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# McLaren-15

CPU : IVY Bridge PGA  
Chip Set : Intel Panther Point  
GFX : N13P-GT  
Remarks : Chief River Platform

Model Name : McLaren-15  
PBA Name : MAIN\_Quad  
PCB Code : BA41-01898A (PTC)  
BA41-01899A (GCE)  
BA41-01900A (NY)

Dev. Step : PV  
Revision : 0.9  
T.R. Date : 2011.11.25

Design	CHECK	APPROVAL
SH YOU	SS BAIK	BL LEE

■ Owner : SEC N/P Lab

Signature : SH YOU

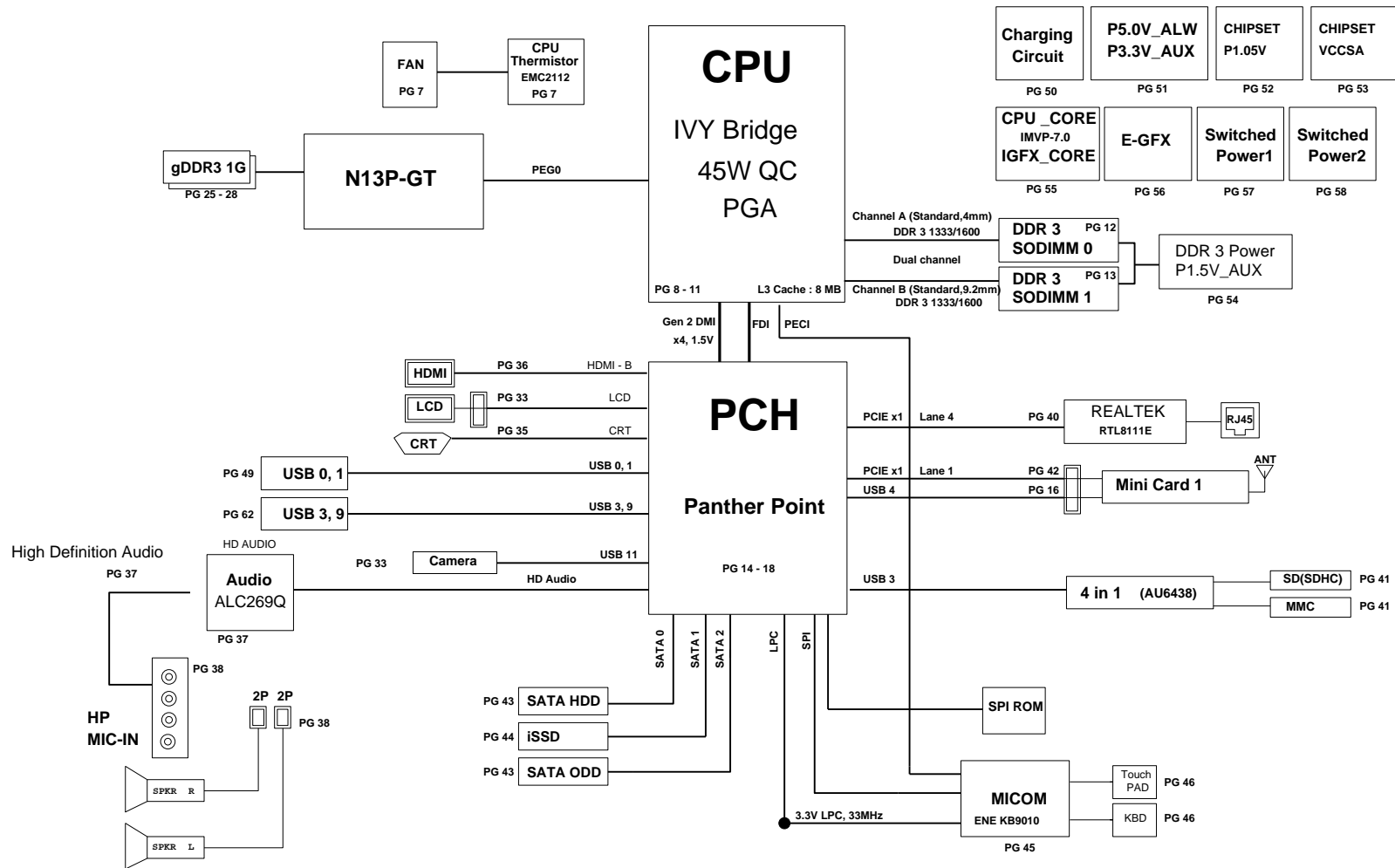
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sheet33 : LVDS/CAMERA  
sheet34 : 80 Port  
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sheet37 : Audio - ALC269  
sheet38 : Audio - HP/MIC/Woofer Amp  
sheet39 : Audio - Stereo Amp  
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sheet43 : SATA interface  
sheet44 : iSSD  
sheet45 : MICOM / BIOS  
sheet46 : MICOM Glue Logic (KBD / TP)  
sheet47 : LED for 15"  
sheet48 : 2 USB 2.0  
sheet49 : USB 3.0 connector  
sheet50 : Power - charger  
sheet51 : Power - P3.3V\_AUX / P5.0V\_ALW  
sheet52 : Power - P1.05V (Chipset Power)  
sheet53 : Power - VCCSA (Chipset Power)  
sheet54 : Power - DDR3  
sheet55 : Power - CPU VRM  
sheet56 : Power - EGFX\_CORE  
sheet57 : Power - Switched Power 1  
sheet58 : Power - Switched Power 2  
sheet59 : Power - Switched Power for iSSD  
sheet60 : Power - Power Discharge  
sheet61 : Mount Hole / Thermal Hole  
sheet62 : USB Sub B'D (15")  
sheet63 : USB Sub B'D (17")

DRAW	SH, YOU	DATE	3/11/2011	TITLE	McLaren-15_QUAD	SAMSUNG
CHECK	SS, BAIK	DEV. STEP	PV	MAIN		ELECTRONICS
APPROVAL	BL, LEE	REV	REV 0.9	COVER		PART NO. BA41-01898A
MODULE CODE		LAST EDIT	October, 24, 2011 9:57:03 PM	PAGE	1	OF 63

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# BLOCK DIAGRAM



DRAW	MS YANG	DATE	3/11/2011	TITLE	McLaren-15_QUAD MAIN BLOCK DIAGRAM	SAMSUNG ELECTRONICS PART NO. BA41-01662A
CHECK	MK KIM	DEV. STEP	PR			
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 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_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)	
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)	
VCC_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for GPU VCC for COUGARPOINT	
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	
		<b>S3</b>
		<b>S0</b>
		<b>S0</b>

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

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

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	25MHz	ISSD	Express Cache
Crystal	25MHz	GREENCLK	GREENCLK
Crystal	27MHz	N13P-GT	NVIDIA
GREENCLK	32.768KHz	PCH	PCH
GREENCLK	32.768KHz	MICOM	MICOM
GREENCLK	25MHz	PCH	PCH
GREENCLK	25MHz	LAN	LAN

LCD Panel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

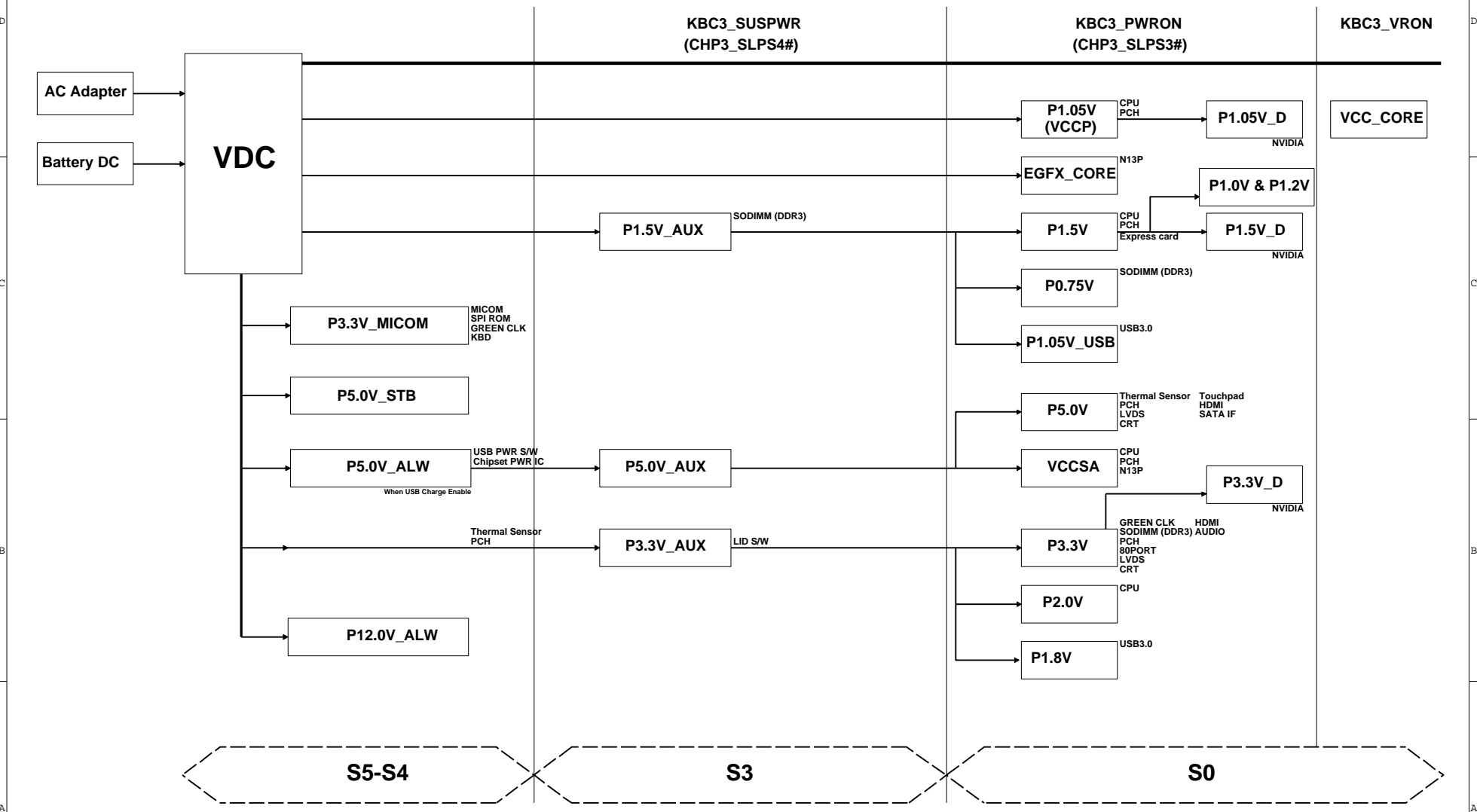
I <sup>2</sup> C / SMB Address			
Devices	Address	Hex	Bus
HM65	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	Thermal Sensor
SODIMM0	1010 000x	A0h	
SODIMM1	1010 010x	A4h	
Thermal Sensor on SODIMM0	0011 000x	30h	
Thermal Sensor on SODIMM1	0011 010x	34h	
Thermal Sensor on board	1101 100x	98h	
Power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

DRAW	MS YANG	DATE	3/11/2011	TITLE <b>PETRONAS-15_QUAD</b> <b>MAIN</b> <b>BOARD INFO</b>	<b>SAMSUNG</b> ELECTRONICS PART NO. <b>BA41-01662A</b>
CHECK	MK KIM	DEV. STEP	PR		
APPROVAL	BL LEE	REV	REV 1.0		
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 PM		
				PAGE	3 OF 51

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# POWER DIAGRAM

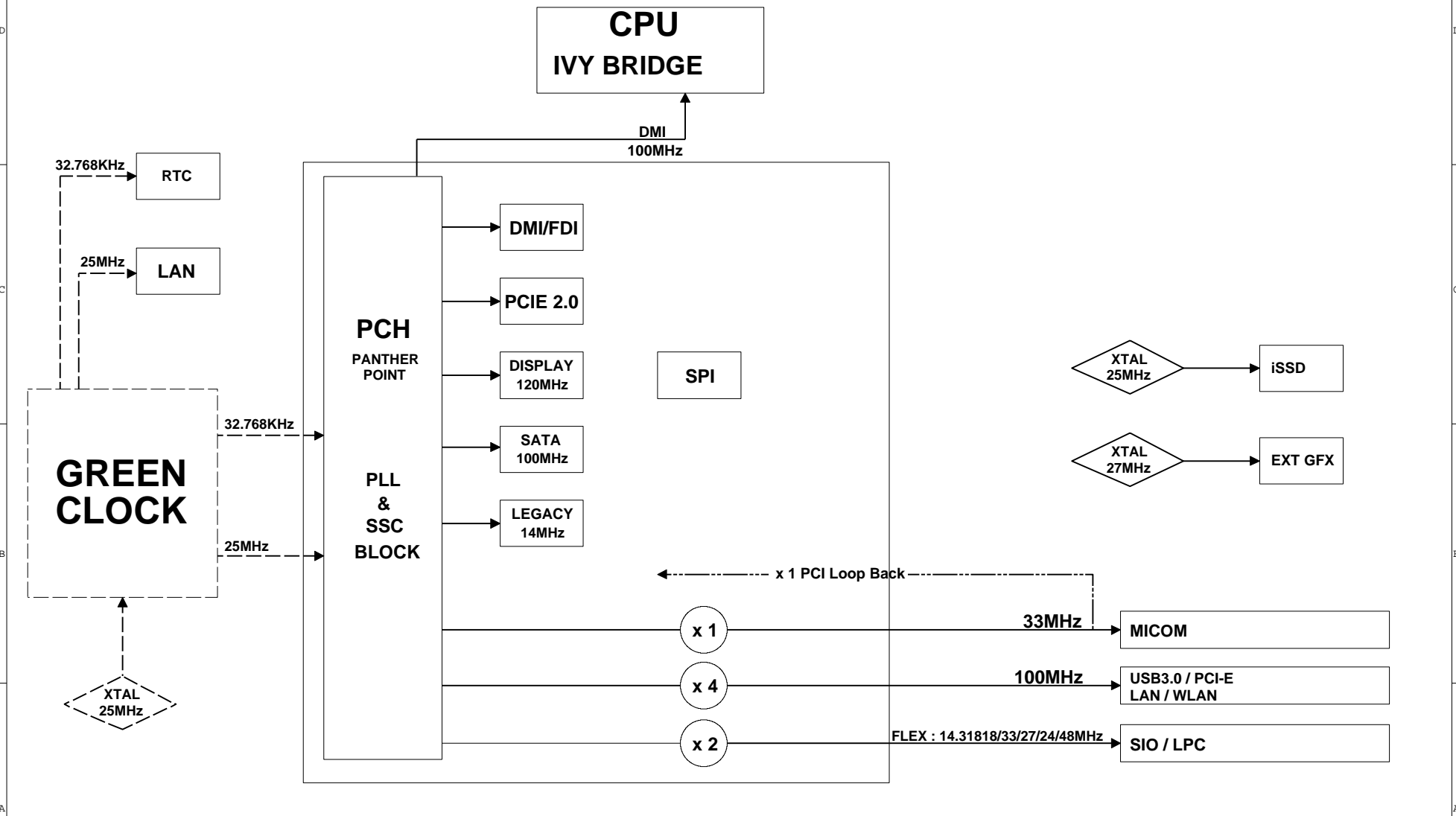
Rev 1.0



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	MAIN	POWER DIAGRAM	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0			PART NO.
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 PM			BA41-01662A
				PAGE	4	OF 51

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# CLOCK DISTRIBUTION Rev. 1.0

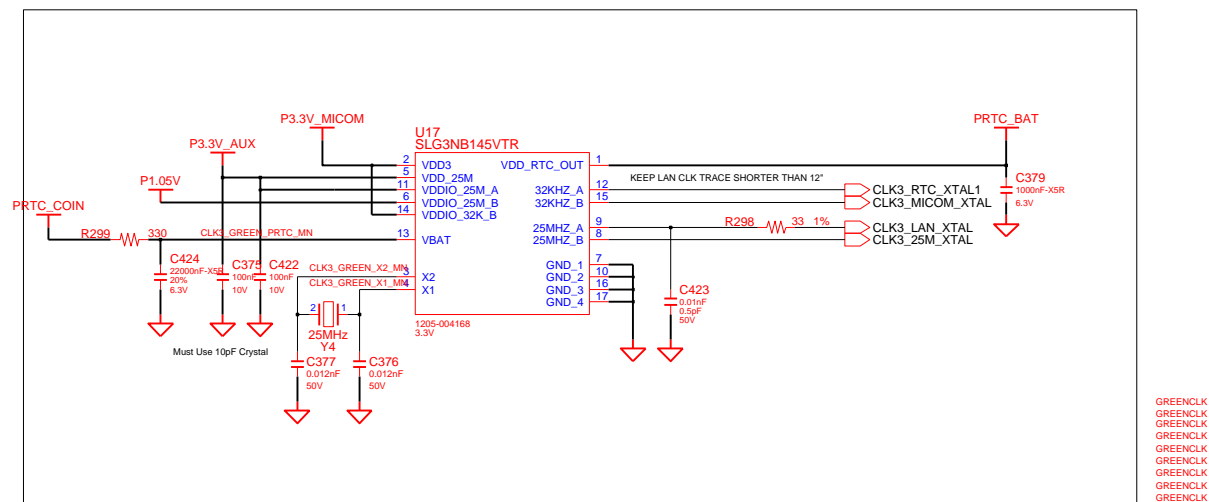


DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	MAIN		ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0	CLOCK DIAGRAM	PART NO.	BA41-01662A
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	5	OF 51

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## CLOCK DISTRIBUTOR



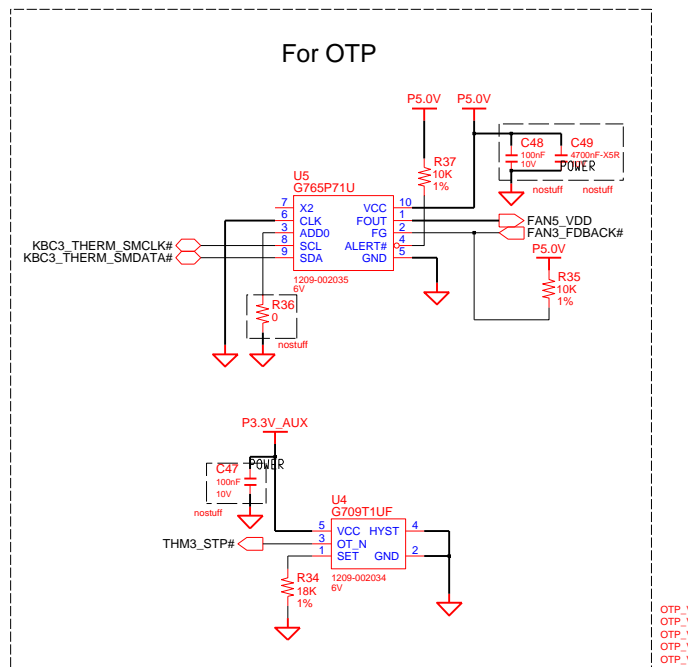
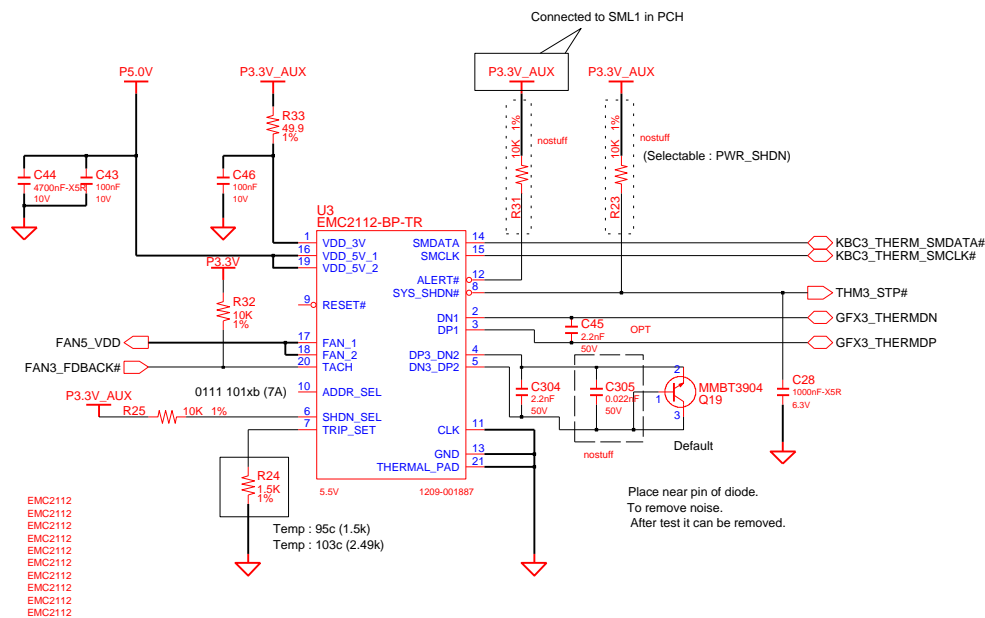
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK  
GREENCLK

DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD CLOCK CLOCK DISTRIBUTION	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR			PART NO. BA41-01662A
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	6	OF 51

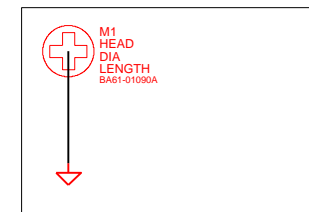
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## THERMAL SENSOR & FAN CONTROL

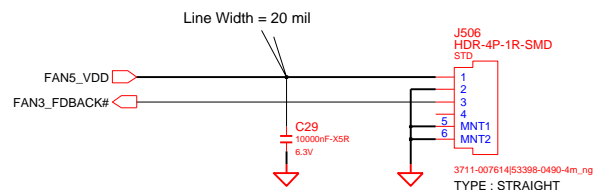


### FAN PEM



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

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



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD THERMAL SENSOR THERMAL SENSOR EMC2112	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR			PART NO. BA41-01662A
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT				

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**FUNCTIONAL BLOCKS:**

- CLOCKS:** BCLK, BCLK#, DPLL\_REF\_SSCLK, DPLL\_REF\_SSCLK#.
- THERMAL:** CATERR#, PROC\_SELECT#, SKTOCC#, CPU3\_PECI, PROCHOT#, THERMTRIP#.
- DDR3 MISC:** SM\_DRAMRST#, SM\_RCOMP0, SM\_RCOMP1, SM\_RCOMP2.
- JTAG & BPM:** PRDY#, PREQ#, TCK, TMS, TRST#, TDI, TDO, DBR#, BPM#0-BPM#7.
- PWR MANAGEMENT:** PM\_SYNC, UNCOREPWRGOOD, SM\_DRAMPWRGOOD, RESET#.

