

Petronas-14 DC

CPU : Sandy Bridge PGA
Chip Set : Intel Cougar Point
GFX : NVIDIA N12P-GVR
Remarks : Huron River Platform

Model Name : Petronas-14
PBA Name : MAIN_Dual
PCB Code : BA41-01666A

Dev. Step : MP
Revision : 1.2
T.R. Date : 2011.08.12

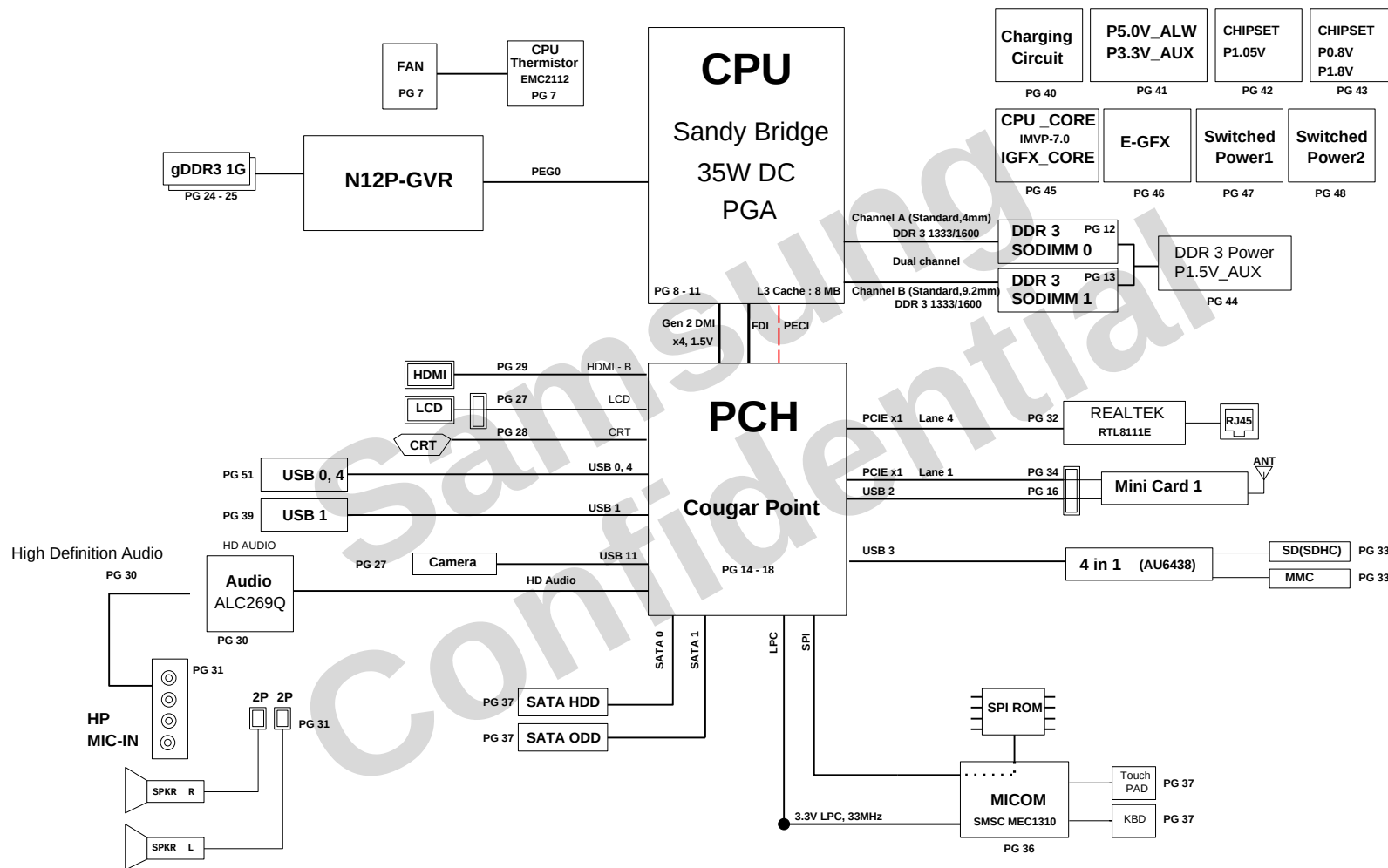
Design	CHECK	APPROVAL
MS YANG	MK KIM	BL LEE

Owner : SEC Mobile R & D Signature : X

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DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG
CHECK	MK KIM	DEV. STEP	MP	MAIN		ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.2	COVER		PART NO. BA41-01666A
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	1	OF 51

BLOCK DIAGRAM



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC MAIN BLOCK DIAGRAM	SAMSUNG ELECTRONICS PART NO. BA41-01666A
CHECK	MK KIM	DEV. STEP	MP			
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE	undefined	LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	2	OF 51

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	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)	
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	
		S3
		S0
		S0

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	Mini PCI Express	3	NC
3	Multi Memory Card Controller	4	LAN CONTROLLER
4	SYSTEM PORT 2	5	NC
5	NC	6	NC
6	NC	7	NC
7	NC	8	NC
8	NC		
9	NC		
10	BLUETOOTH		
11	Camera(LCD Cable)		
12	NC		
13	NC		

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

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	HM65	Real Time Clock
Crystal	25MHz	LAN	Intel LAN
Crystal	25MHz	GREENCLK	GREENCLK
Crystal	25MHz	HM65	INTEL
Crystal	27MHz	N12P-GVR	NVIDIA

LCD Pannel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

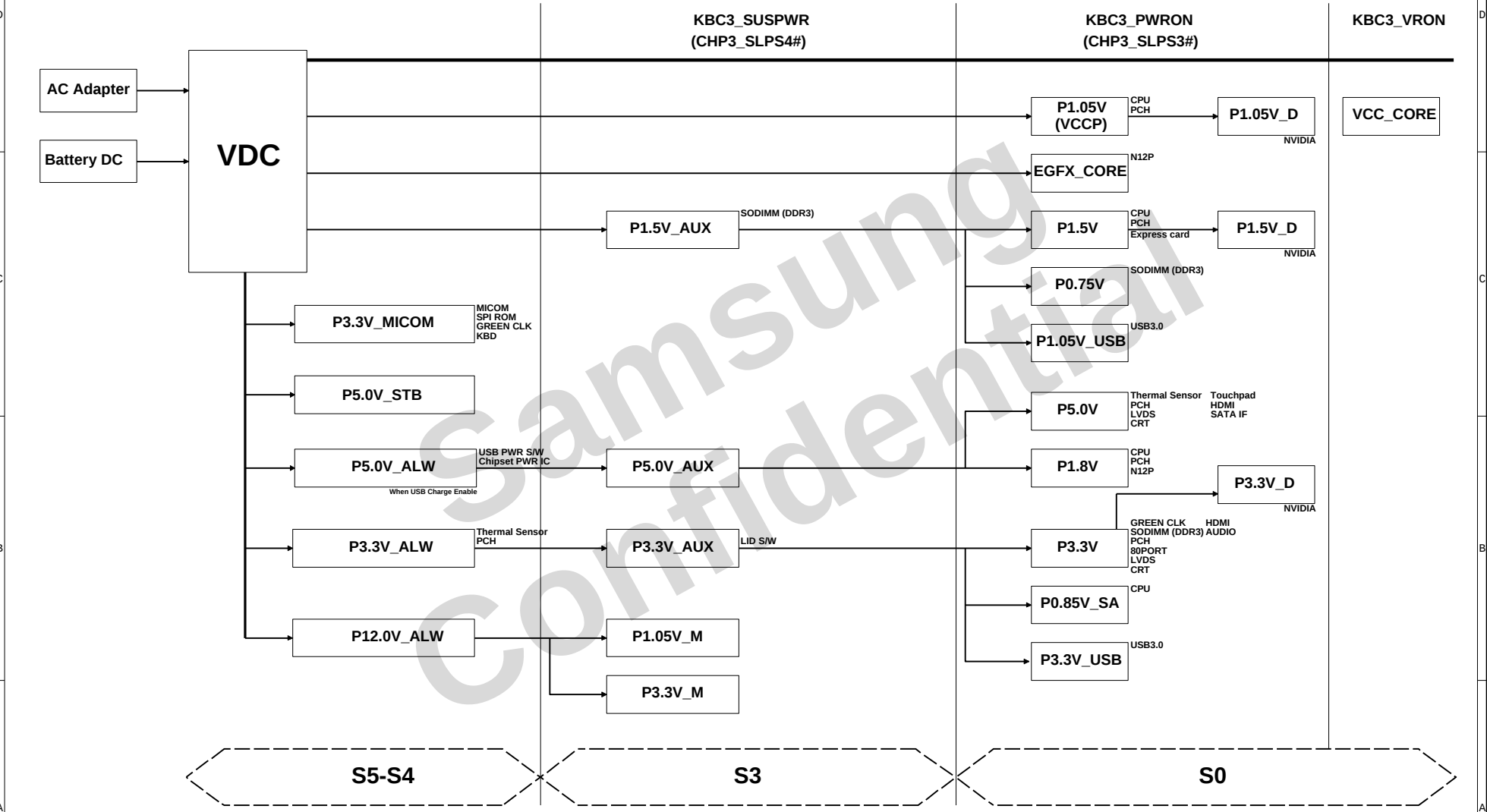
I ² C / SMB Address			
Devices	Address	Hex	Bus
HM65	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	Thermal Sensor
SODIMM0	1010 000x	A0h	
SODIMM1	1010 010x	A4h	
Thermal Sensor on SODIMM0	0011 000x	30h	
Thermal Sensor on SODIMM1	0011 010x	34h	
Thermal Sensor on board	1101 100x	98h	
Power thermal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

DRAW	MS YANG	DATE	3/11/2011	TITLE PETRONAS-14DC MAIN BOARD INFO	SAMSUNG ELECTRONICS PART NO. BA41-01666A
CHECK	MK KIM	DEV. STEP	MP		
APPROVAL	BL LEE	REV	REV 1.2		
MODULE CODE	undefined	LAST EDIT	August 15, 2011 11:04:51 AM		
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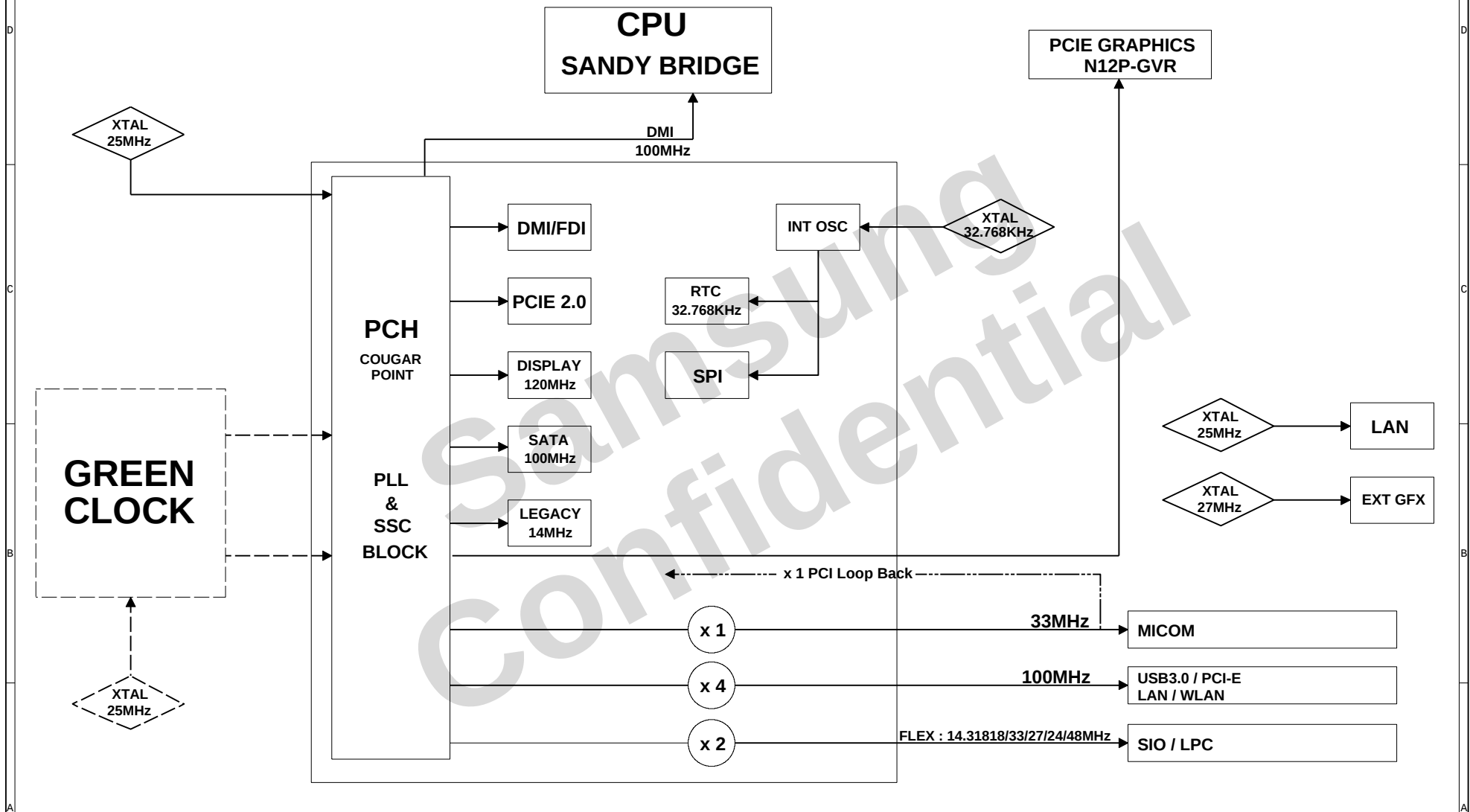
POWER DIAGRAM

Rev 0.8



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG
CHECK	MK KIM	DEV. STEP	MP	MAIN	POWER DIAGRAM	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.2			PART NO.
MODULE CODE	undefined	LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	4	BA41-01666A
				OF	51	

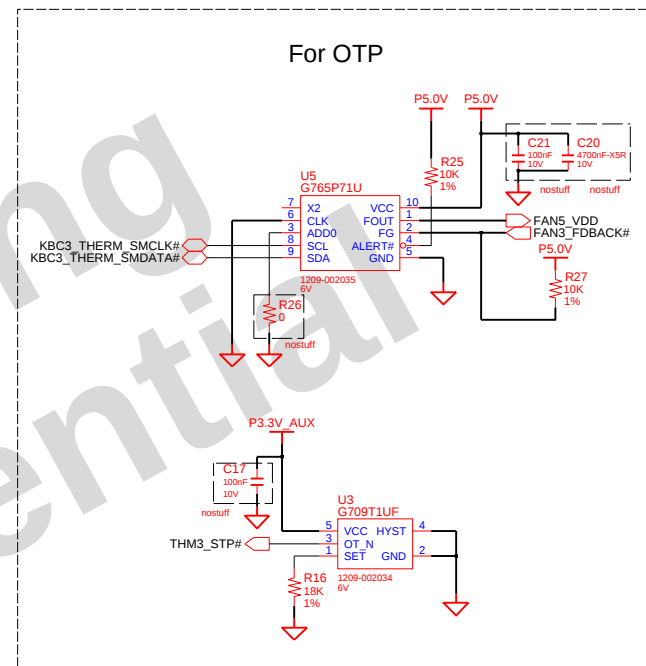
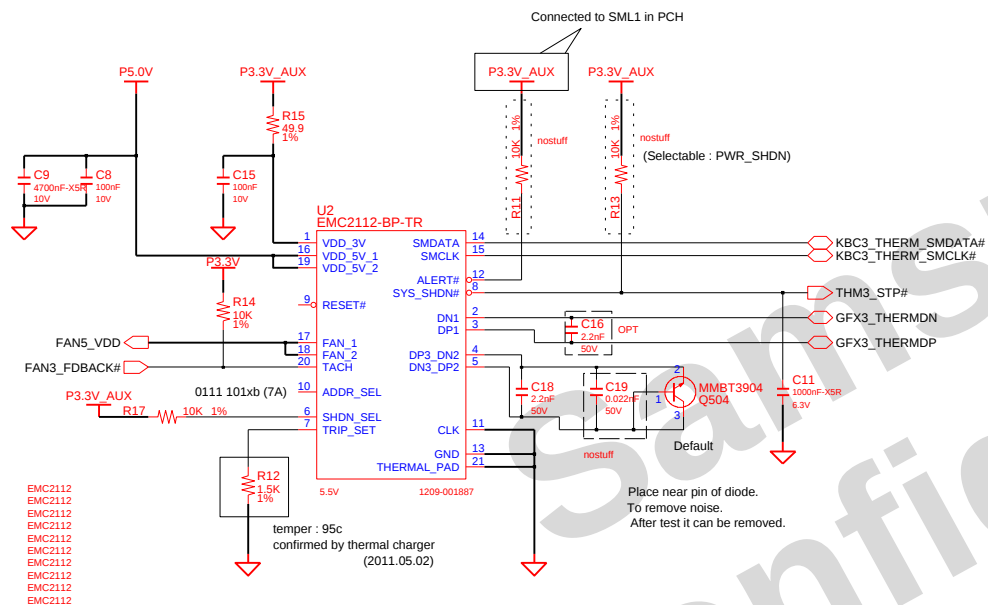
CLOCK DISTRIBUTION Rev. 0.8



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG
CHECK	MK KIM	DEV. STEP	MP	MAIN	MAIN	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.2	CLOCK DIAGRAM	PART NO.	BA41-01666A
MODULE CODE	undefined	LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	5	OF 51

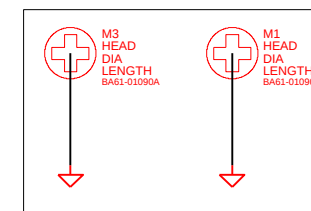
DRAW	MS YANG	DATE	3/11/2011	TITLE PETRONAS-14DC CLOCK CLOCK DISTRIBUTION	SAMSUNG ELECTRONICS				
CHECK	MK KIM	DEV. STEP	MP						
APPROVAL	BL LEE	REV	REV 1.2						
PART NO.									
				BA41-01666A					
MODULE CODE	undefined	LAST EDIT			August 15, 2011 11:04:51 AM	PAGE	6	OF	51

THERMAL SENSOR & FAN CONTROL



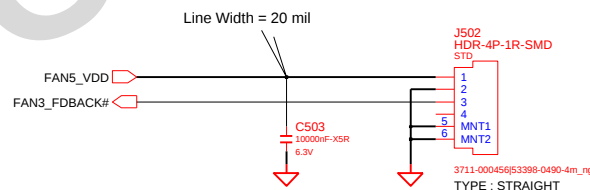
Temperature : 95.78c
confirmed by thermal charger
(2011.05.02)
 $R_{th}(\text{kohm}) = 0.0012T^2 - 0.9308T + 96.147$

