
DESIGN	MS YANG	DATE	1/03/2011	TITLE	Jinmao-R	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-01XXXA
CHECK	MK KIM	DEV. STEP	ADV		AU 6437	
APPROVAL	BL LEE	REV	rev. 0.3		AU 6437	
MODULE CODE		LAST EDIT	January 18, 2011 08:10:20 AM	PAGE	46 OF 48	

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## TOUCHPAD

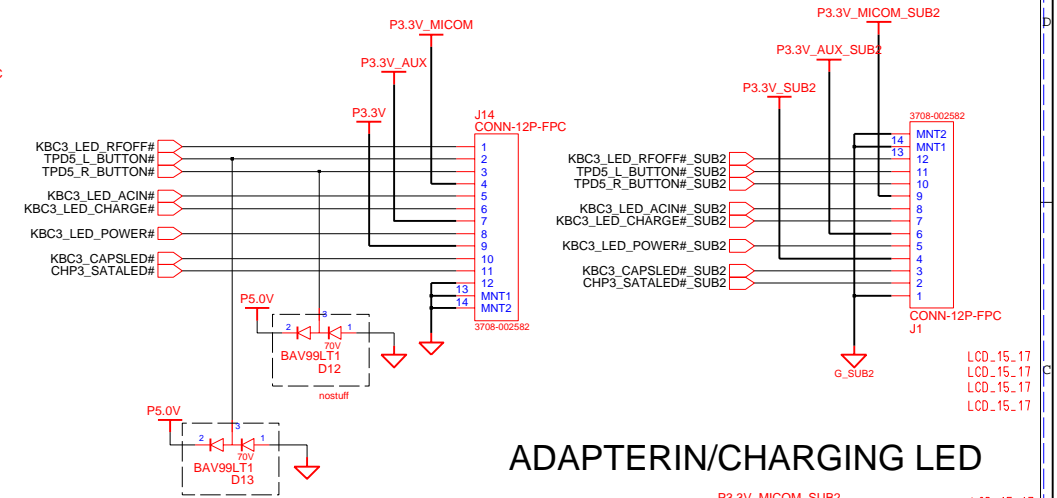


## ADAPTERIN/CHARGING LED

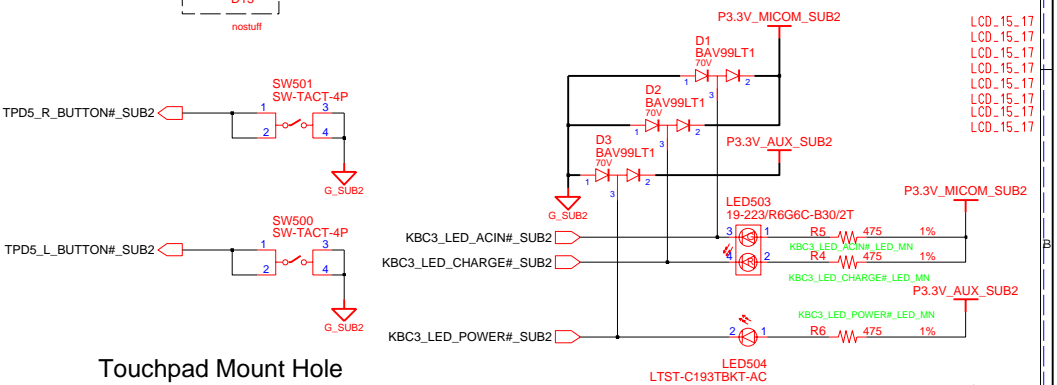


## 15.6" & 17.3"

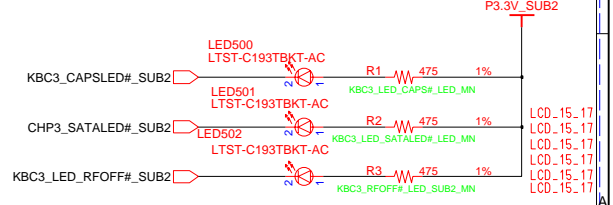
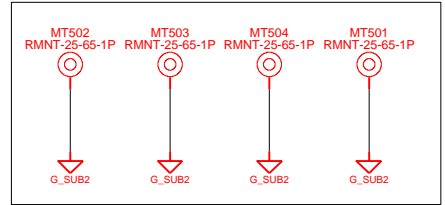
## TOUCHPAD MAIN TO SUB TOUCHPAD SUB TO MAIN



## ADAPTERIN/CHARGING LED

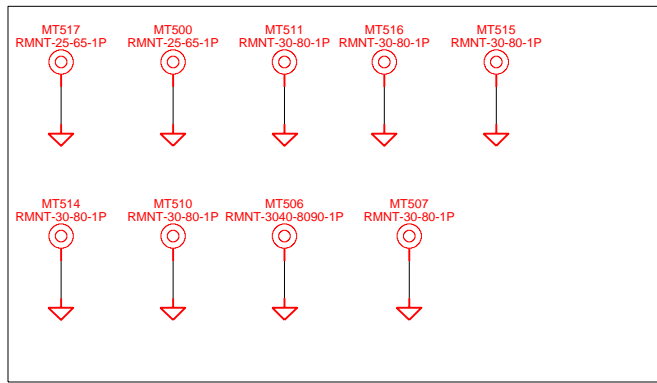


## Touchpad Mount Hole

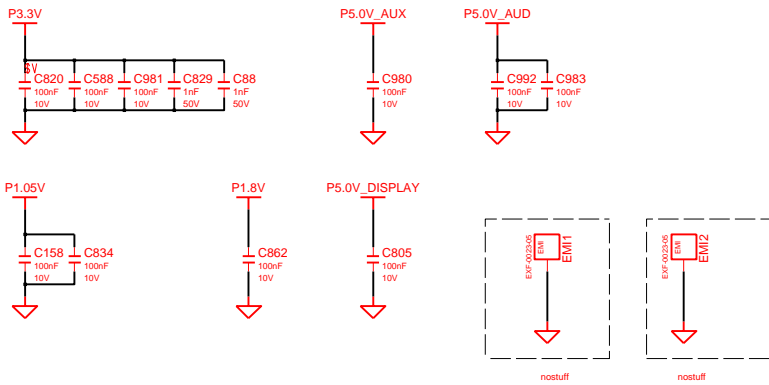
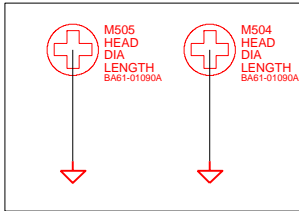


DRAW	MS YANG	DATE	1/03/2011	TITLE	Jinmao-R	<b>SAMSUNG</b> ELECTRONICS
CHECK	MK KIM	DEV. STEP	ADV	Touchpad	Touchpad	
APPROVAL	BL LEE	REV	rev. 0.3			PART NO. BA41-01XXXX
MODULE CODE		LAST EDIT			January 18, 2011 08:10:20 AM	PAGE 47 OF 48

### Mainboard Mount ((25-65)X2EA, (30-80)X7EA)



### PCH Thermal



D  
C  
B  
A

DESIGN	MS YANG	DATE	1/03/2011	TITLE	Jinmao-R	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	ADV	MNT hole		
APPROVAL	BL LEE	REV	rev. 0.3	MNT hole		PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT	January 18, 2011 08:10:20 AM	PAGE	48	OF 48