**POWER AND SIGNAL CONNECTIONS:**

- Power:** P1.05V, P1.05V, P1.5V, P1.5V, P3.3V\_AUX, POWER.
- Resistors:** R279 (24.9 1%), R81 (61.9 1%), R79 (56 1%), R351 (1.5K 1%), R158 (1.5K 1%), R157 (10K 1%), R352 (750 1%), R159 (750 1%), R592 (1K 1%), R281 (1K 1%), R349 (140 1%), R624 (24.9 1%), R625 (200 1%), R312 (200 1%), C636 (100nF).
- Capacitors:** C252-C309 (100nF), C253-C308 (100nF).
- Integrated Circuits:** U208 (75208).
- Signal Connections:** CPU1\_NVM\_IVB#, CPU3\_PECI, PROCHOT#, THERMTRIP#, PM\_SYNC, UNCOREPWRGOOD, SM\_DRAMPWRGOOD, RESET#, PEG1\_RXN(15:0), PEG1\_RXP(15:0), PEG1\_TXN\_C(15:0), CPU1\_DRAM\_PWRGD, PLT3\_RST#, CPU1\_DRAM\_PWRGD, PEG1\_TXP\_C(15:0), PEG1\_TXN(15:0), PEG1\_TXP(15:0).

**NOTES:**

- When External Graphic & EDP disable  
DPLL\_REF\_SSCLK : 1K to GND  
DPLL\_REF\_SSCLK# : 1K to P1.05V
- PECI spacing 18mil over
- Originally 62ohm
- SHORT4 INSTPAR
- nostuff
- anmot\_deleted

**TABLES:**

DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD
CHECK	MK KIM	DEV. STEP	PR		CPU
APPROVAL	BL LEE	REV	REV 1.0		Ivy Bridge (1/4)
MODULE CODE	undefined	LAST EDIT			

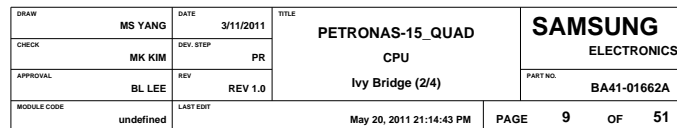
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**PAGE:** 8

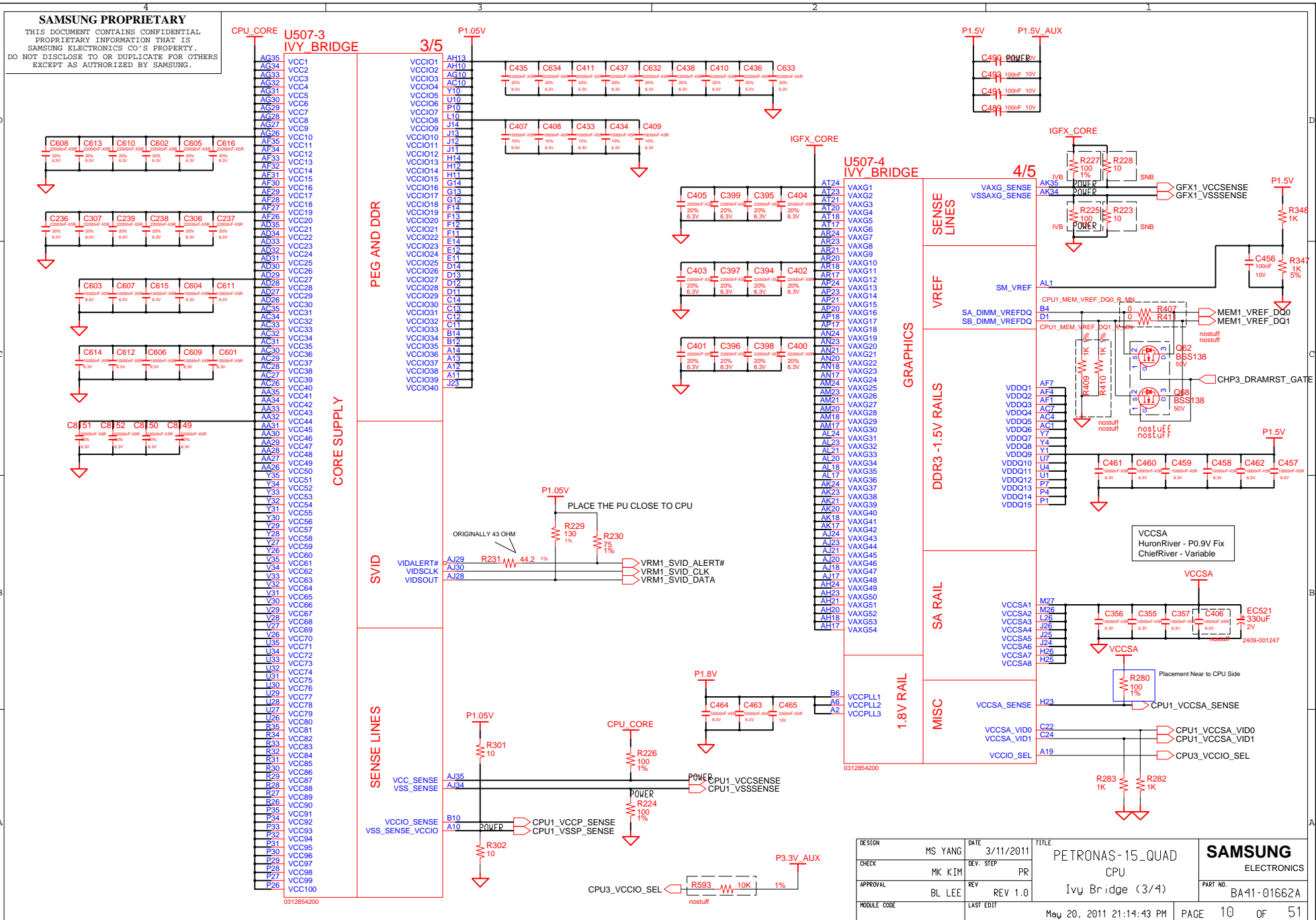
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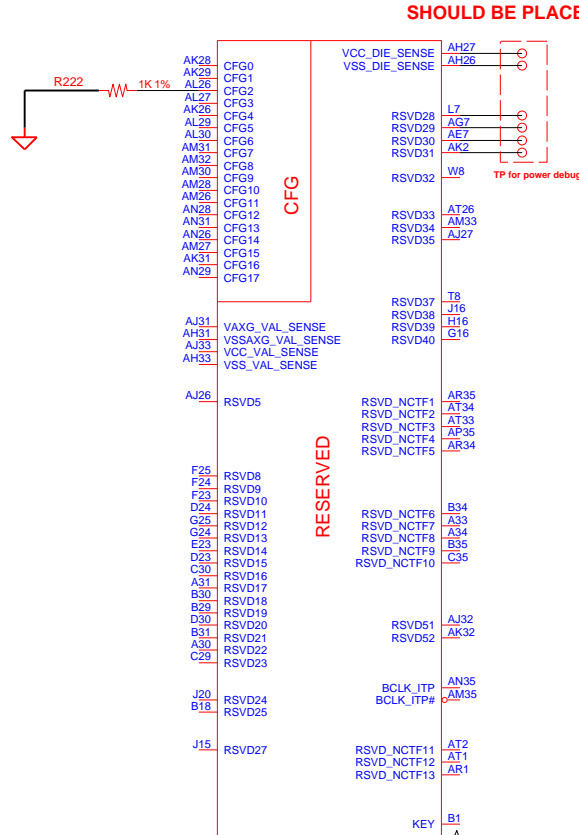
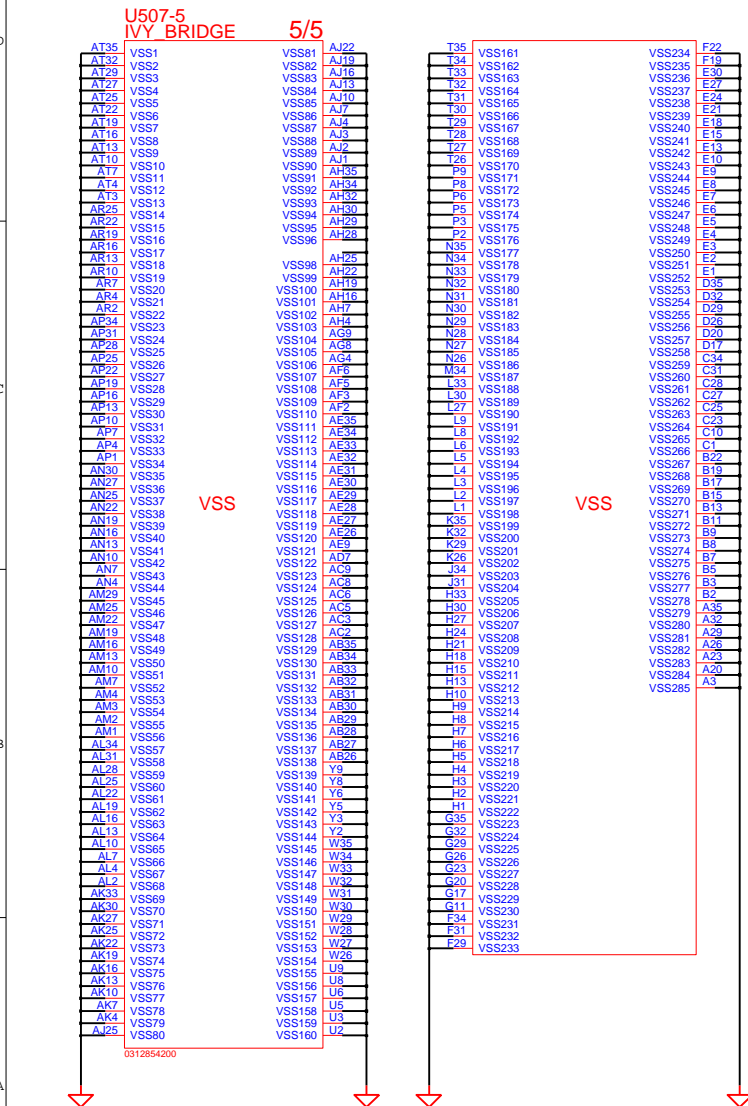
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DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD
CHECK	MK KIM	DEV. STEP	PR		CPU
APPROVAL	BL LEE	REV	REV 1.0		Ivy Bridge (3/4)
MODULE CODE		LAST EDIT			
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PART NO. BA41-01662A

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CFG Straps for Processor	
PEG STATIC LANE REVERSAL - CFG2 IS FOR THE 16X	
CFG2	1 : (DEFAULT) NORMAL OPERATION 0 : LANE REVERSED
PCIE PORT BIFURCATION 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 XXRESETB DEASSERTION 0 : PEG WAIT FOR BIOS FOR TRAINING

DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD CPU Ivy Bridge (4/4)	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR			PART NO. BA41-01662A
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT				
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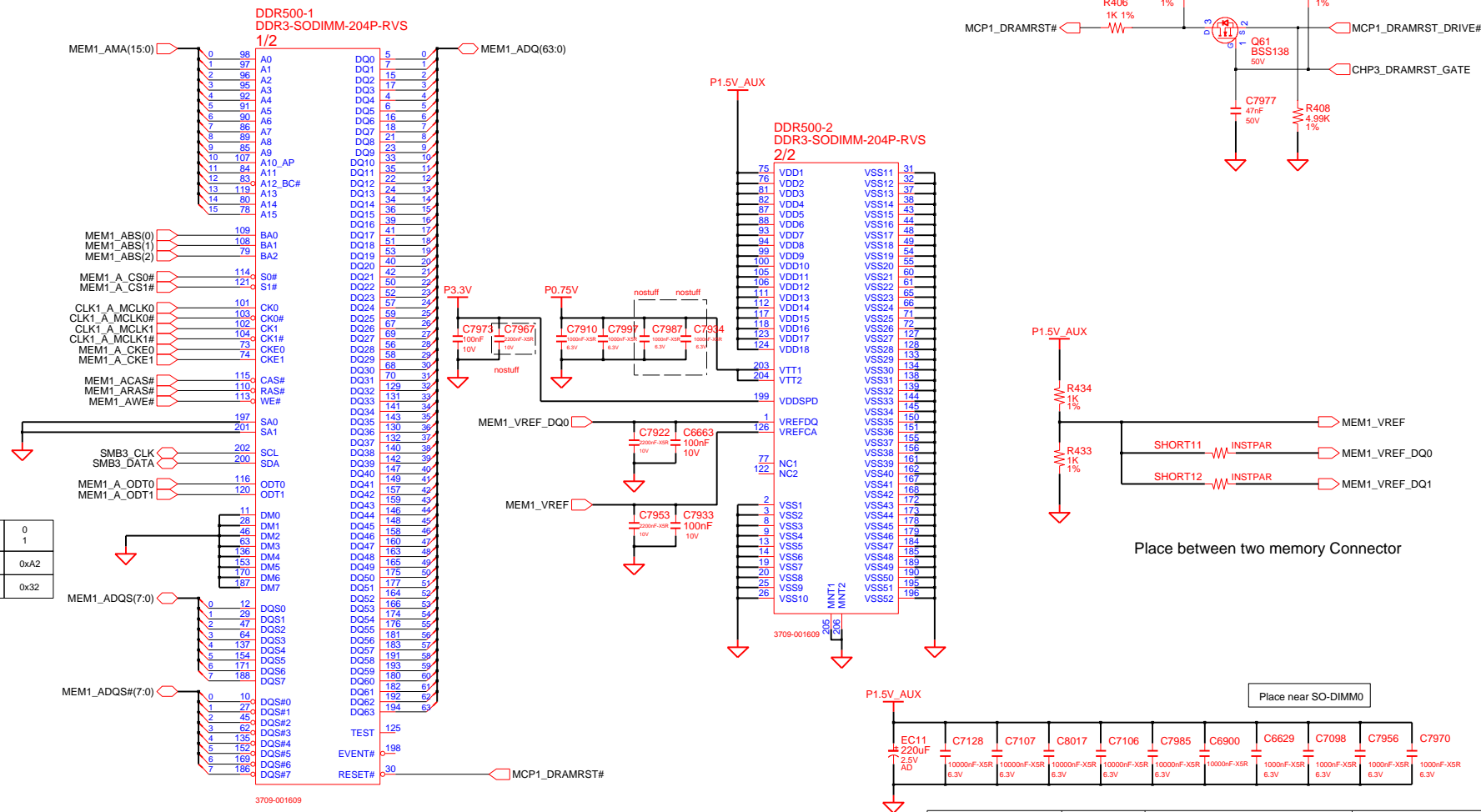
## SO-DIMM#0 : 2nd SO-DIMM

### DDR SO-DIMM #0

Height : 9.2 mm (REVERSE)

P/N : 3709-001656 (Foxconn)

P/N : 3709-001609 (Concraft)



SA0	0	0
SA1	0	1
SPD ADD	0xA0	0xA2
TS ADD	0x30	0x32

DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR		SODIMM A	
APPROVAL	BL LEE	REV	REV 1.0		DDR3	
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	12 OF 51	

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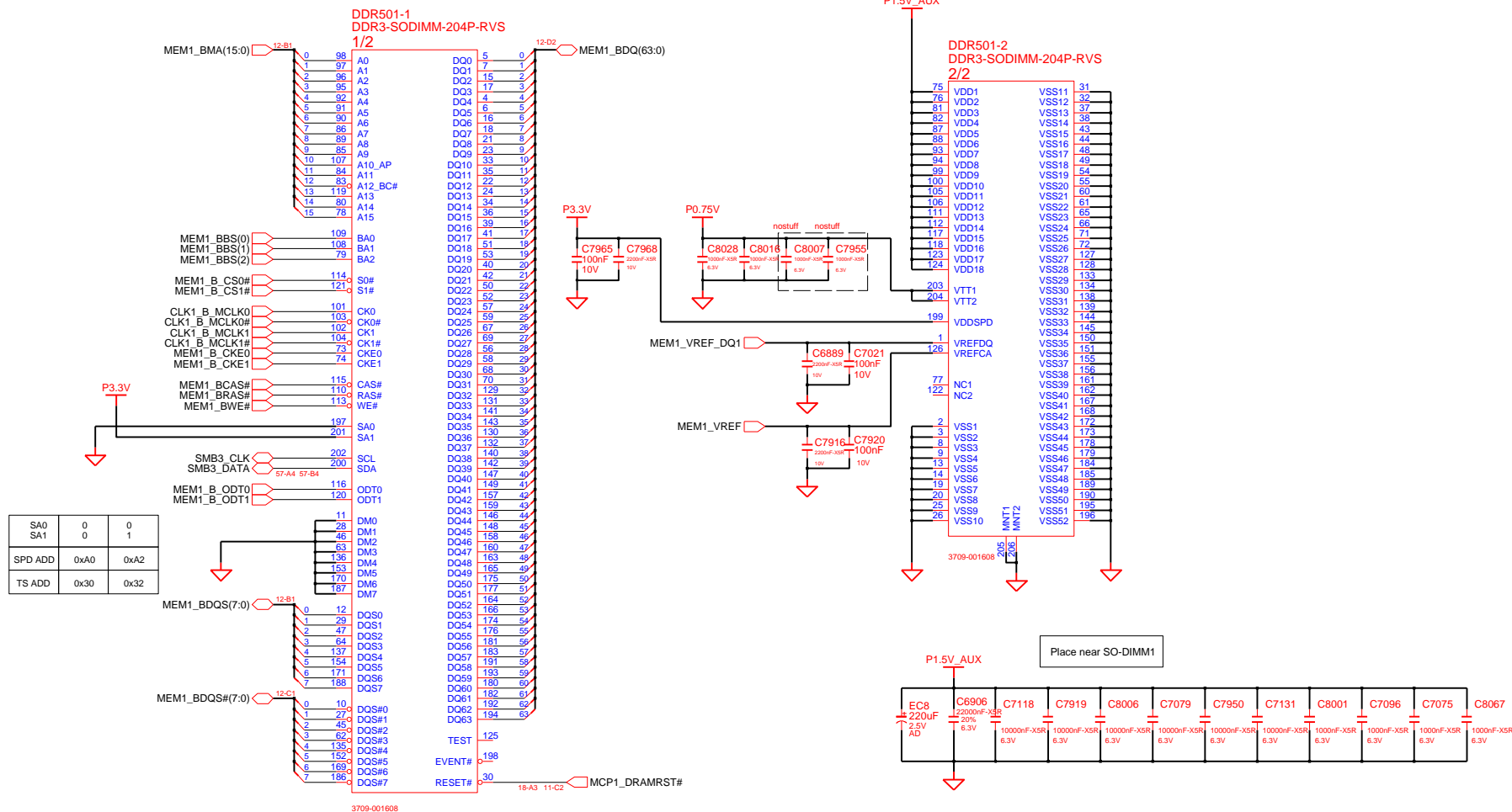
## SO-DIMM#1 : 1st SO-DIMM

### DDR SO-DIMM #1

Height : 4.0 mm (REVERSE)

P/N : 3709-001654 (Foxconn)

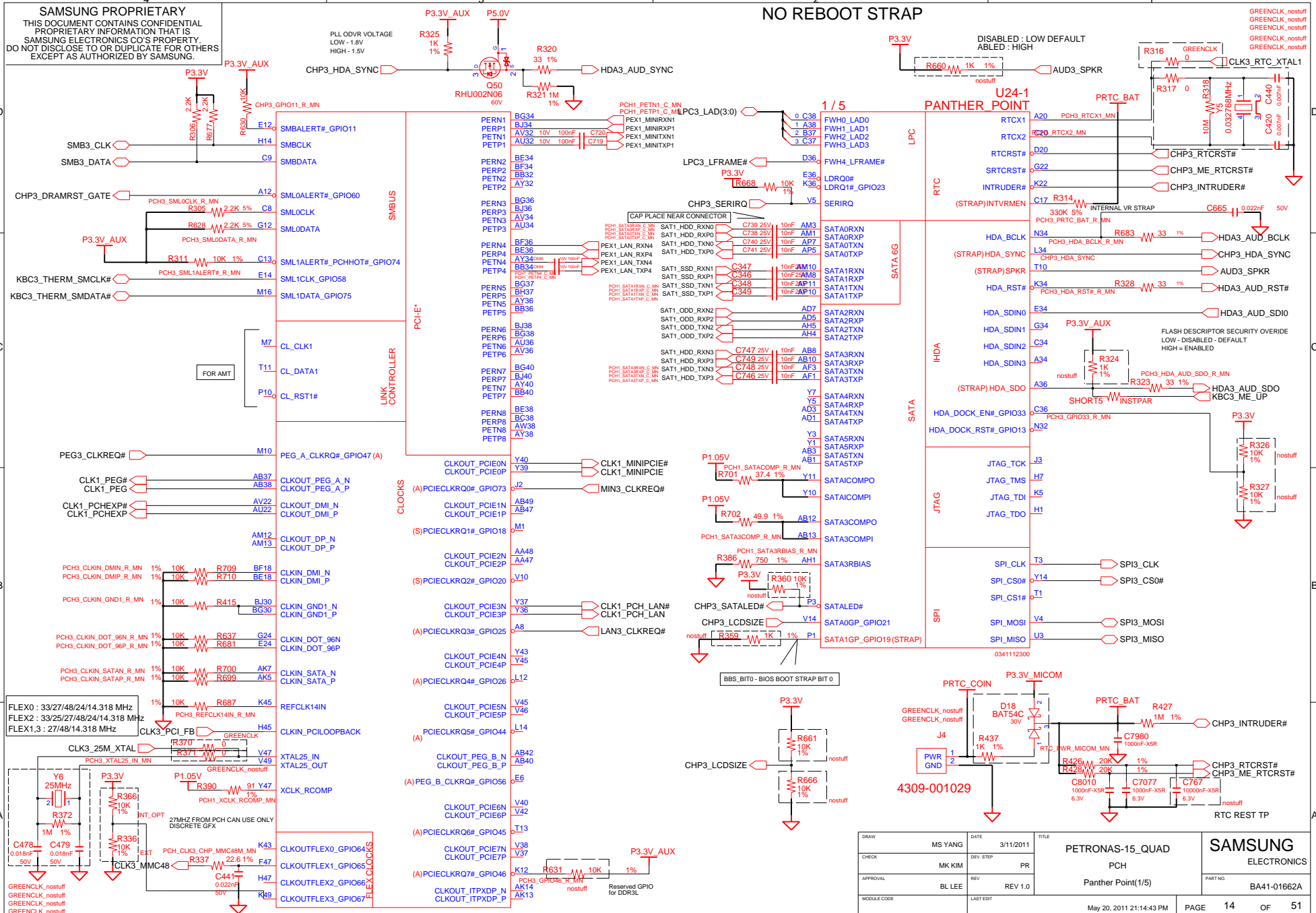
P/N : 3709-001608 (Concraft)