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



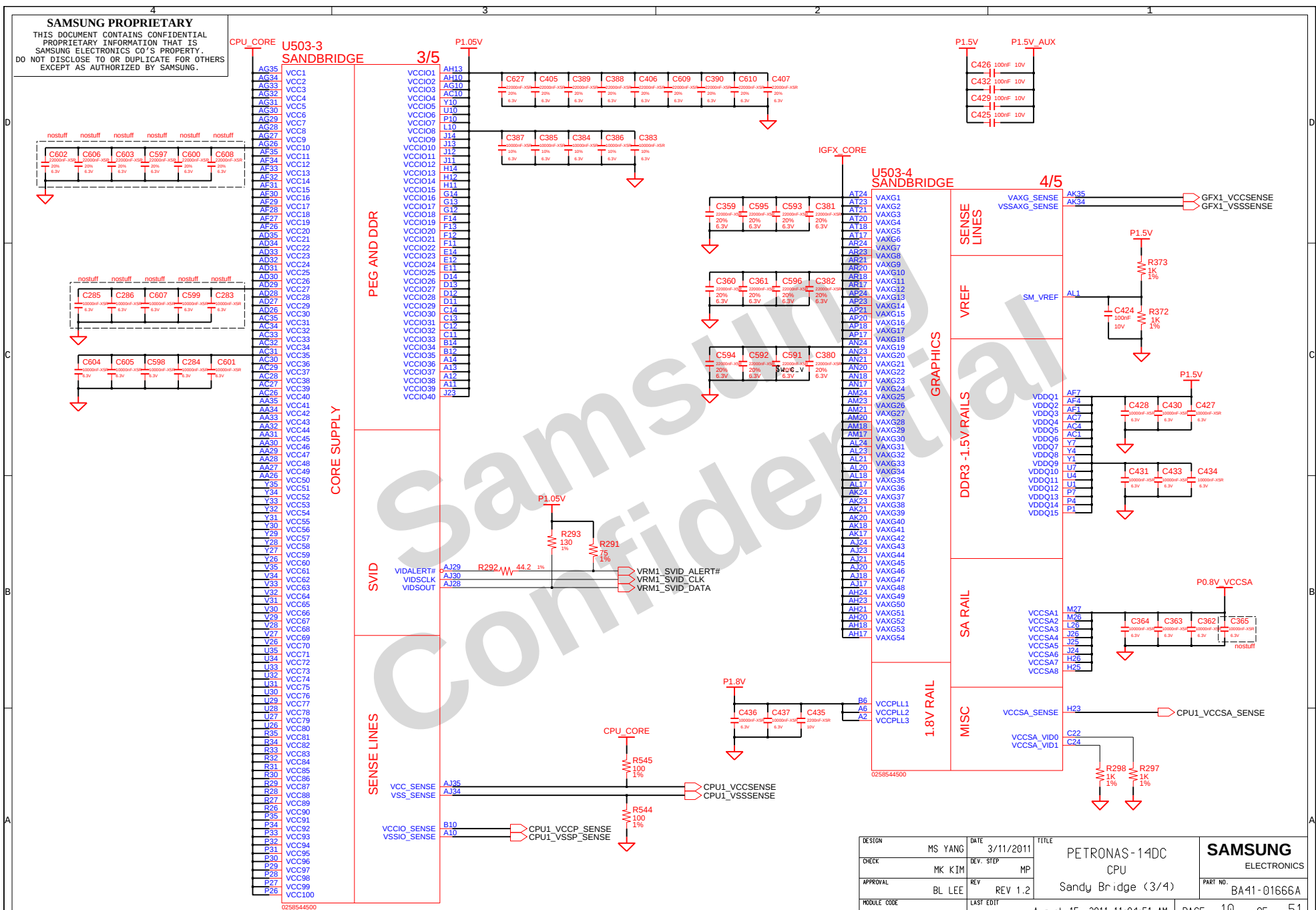
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CHECK	MK KIM	DEV. STEP	MP			
APPROVAL	BL LEE	REV	REV 1.2		THERMAL SENSOR EMC2112	PART NO. BA41-01666A
MODULE CODE		LAST EDIT			August 15, 2011 11:04:51 AM	PAGE 7 OF 51

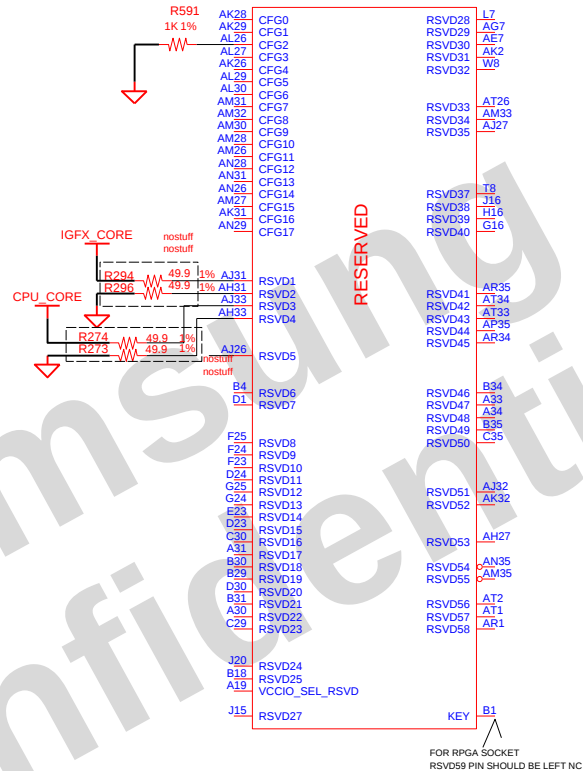
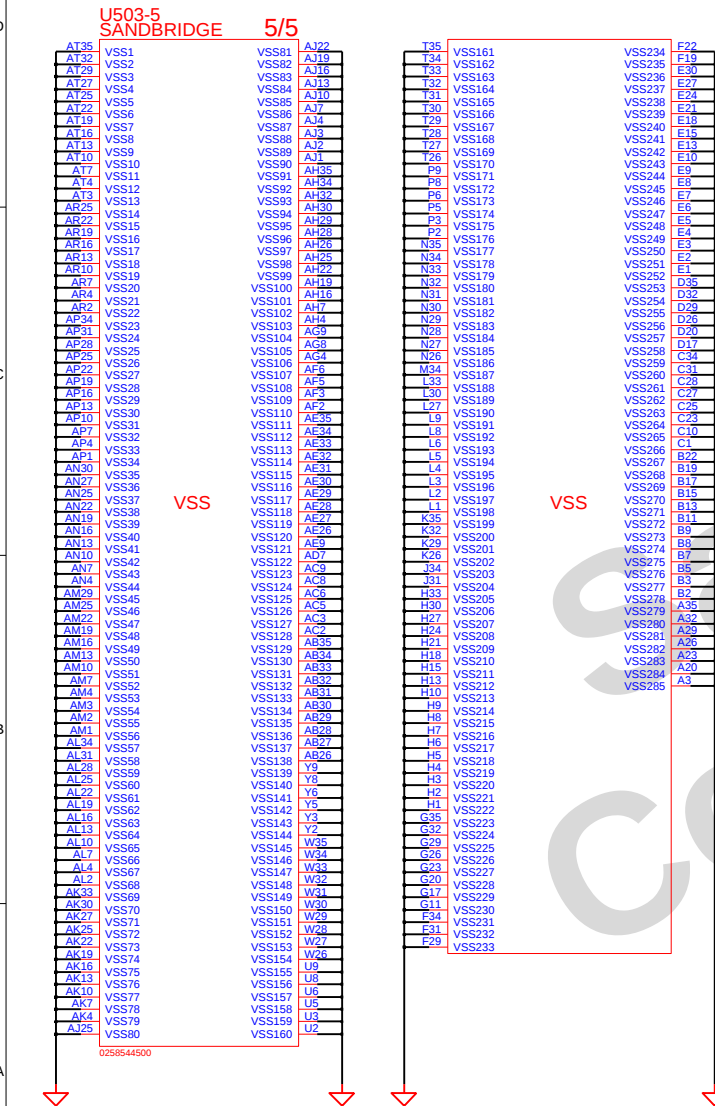
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[illegible]

DRAW	MS YANG	DATE	3/11/2011	PETRONAS-14DC CPU Sandy Bridge (1/4)	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP		
APPROVAL	BL LEE	REV	REV 1.2		
MODULE CODE	undefined	LAST EDIT			
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D:/users/mobile39/mentor/Petronas-14_DC/mp1.25/Petronas-14_MAIN





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-14DC	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP		CPU	
APPROVAL	BL LEE	REV	REV 1.2		Sandy Bridge (4/4)	PART NO.
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	11	BA41-01666A
					OF	51

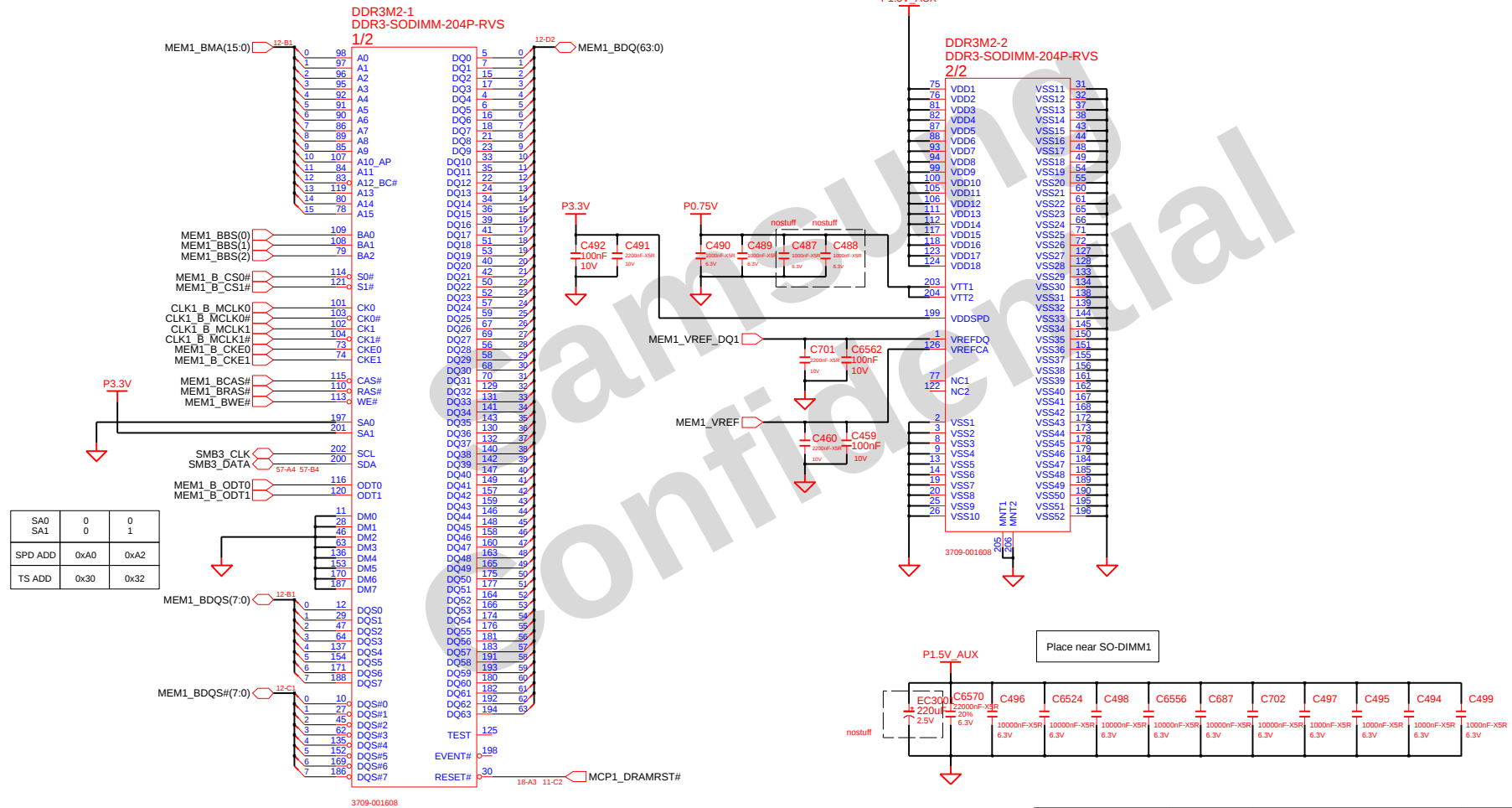
SO-DIMM#1 : 1st SO-DIMM

DDR SO-DIMM #1

Height : 4.0 mm (REVERSE)

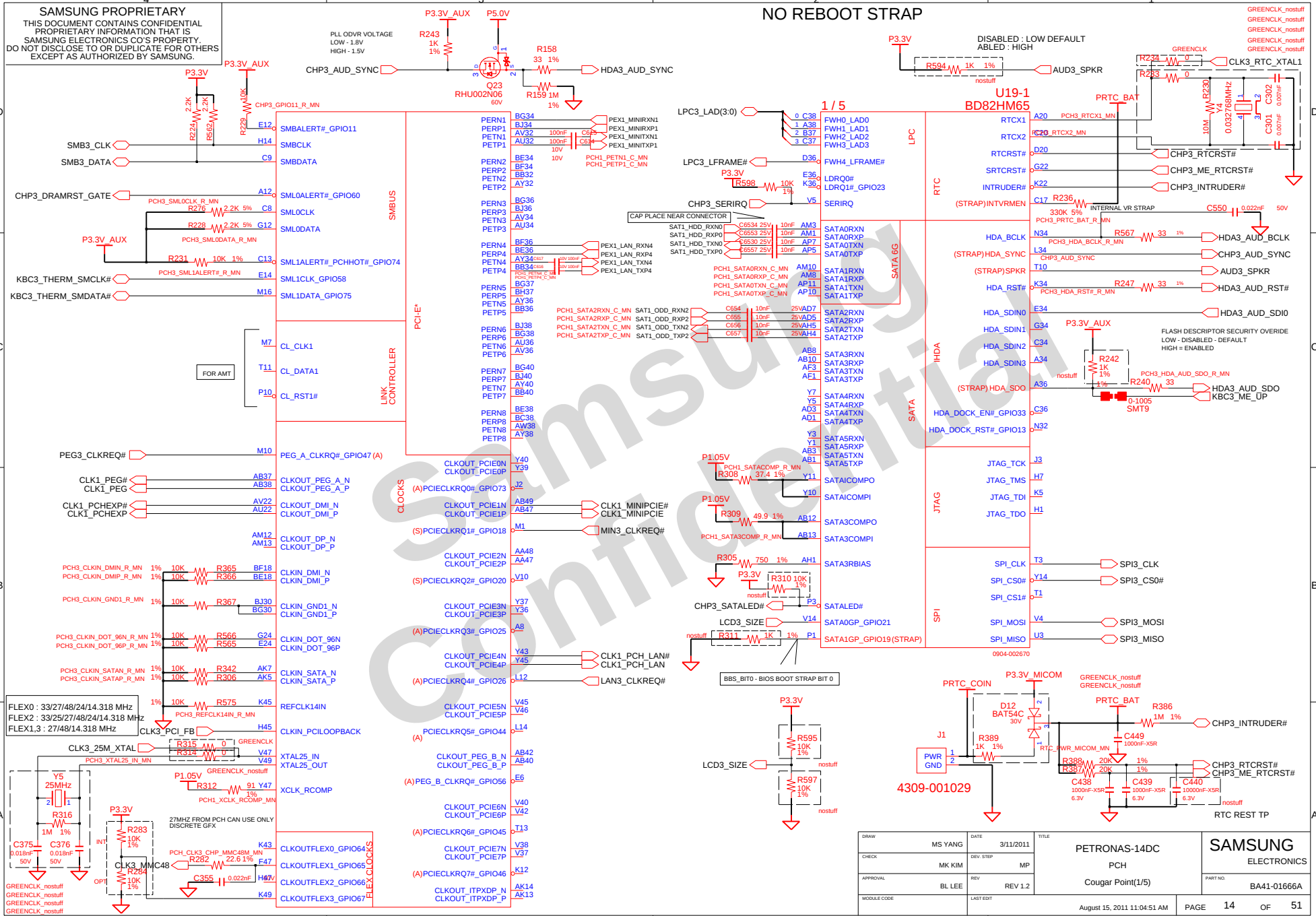
P/N : 3709-001654 (Foxconn)

P/N : 3709-001608 (Concraft)

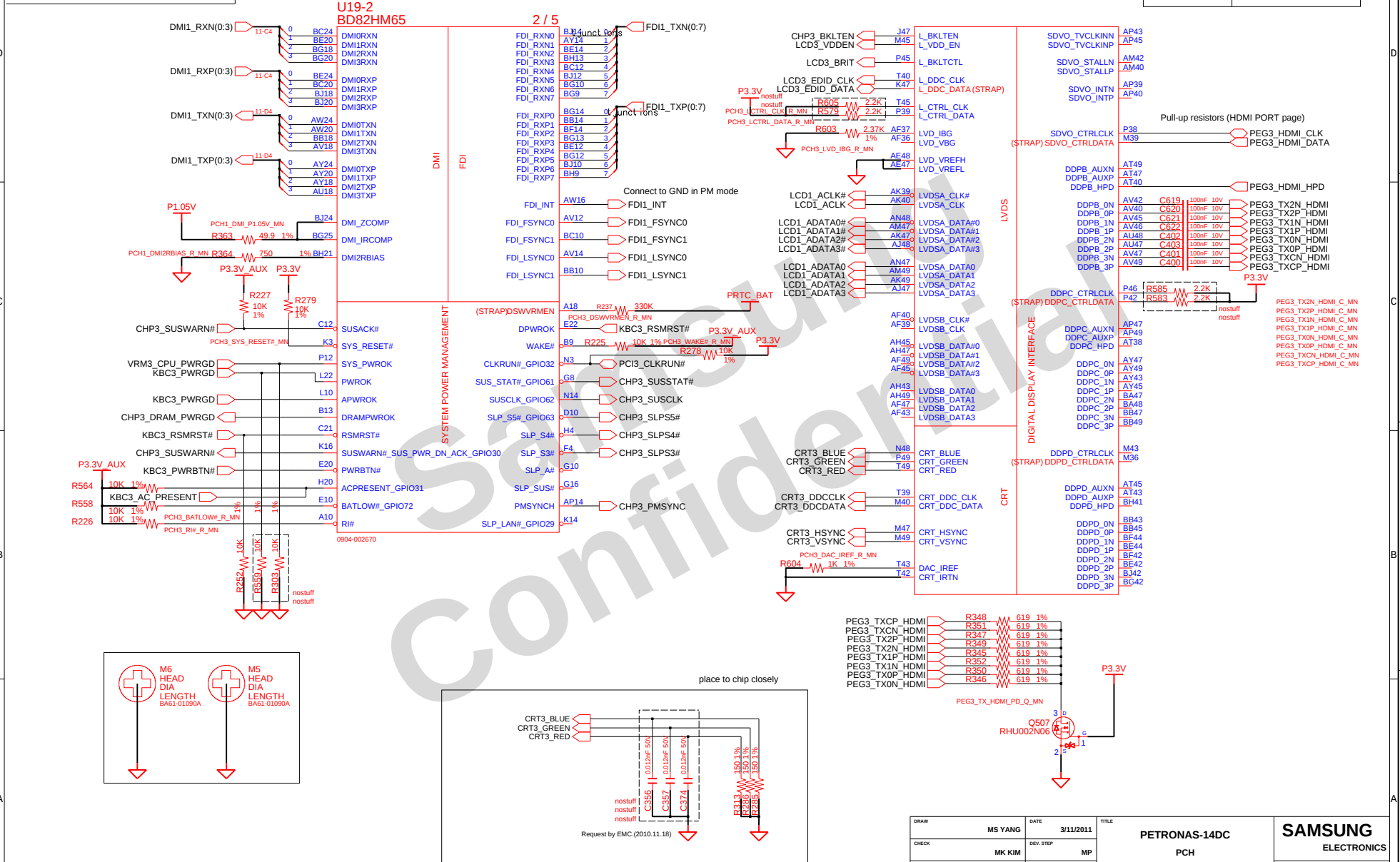


DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG ELECTRONICS PART NO. BA41-01666A
CHECK	MK KIM	DEV. STEP	MP		SODIMM B	
APPROVAL	BL LEE	REV	REV 1.2		DDR3	
MODULE CODE		LAST EDIT		August 15, 2011 11:04:51 AM	PAGE	13 OF 51

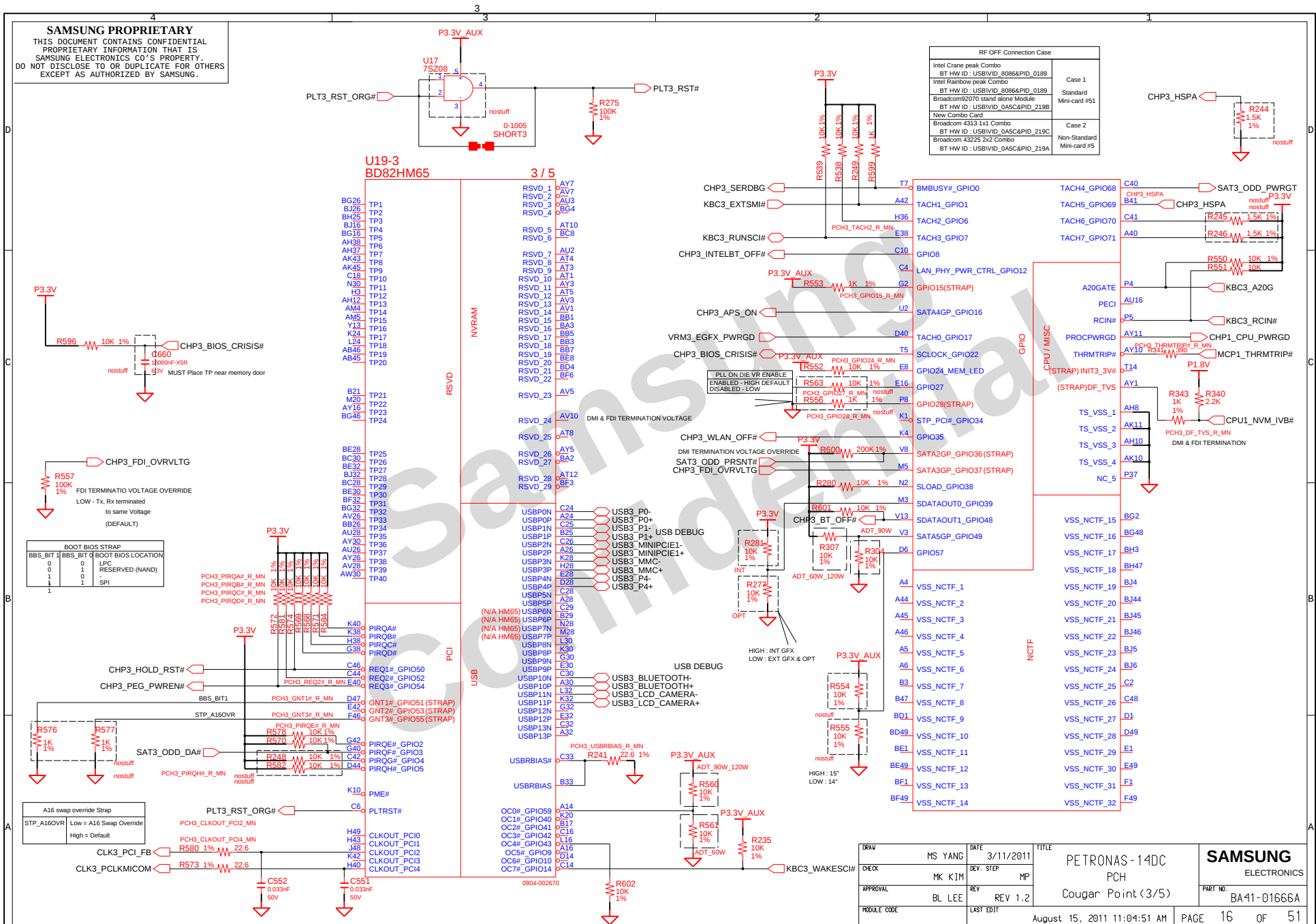
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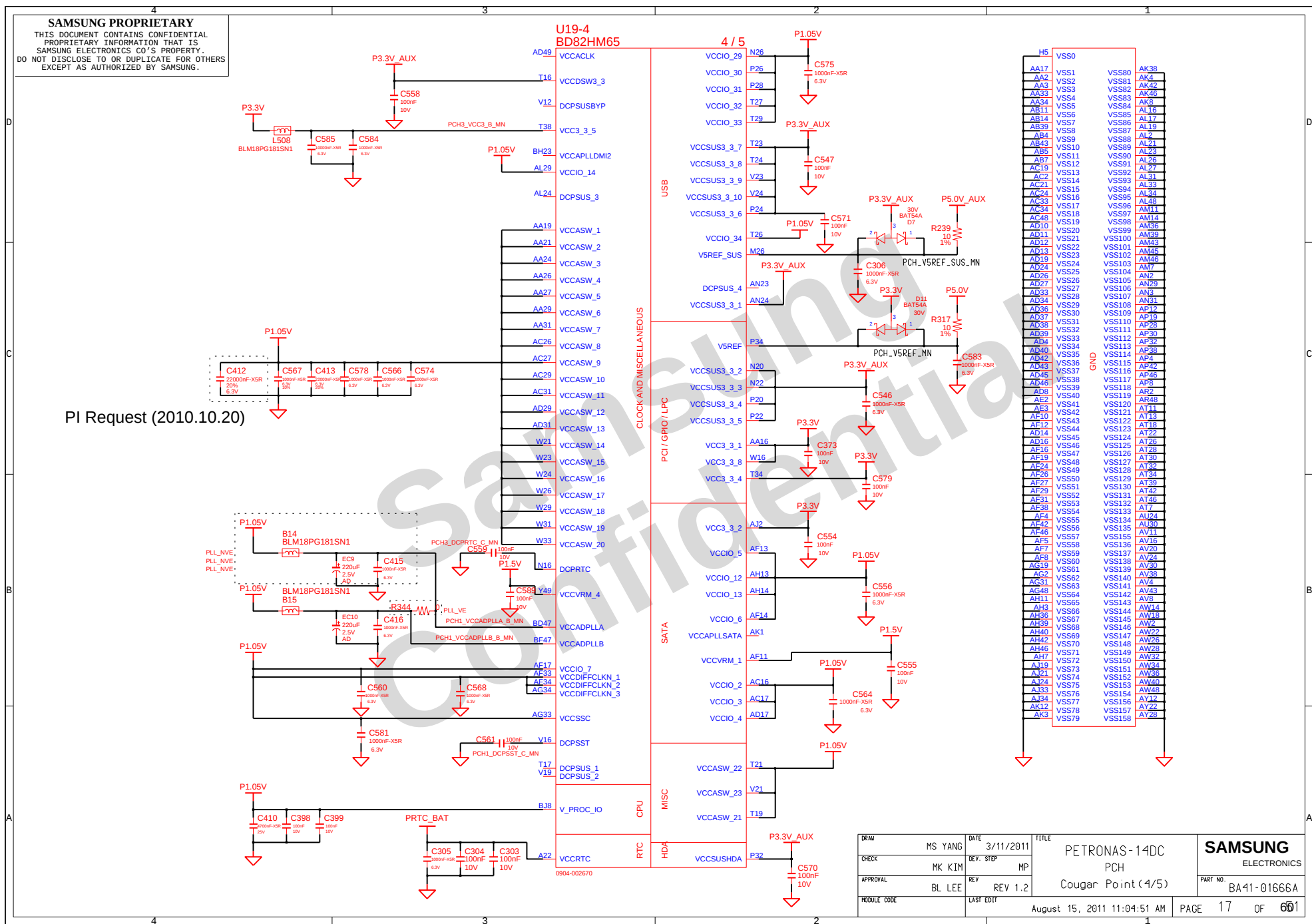
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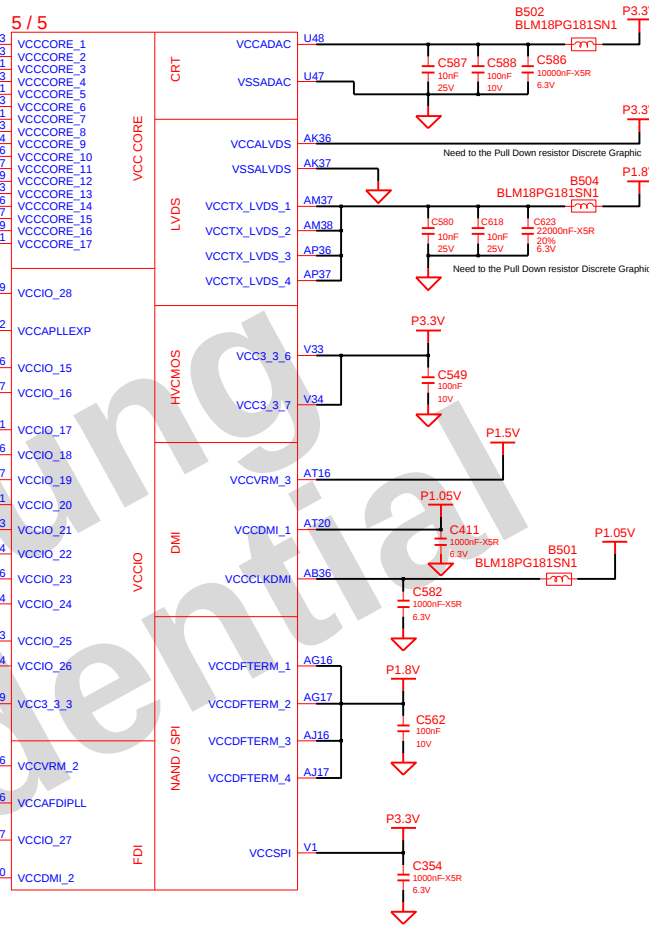
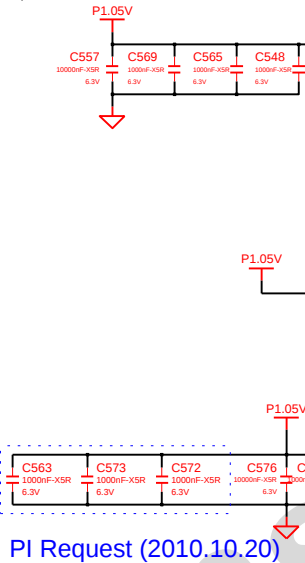
U19-5
BD82HM65

This power share with thermal sensor

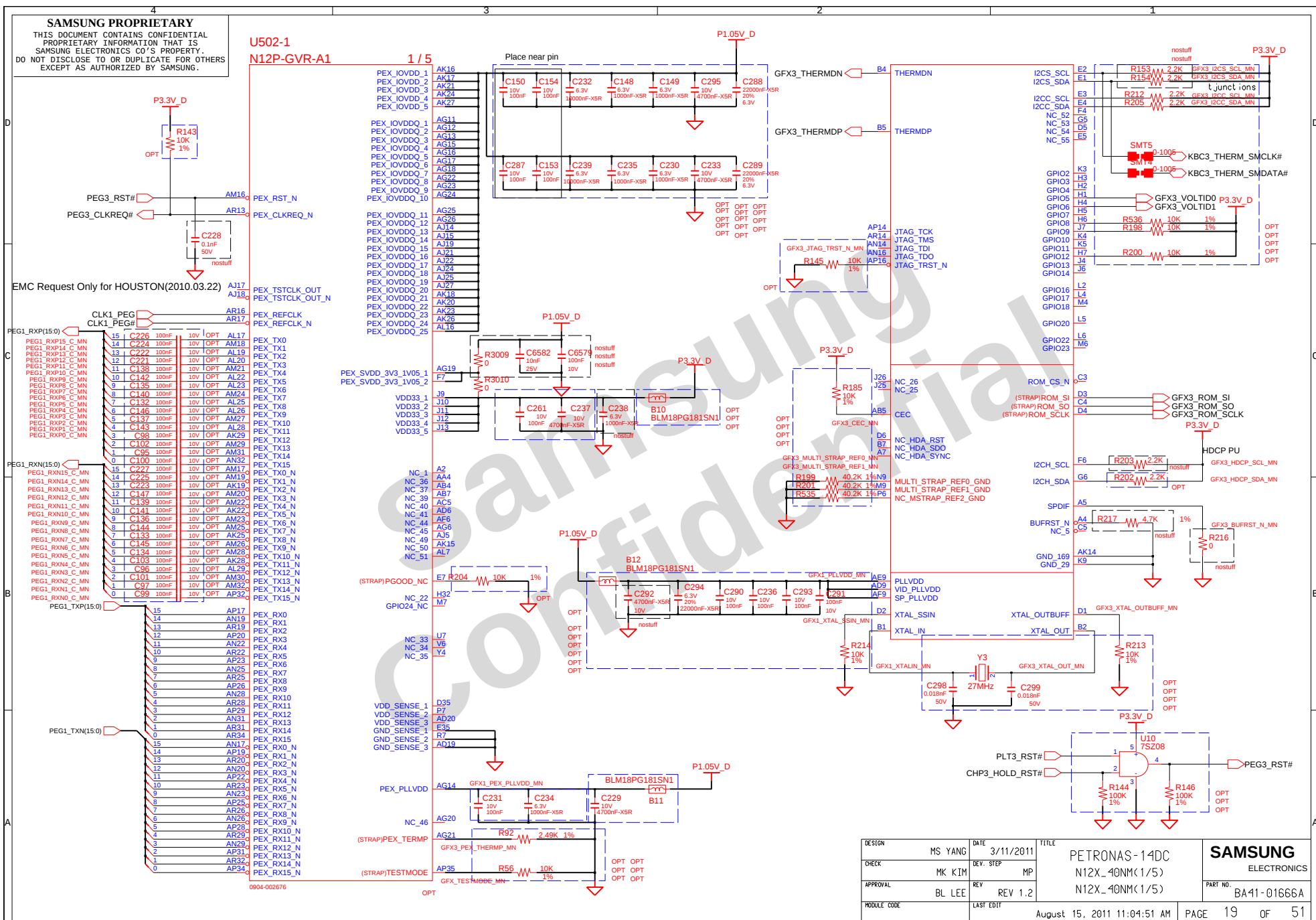
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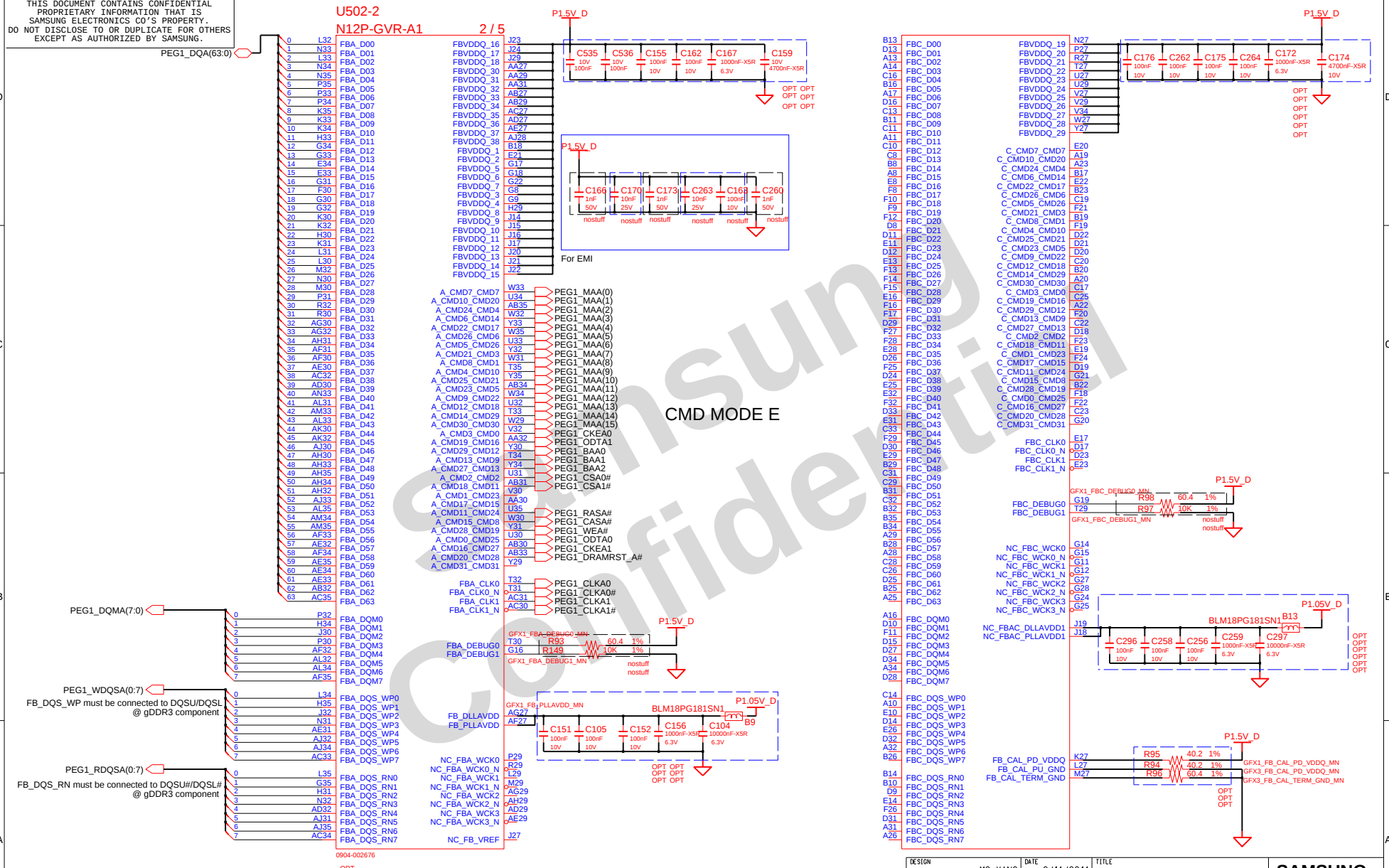
AY4	VSS159	VSS259	H46
AY2	VSS160	VSS260	K18
AY46	VSS161	VSS261	K39
AY8	VSS162	VSS262	K46
B11	VSS163	VSS263	L18
B15	VSS164	VSS264	L2
B19	VSS165	VSS265	L20
B23	VSS166	VSS266	L26
B27	VSS167	VSS267	L28
B31	VSS168	VSS268	L36
B35	VSS169	VSS269	L48
B39	VSS170	VSS270	M12
B7	VSS171	VSS271	M16
F45	VSS172	VSS272	M22
BB12	VSS173	VSS273	M24
BB16	VSS174	VSS274	M30
BB20	VSS175	VSS275	M32
BB22	VSS176	VSS276	M34
BB24	VSS177	VSS277	M36
BB28	VSS178	VSS278	M42
BB30	VSS179	VSS279	M46
BB38	VSS180	VSS280	M48
BB4	VSS181	VSS281	N18
BB46	VSS182	VSS282	N19
BC14	VSS183	VSS283	N24
BC18	VSS184	VSS284	N28
BC2	VSS185	VSS285	N30
BC22	VSS186	VSS286	N47
BC26	VSS187	VSS287	P11
BC32	VSS188	VSS288	P15
BC34	VSS189	VSS289	P16
BC36	VSS190	VSS290	P17
BC40	VSS191	VSS291	P18
BC42	VSS192	VSS292	P19
BC48	VSS193	VSS293	P21
BD46	VSS194	VSS294	P23
BD5	VSS195	VSS295	P24
BD22	VSS196	VSS296	P26
BD24	VSS197	VSS297	P27
BD40	VSS198	VSS298	P28
BF10	VSS199	VSS299	P30
BF12	VSS200	VSS300	P32
BF16	VSS201	VSS301	P34
BF20	VSS202	VSS302	P36
BF22	VSS203	VSS303	P38
BF24	VSS204	VSS304	P40
BF26	VSS205	VSS305	P42
BF28	VSS206	VSS306	P44
BF3	VSS207	VSS307	P46
BF38	VSS208	VSS308	P48
BF40	VSS209	VSS309	P50
BF9	VSS210	VSS310	P52
BG17	VSS211	VSS311	P54
BG21	VSS212	VSS312	P56
BG21	VSS213	VSS313	P58
BG33	VSS214	VSS314	P60
BG44	VSS215	VSS315	P62
BG8	VSS216	VSS316	P64
BH11	VSS217	VSS317	P66
BH15	VSS218	VSS318	P68
BH17	VSS219	VSS319	P70
BH19	VSS220	VSS320	P72
H10	VSS221	VSS321	P74
BH27	VSS222	VSS322	P76
BH31	VSS223	VSS323	P78
BH33	VSS224	VSS324	P80
BH36	VSS225	VSS325	P82
BH39	VSS226	VSS326	P84
BH43	VSS227	VSS327	P86
BH7	VSS228	VSS328	P88
D3	VSS229	VSS329	P90
D12	VSS230	VSS330	P92
D16	VSS231	VSS331	P94
D18	VSS232	VSS332	P96
D22	VSS233	VSS333	P98
D24	VSS234	VSS334	P100
D26	VSS235	VSS335	P102
D30	VSS236	VSS336	P104
D32	VSS237	VSS337	P106
D34	VSS238	VSS338	P108
D38	VSS239	VSS339	P110
D42	VSS240	VSS340	P112
D8	VSS241	VSS341	P114
E18	VSS242	VSS342	P116
E26	VSS243	VSS343	P118
G19	VSS244	VSS344	P120
G20	VSS245	VSS345	P122
G26	VSS246	VSS346	P124
G28	VSS247	VSS347	P126
G36	VSS248	VSS348	P128
G48	VSS249	VSS349	P130
H12	VSS250	VSS350	P132
H18	VSS251	VSS351	P134
H22	VSS252	VSS352	P136
H24	VSS253		
H26	VSS254		
H30	VSS255		
H32	VSS256		
H34	VSS257		
F3	VSS258		