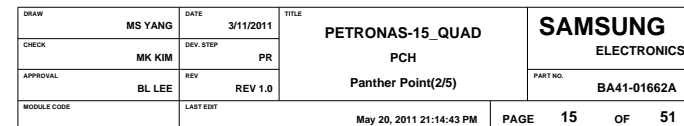


DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR		SODIMM B	
APPROVAL	BL LEE	REV	REV 1.0		DDR3	
MODULE CODE		LAST ENT				PART NO. BA41-01662A
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NO REBOOT STRAP



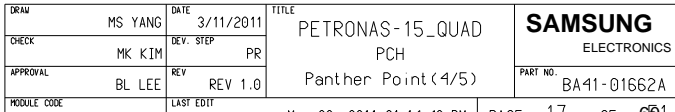








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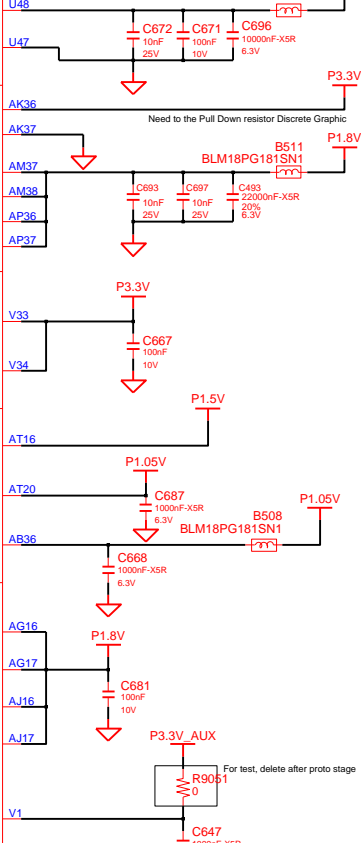
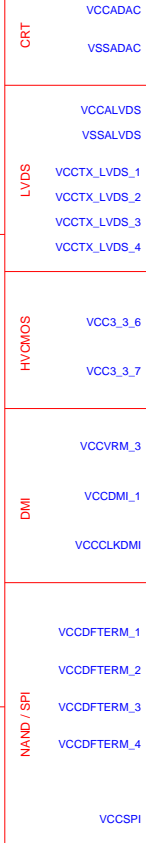
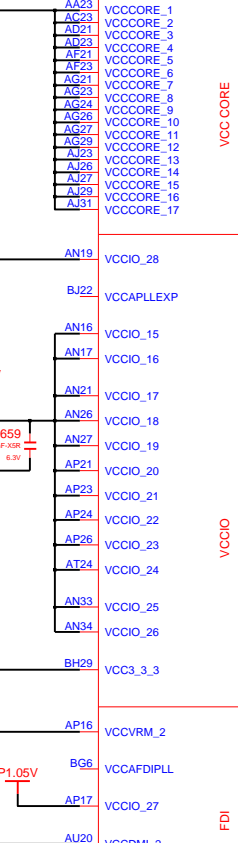
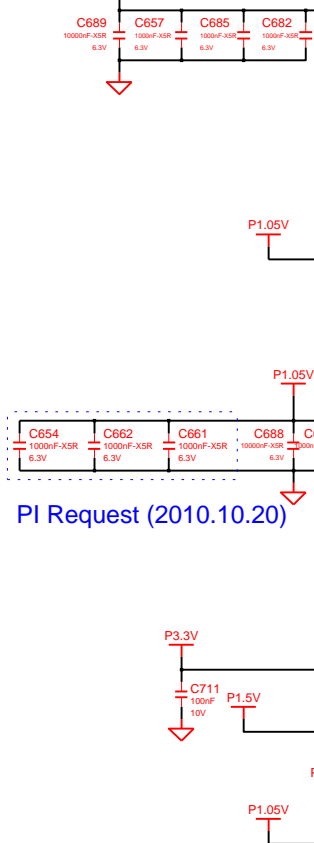
**U24-5  
PANTHER POINT**

This power share with thermal sensor

5 / 5

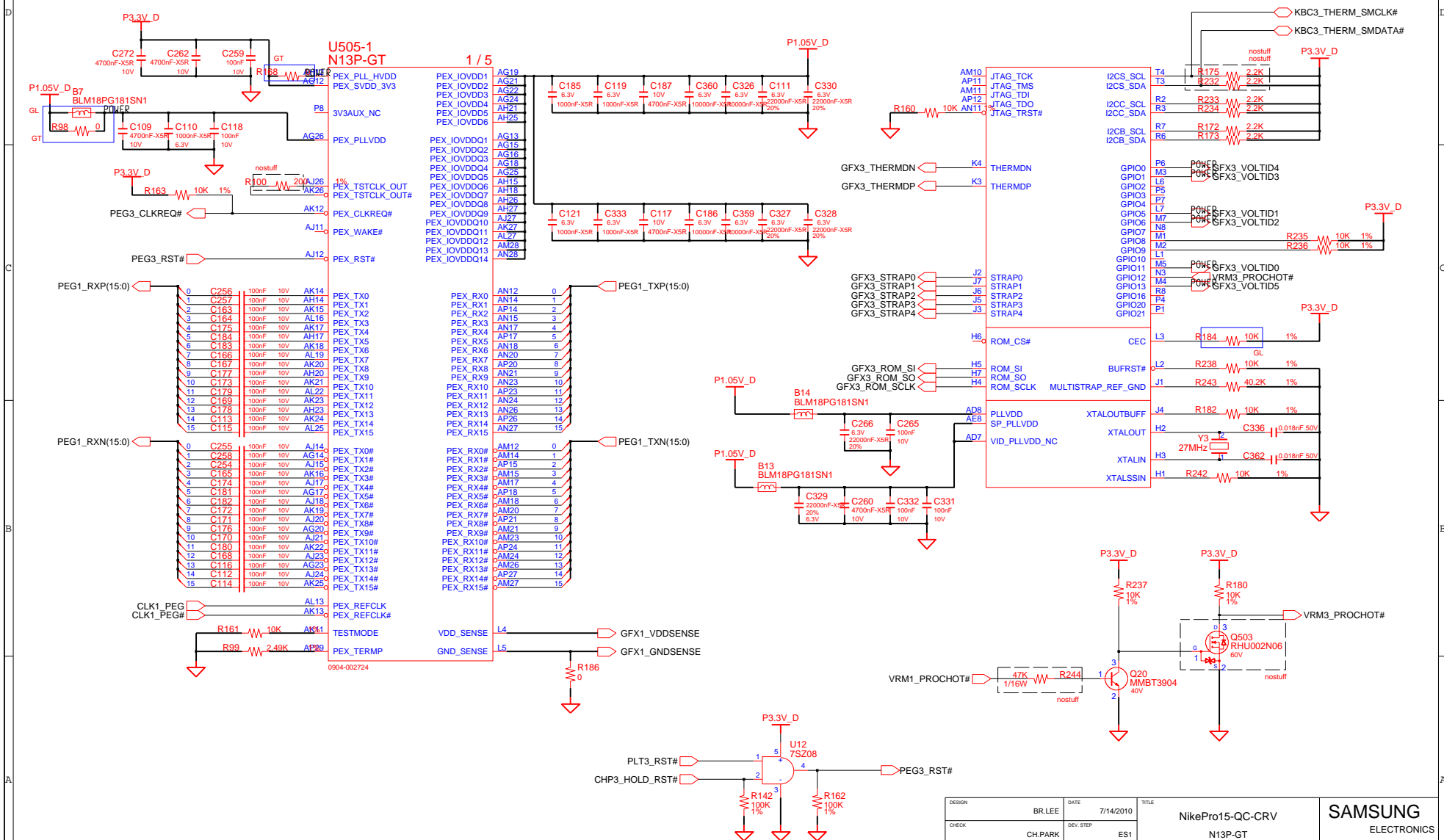
AY4	VSS159	VSS259	H46
AY2	VSS160	VSS260	K18
AY46	VSS161	VSS261	K26
AY8	VSS162	VSS262	K30
B11	VSS163	VSS263	K46
B15	VSS164	VSS264	K7
B19	VSS165	VSS265	L2
B23	VSS166	VSS266	L20
B27	VSS167	VSS267	L26
B31	VSS168	VSS268	L26
B35	VSS169	VSS269	L28
B39	VSS170	VSS270	L36
B7	VSS171	VSS271	L48
F45	VSS172	VSS272	M12
BB12	VSS173	VSS273	P16
BB16	VSS174	VSS274	M18
BB20	VSS175	VSS275	M22
BB22	VSS176	VSS276	M24
BB24	VSS177	VSS277	M30
BB28	VSS178	VSS278	M32
BB30	VSS179	VSS279	M34
BB38	VSS180	VSS280	M36
BB4	VSS181	VSS281	M4
BB46	VSS182	VSS282	M42
BC14	VSS183	VSS283	M46
BC18	VSS184	VSS284	N18
BC2	VSS185	VSS285	P30
BC22	VSS186	VSS286	P30
BC26	VSS187	VSS287	N47
BC32	VSS188	VSS288	P16
BC34	VSS189	VSS289	T33
BC36	VSS190	VSS290	P40
BC48	VSS191	VSS291	P47
BD46	VSS192	VSS292	P47
BD5	VSS193	VSS293	P7
BD22	VSS194	VSS294	R2
BD26	VSS195	VSS295	R48
BE40	VSS196	VSS296	T12
BE40	VSS197	VSS297	T31
BF10	VSS198	VSS298	T37
BF12	VSS199	VSS299	T4
BF16	VSS200	VSS300	W34
BF20	VSS201	VSS301	T46
BF22	VSS202	VSS302	T47
BF24	VSS203	VSS303	T8
BF26	VSS204	VSS304	V11
BF28	VSS205	VSS305	V17
BD3	VSS206	VSS306	V26
BF30	VSS207	VSS307	V27
BF38	VSS208	VSS308	V29
BF40	VSS209	VSS309	V30
BF9	VSS210	VSS310	V31
BG17	VSS211	VSS311	V36
BG21	VSS212	VSS312	V43
BG33	VSS213	VSS313	V7
BG44	VSS214	VSS314	V7
CG8	VSS215	VSS315	W17
BH11	VSS216	VSS316	W2
BH15	VSS217	VSS317	W27
BH17	VSS218	VSS318	W48
BH19	VSS219	VSS319	Y12
H10	VSS220	VSS320	Y30
BH27	VSS221	VSS321	Y4
BH31	VSS222	VSS322	Y42
BH33	VSS223	VSS323	Y46
BH36	VSS224	VSS324	Y8
BH38	VSS225	VSS325	BG29
BH43	VSS226	VSS326	N24
BH7	VSS227	VSS327	AJ3
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D12	VSS229	VSS329	B43
D16	VSS230	VSS330	BE10
D18	VSS231	VSS331	BG41
D22	VSS232	VSS332	BG43
D24	VSS233	VSS333	G14
D26	VSS234	VSS334	H16
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D32	VSS236	VSS336	BG22
D34	VSS237	VSS337	BG24
D36	VSS238	VSS338	C22
D42	VSS239	VSS339	AP13
D8	VSS240	VSS340	M14
E18	VSS241	VSS341	AP3
E26	VSS242	VSS342	AP1
E18	VSS243	VSS343	BE18
G18	VSS244	VSS344	BC16
G20	VSS245	VSS345	BG28
G26	VSS246	VSS346	BJ28
G28	VSS247	VSS347	
G36	VSS248	VSS348	
G48	VSS249	VSS349	
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H18	VSS251	VSS351	
H22	VSS252	VSS352	
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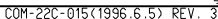


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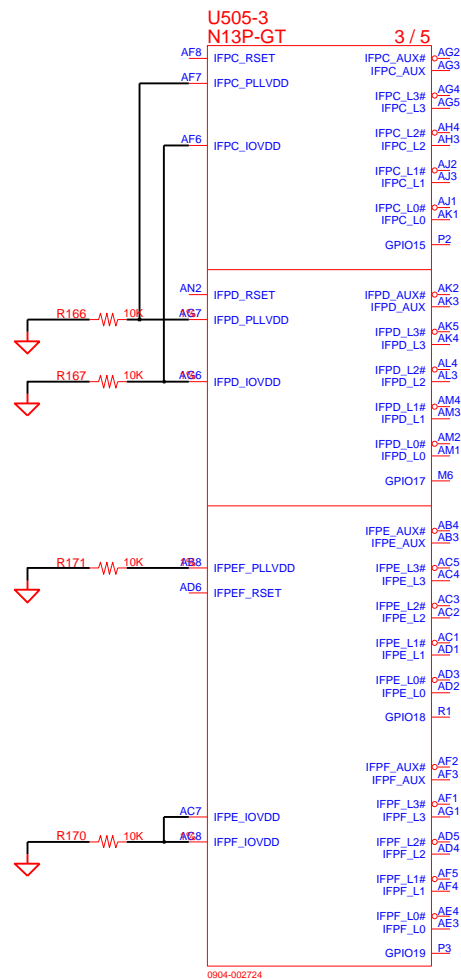
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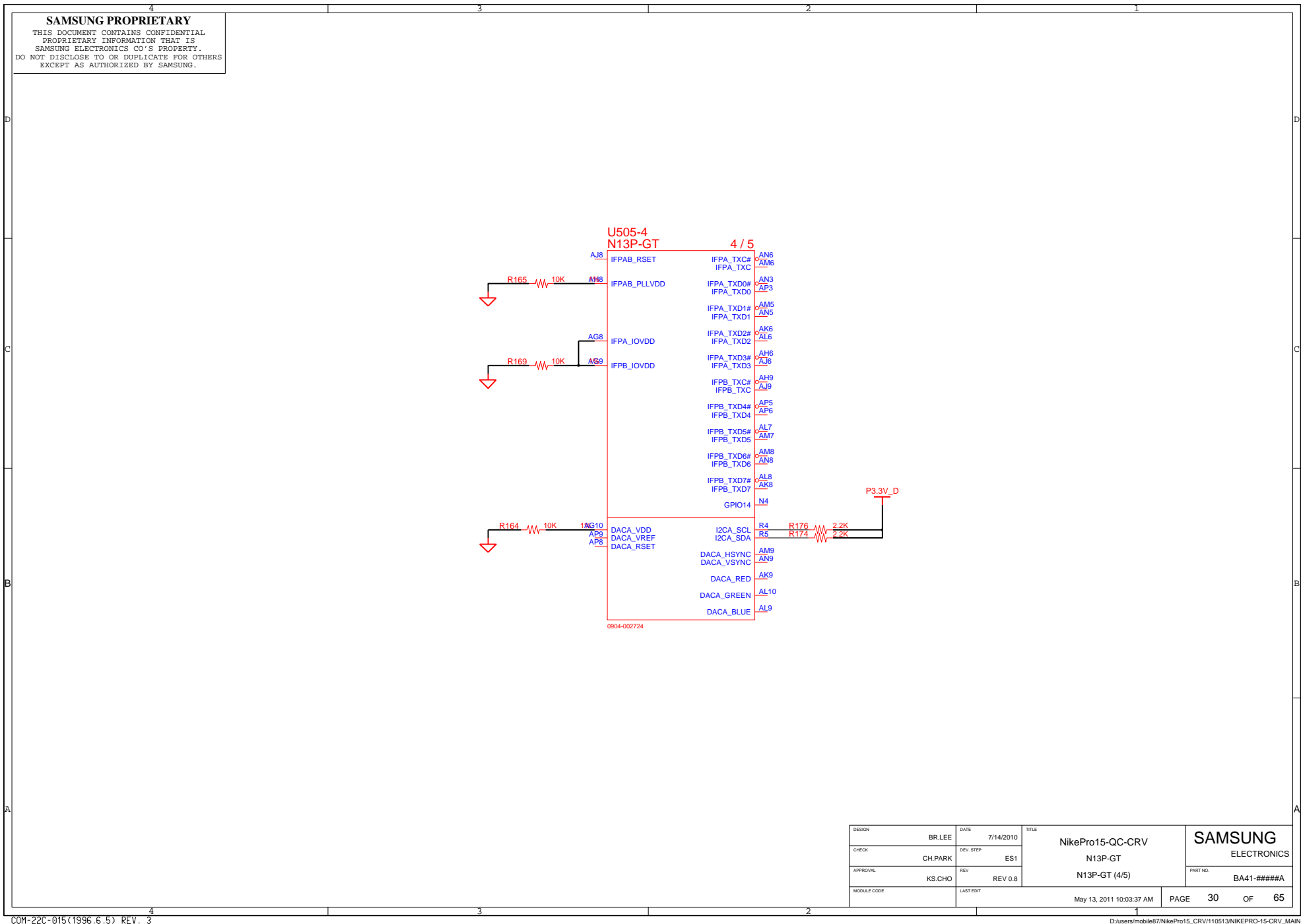
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APPROVAL	KS.CHO	REV	REV 0.8				
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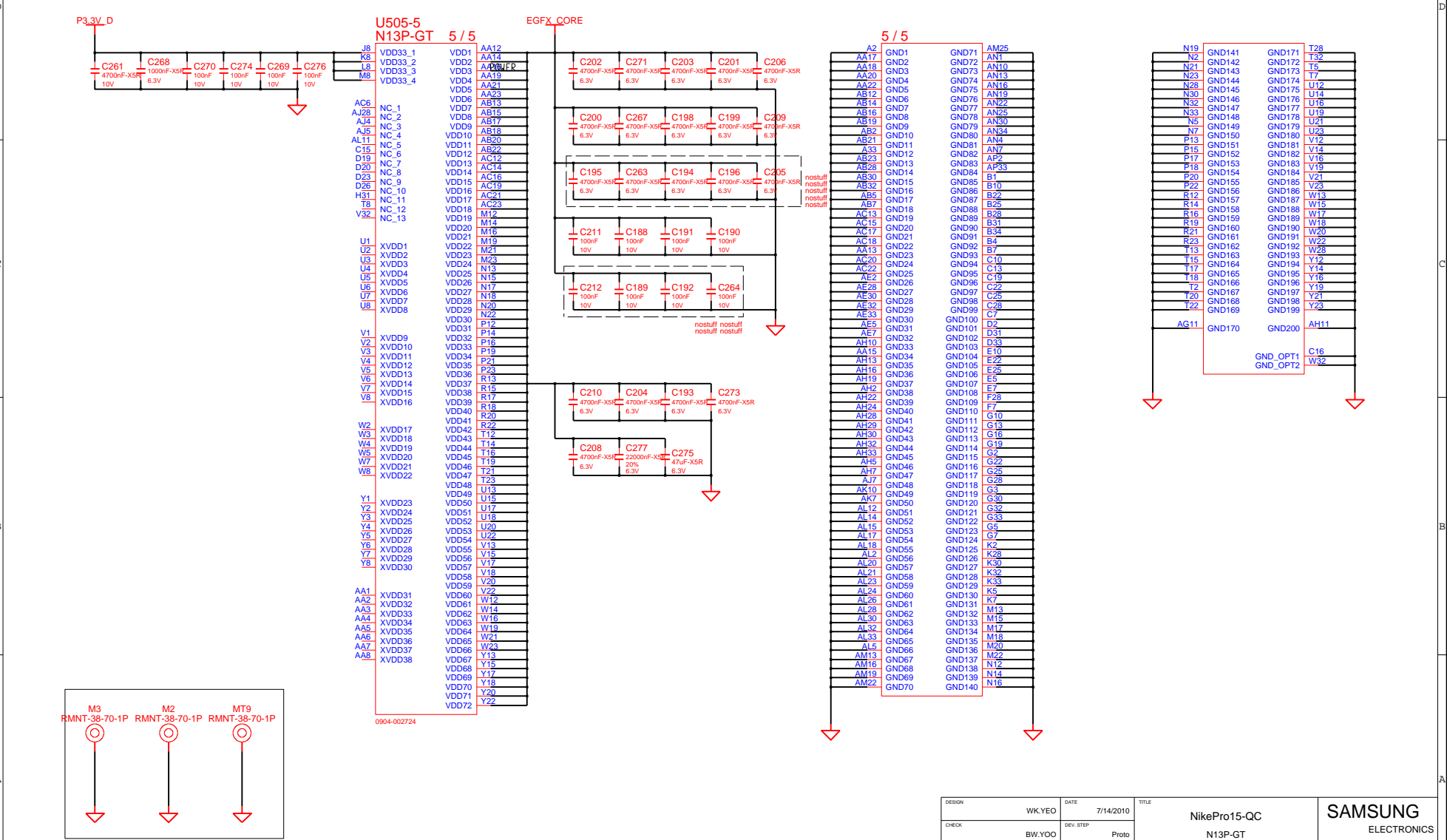
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APPROVAL	KS.CHO	REV	REV 0.8			PART NO.	BA41-####A		
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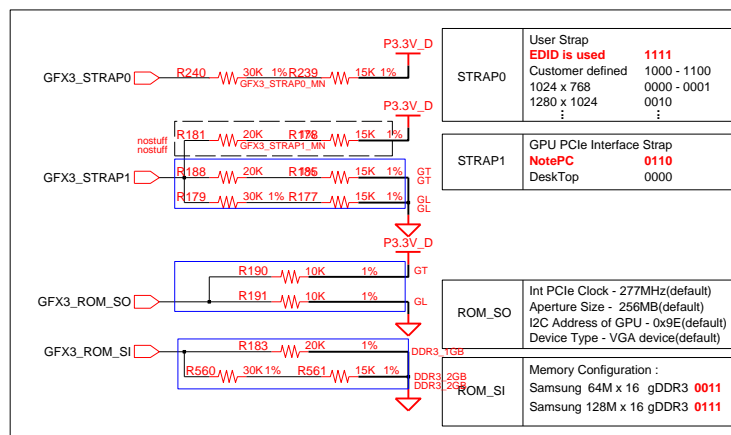
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APPROVAL	SH.LEE	REV	REV 0.8		N13P-GT (5/5)	
MODULE CODE		LAST EDIT	April 22, 2011 14:15:44 PM	PAGE	31 OF 66	

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## N13x STRAP

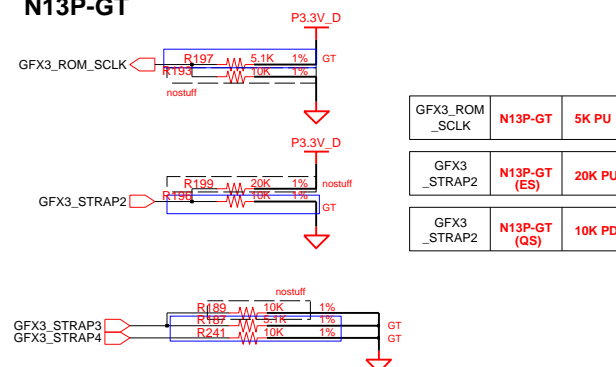
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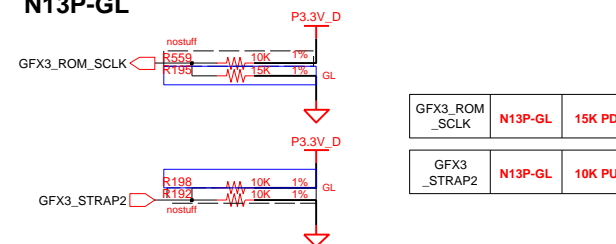
RESISTOR	PULL UP	PULL DOWN
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111

STRAP PIN	BIT 3	BIT 2	BIT 1	BIT 0
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
ROM_SO	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM

### N13P-GT



### N13P-GL



DESIGN	WK.YEO	DATE	7/14/2010	TITLE	NikePro15-QC	SAMSUNG
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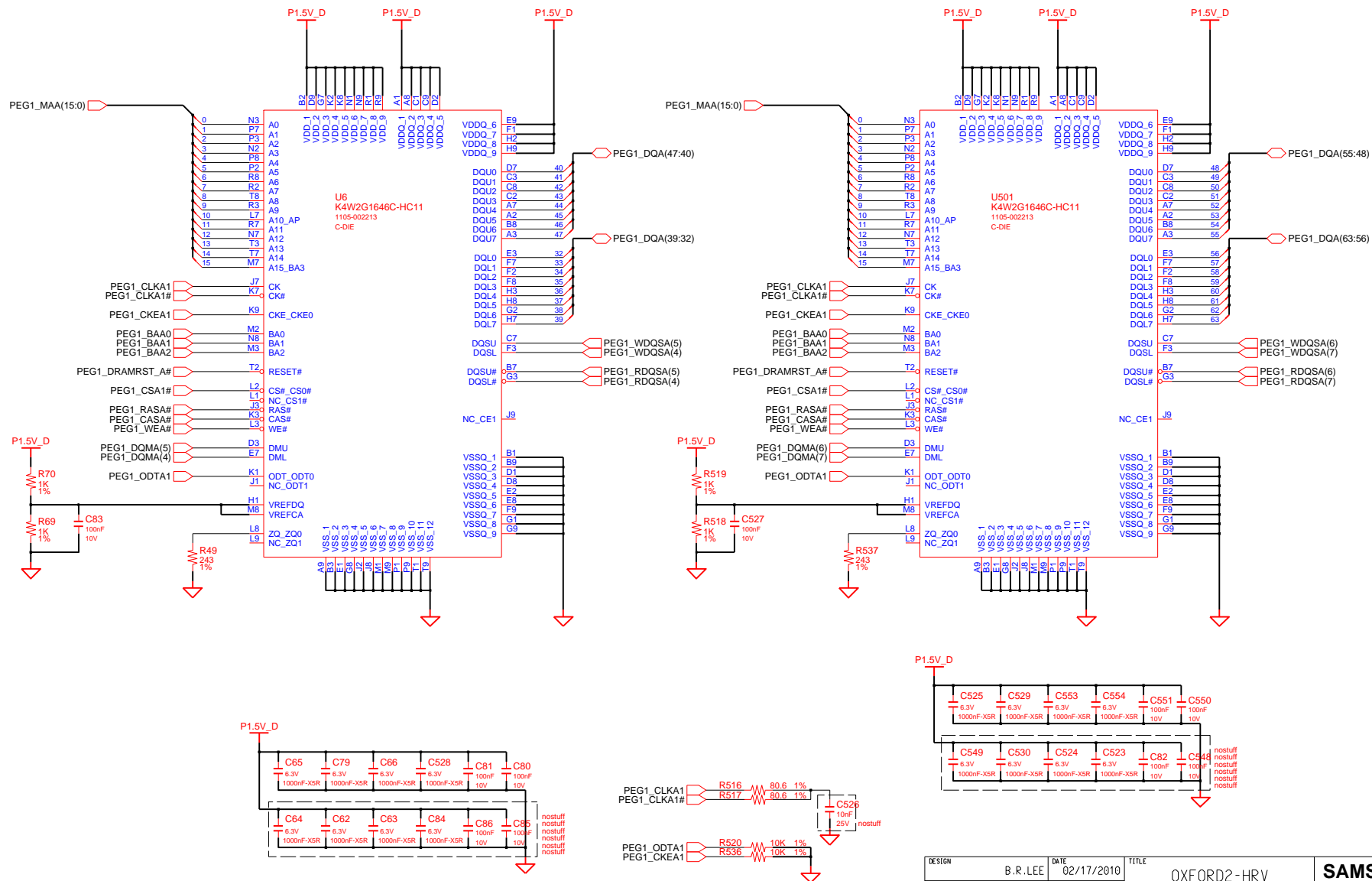
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The image displays three detailed PCB layout diagrams for the PEG1 interface, showing component placement, pin connections, and power/ground planes. The diagrams are labeled U7, U502, and U503, all using the K4W2G1646C-HC11 C-DIE.

**Diagram U7:** Shows the die with pins connected to various components. Key components include resistors R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R

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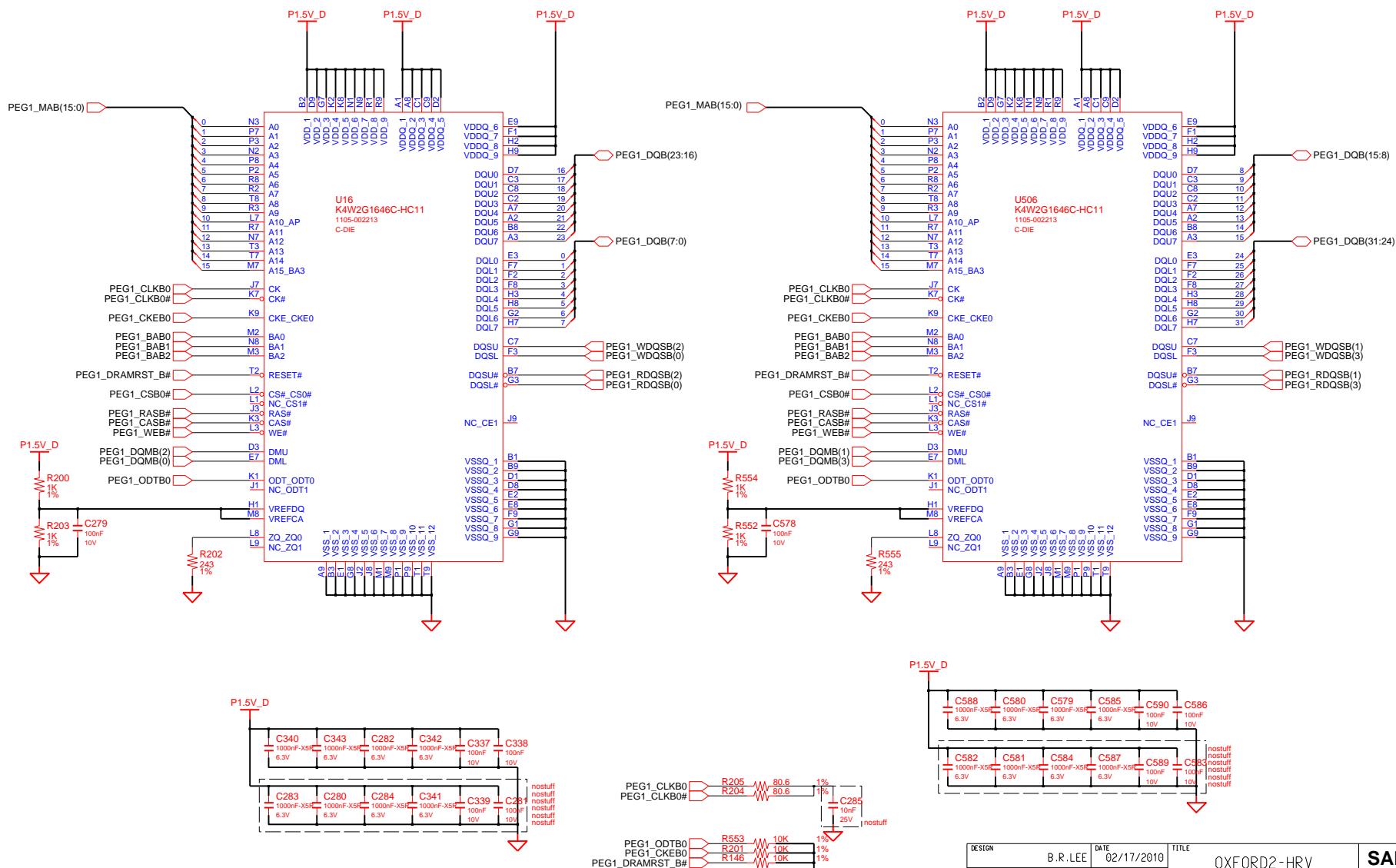
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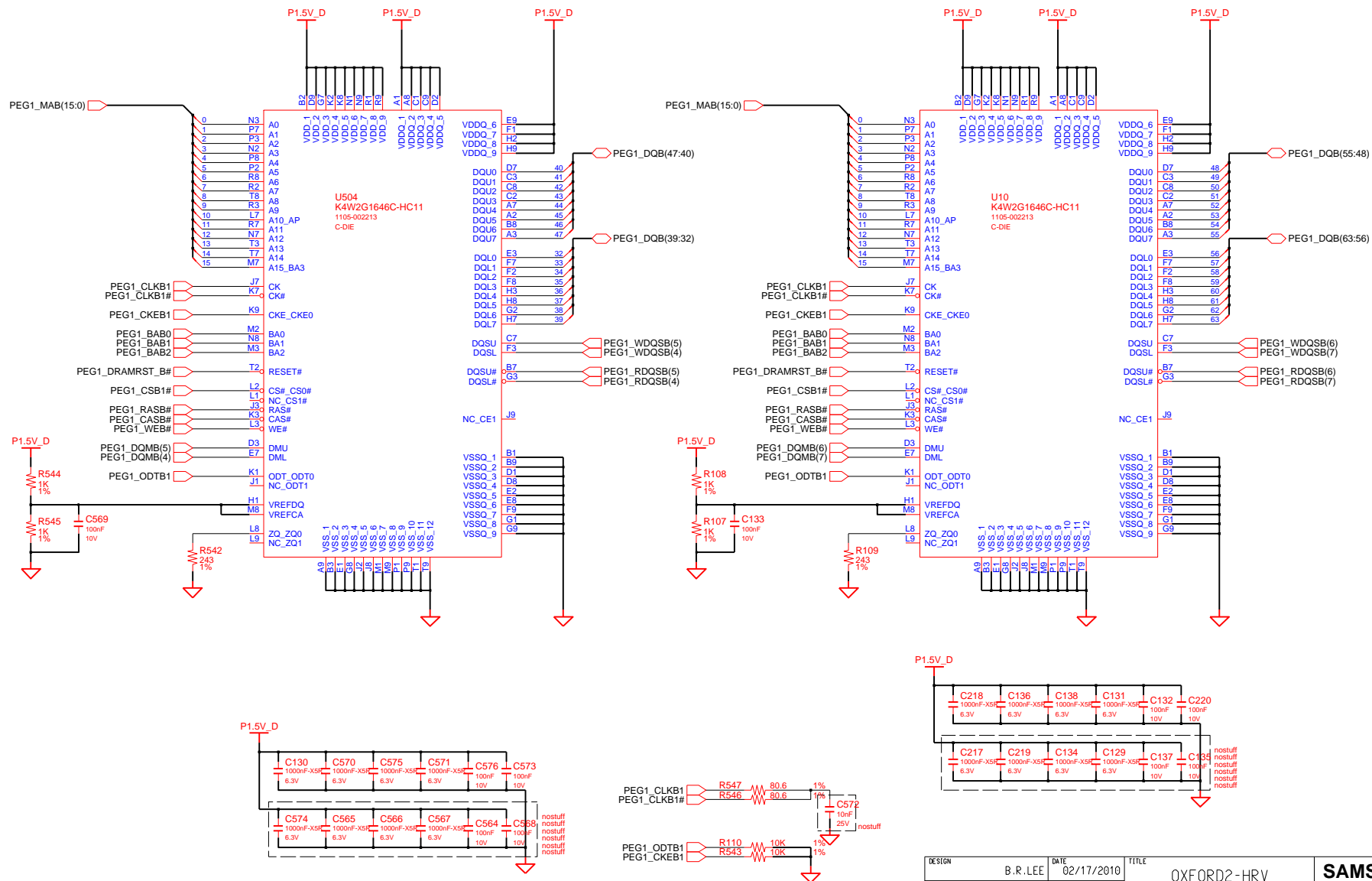
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## B-Channel #0 (D-mode)



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			PART NO.		BA41-#####

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



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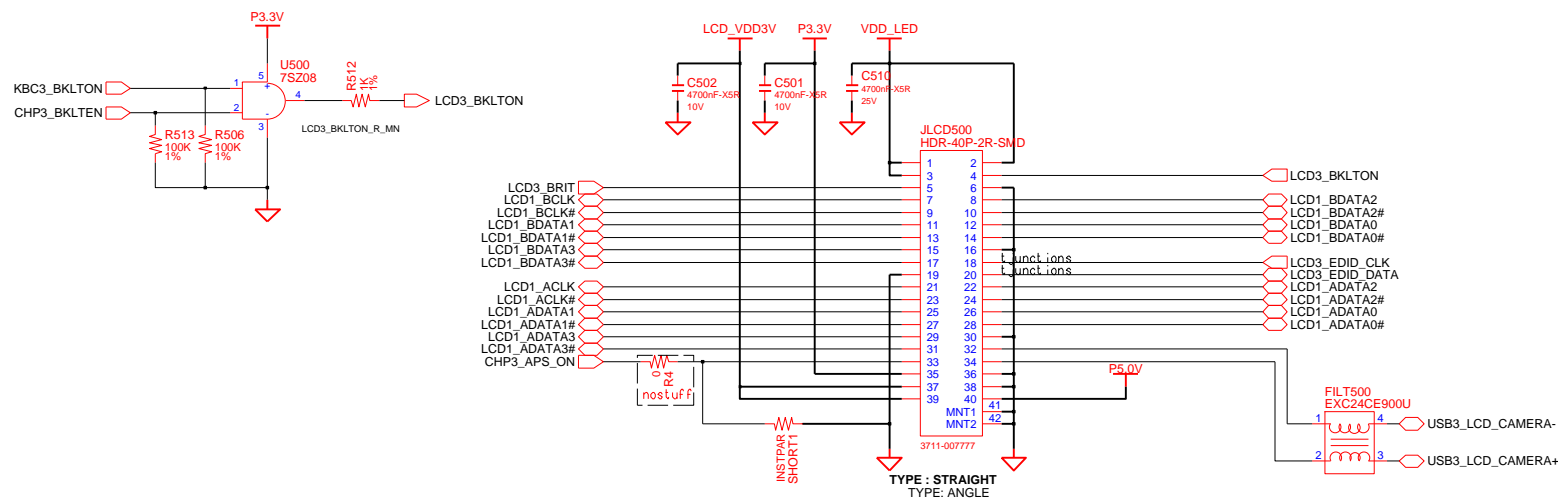
DESIGN	B.R.LEE	DATE	02/17/2010	TITLE	OXFORD2-HRV	<b>SAMSUNG</b> ELECTRONICS		
CHECK	G.S.CHO	DEV. STEP	ES1					
APPROVAL	JG.KOO	REV	REV 0.65				PART NO.	BA41-#####
MODULE CODE	LAST EDIT		February 26, 2010 20:43:59 PM				PAGE	34 OF 73



# LVDS LOGIC

# Backlight On

## 2Ch. LCD Connector + CAMERA

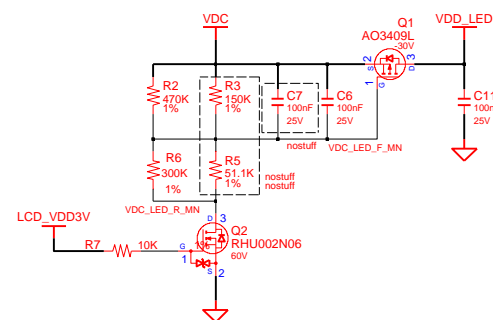


## LCD Power

**B10 T/F Reccomand (2011.07.06)**

B10 T/F Recommand (2011.07.06)

## LED Power

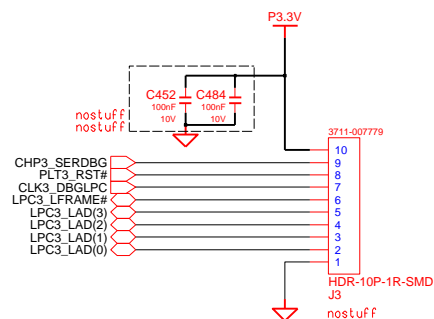


DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD		SAMSUNG	
CHECK	MK KIM	DEV. STEP	PR		GRAPHICS_IF		ELECTRONICS	
APPROVAL	BL LEE	REV	REV 1.0		LVDS		PART NO.	BA41-01662A
MODULE CODE	LAST EDIT			May 20, 2011 21:14:43 PM			PAGE	27 OF 51

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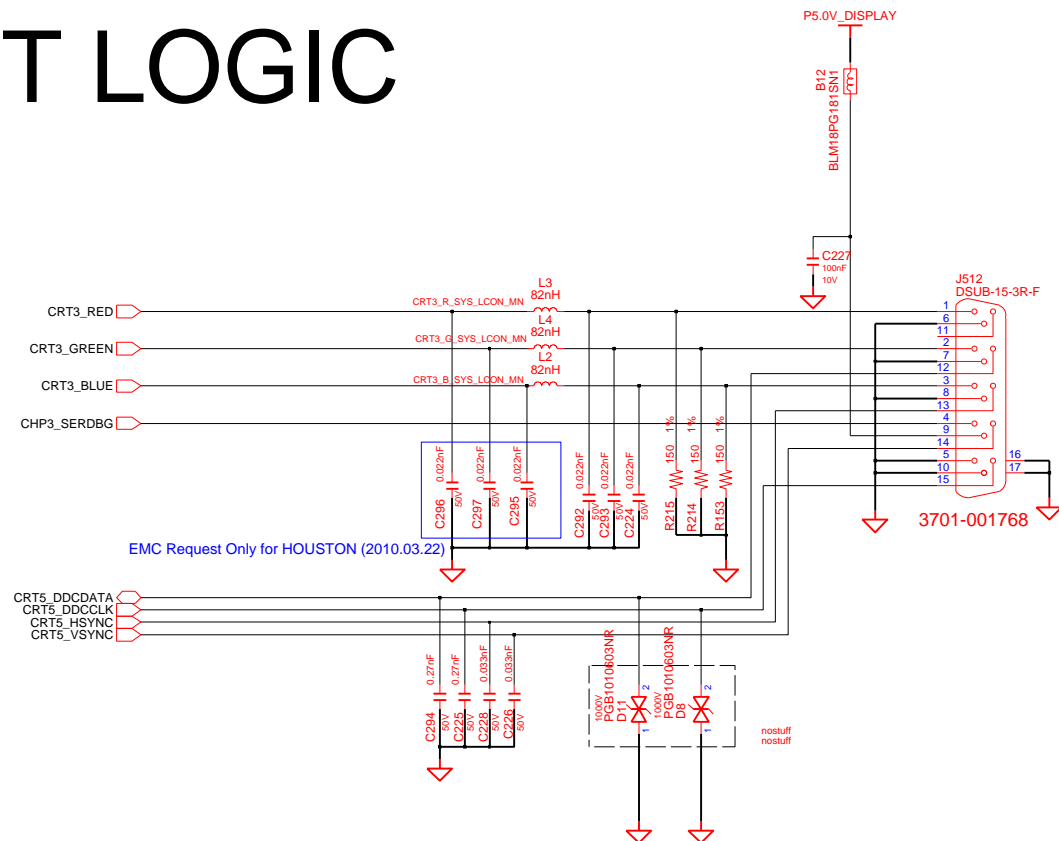
## 80H PORT DEBUG