0904-002670



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC PCH Cougar Point(5/5)	SAMSUNG ELECTRONICS		
CHECK	MK KIM	DEV. STEP	MP					
APPROVAL	BL LEE	REV	REV 1.2					
				PART NO.	BA41-01666A			
MODULE CODE	undefined	LAST EDIT		August 15, 2011 11:04:51 AM	PAGE	18	OF	51





DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC N12X_40NM(2/5) N12X_40NM(2/5)	SAMSUNG ELECTRONICS		
CHECK	MK KIM	DEV. STEP	MP					
APPROVAL	BL LEE	REV	REV 1.2				PART NO.	BA41-01666A
MODULE CODE	LAST EDIT		August 15, 2011 11:04:51 AM				PAGE 20 OF 51	

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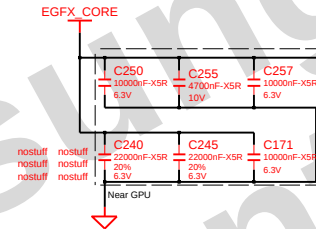
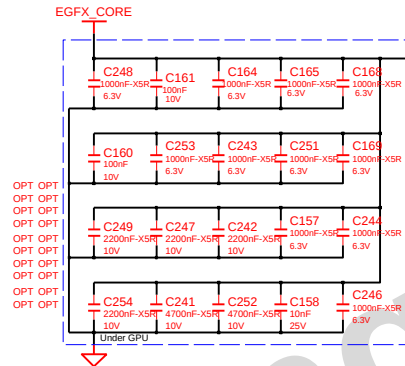
U502-3
N12P-GVR-A1

3/5

B3	GND_1	GND_97	V16
B6	GND_2	GND_98	V18
B9	GND_3	GND_99	V20
B12	GND_4	GND_100	V22
B15	GND_5	GND_101	V31
B21	GND_6	GND_102	V32
B24	GND_7	GND_103	Y11
B27	GND_8	GND_104	Y13
B30	GND_9	GND_105	Y15
B33	GND_10	GND_106	Y17
C2	GND_11	GND_107	Y19
C34	GND_12	GND_108	Y21
E6	GND_13	GND_109	Y23
E9	GND_14	GND_110	Y25
E12	GND_15	GND_111	AA2
E15	GND_16	GND_112	AA5
E18	GND_17	GND_113	AA11
E24	GND_18	GND_114	AA12
E27	GND_19	GND_115	AA13
E30	GND_20	GND_116	AA14
F2	GND_21	GND_117	AA15
F5	GND_22	GND_118	AA16
F91	GND_23	GND_119	AA17
F34	GND_24	GND_120	AA18
J2	GND_25	GND_121	AA19
J5	GND_26	GND_122	AA20
J31	GND_27	GND_123	AA22
J34	GND_28	GND_124	AA23
M2	GND_30	GND_125	AA24
M5	GND_31	GND_126	AA25
M11	GND_32	GND_127	AA34
M13	GND_33	GND_128	AB12
M15	GND_34	GND_129	AB14
M17	GND_35	GND_130	AB16
M19	GND_36	GND_131	AB18
M21	GND_37	GND_132	AB20
M23	GND_38	GND_133	AB22
M25	GND_39	GND_134	AB24
M31	GND_40	GND_135	AC9
M34	GND_41	GND_136	AD2
N11	GND_42	GND_137	AD5
N12	GND_43	GND_138	AD11
N13	GND_44	GND_139	AD13
N14	GND_45	GND_140	AD15
N15	GND_46	GND_141	AD17
N16	GND_47	GND_142	AD21
N17	GND_48	GND_143	AD23
N18	GND_49	GND_144	AD25
N19	GND_50	GND_145	AD34
N20	GND_51	GND_146	AD38
N21	GND_52	GND_147	AE11
N22	GND_53	GND_148	AE12
N23	GND_54	GND_149	AE13
N24	GND_55	GND_150	AE14
N25	GND_56	GND_151	AE15
P12	GND_57	GND_152	AE16
P14	GND_58	GND_153	AE17
P16	GND_59	GND_154	AE18
P19	GND_60	GND_155	AE19
P20	GND_61	GND_156	AE20
P22	GND_62	GND_157	AE21
P24	GND_63	GND_158	AE22
P25	GND_64	GND_159	AE23
R5	GND_65	GND_160	AE24
R31	GND_66	GND_161	AE25
R34	GND_67	GND_162	AG2
T11	GND_68	GND_163	AG5
T13	GND_69	GND_164	AG31
T15	GND_70	GND_165	AG34
T17	GND_71	GND_166	AK2
T19	GND_72	GND_167	AK5
T21	GND_73	GND_168	AK31
T23	GND_74	GND_170	AK34
T25	GND_75	GND_171	AL6
U11	GND_76	GND_172	AL9
U12	GND_77	GND_173	AL12
U13	GND_78	GND_174	AL15
U14	GND_79	GND_175	AL18
U15	GND_80	GND_176	AL21
U16	GND_81	GND_177	AL24
U17	GND_82	GND_178	AL27
U18	GND_83	GND_179	AL30
U19	GND_84	GND_180	AN2
U20	GND_85	GND_181	AN34
U21	GND_86	GND_182	AP3
U22	GND_87	GND_183	AP6
U23	GND_88	GND_184	AP9
U24	GND_89	GND_185	AP12
U25	GND_90	GND_186	AP15
V2	GND_91	GND_187	AP18
V5	GND_92	GND_188	AP21
V9	GND_93	GND_189	AP24
V12	GND_94	GND_190	AP27
V14	GND_95	GND_191	AP30
	GND_96	GND_192	AP33
		GND_193	

0904-002676

OPT

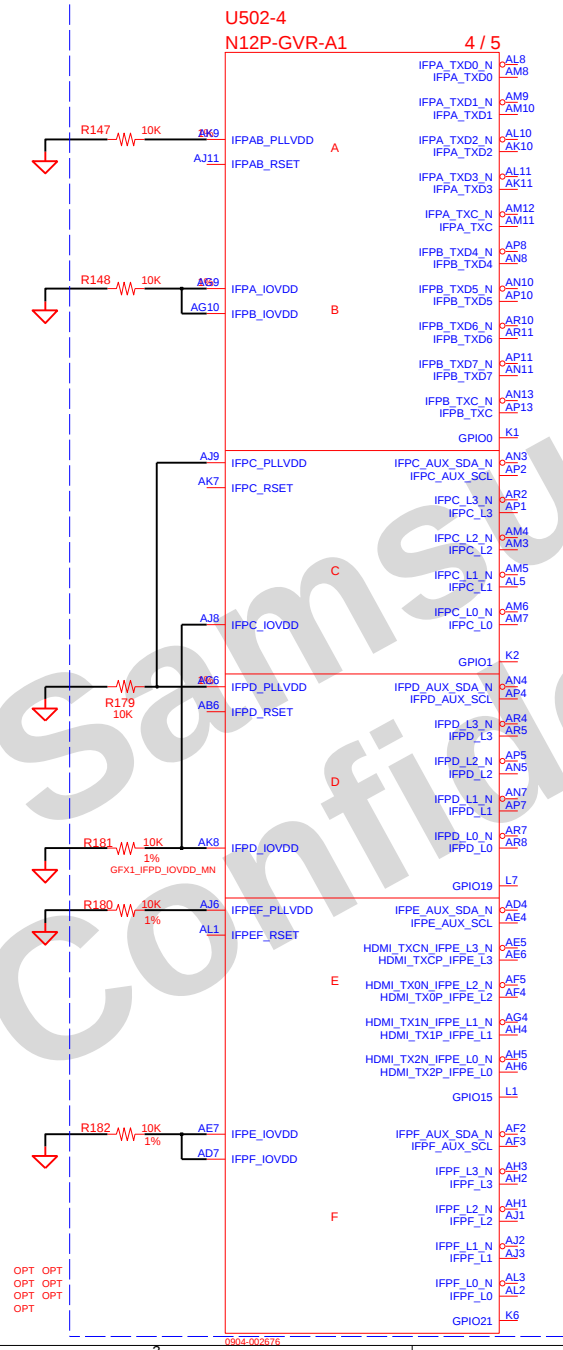


L11	VDD_1	VDD_57	V19
L12	VDD_2	VDD_58	V21
L13	VDD_3	VDD_59	V23
L14	VDD_4	VDD_60	V25
L15	VDD_5	VDD_61	W11
L16	VDD_6	VDD_62	W12
L17	VDD_7	VDD_63	W13
L18	VDD_8	VDD_64	W14
L19	VDD_9	VDD_65	W15
L20	VDD_10	VDD_66	W16
L21	VDD_11	VDD_67	W17
L22	VDD_12	VDD_68	W18
L23	VDD_13	VDD_69	W19
L24	VDD_14	VDD_70	W20
L25	VDD_15	VDD_71	W21
M12	VDD_16	VDD_72	W22
M14	VDD_17	VDD_73	W23
M16	VDD_18	VDD_74	W24
M18	VDD_19	VDD_75	W25
M20	VDD_20	VDD_76	Y12
M22	VDD_21	VDD_77	Y14
M24	VDD_22	VDD_78	Y16
P11	VDD_23	VDD_79	Y18
P13	VDD_24	VDD_80	Y20
P15	VDD_25	VDD_81	Y22
P17	VDD_26	VDD_82	Y24
P19	VDD_27	VDD_83	AB11
P21	VDD_28	VDD_84	AB13
P23	VDD_29	VDD_85	AB15
P25	VDD_30	VDD_86	AB17
R11	VDD_31	VDD_87	AB19
R12	VDD_32	VDD_88	AB21
R13	VDD_33	VDD_89	AB23
R14	VDD_34	VDD_90	AB25
R15	VDD_35	VDD_91	AC11
R16	VDD_36	VDD_92	AC12
R17	VDD_37	VDD_93	AC13
R18	VDD_38	VDD_94	AC14
R19	VDD_39	VDD_95	AC15
R20	VDD_40	VDD_96	AC16
R21	VDD_41	VDD_97	AC17
R22	VDD_42	VDD_98	AC18
R23	VDD_43	VDD_99	AC19
R24	VDD_44	VDD_100	AC20
R25	VDD_45	VDD_101	AC21
T12	VDD_46	VDD_102	AC22
T14	VDD_47	VDD_103	AC23
T16	VDD_48	VDD_104	AC24
T18	VDD_49	VDD_105	AC25
T20	VDD_50	VDD_106	AD12
T22	VDD_51	VDD_107	AD14
T24	VDD_52	VDD_108	AD16
V11	VDD_53	VDD_109	AD18
V13	VDD_54	VDD_110	AD22
V15	VDD_55	VDD_111	AD24
V17	VDD_56		

EGFX_CORE

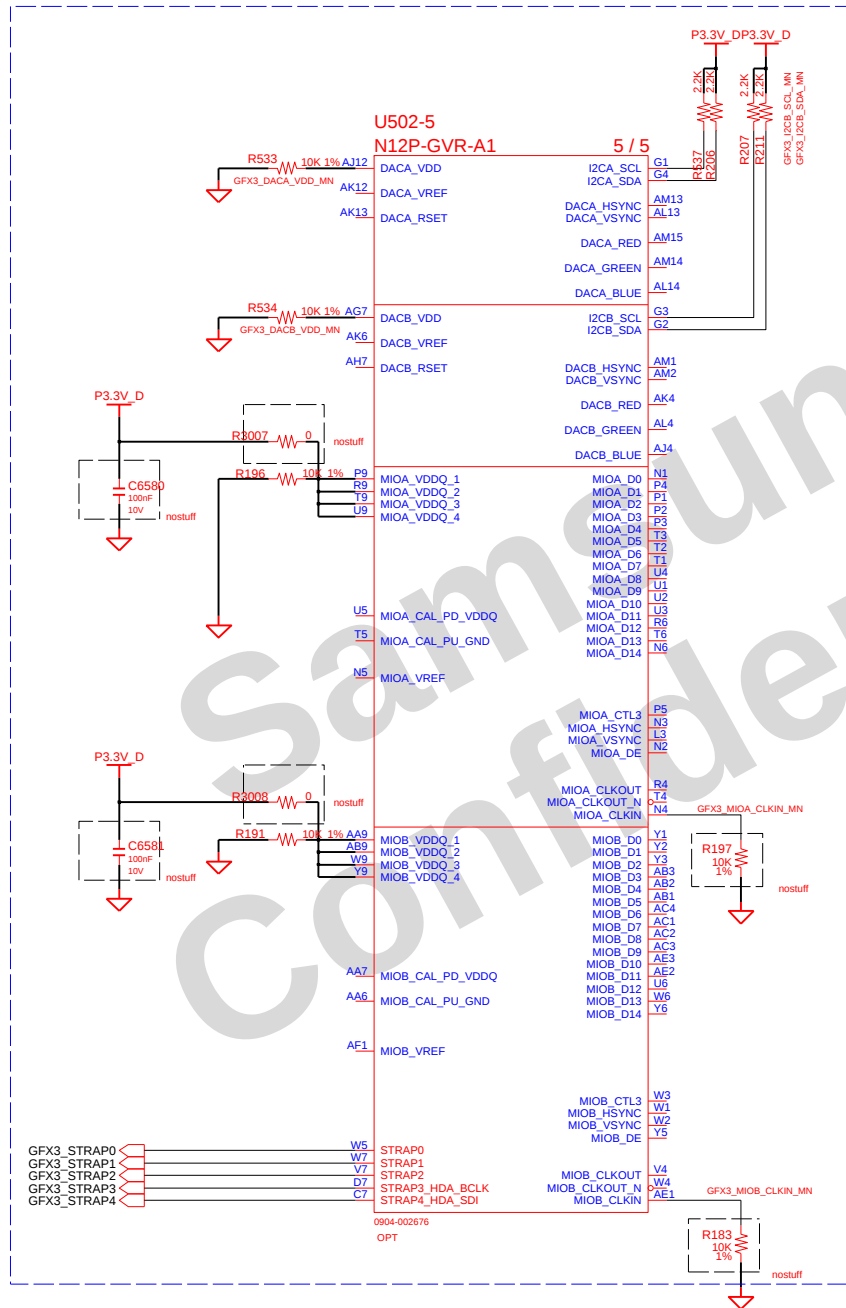
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CHECK	MK KIM	DEV. STEP	MP		N12X_40NM(3/5)	
APPROVAL	BL LEE	REV	REV 1.2		N12X_40NM(3/5)	
MODULE CODE		LAST EDIT		August 15, 2011 11:04:51 AM		
PAGE 21 OF 51						

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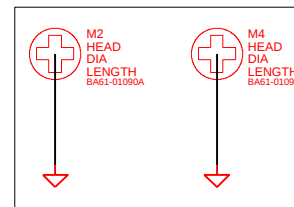


DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG ELECTRONICS PART NO. BA41-01666A
CHECK	MK KIM	DEV. STEP	MP		N12X_40NM(4/5)	
APPROVAL	BL LEE	REV	REV 1.2		N12X_40NM(4/5)	
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	22 OF 51	

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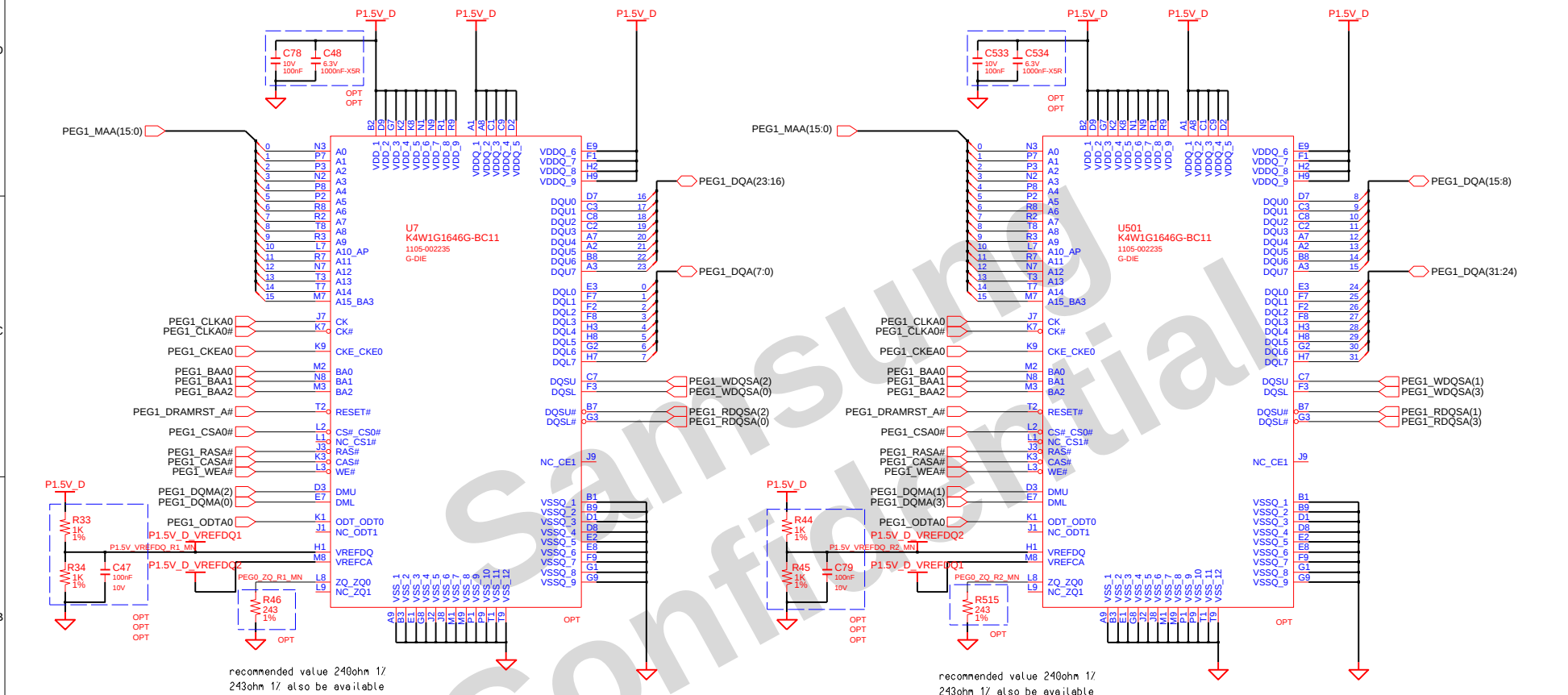
GPU Thermal



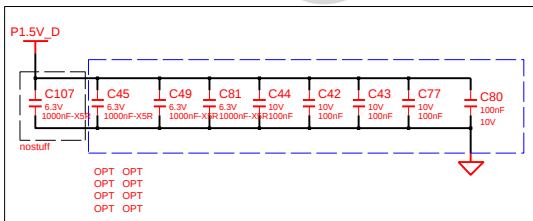
INT GFX and OPT GFX model need.

DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG
CHECK	MK KIM	DEV. STEP	MP	N12X_40NM(5/5)	ELECTRONICS	
APPROVAL	BL LEE	REV	REV 1.2	N12X_40NM(5/5)	PART NO.	BA41-01666A
MODULE CODE		LAST EDIT			PAGE	23 OF 51

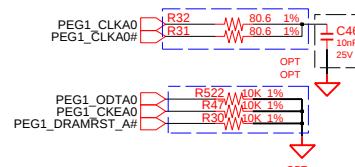
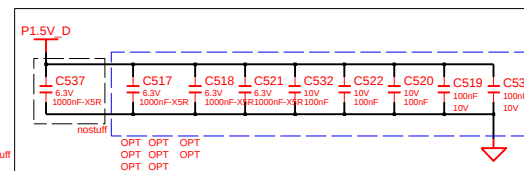
A-Channel #0 (E-mode)



Place near to VDDQ

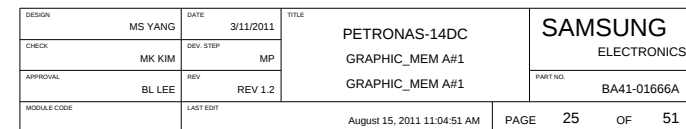


Place near to VDDQ



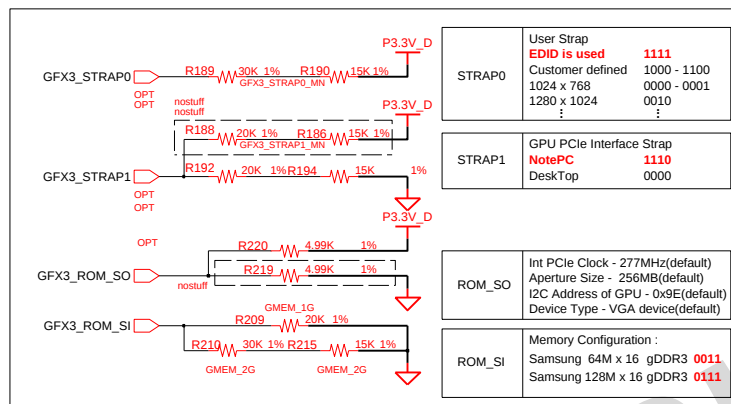
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP		GRAPHIC_MEM A#0	
APPROVAL	BL LEE	REV	REV 1.2		GRAPHIC_MEM A#0	
MODULE CODE		LAST EDIT				
August 15, 2011 11:04:51 AM						PAGE 24 OF 51

A-Channel #1 (E-mode)

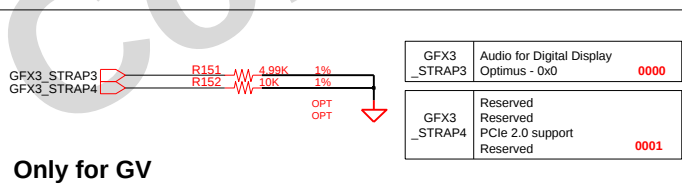
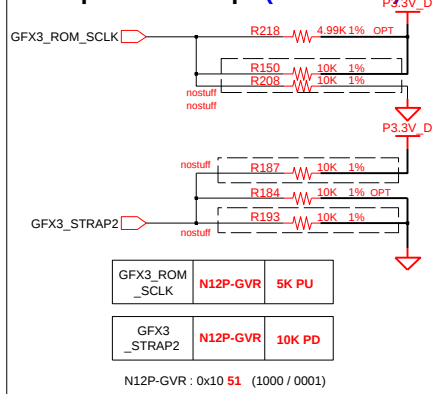


N12x_40nm STRAP

Function Straps



Chip Select Straps (N12P-GV1)



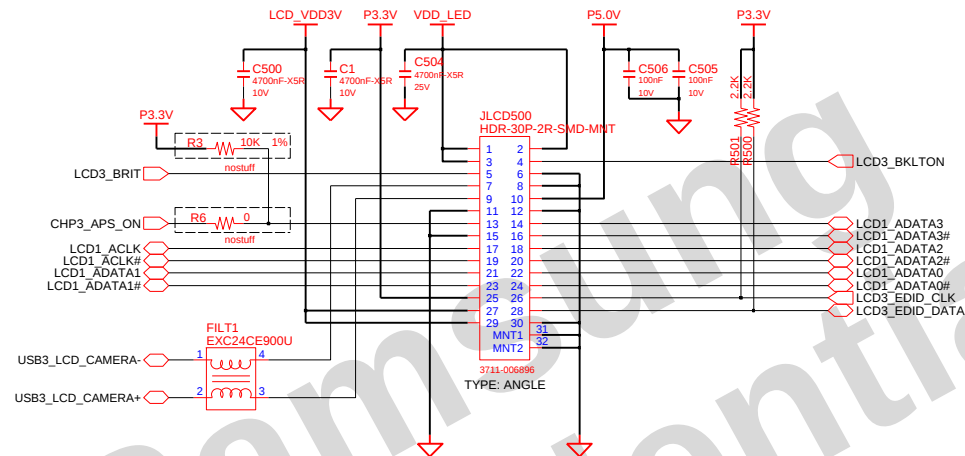
RESISTOR	PULL UP	PULL DOWN
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111

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

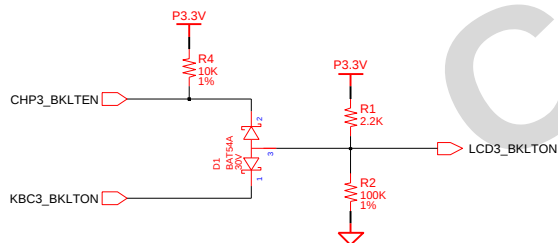
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC GRAPHIC_MEM C#0 GRAPHIC_MEM C#0	SAMSUNG			
CHECK	MK KIM	DEV. STEP	MP			ELECTRONICS			
APPROVAL	BL LEE	REV	REV 1.2			PART NO.	BA41-01666A		
MODULE CODE	LAST EDIT		August 15, 2011 11:04:51 AM			PAGE	26	OF	51

LVDS LOGIC

1Ch. LCD Connector + CAMERA

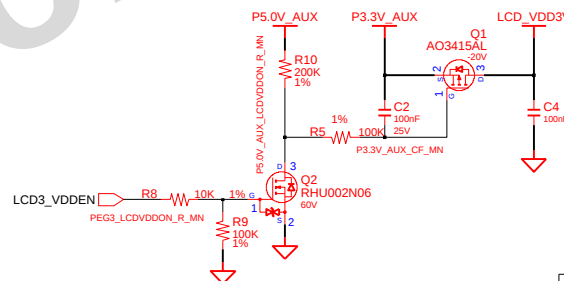


Backlight On

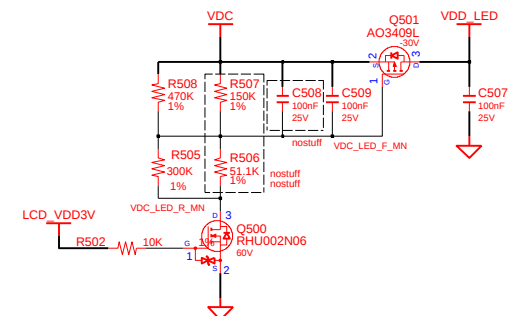


LCD Power

EBL Purpose



LED Power

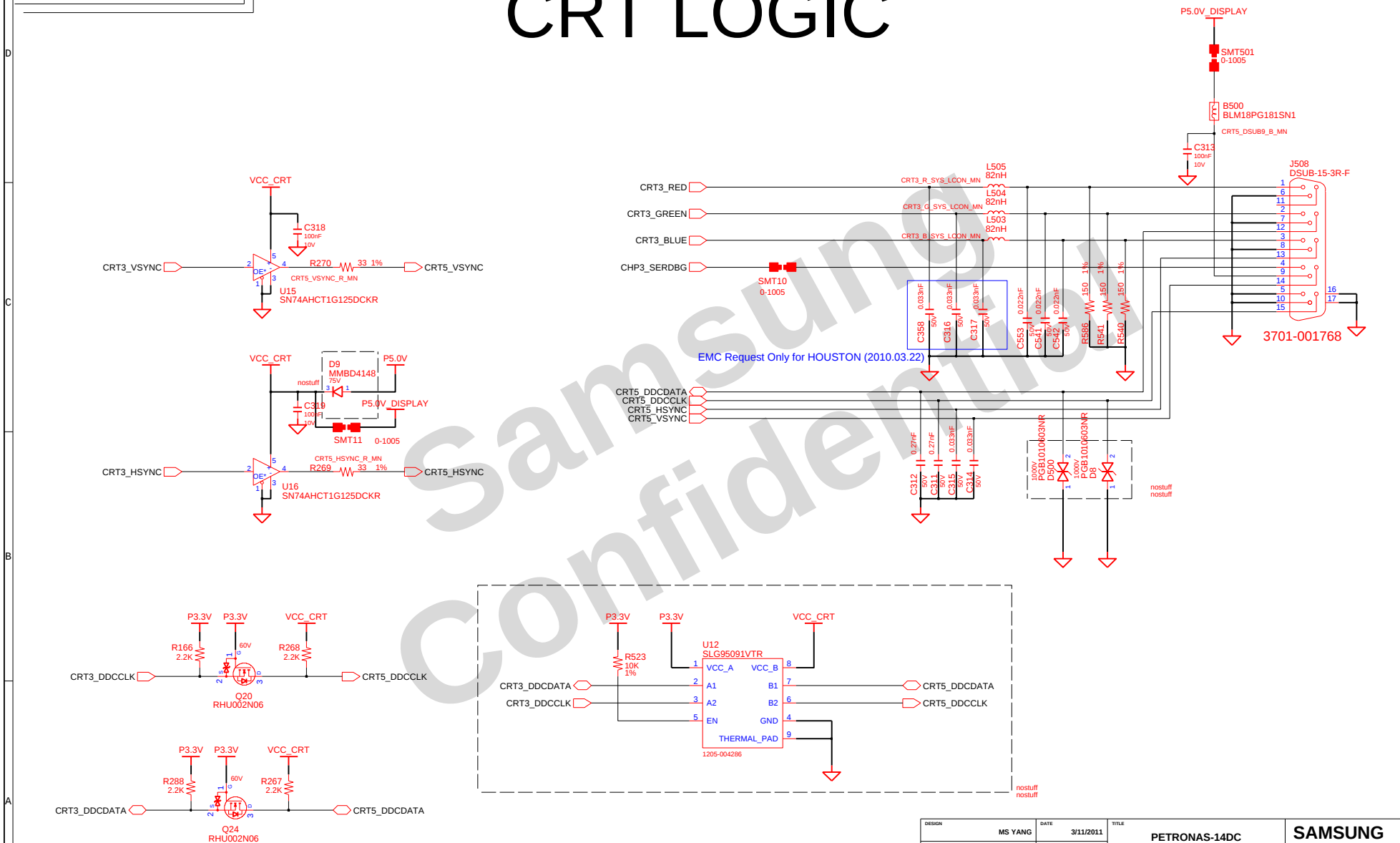


DESIGN	MS YANG	DATE	3/11/2011	PETRONAS-14DC GRAPHICS_IF LVDS		SAMSUNG ELECTRONICS	
CHECK	MK KIM	DEV. STEP	MP				
APPROVAL	BL LEE	REV	REV 1.2				
				PART NO.		BA41-01666A	
MODULE CODE	LAST EDIT		August 15, 2011 11:04:51 AM			PAGE	27 OF 51

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CRT LOGIC



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC GRAPHICS_IF CRT	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			PART NO. BA41-01666A
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE		LAST EDIT		August 15, 2011 11:04:51 AM	PAGE 28 OF 51	

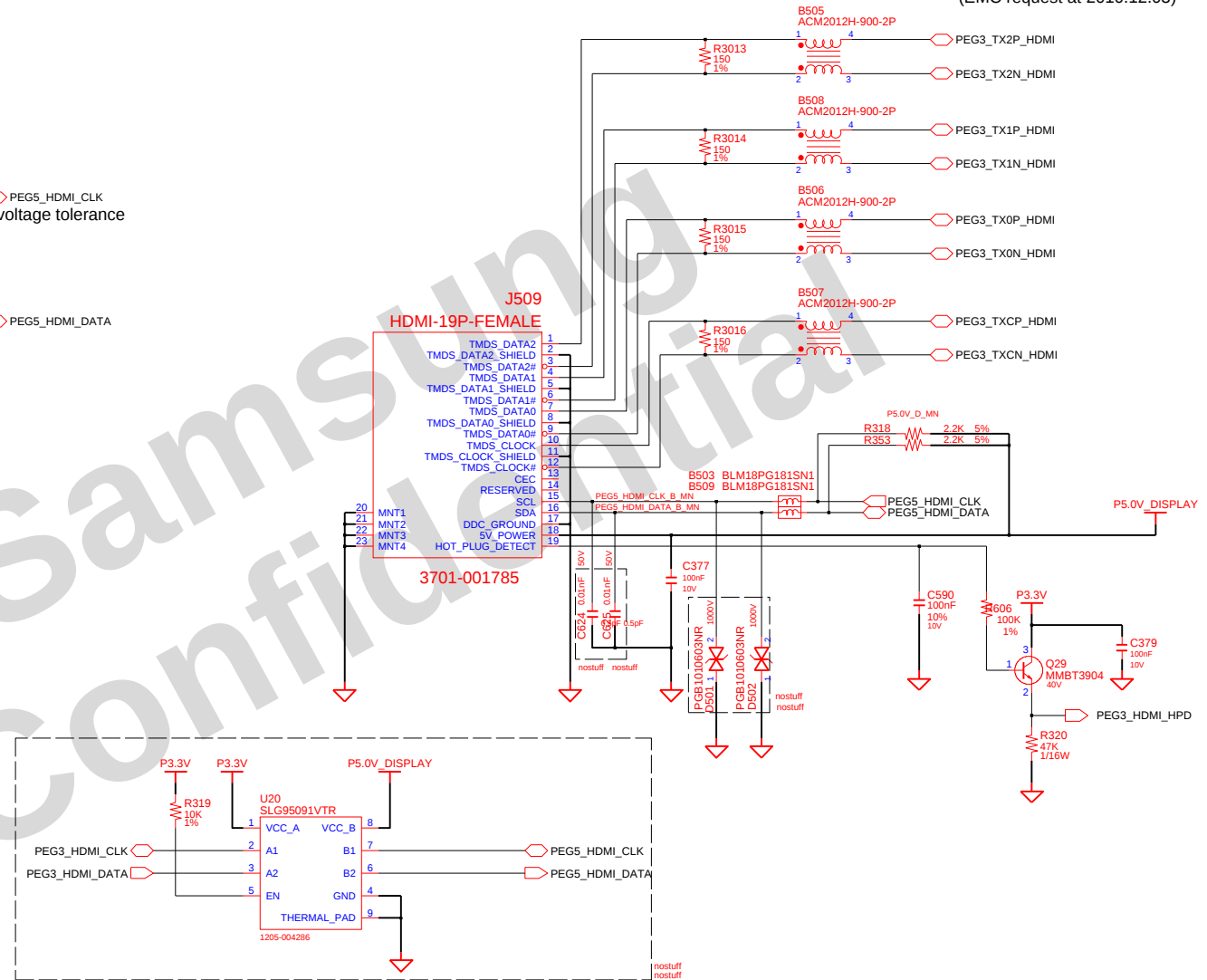
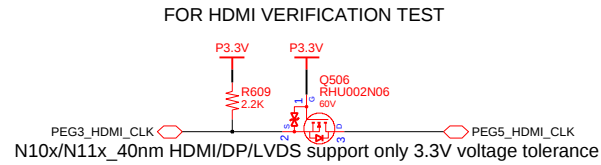
HDMI Graphic

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.