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	GRAPHICS_IF		ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0	LVDS	PART NO.	BA41-01662A
MODULE CODE	LAST EDIT				PAGE	27 OF 51
				May 20, 2011 21:14:43 PM		

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# CRT LOGIC



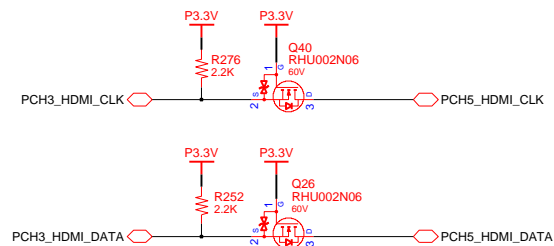
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD		SAMSUNG	
CHECK	MK KIM	DEV. STEP	PR	GRAPHICS_IF		ELECTRONICS		
APPROVAL	BL LEE	REV	REV 1.0	CRT		PART NO.	BA41-01662A	
MODULE CODE	LAST EDIT			May 20, 2011 21:14:43 PM			PAGE	28 OF 51

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**STANDARD NET NAME**

Display from PCH	Display from GPU
PCH3_HDMI_xxx	PEG3_HDMI_xxx
PCH1_xxxx_HDMI	PEG3_xxxx_HDMI



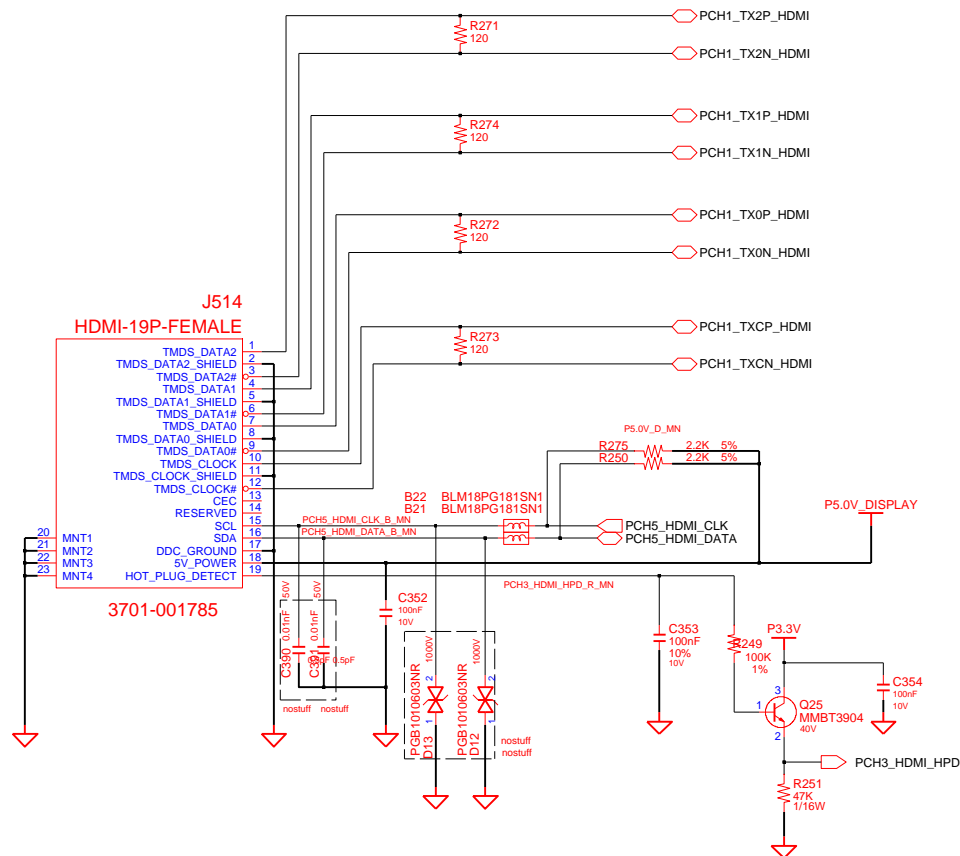
# HDMI Graphic

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

(EMC request at 2010.04.15)

After checking, Veyron\_R don't need to use CMC for each signal.

(EMC request at 2010.12.03)



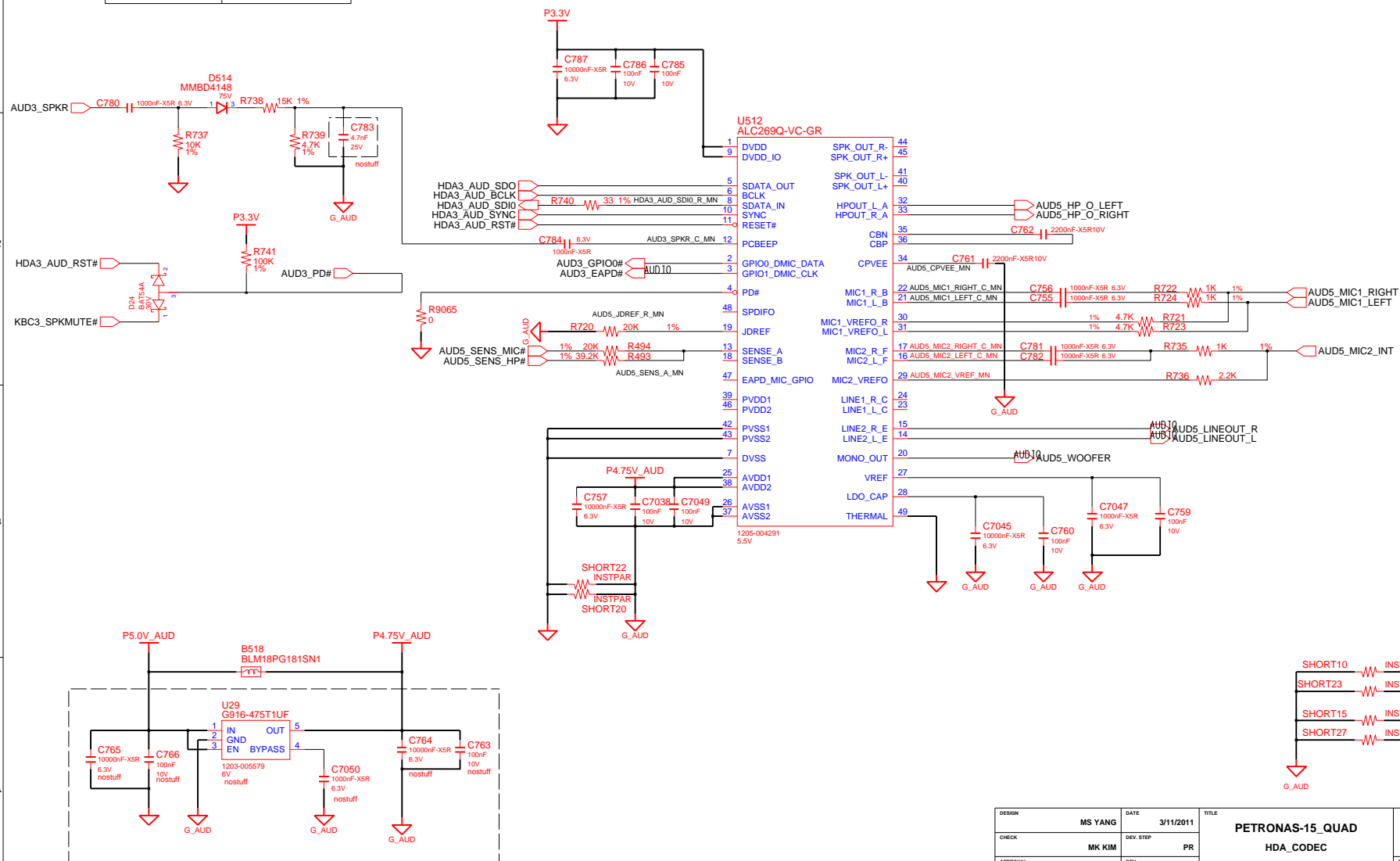
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR	GRAPHICS_IF		
APPROVAL	BL LEE	REV	REV 1.0	HDMI		
					PART NO.	BA41-01662A
MODULE CODE	LAST EDIT		May 20, 2011 21:14:43 PM			PAGE 29 OF 51

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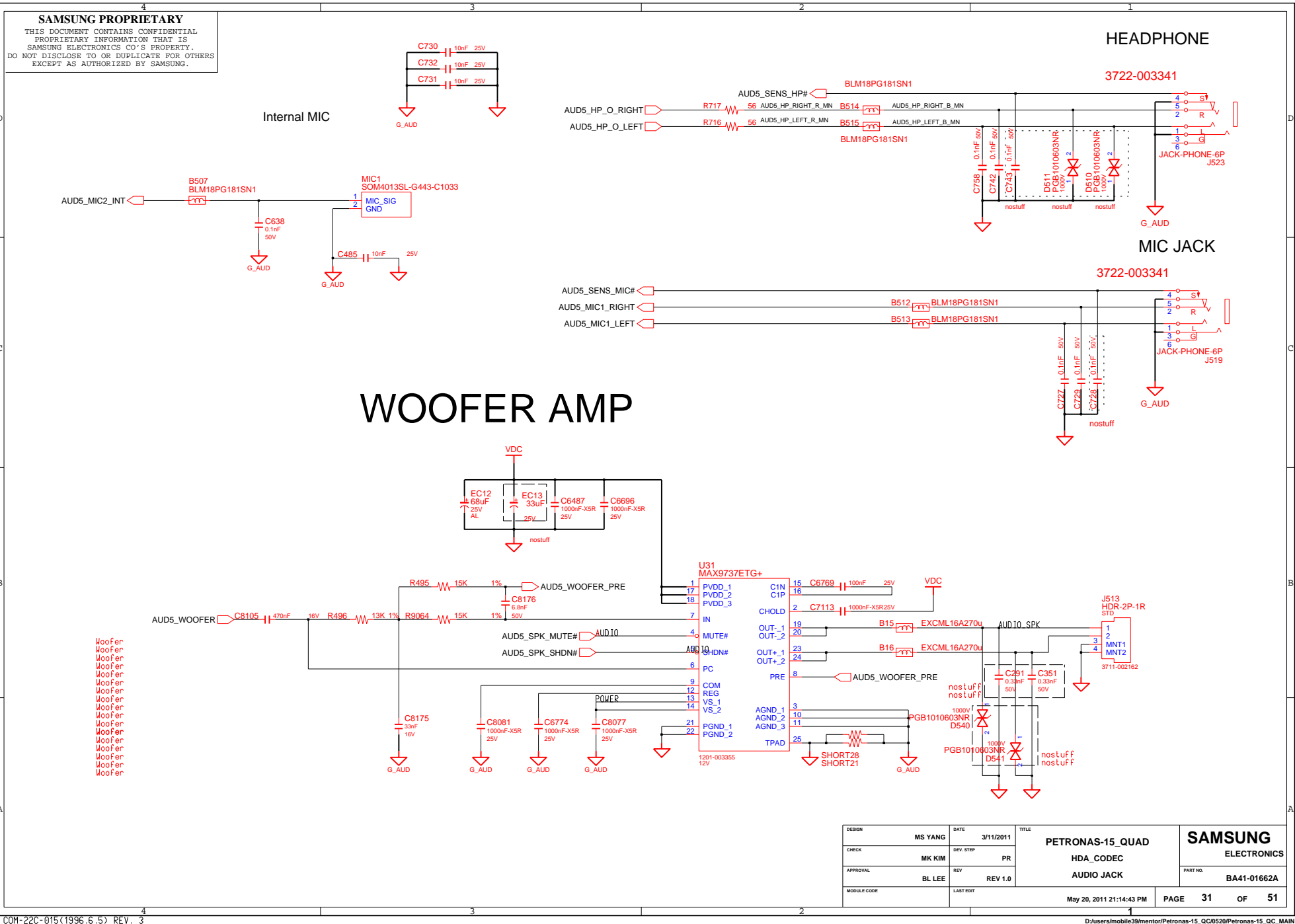
Codec Pin9 Setting	
S/B with Low Voltage IO	S/B without Low Voltage IO
Pin9 : 1.5V	Pin9 : 3.3V

# HD AUDIO



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR		HDA_CODEC	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		AUDIO CODEC ALC269	PART NO.
MODULE CODE		LAST EDIT				BA41-01662A
				May 20, 2011 21:14:43 PM	PAGE	30 OF 51

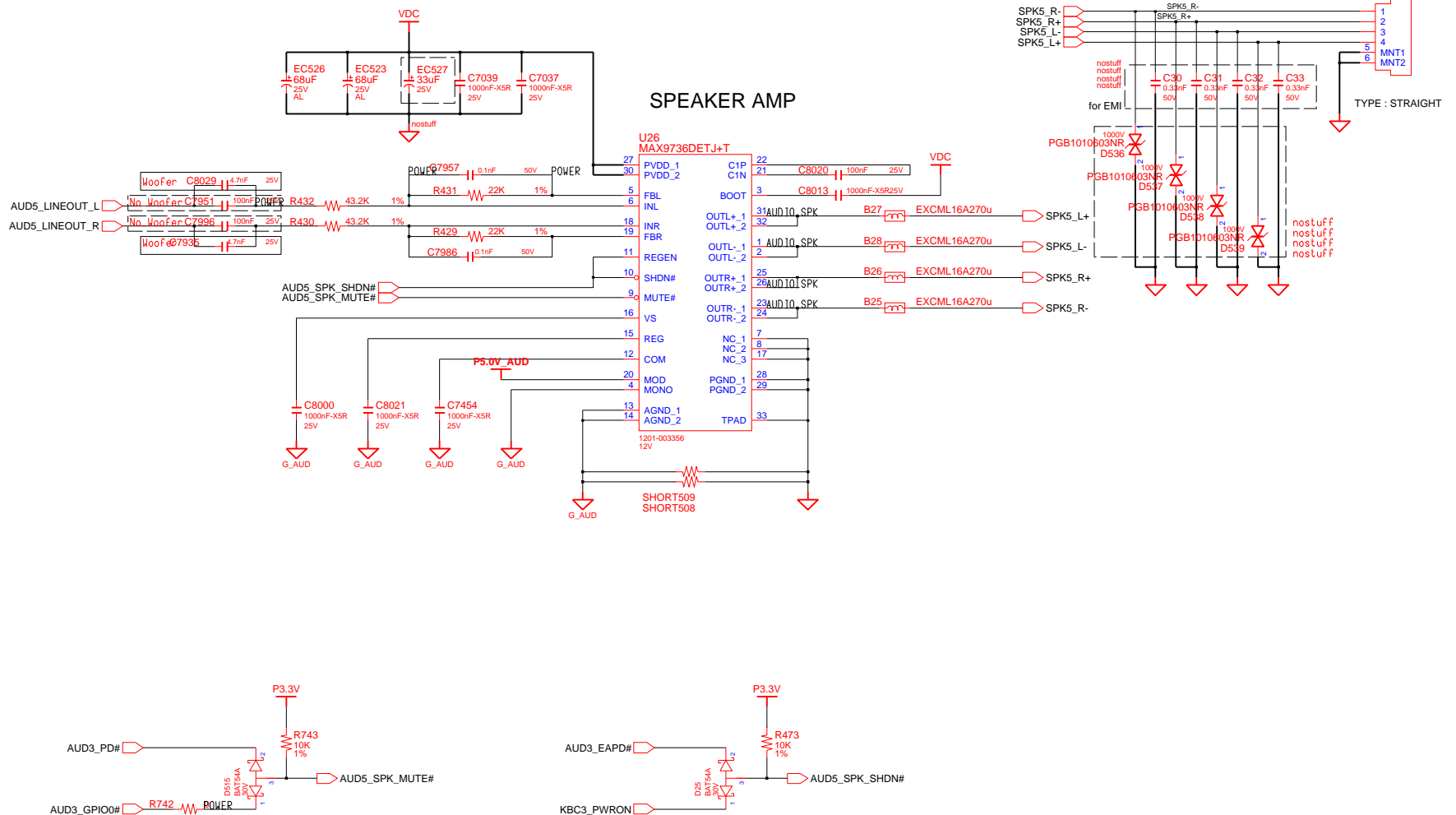
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DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR		HDA_CODEC	
APPROVAL	BL LEE	REV	REV 1.0		AUDIO JACK	
MODULE CODE		LAST EDIT				PART NO.
						BA41-01662A
May 20, 2011 21:14:43 PM						PAGE 31 OF 51

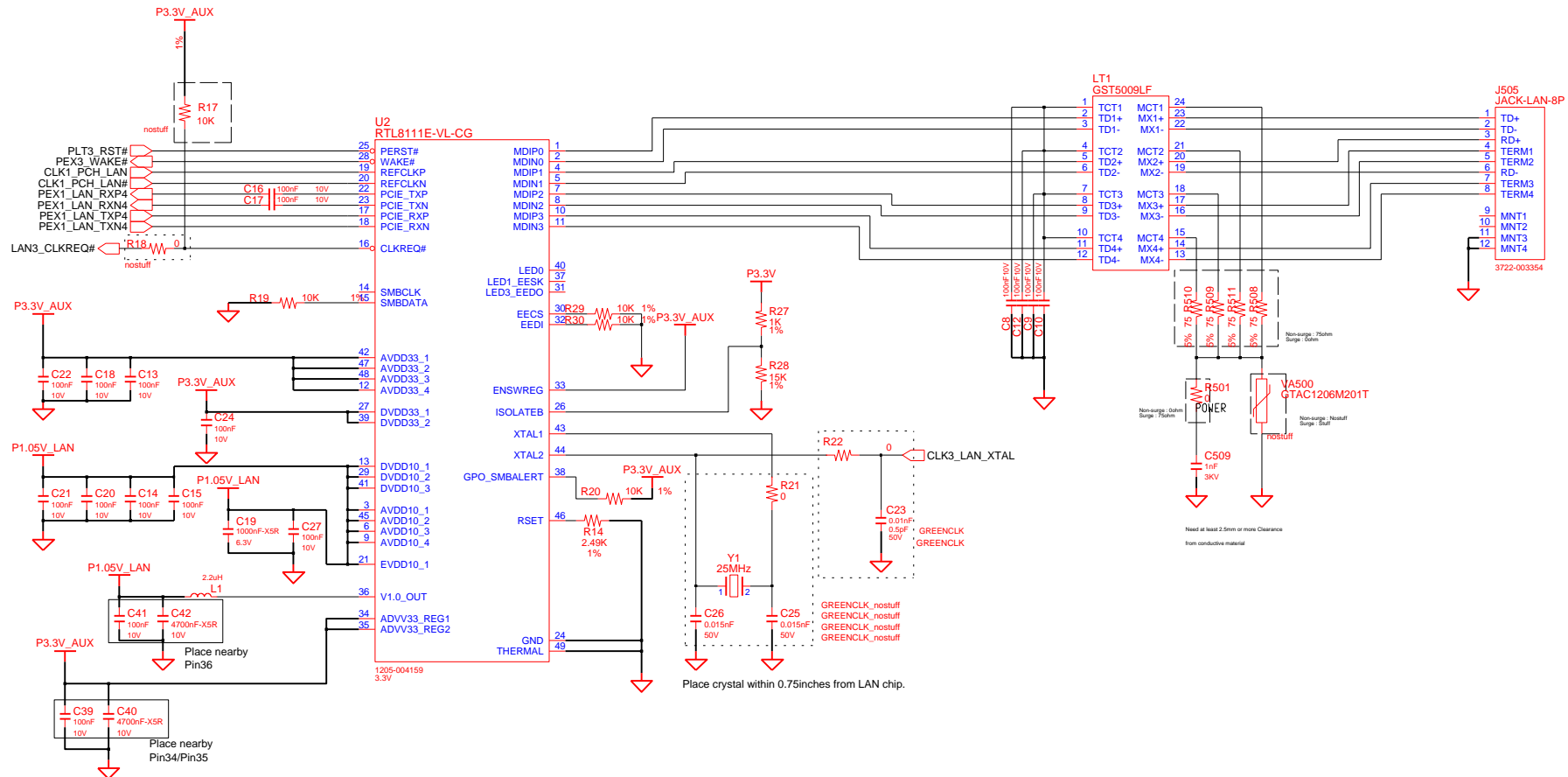
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SPEAKER AMP



DESIGN	DATE	TITLE		
CHECK	DEV. STEP	McLaren-15 Audio Speaker AMP		
APPROVAL	REV			
MODULE CODE	LAST EDIT			
			PART NO.	BA41-undefi

# Reatek RTL8111E



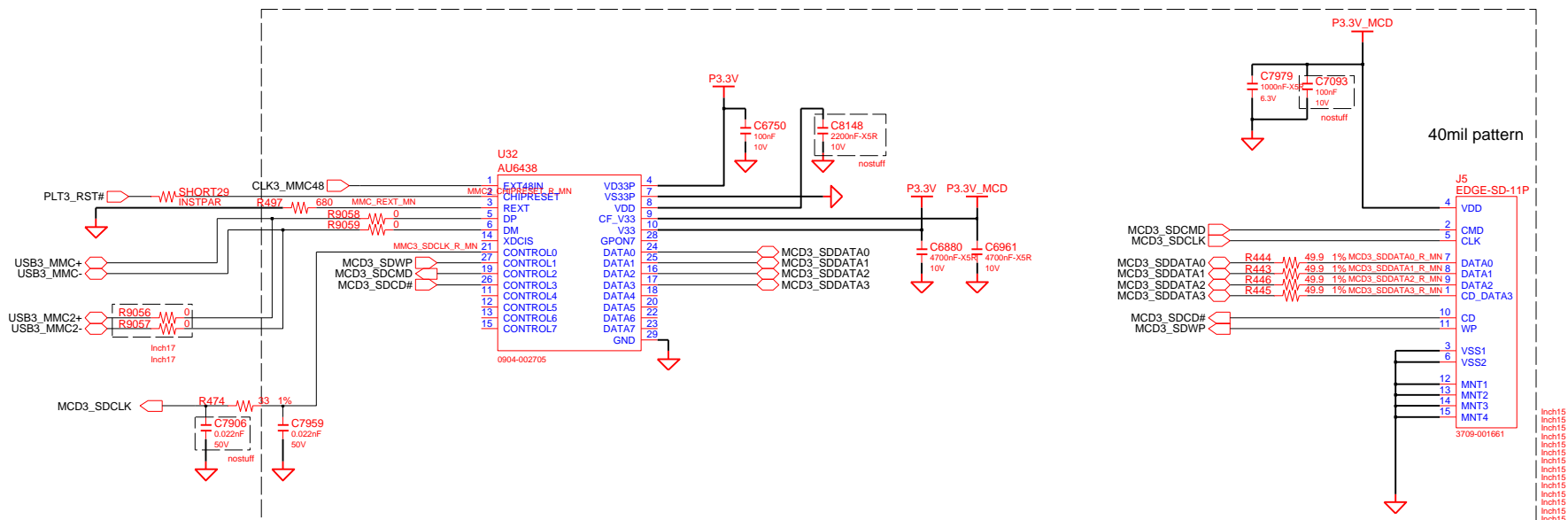
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR		LAN	
APPROVAL	BL LEE	REV	REV 1.0		LAN_Reatek_RTL8111	
MODULE CODE		LAST EDIT				PART NO. BA41-01662A
					May 20, 2011 21:14:43 PM	PAGE 32 OF 51



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# 4 IN 1 CARD

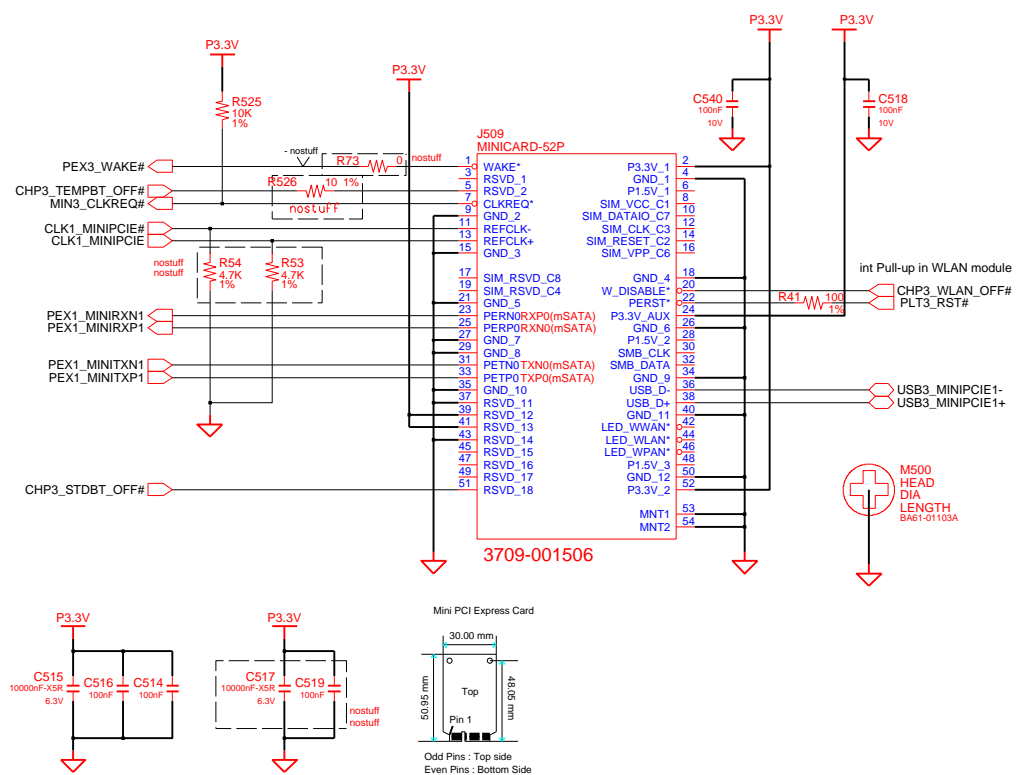


DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD MULTICARD 4 IN 1 CARD (AU6438)	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR			PART NO. BA41-01662A
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT		May 20, 2011 21:14:43 PM	PAGE 33 OF 51	

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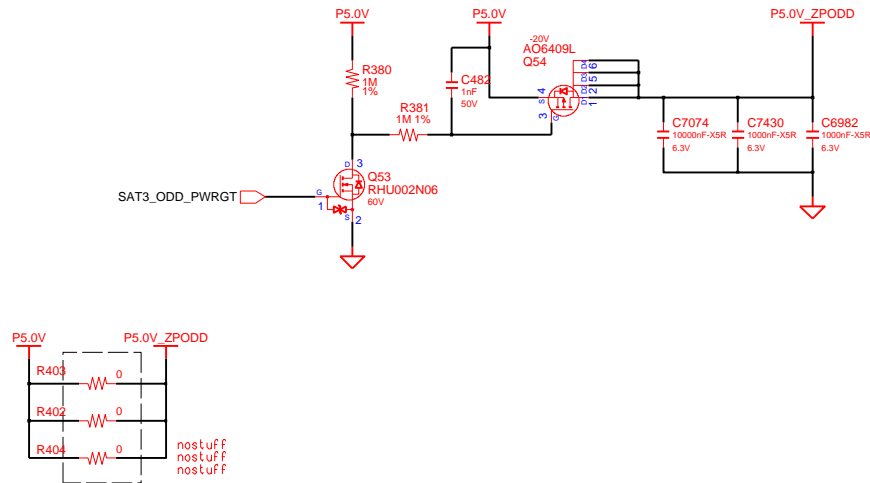
## WLAN, 7mm



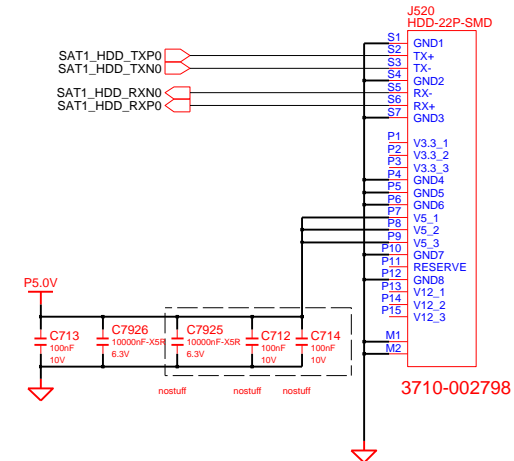
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	MINI_PCIE_CONN	ELECTRONICS	
APPROVAL	BL LEE	REV	REV 1.0	WLAN	PART NO.	BA41-01662A
MODULE CODE		LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	34	OF 51

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## SATA I/F CONN

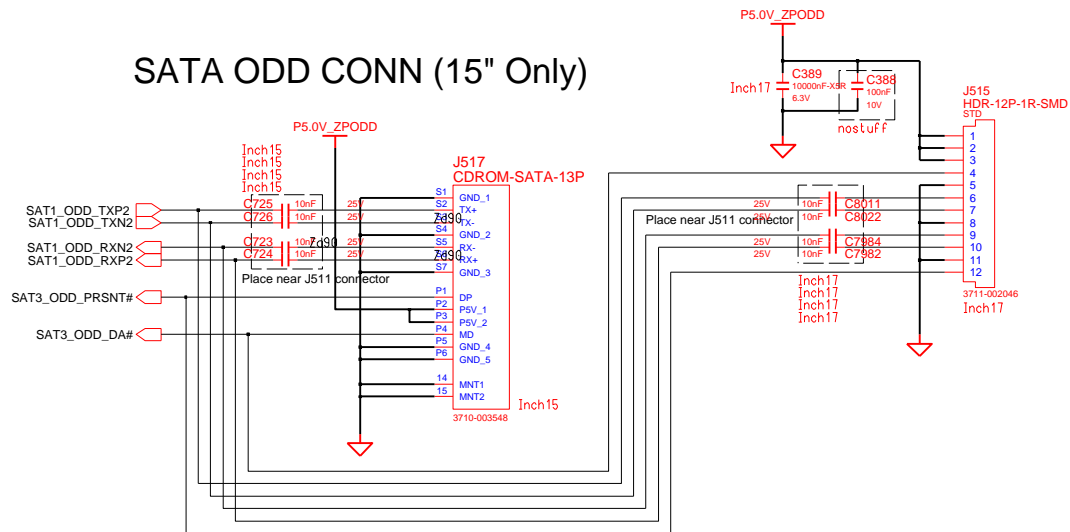


## SATA HDD CONN

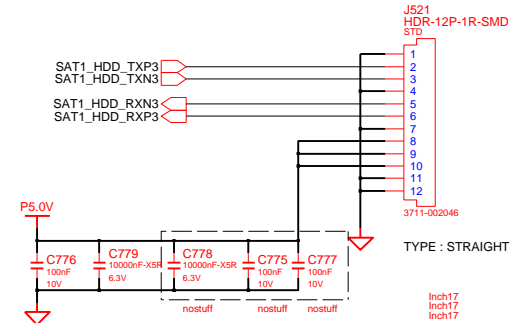


## SATA 2'nd ODD CONN (17" only)

## SATA ODD CONN (15" Only)



## SATA 2'nd HDD CONN (17" only)

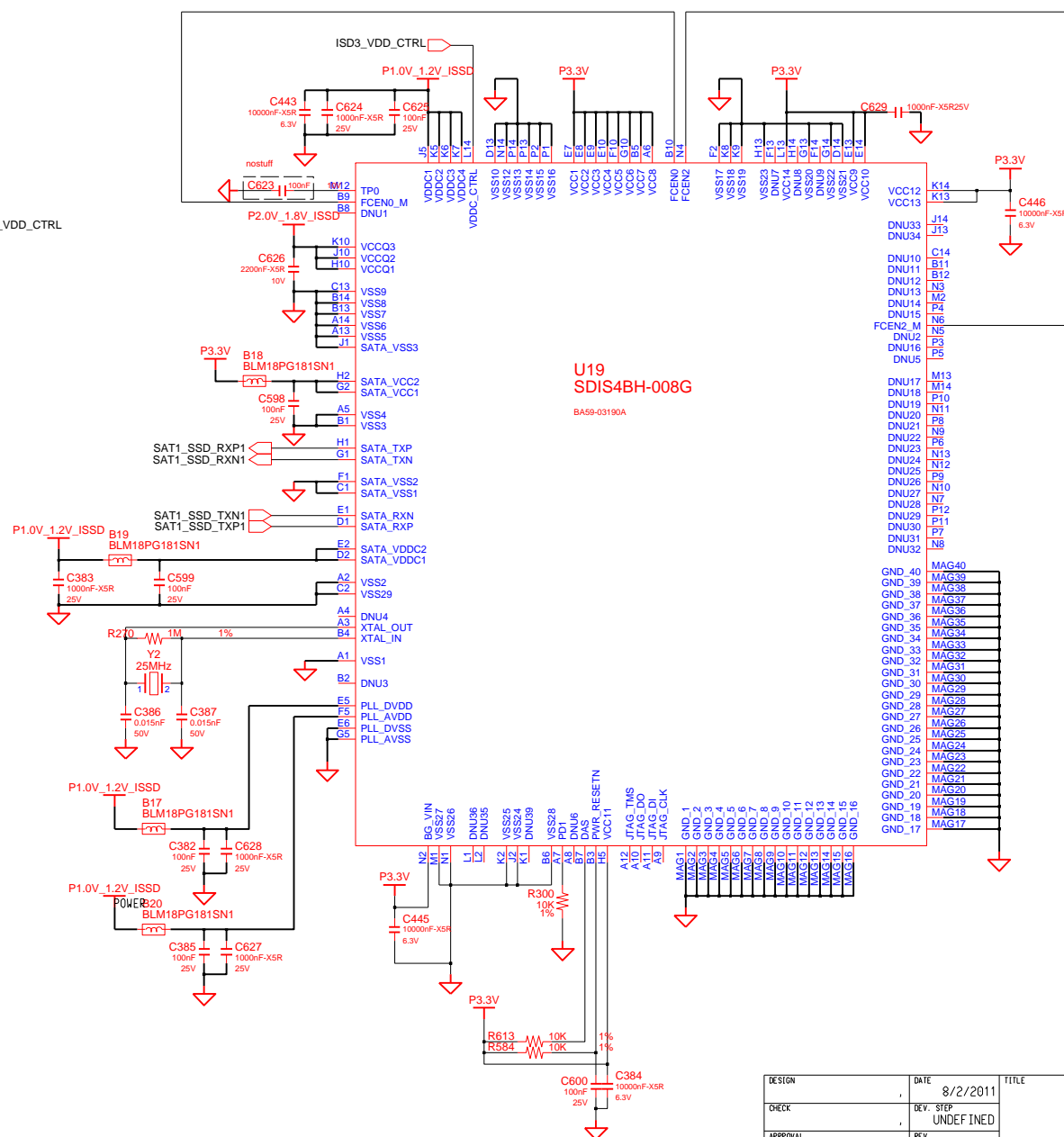
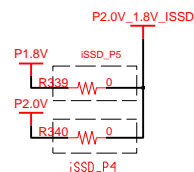
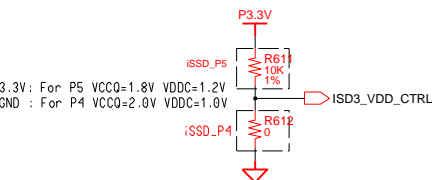


DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	SATA_DEVICES	ELECTRONICS	
APPROVAL	BL LEE	REV	REV 1.0	SATA Interface	PART NO.	BA41-01662A
MODULE CODE		LAST EDIT				
				May 20, 2011 21:14:43 PM	PAGE	35 OF 51

# ISSD


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

ISD3 VDD CTRL



U19  
SDIS4BH-008G

BA59-03190A

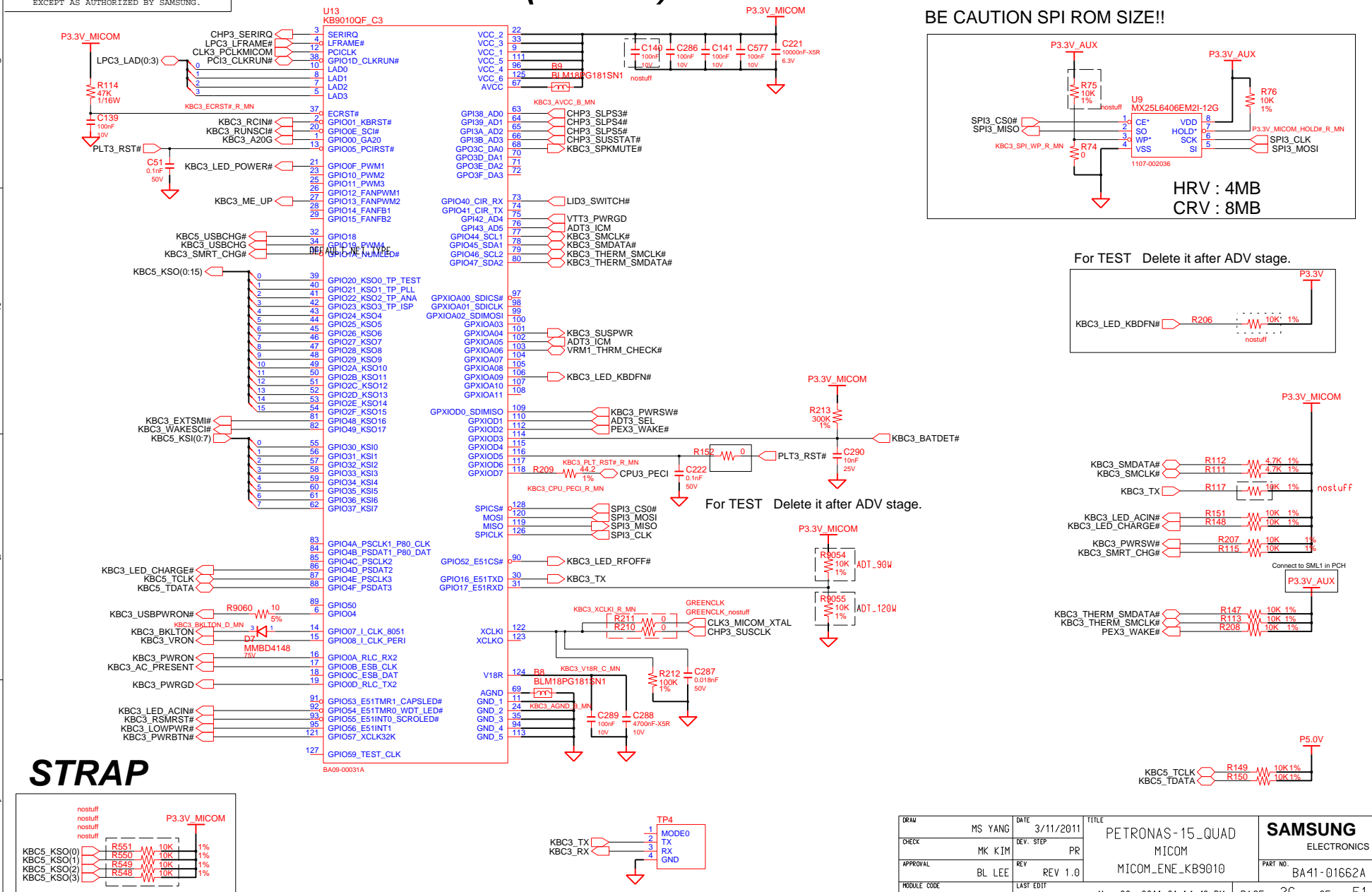
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CHECK	DEV. STEP	UNDEFINED	ISSD		
APPROVAL	REV	UNDEFINED	ISSD	PART NO.	
MODULE CODE	LAST EDIT	August, 2, 2011 9:27:26 PM		PAGE	6

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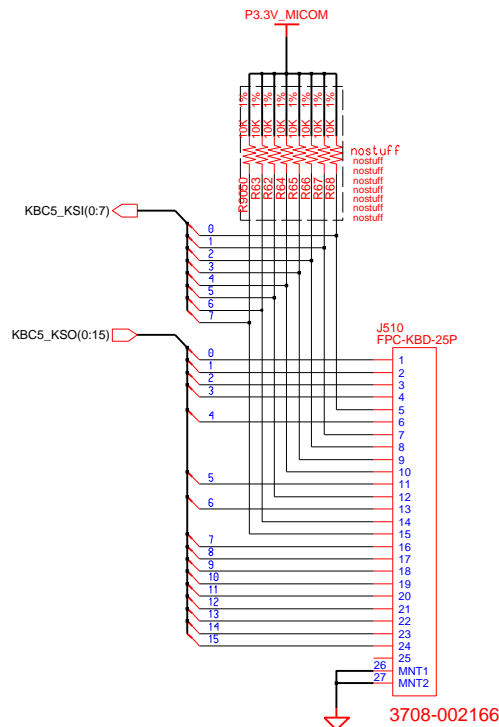
## MAIN BOARD (MICOM)

BE CAUTION SPI ROM SIZE!!