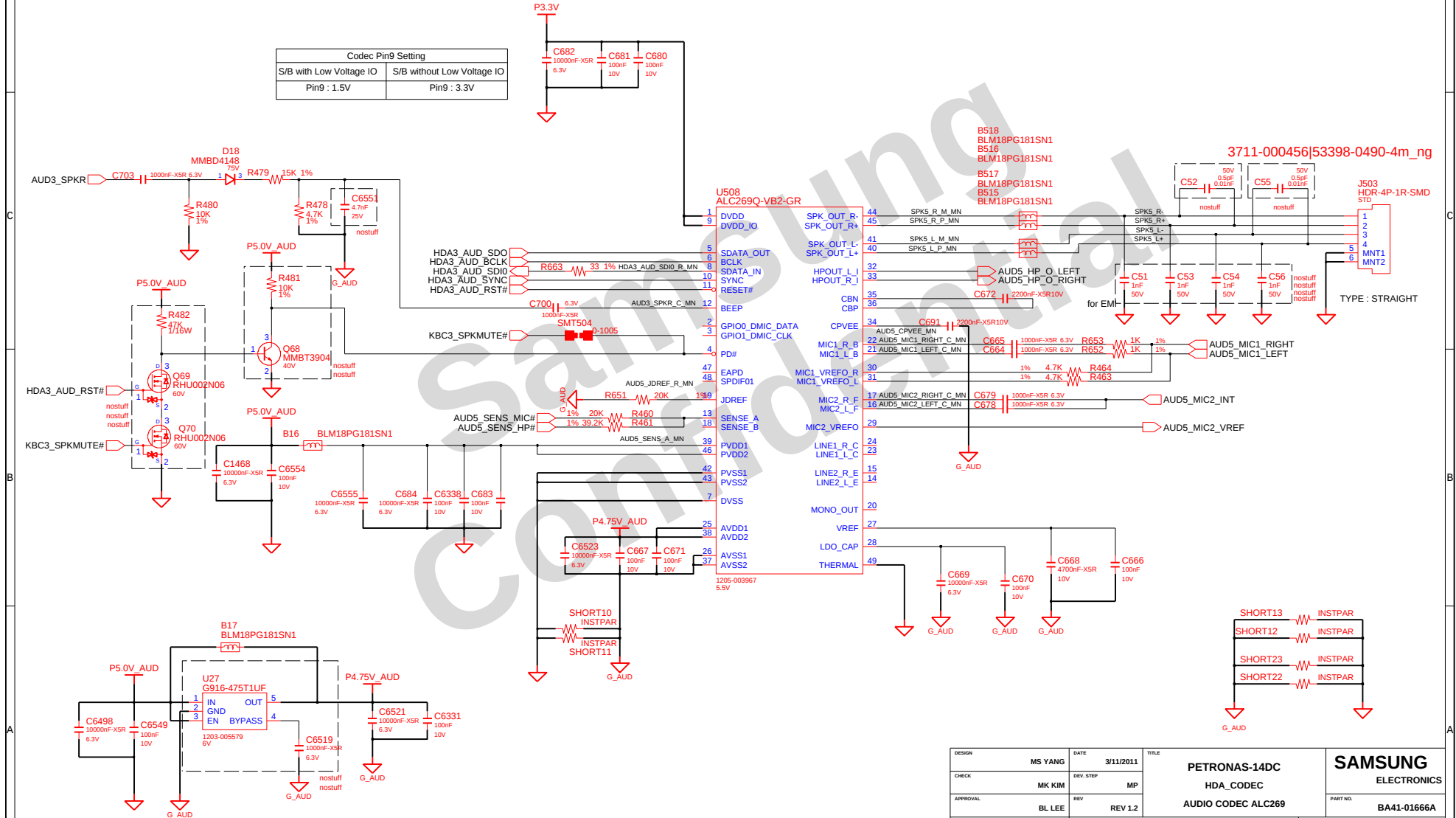
(EMC request at 2010.12.03)



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC GRAPHICS_IF	SAMSUNG ELECTRONICS
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APPROVAL	BL LEE	REV	REV 1.2		HDMI	BA41-01666A
MODULE CODE		LAST EDIT		August 15, 2011 11:04:51 AM	PAGE 29	OF 51

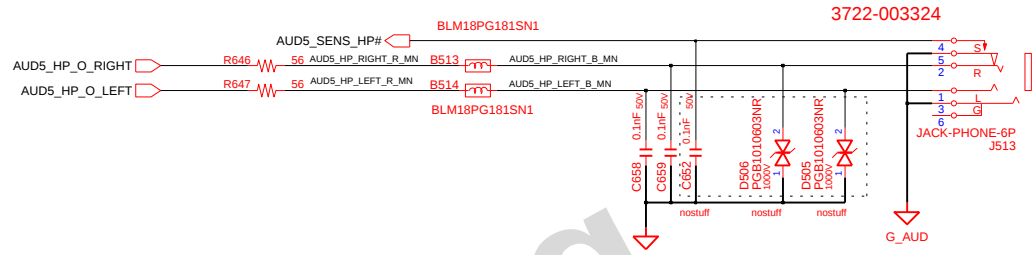
HD AUDIO

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

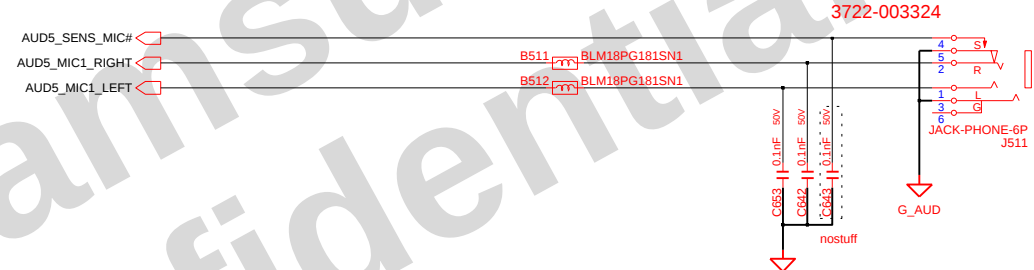


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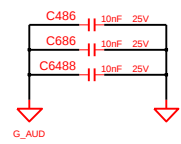
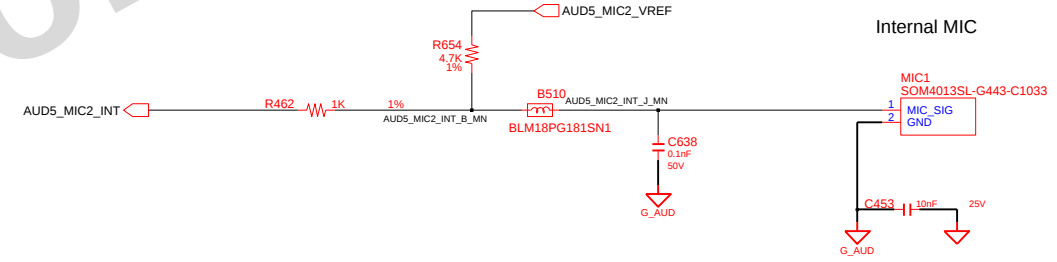
HEADPHONE



MIC JACK

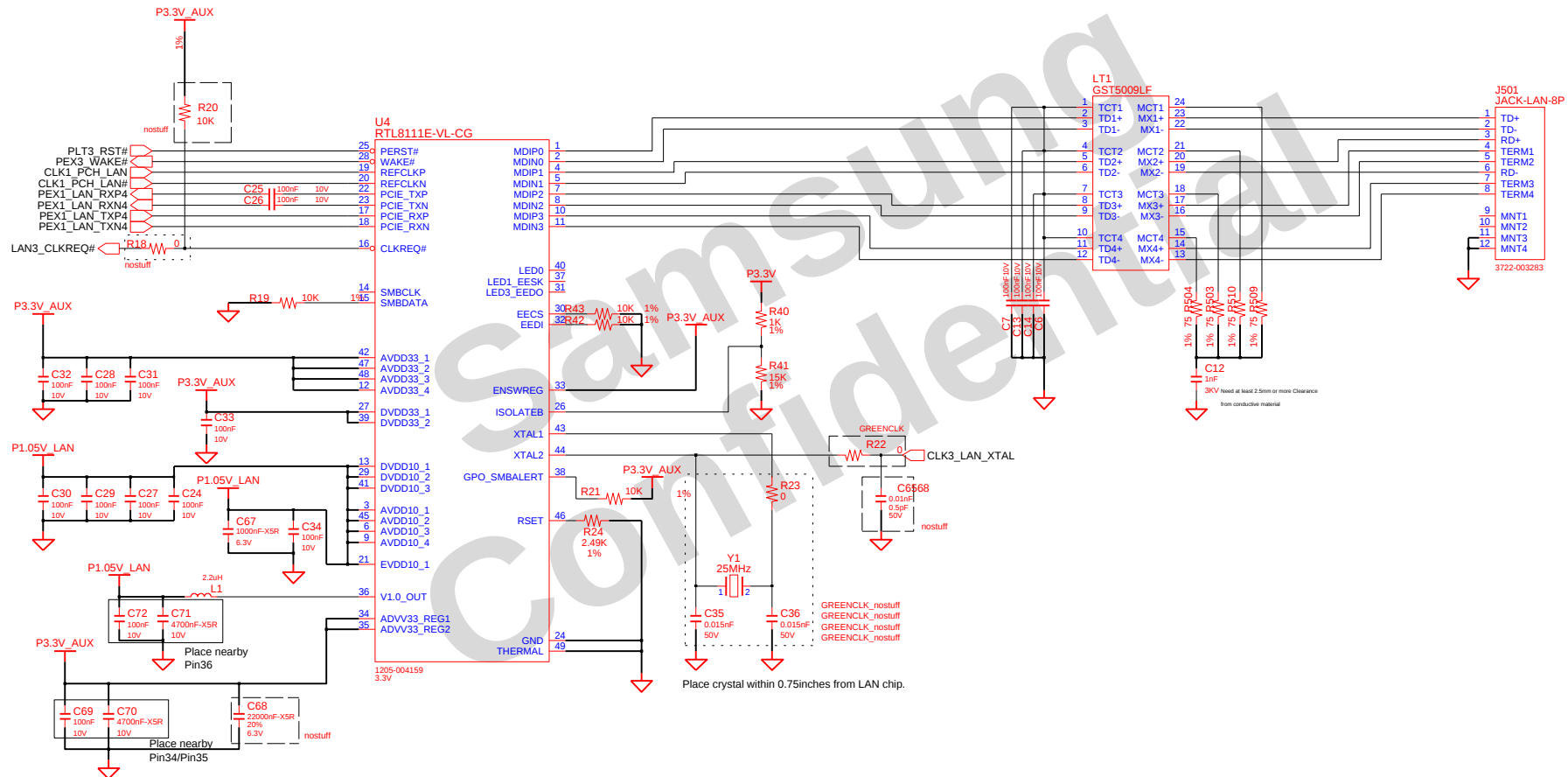


Internal MIC



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC HDA_CODEC AUDIO JACK	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			
APPROVAL	BL LEE	REV	REV 1.2			
				PART NO.	BA41-01666A	
MODULE CODE	LAST EDIT		August 15, 2011 11:04:51 AM		PAGE	31 OF 51

Reatek RTL8111E



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG
CHECK	MK KIM	DEV. STEP	MP		LAN	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.2		LAN Reatek RTL8111E	PART NO.
MODULE CODE		LAST EDIT				BA41-01666A
				August 15, 2011 11:04:51 AM	PAGE	32 OF 51

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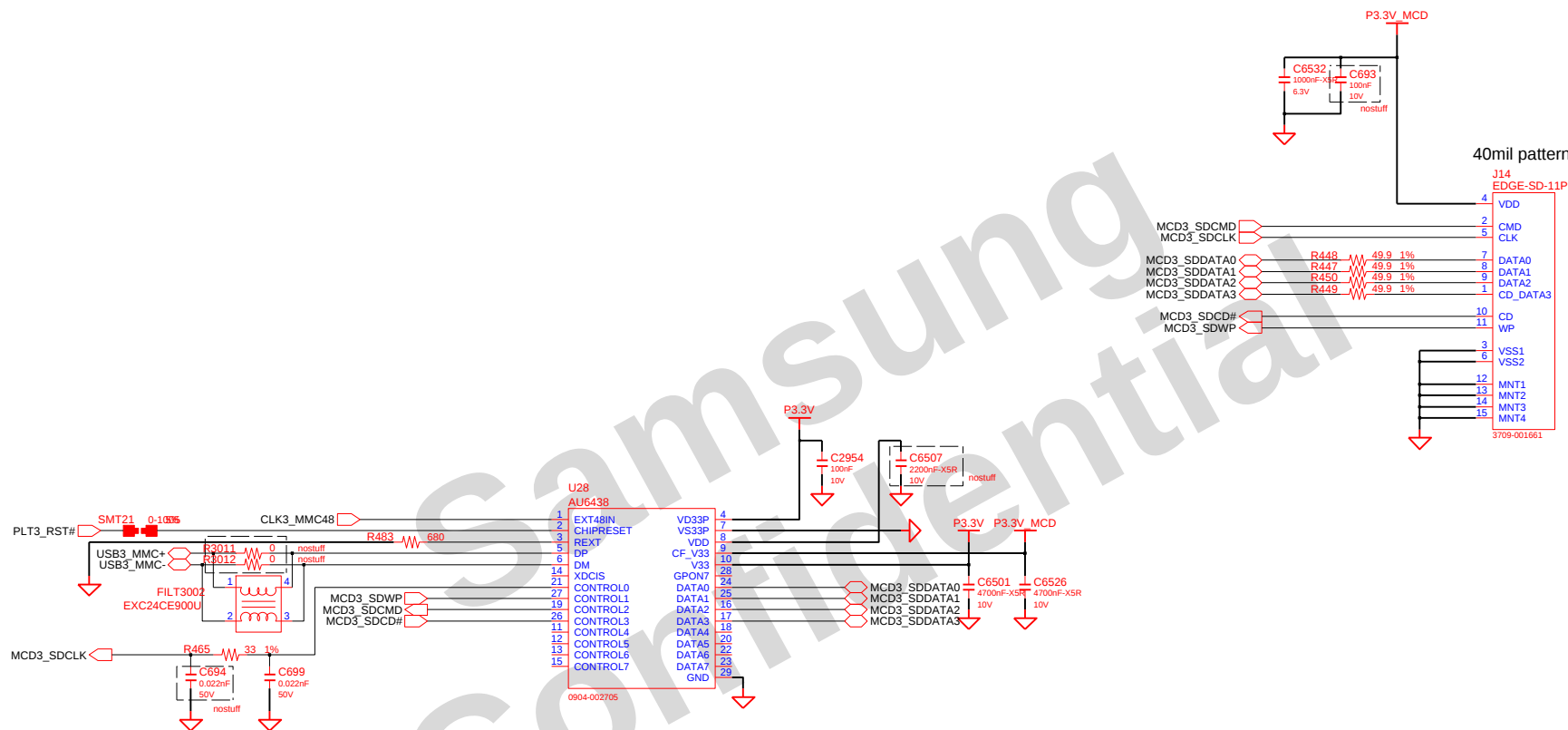
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4 IN 1 CARD

40mil pattern

J14
EDGE-SD-11P

4 VDD
2 CMD
5 CLK
7 DATA0
8 DATA1
9 DATA2
1 CD_DATA3
10 CD
11 WP
3 VSS1
6 VSS2
12 MNT1
13 MNT2
14 MNT3
15 MNT4
3709-001661

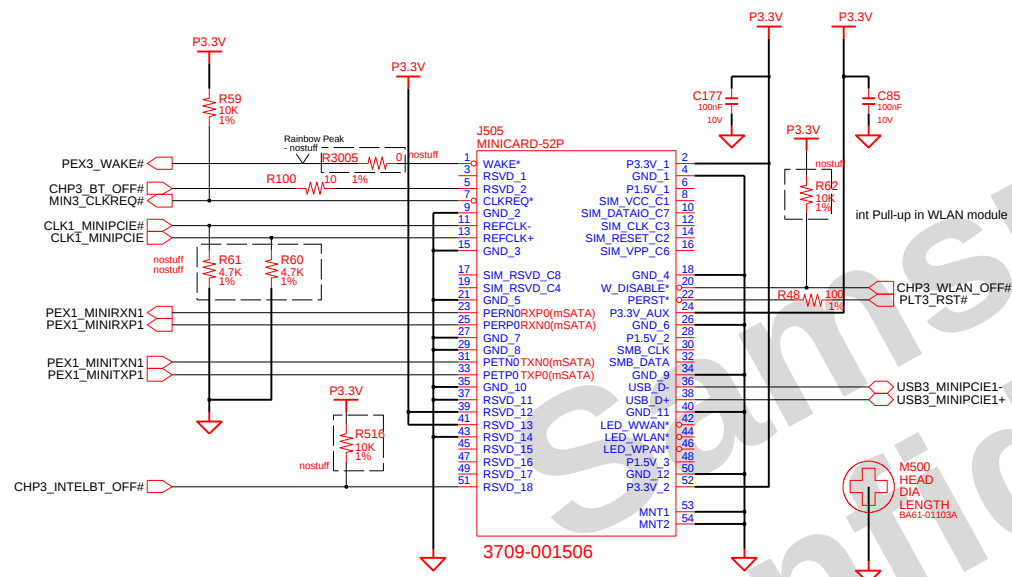


DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC MULTICARD 4 IN 1 CARD(AU6438)	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			PART NO. BA41-01666A
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	33	OF 51

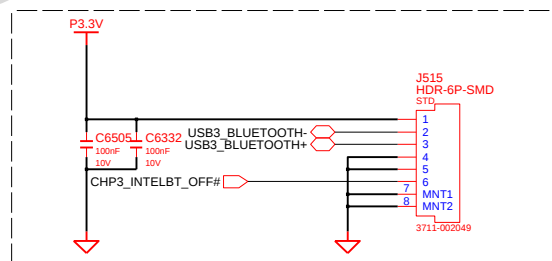
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WLAN, 7mm



Bluetooth Interface

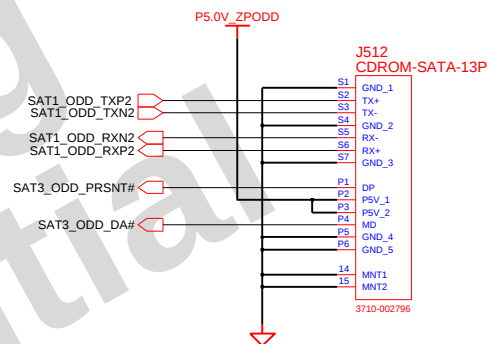
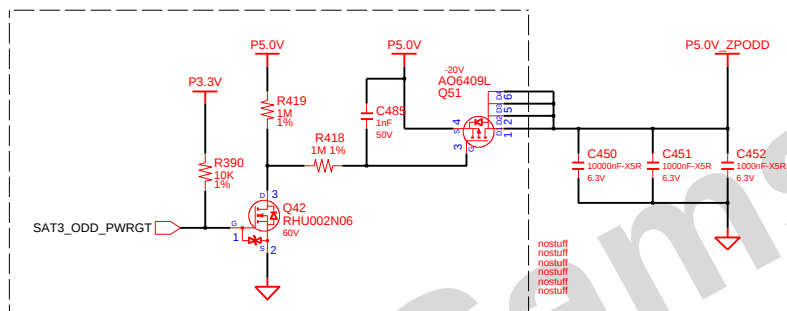


DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC MINI_PCIE_CONN WLAN	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			PART NO. BA41-01666A
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE		LAST EDIT		August 15, 2011 11:04:51 AM	PAGE 34 OF 51	

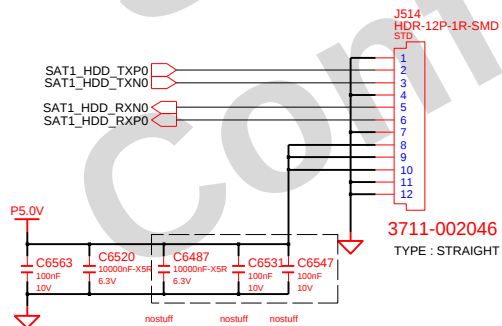
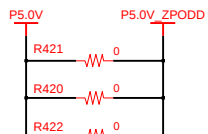
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SATA I/F CONN

SATA ODD CONN 14"



SATA HDD CONN



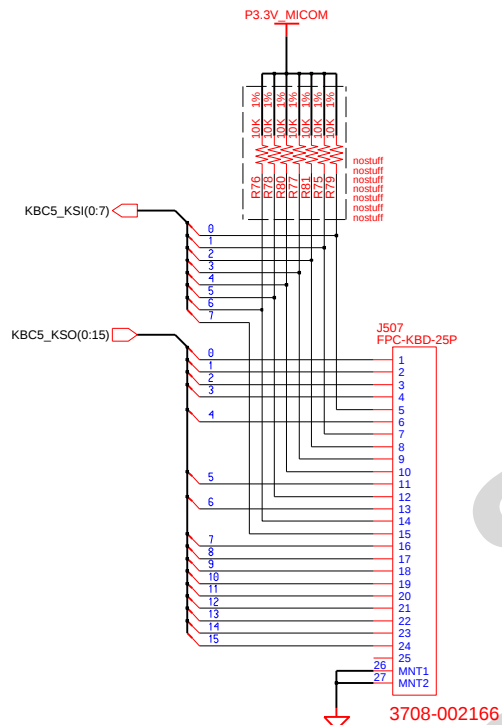
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CHECK	MK KIM	DEV. STEP	MP	SATA_DEVICES		ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.2	HDD & ODD SUB CONNECTOR	PART NO.	BA41-01666A
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	35	OF 51

MAIN BOARD (MICOM)

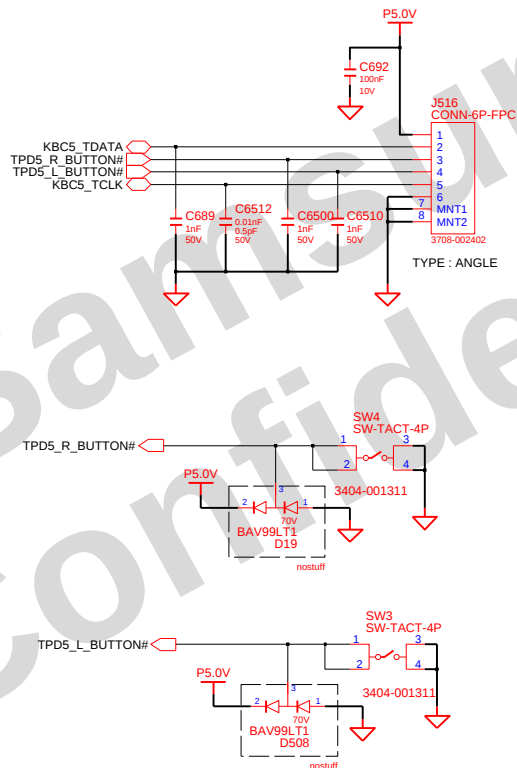
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Micom Glue Logic