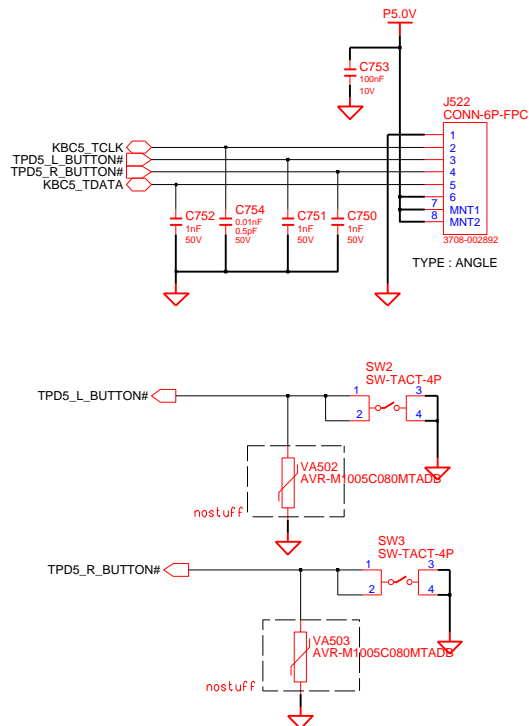


# Micom Glue Logic

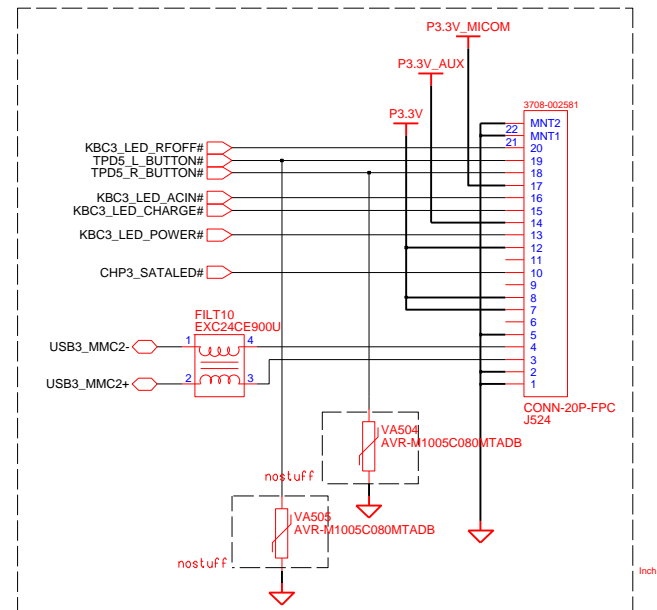
## KEYBOARD



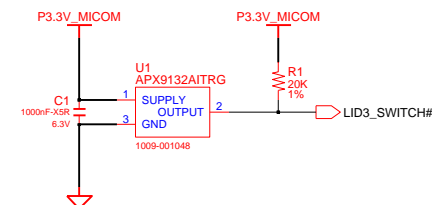
## TOUCHPAD



## TOUCHPAD MAIN TO SUB



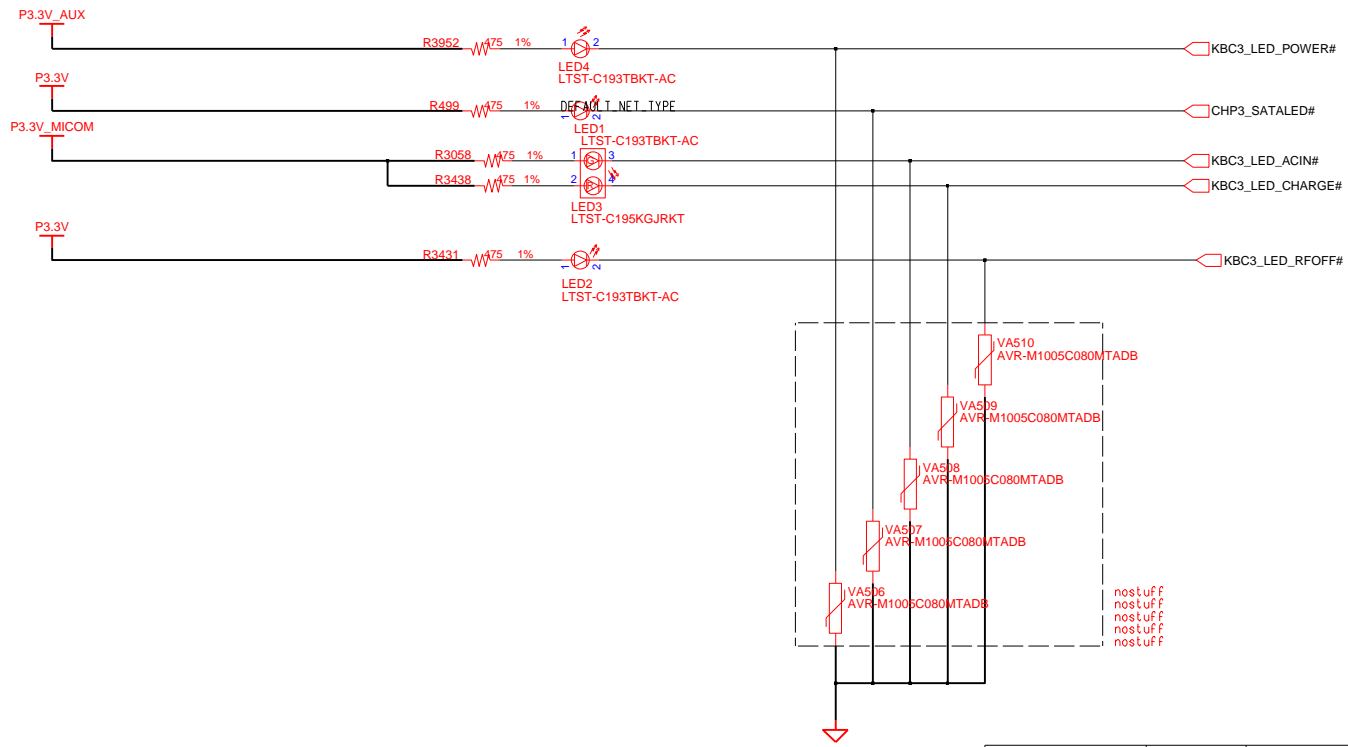
## LID\_SWITCH



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD MICOM GLUE LOGIC KEYBOARD & TOUCHPAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR			PART NO. BA41-01662A
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT		May 20, 2011 21:14:43 PM	PAGE 37 OF 51	

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# LED for 15"



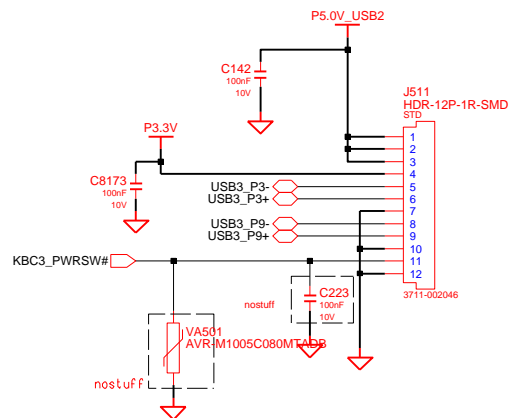
DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	LED_SWITCH	LED_SWITCH	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0	LED_SWITCH	PART NO.	BA41-01662A
MODULE CODE	LAST EDIT		May 20, 2011 21:14:43 PM		PAGE	38 OF 51

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## 2 USB 2.0

### MAIN TO SUB

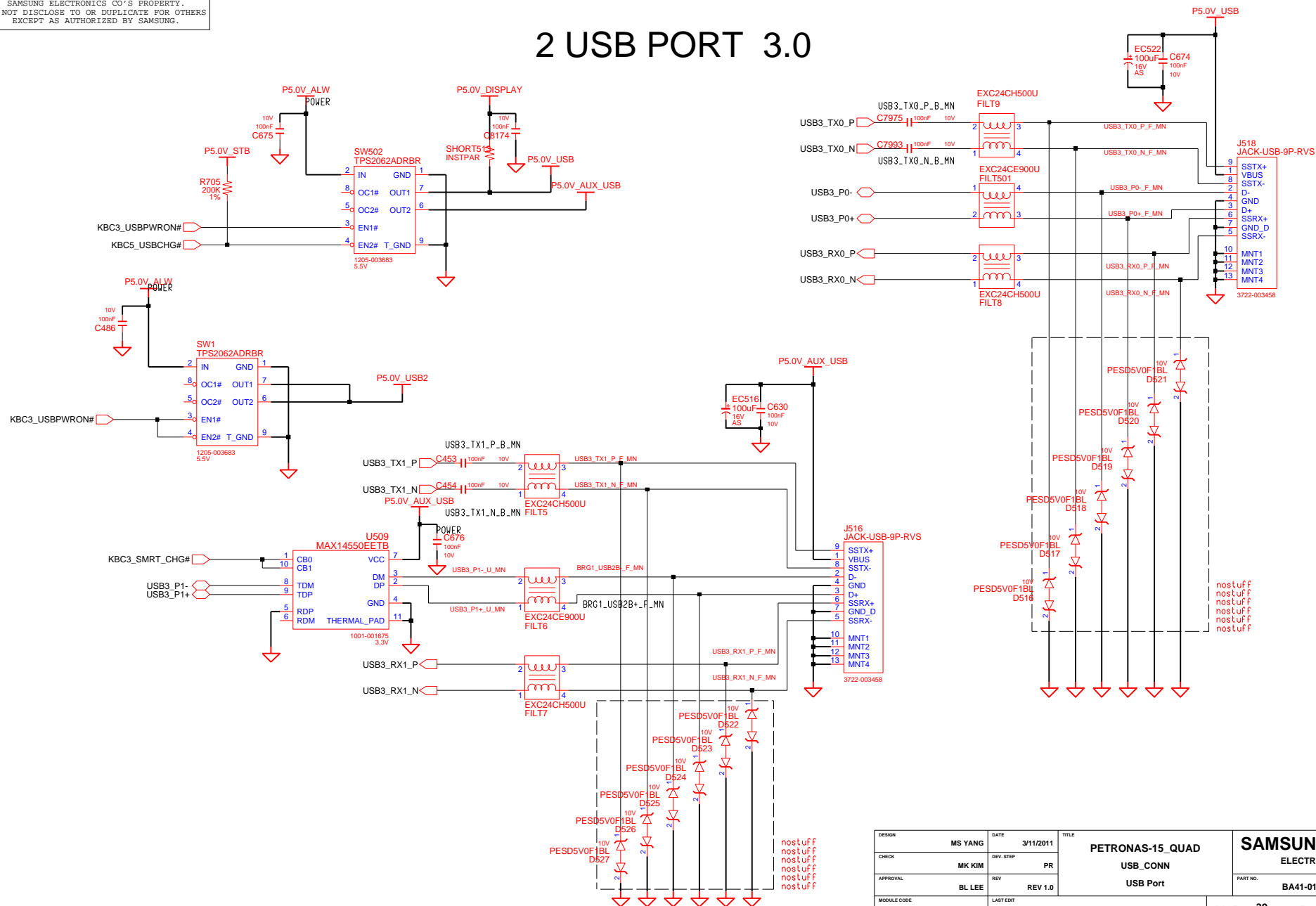


DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	USB_CONN	USB Port	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0			PART NO.
MODULE CODE		LAST EDIT	May 20, 2011 21:14:43 PM			BA41-01662A
				PAGE	39	OF 51



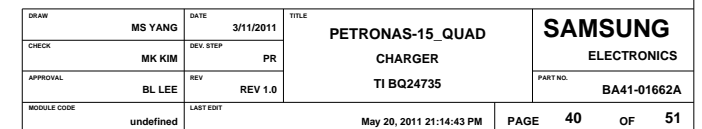
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2 USB PORT 3.0



DESIGN	MS YANG	DATE	3/11/2011	TITLE <b>PETRONAS-15_QUAD</b>		<b>SAMSUNG</b> ELECTRONICS	
CHECK	MK KIM	DEV. STEP	PR				
APPROVAL	BL LEE	REV	REV 1.0	USB_CONN USB Port		PART NO.	BA41-01662A
MODULE CODE	LAST EDIT			May 20, 2011 21:14:43 PM		PAGE	39 OF 51

## CHARGER & POWER MANAGEMENT

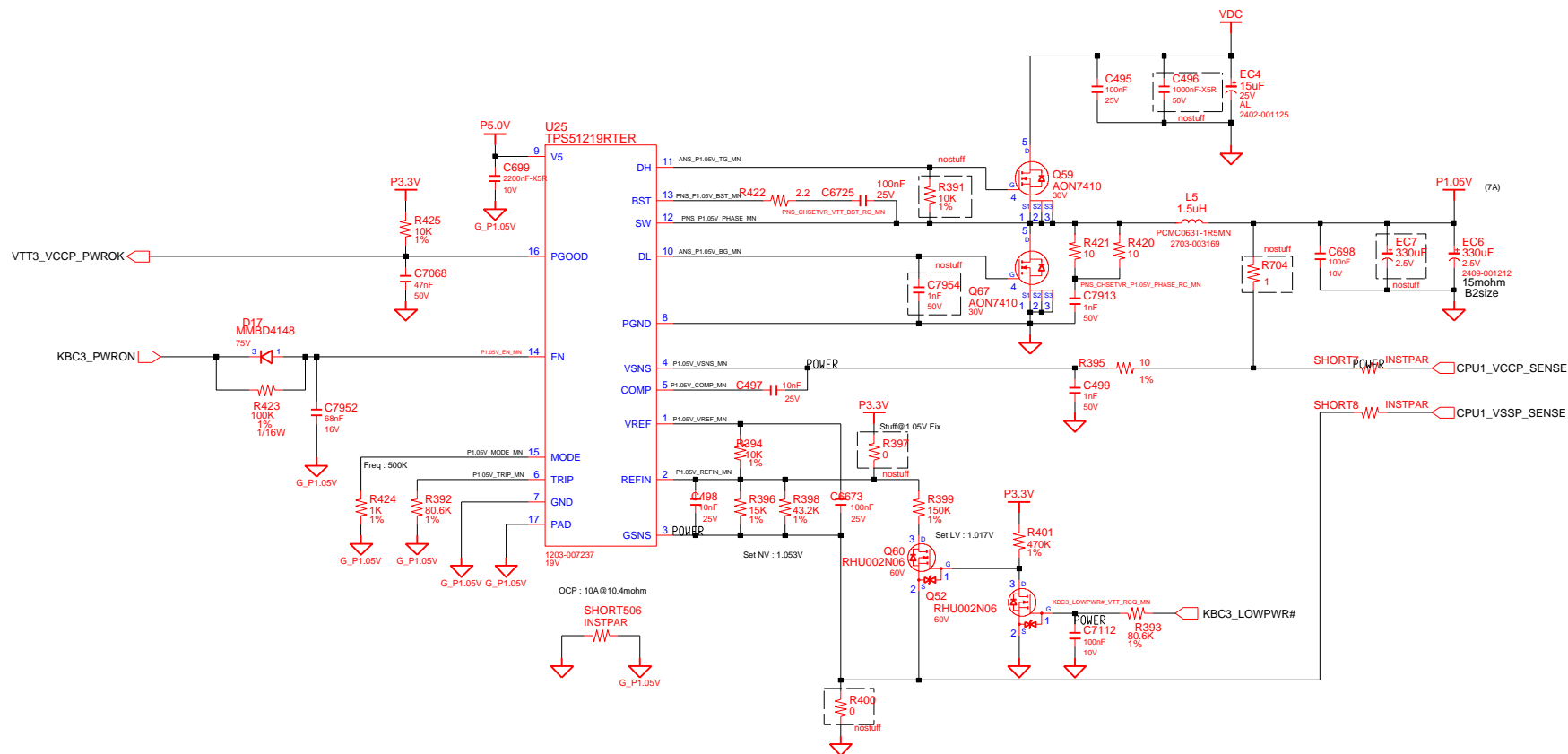




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# Chipset Power (P1.05V)

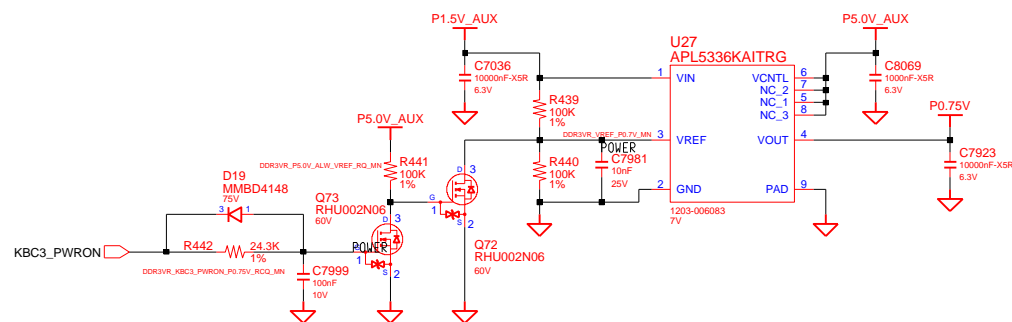


DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-01662A
CHECK	MK KIM	DEV. STEP	PR		P1.05V	
APPROVAL	BL LEE	REV	REV 1.0		TI TPS51219	
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	42 OF 51	

## CHIPSET POWER(VCCSA)

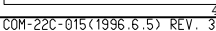
VID0	VID1	VCCSA
0	0	0.9V
0	1	0.8V @ MODE = OPEN
0	1	0.85V @ MODE = 33K $\Omega$
1	0	0.725V
1	1	0.675V

DESIGN	MS YANG	DATE	3/11/2011	TITLE PETRONAS-15_QUAD P1.1V_VTT	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR		
APPROVAL	BL LEE	REV	REV 1.0		
MODULE CODE	LAST EDIT		May 20, 2011 21:14:43 PM		
				PART NO.	BA41-01662A

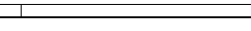


DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD		SAMSUNG	
CHECK	MK KIM	DEV. STEP	PR	PWR. MEMORY		ELECTRONICS		
APPROVAL	BL LEE	REV	REV 1.0	DDR3 POWER		PART NO.	BA41-01662A	
MODULE CODE		undefined		LAST EDIT		May 20, 2011 21:14:43 PM		PAGE 44 OF 51

TH2  
NTCG104QH474G



R84 C100

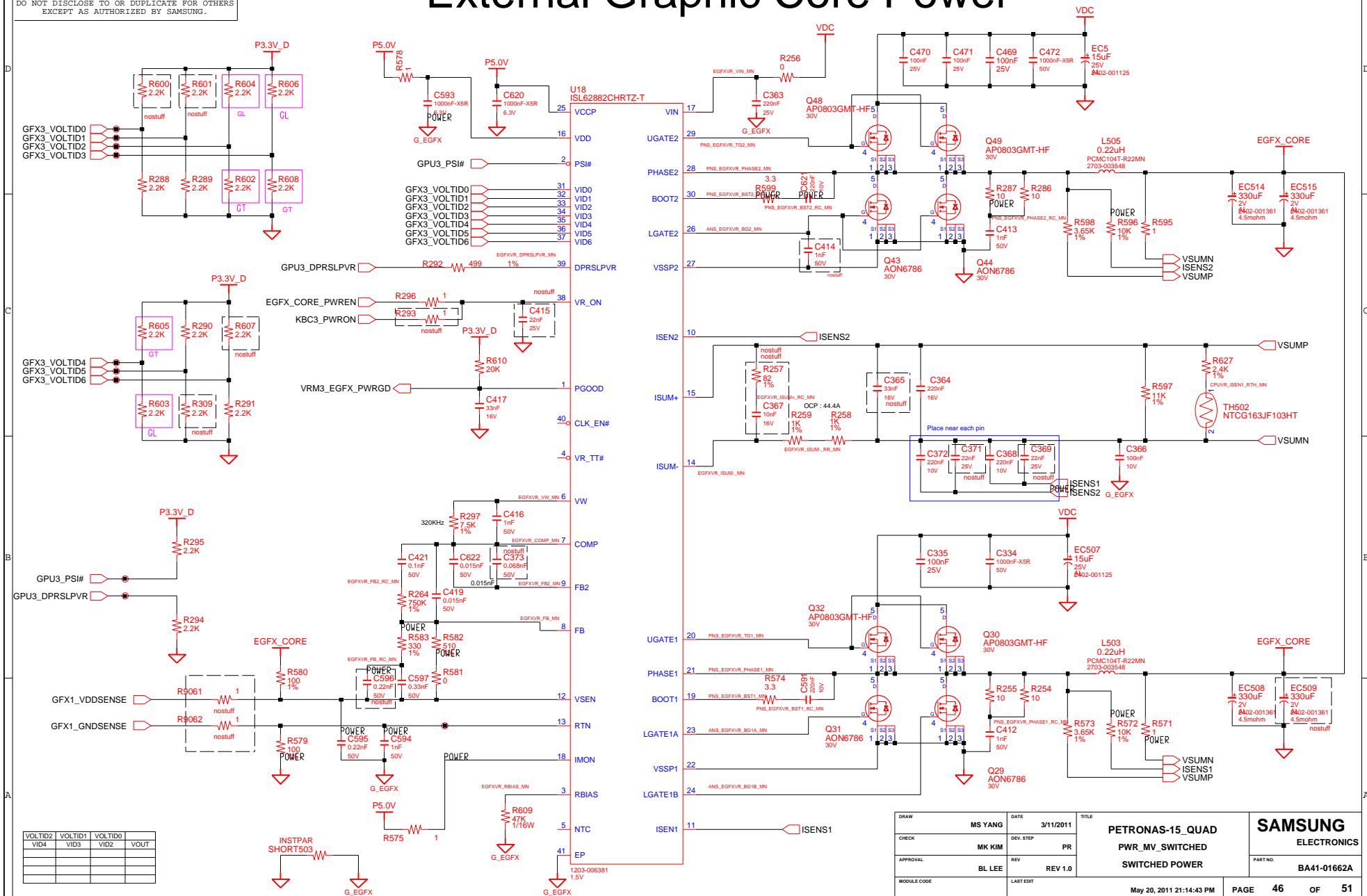


D:/users/mobile39/mentor/Petronas-15 QC/0520/Petronas-15 QC.M

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# External Graphic Core Power





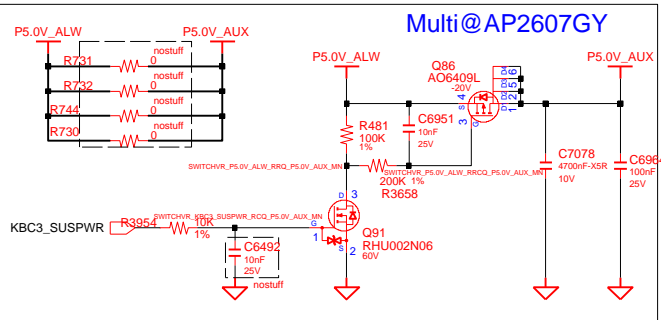
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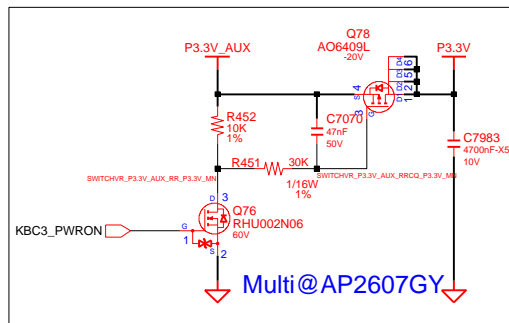
## Switched Power 1

(P5.0V -> P3.3V -> EGFX\_CORE -> P1.8V -> P1.5V -> P0.75V -> P1.05V -> P0.85V\_SA -> CPU\_CORE)