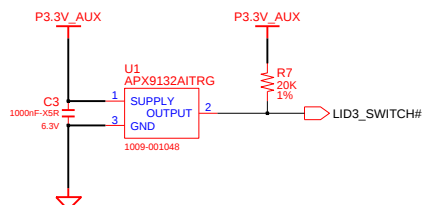
KEYBOARD



TOUCHPAD



LID_SWITCH



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC MICOM GLUE LOGIC KEYBOARD & TOUCHPAD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			PART NO. BA41-01666A
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	37	OF 51

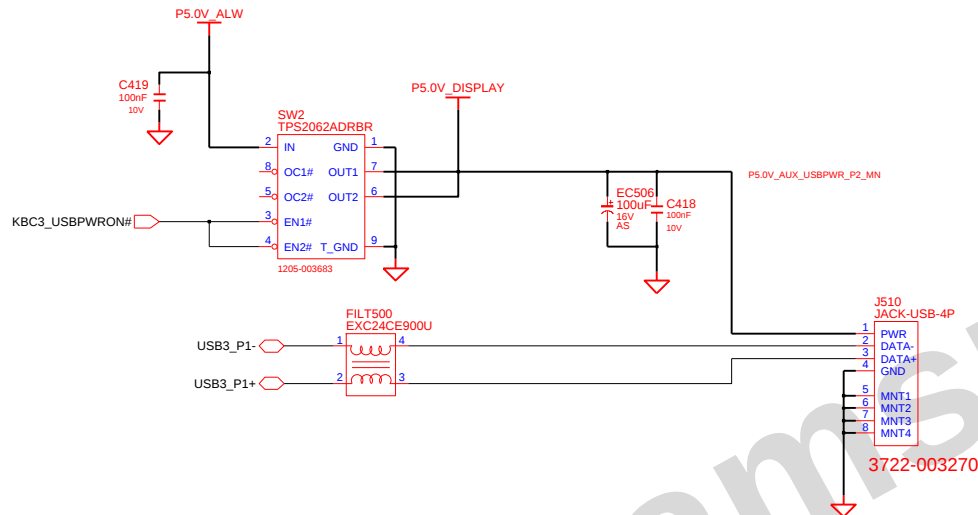
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D:/users/mobile39/mentor/Petronas-14 DC/mp1.25/Petronas-14 MAIN

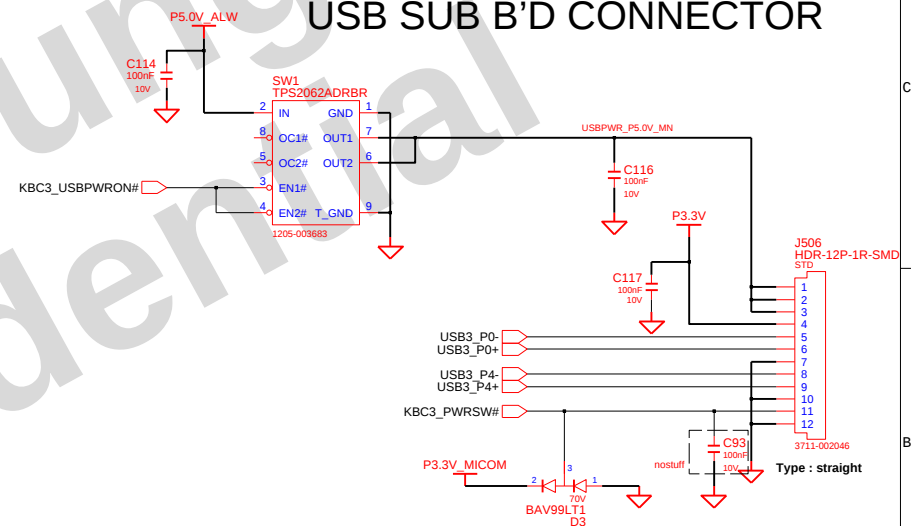
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USB Single connector

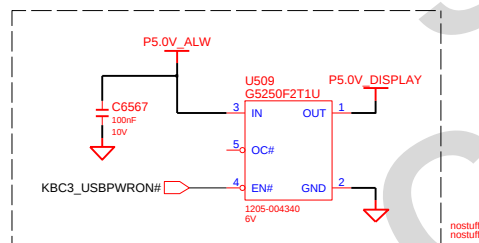


MAIN TO SUB USB CONN Right 2USB Port

USB SUB B'D CONNECTOR



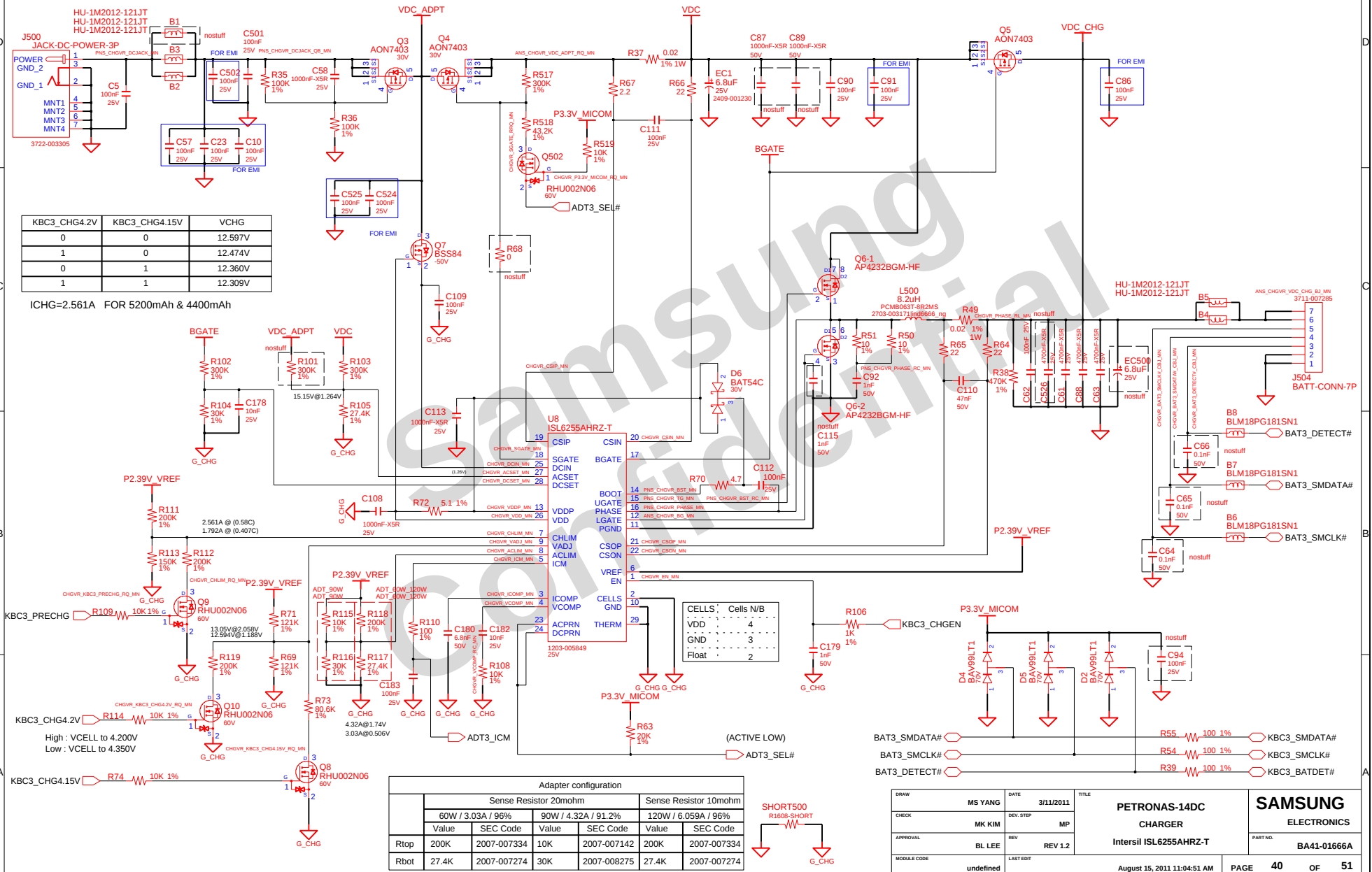
PLACE CLOSE TO USB SUB B'D Conenctor



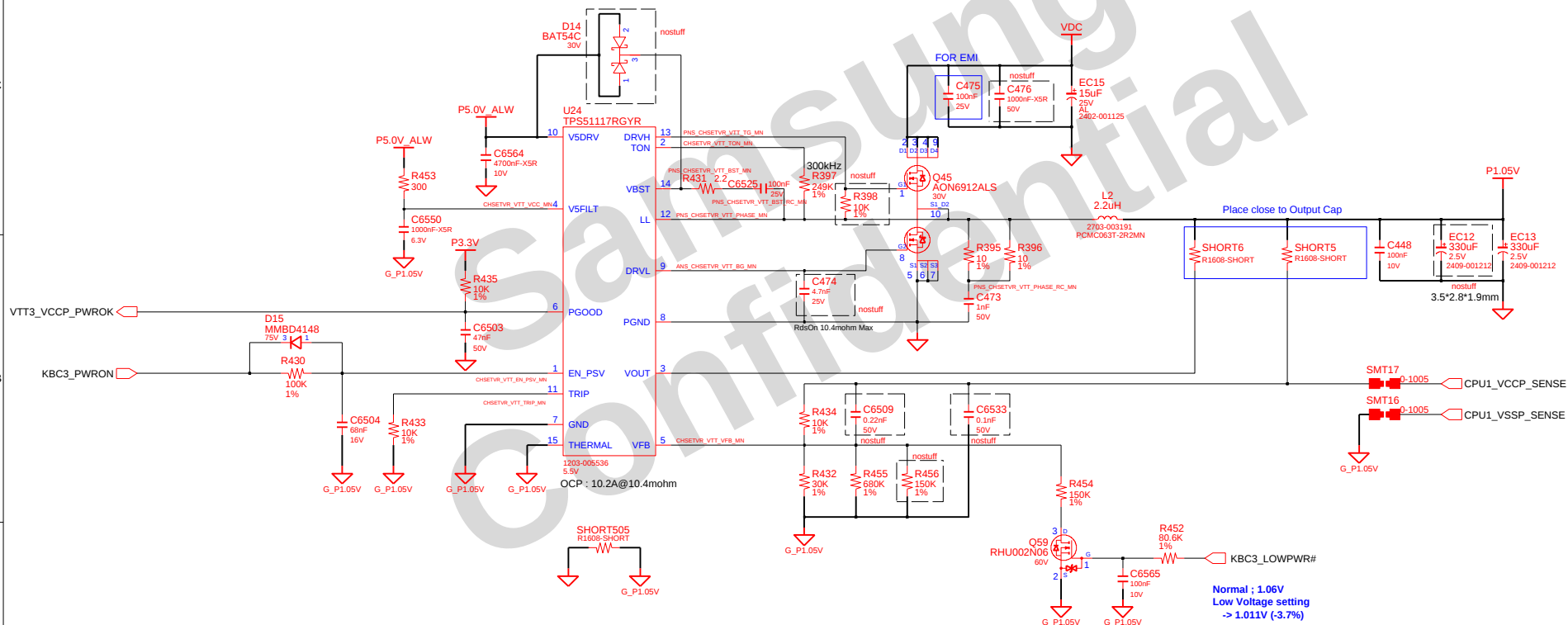
DESIGN	MS YANG	DATE	3/11/2011	PETRONAS-14DC USB_CONN USB Port		SAMSUNG ELECTRONICS	
CHECK	MK KIM	DEV. STEP	MP				
APPROVAL	BL LEE	REV	REV 1.2				
						PART NO.	BA41-01666A
MODULE CODE	LAST EDIT		August 15, 2011 11:04:51 AM			PAGE	39 OF 51

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CHARGER & POWER MANAGEMENT

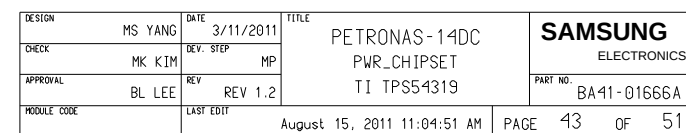


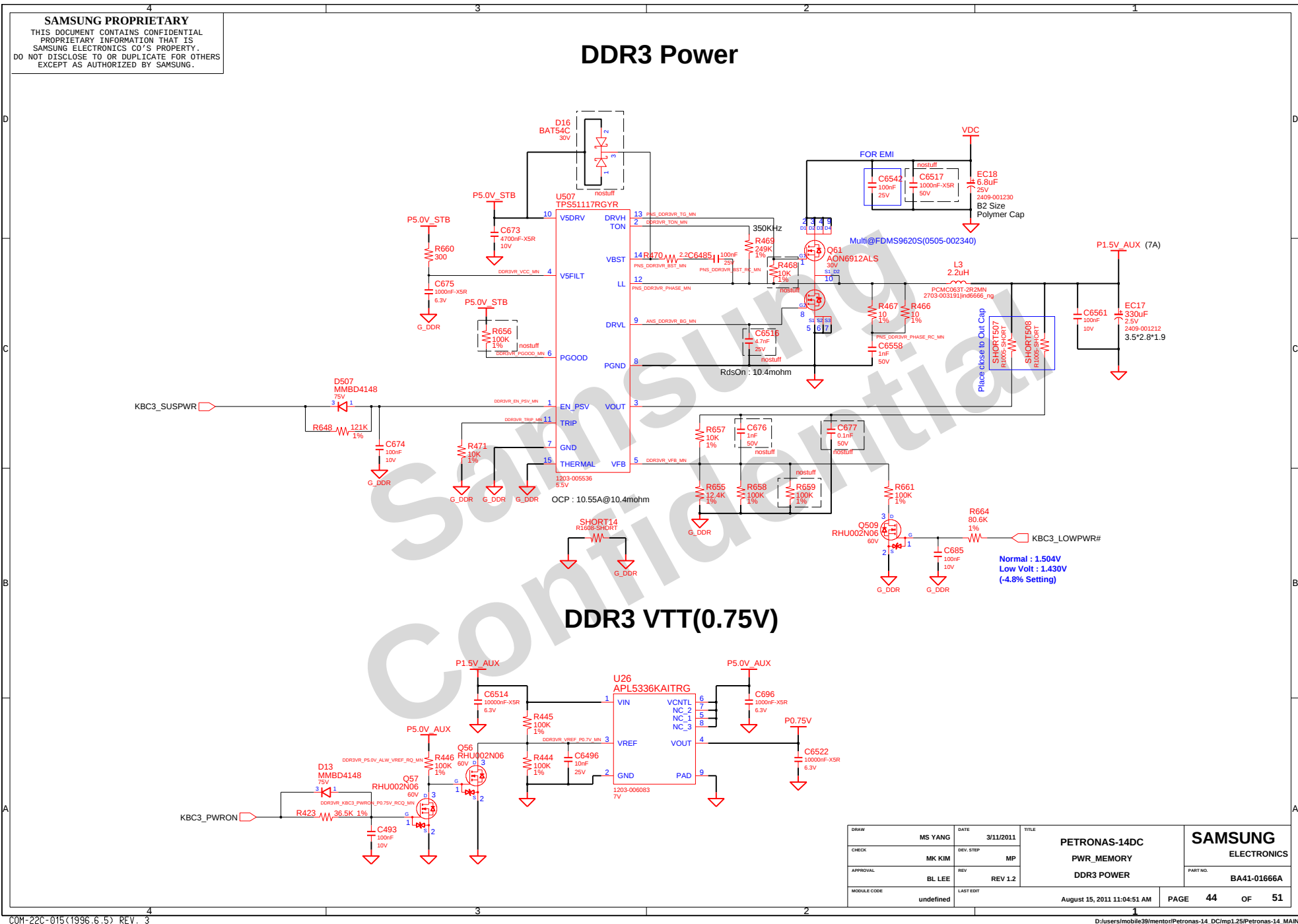
Chipset Power (P1.05V)



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC P1.05V TI TPS51117	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			PART NO. BA41-01666A
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE	undefined	LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	42	OF 51

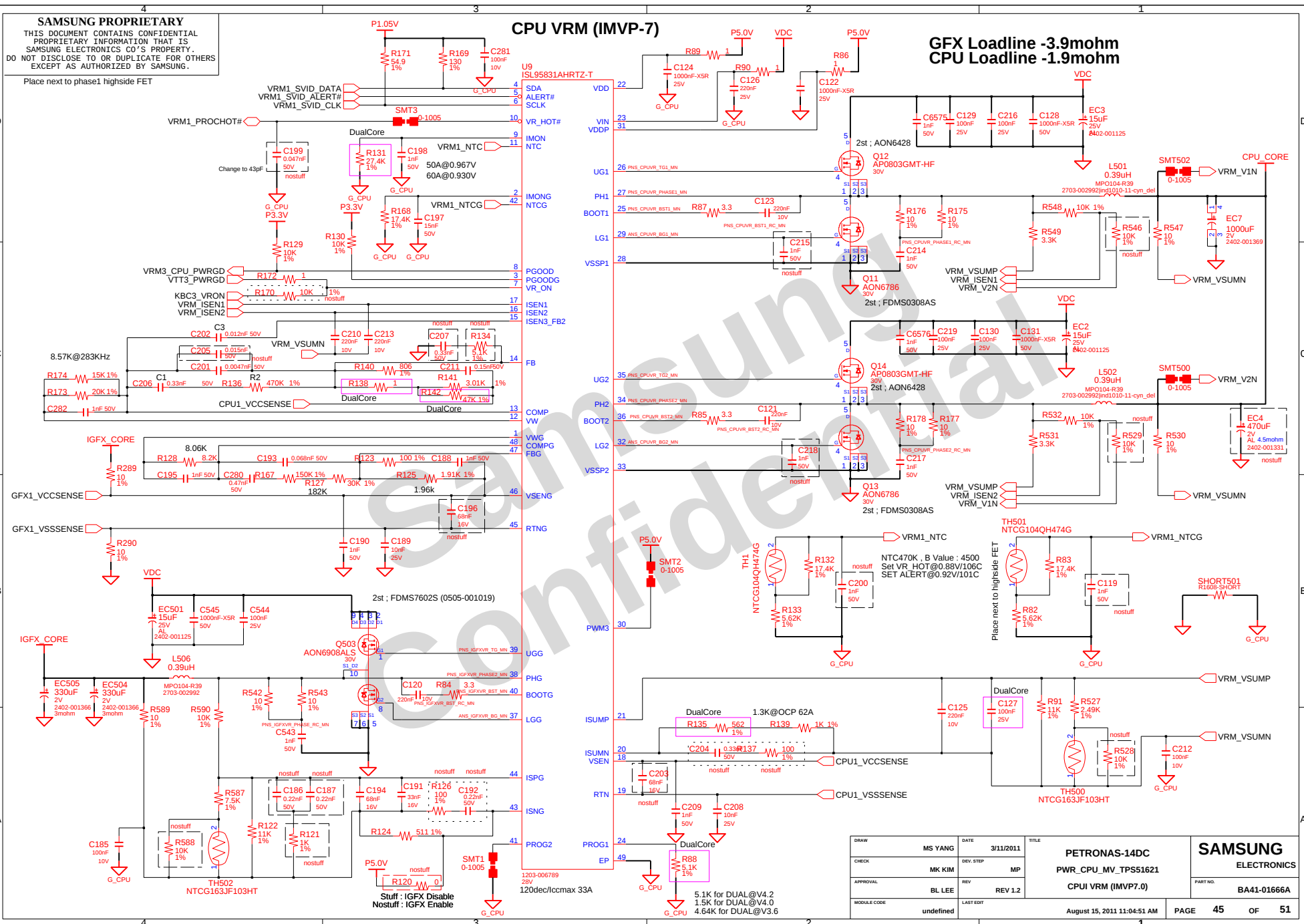
CHIPSET POWER(VCCSA)