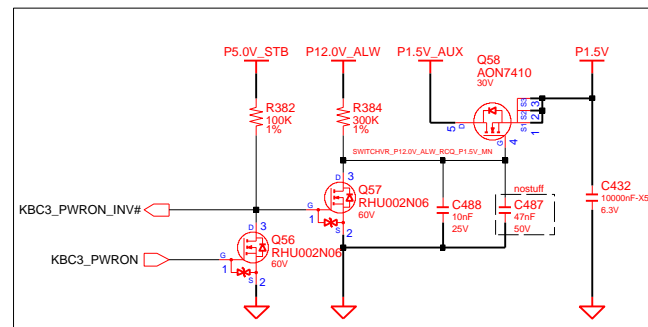
### P5.0V\_AUX



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



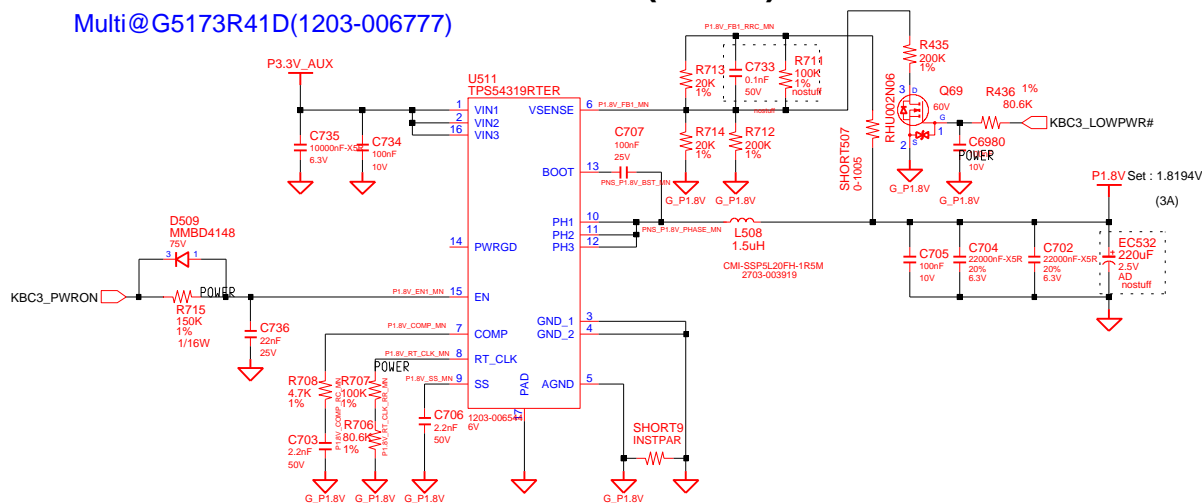
### Switched Power On (P1.5V)



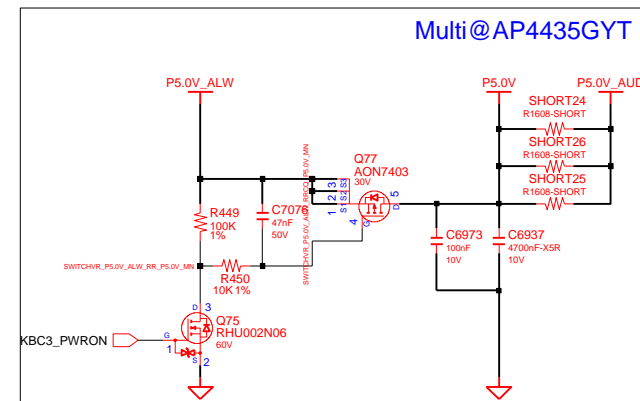
For nVIDIA GFX PWR Sequence  
NVDD(EGFX\_CORE) first and then FBVDDQ(gDDR3)

## CHIPSET POWER(P1.8V)

Multi@G5173R41D(1203-006777)



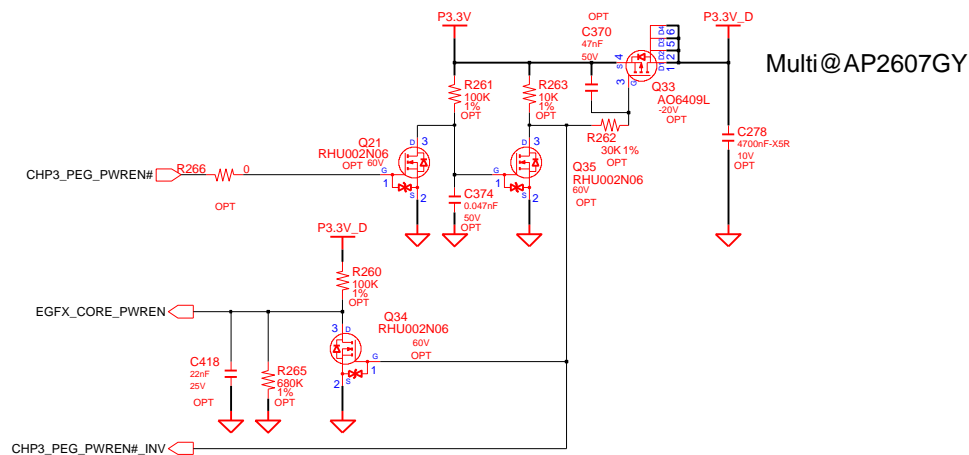
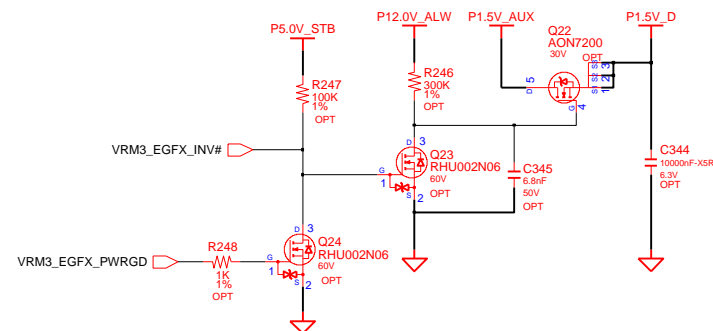
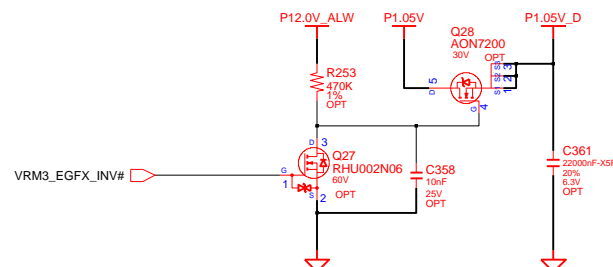
### Switched Power On (P5.0V)



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	PWR_MV_SWITCHED POWER	ELECTRONICS	
APPROVAL	BL LEE	REV	REV 1.0	SWITCHED POWER	PART NO.	BA41-01662A
MODULE CODE	undefined	LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	47	OF 51

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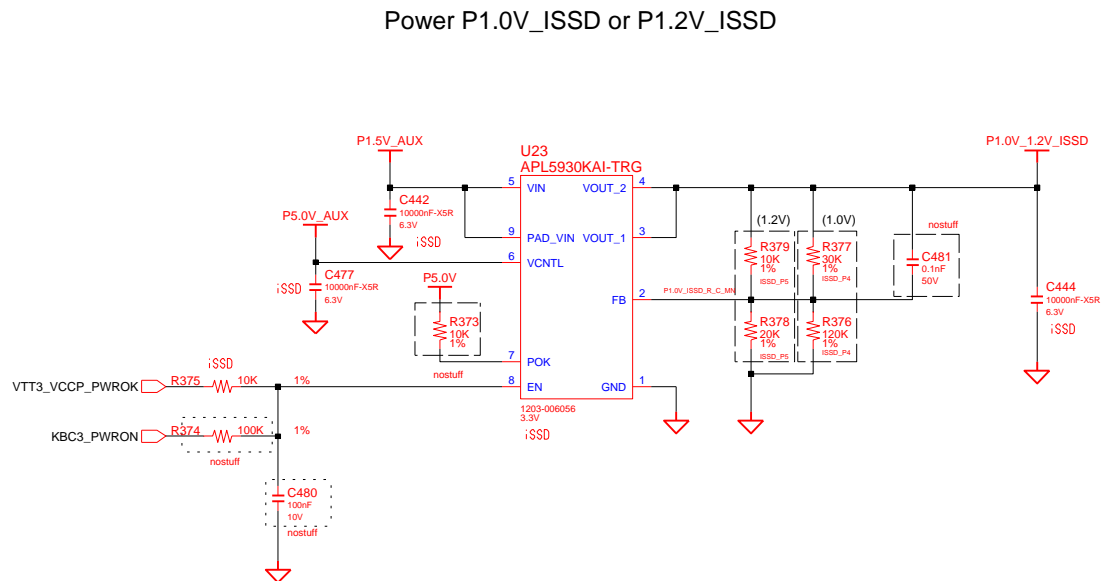
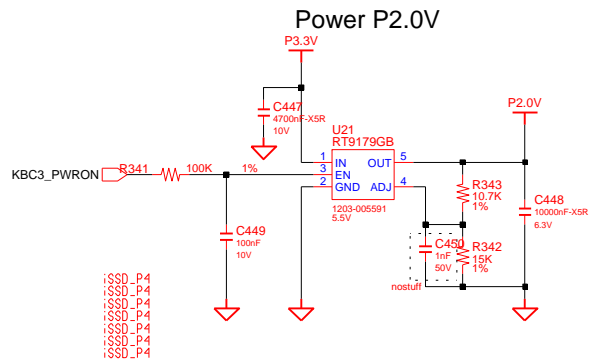
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**Discrete Switched Power (D3.3V : Max\_1.2A)****Discrete Switched Power (D1.5V : Max 5.0A)****Discrete Switched Power (D1.05V : Max 3.6A)**

DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR	Switched PWR 2		
APPROVAL	BL LEE	REV	REV 1.0	FOR OPTIMUS PWR	PART NO. BA41-01662A	
MODULE CODE		LAST EDIT		May 20, 2011 21:14:43 PM	PAGE 48 OF 51	

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## iSSD POWER

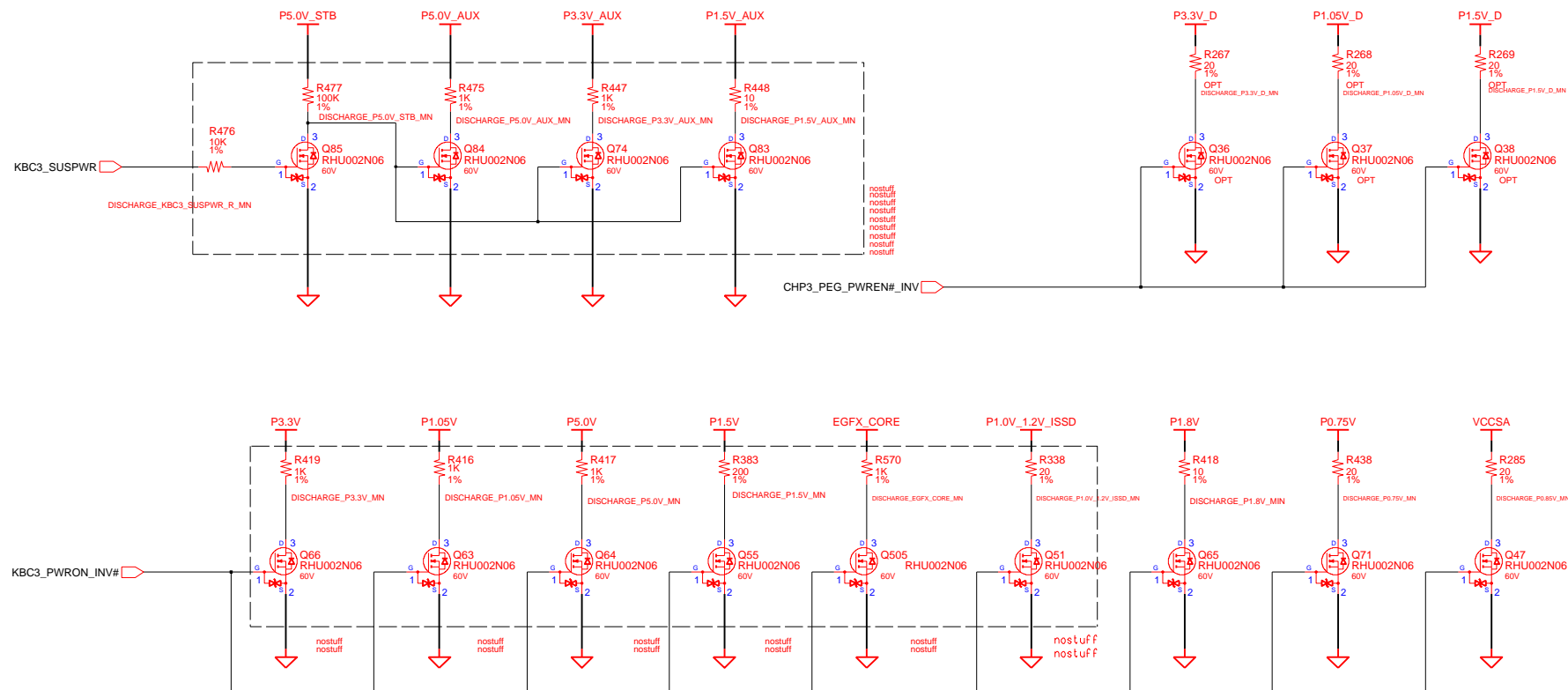


DESIGN	DATE	8/9/2011	TITLE	<div style="text-align: center;">  </div>
CHECK	DEV. STEP	UNDEFINED	iSSD POWER	
APPROVAL	REV	UNDEFINED	iSSD POWER	
MODULE CODE		LAST EDIT		PART NO. BA41-undef i August, 9, 2011 8:05:39 PM PAGE 58undef i

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## POWER DISCHARGER



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD	SAMSUNG
CHECK	MK KIM	DEV. STEP	PR	POWER DISCHARGER	POWER DISCHARGER	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0	POWER DISCHARGER	PART NO.	BA41-01662A
MODULE CODE		LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	49	OF 51

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MT3  
RMNT-25-76-1P

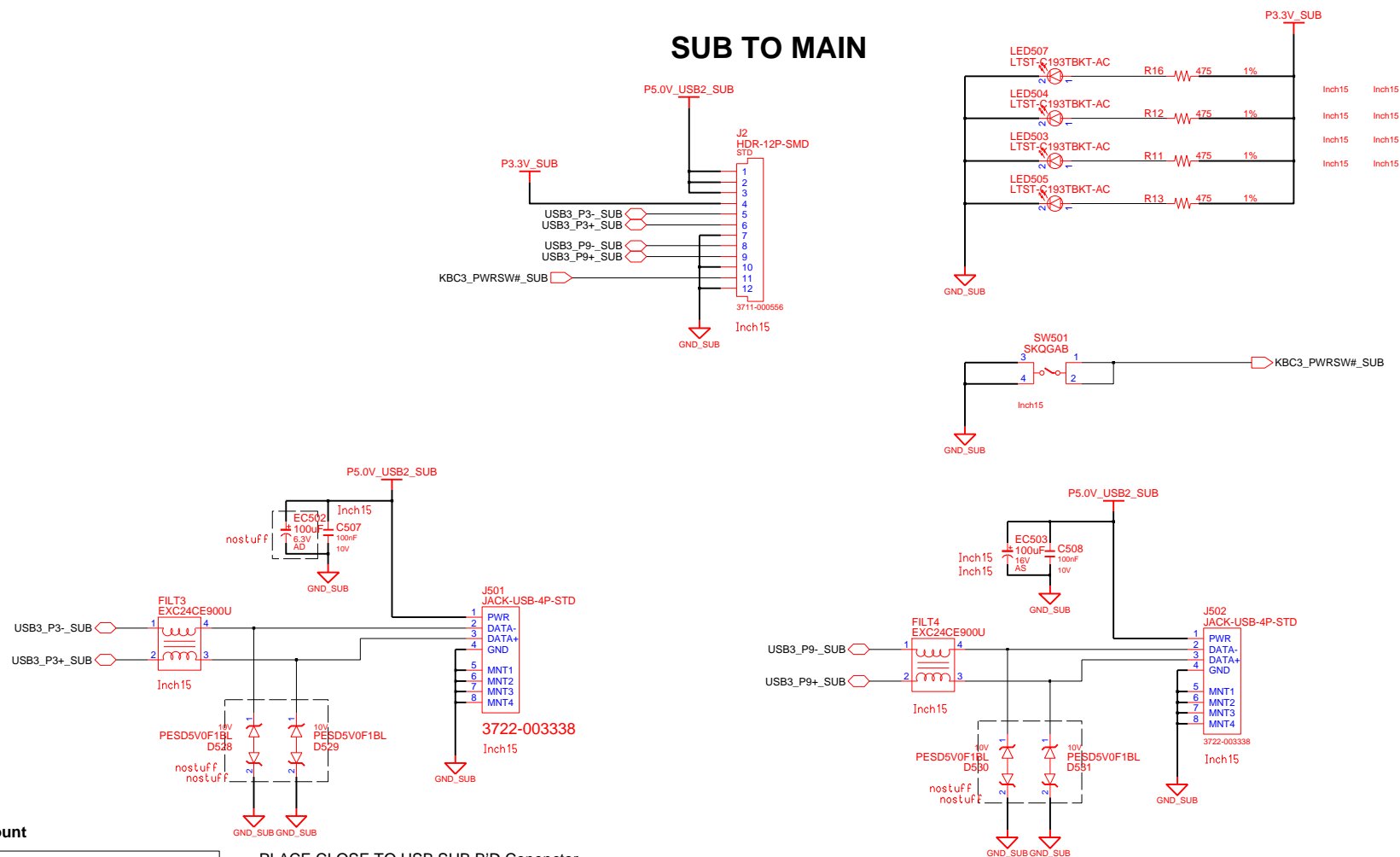
COM-22C-015(1996.6.5) REV. 3

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# USB SUB BOARD (15")

## SUB TO MAIN



PLACE CLOSE TO USB SUB B'D Conenctor

PLACE CLOSE TO USB SUB B'D Conenctor

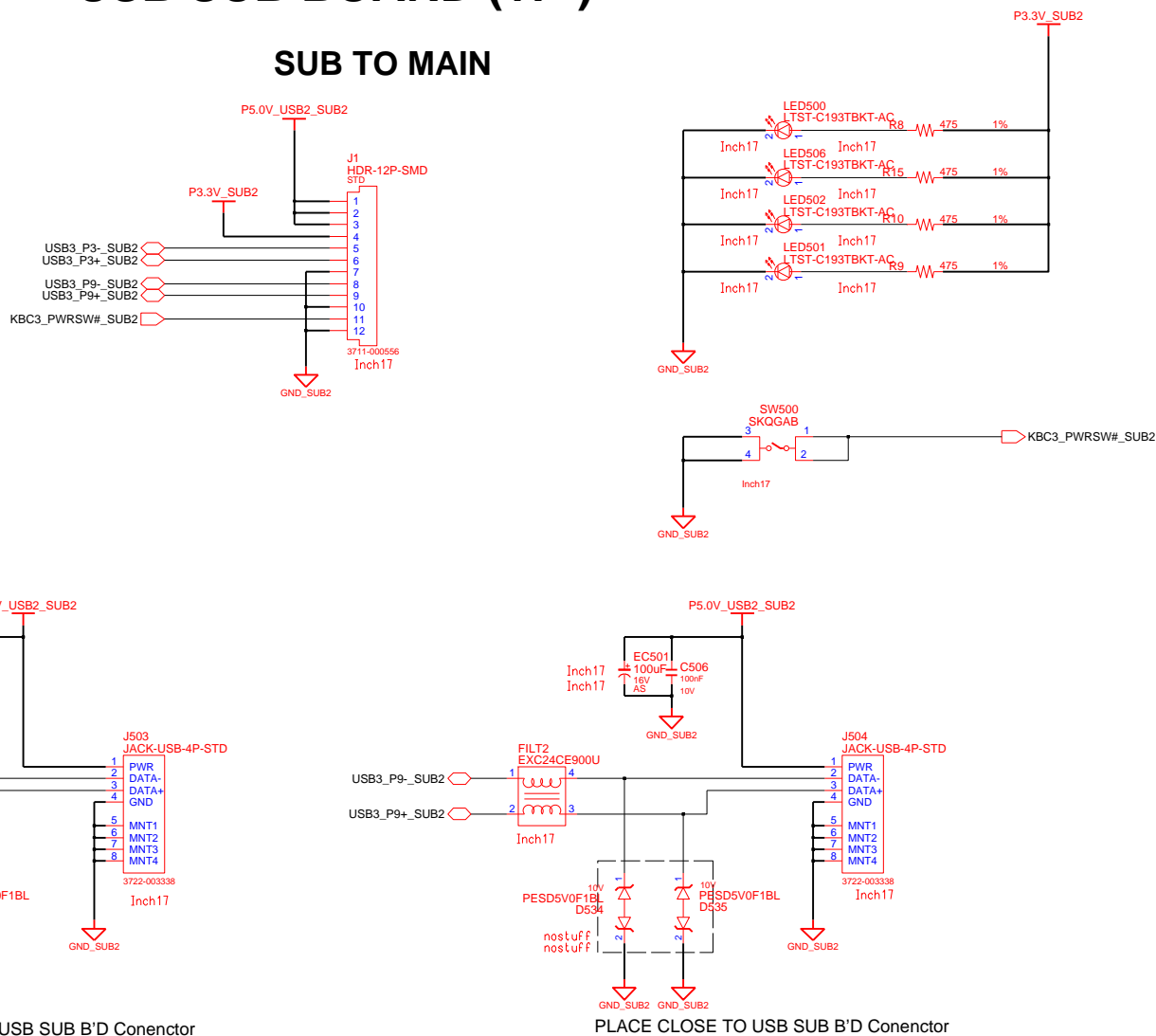
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-15_QUAD SUB BOARD 15" USB Sub BOARD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	PR			PART NO. BA41-01662A
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	May 20, 2011 21:14:43 PM	PAGE	51	OF 51

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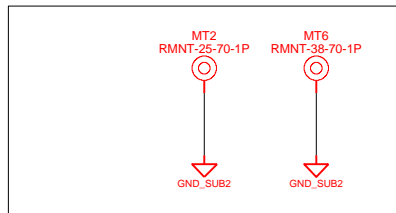
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## USB SUB BOARD (17")

### SUB TO MAIN



#### PCB Mount



PLACE CLOSE TO USB SUB B'D Conenctor

PLACE CLOSE TO USB SUB B'D Conenctor

DESIGN	DATE	TITLE	<b>SAMSUNG</b> ELECTRONICS PART NO. BA41-undef i
CHECK	6/18/2011	undefined	
APPROVAL	DEV. STEP	undefined	
MODULE CODE	REV	undefined	
	LAST EDIT	17" USB SUB BOARD	
		June, 18, 2011 2:15:38 PM	PAGE 52 of 52