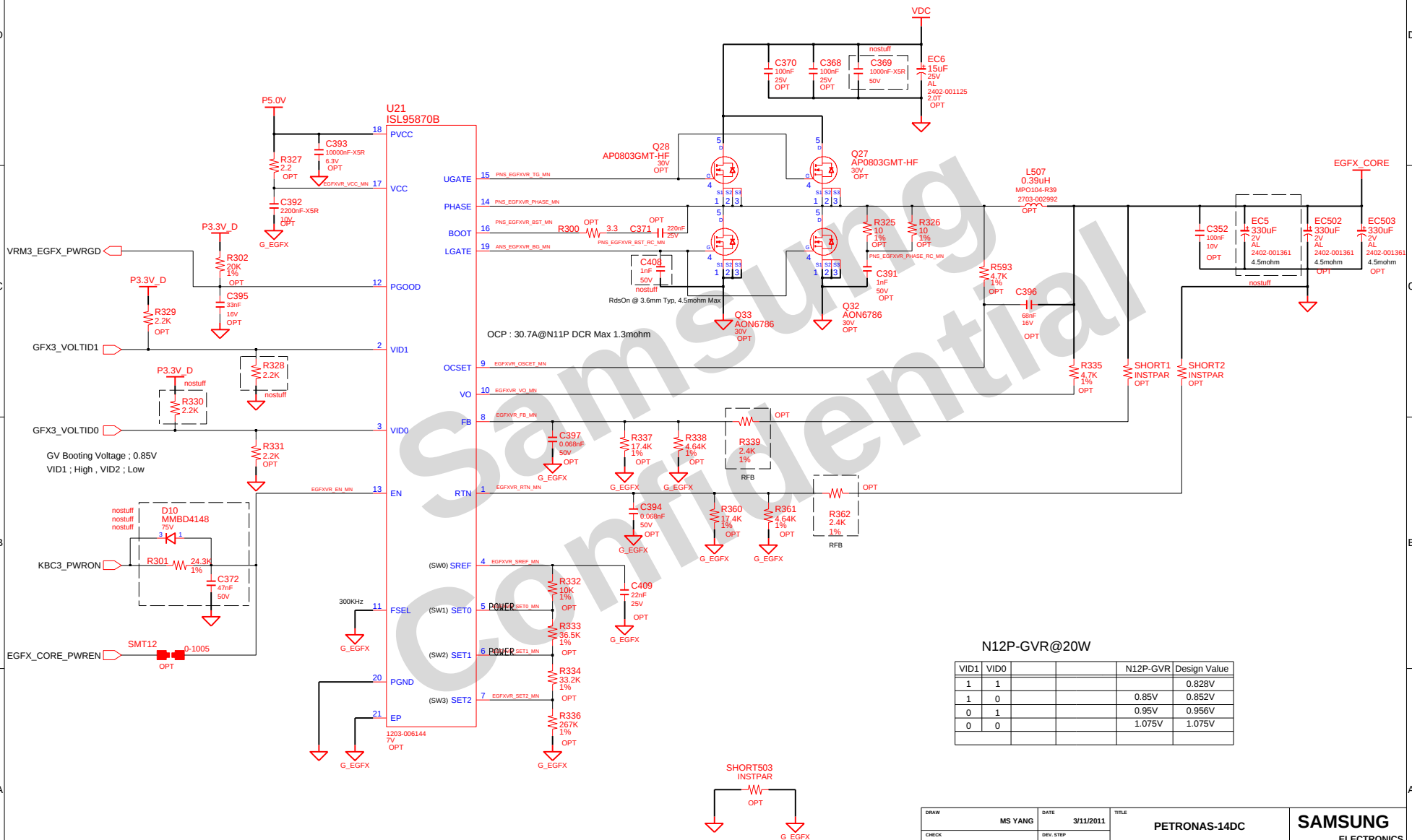


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Place next to phase1 highside FET



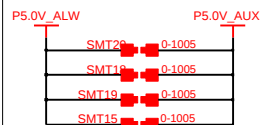
External Graphic Core Power



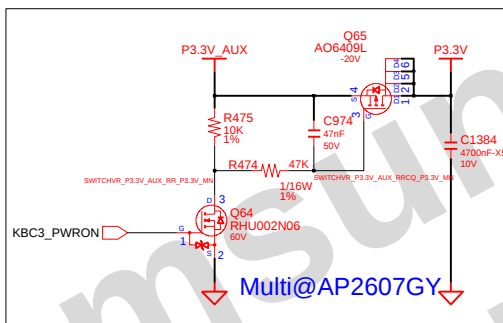
Switched Power 1

(P5.0V -> P3.3V -> EGFX_CORE -> P1.8V -> P1.5V -> P0.75V -> P1.05V -> P0.85V_SA -> CPU_CORE)

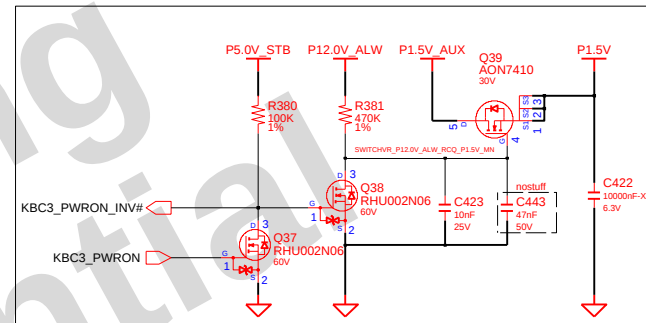
P5.0V_AUX



Switched Power On (P3.3V)

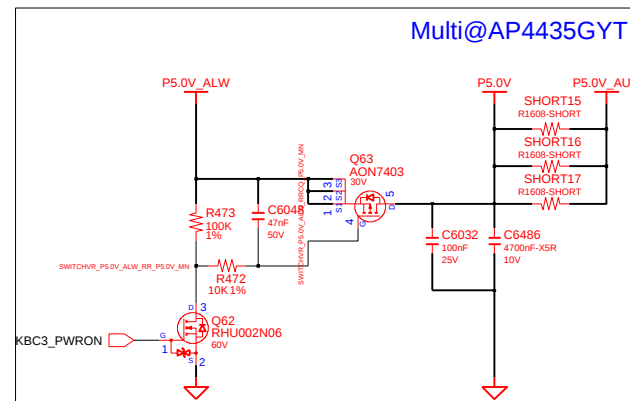


Switched Power On (P1.5V)



For nVIDIA GFX PWR Sequence
NVDD(EGFX_CORE) first and then FBVDDQ(qDDR3)

Switched Power On (P5.0V)



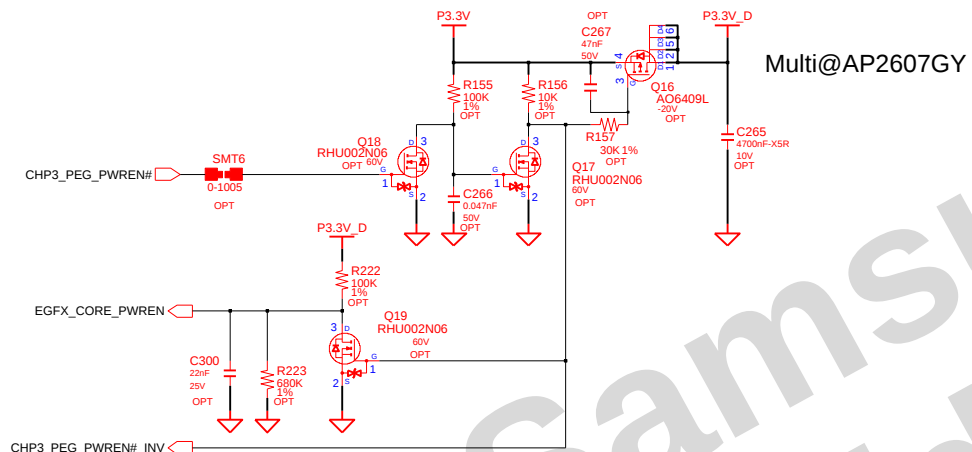
DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG
CHECK	MK KIM	DEV. STEP	MP		Switched PWR 2	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.2		Switched Power	PART NO.
MODULE CODE	undefined	LAST EDIT	August 15, 2011 11:04:51 AM			BA41-01666A
				PAGE	47	OF 51

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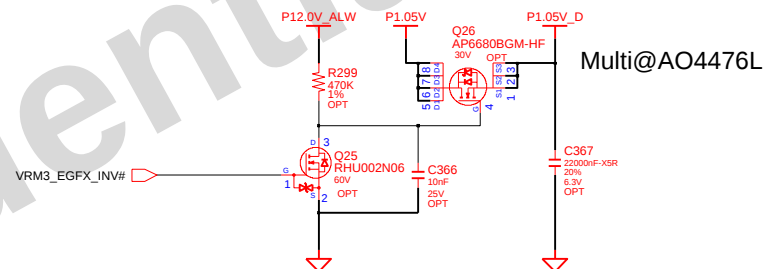
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Switched Power 2 (For nVidia GFX Power Sequence)

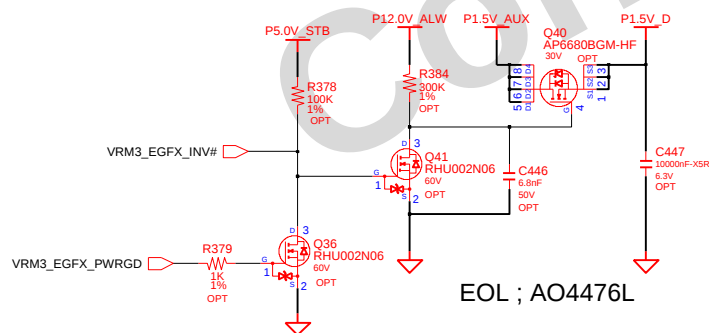
Discrete Switched Power (D3.3V : Max_1.2A)



Discrete Switched Power (D1.05V : Max 3.6A)

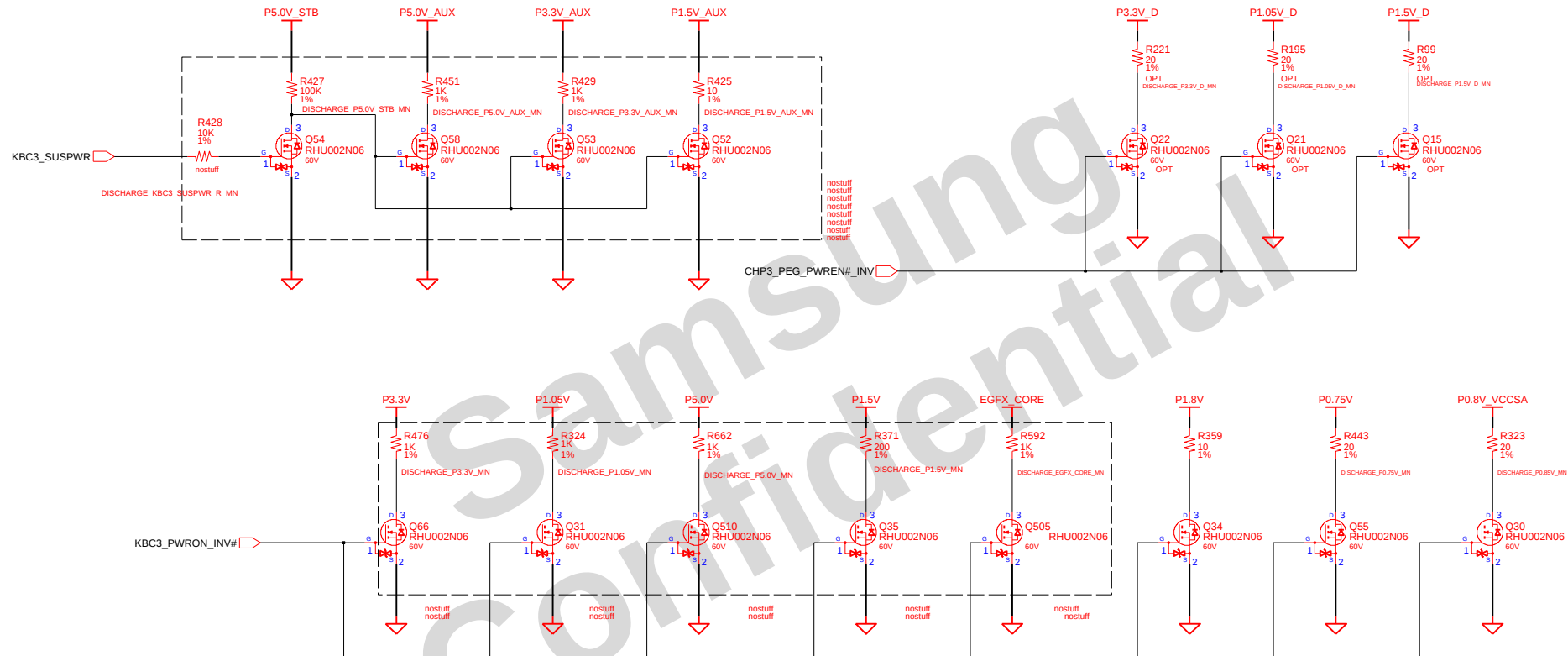


Discrete Switched Power (D1.5V : Max 5.0A)



DRAW	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG
CHECK	MK KIM	DEV. STEP	MP	Switched PWR		ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.2	FOR OPTIMUS PWR	PART NO.	BA41-01666A
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	48	OF 51

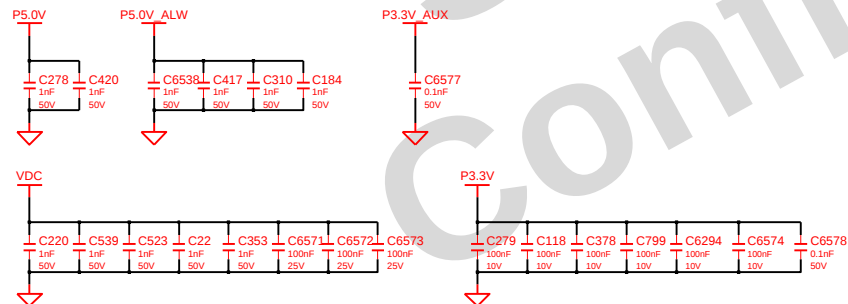
POWER DISCHARGER



DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC DISCHARGER LOGIC DISCHARGING LOGIC	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			PART NO. BA41-01666A
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	49	OF 51

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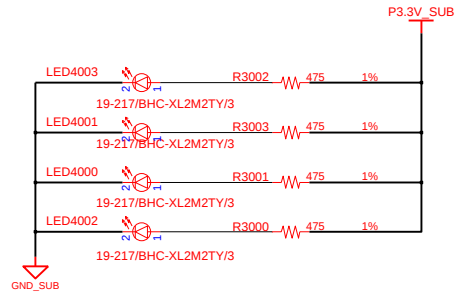
Diagram showing the connection of 8 pins (MT2, MT3, MT4, MT5, MT8, MT9, MT13, MT14) to the RMNT-30-76-1P connector. Each pin is connected to a corresponding pin on the connector via a vertical line and a triangle symbol.



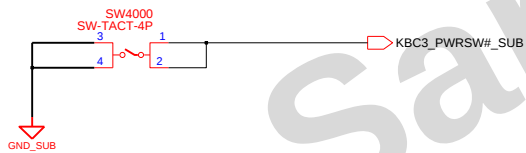
DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC	SAMSUNG ELECTRONICS		
CHECK	MK KIM	REV.	STEP				MP	MT Hole
APPROVAL	BL LEE	REV	REV 1.2				MT Hole	PART NO.
MODULE CODE		LAST EDIT					August 15, 2011 11:04:51 AM	PAGE 50 OF 51
						BA41-01666A		

USB SUB BOARD

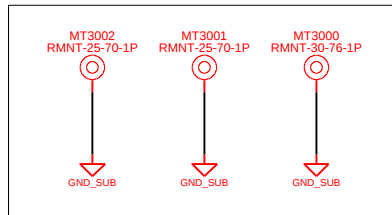
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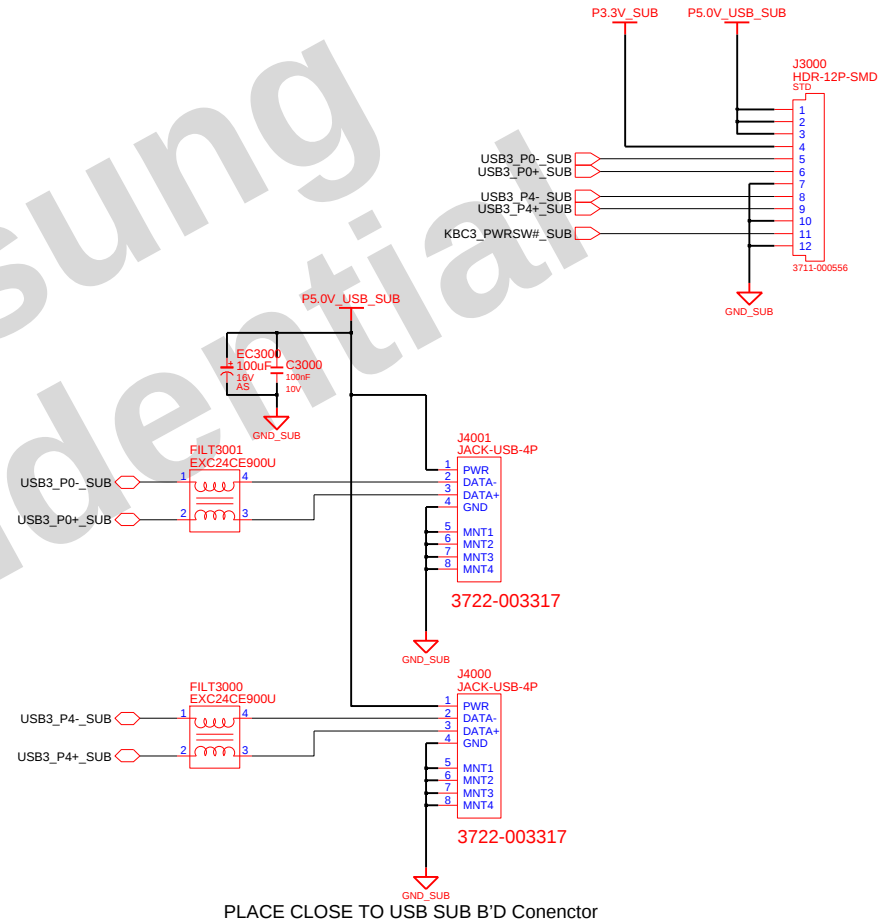
Power Switch Button



PCB Mount



SUB TO MAIN



PLACE CLOSE TO USB SUB B'D Conenctor

DESIGN	MS YANG	DATE	3/11/2011	TITLE	PETRONAS-14DC SUB BOARD SUB BOARD	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	MP			PART NO. BA41-01666A
APPROVAL	BL LEE	REV	REV 1.2			
MODULE CODE		LAST EDIT	August 15, 2011 11:04:51 AM	PAGE	51	OF 51

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