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Petronas-15

CPU : LLANO
Chip Set : AMD HUDSON M2(A60M)
GFX : PX
Remarks : SABINE PLATFORM

Model Name : Petronas-D 15
PBA Name : MAIN
PCB Code : BA41-01681A (GCE)
BA41-01681A (GBM)
BA41-01681A (NY)
Dev. Step : PR
Revision : 1.0
T.R. Date : 2011.05.17

Design	CHECK	APPROVAL

Owner : SEC Mobile R & D Signature : X

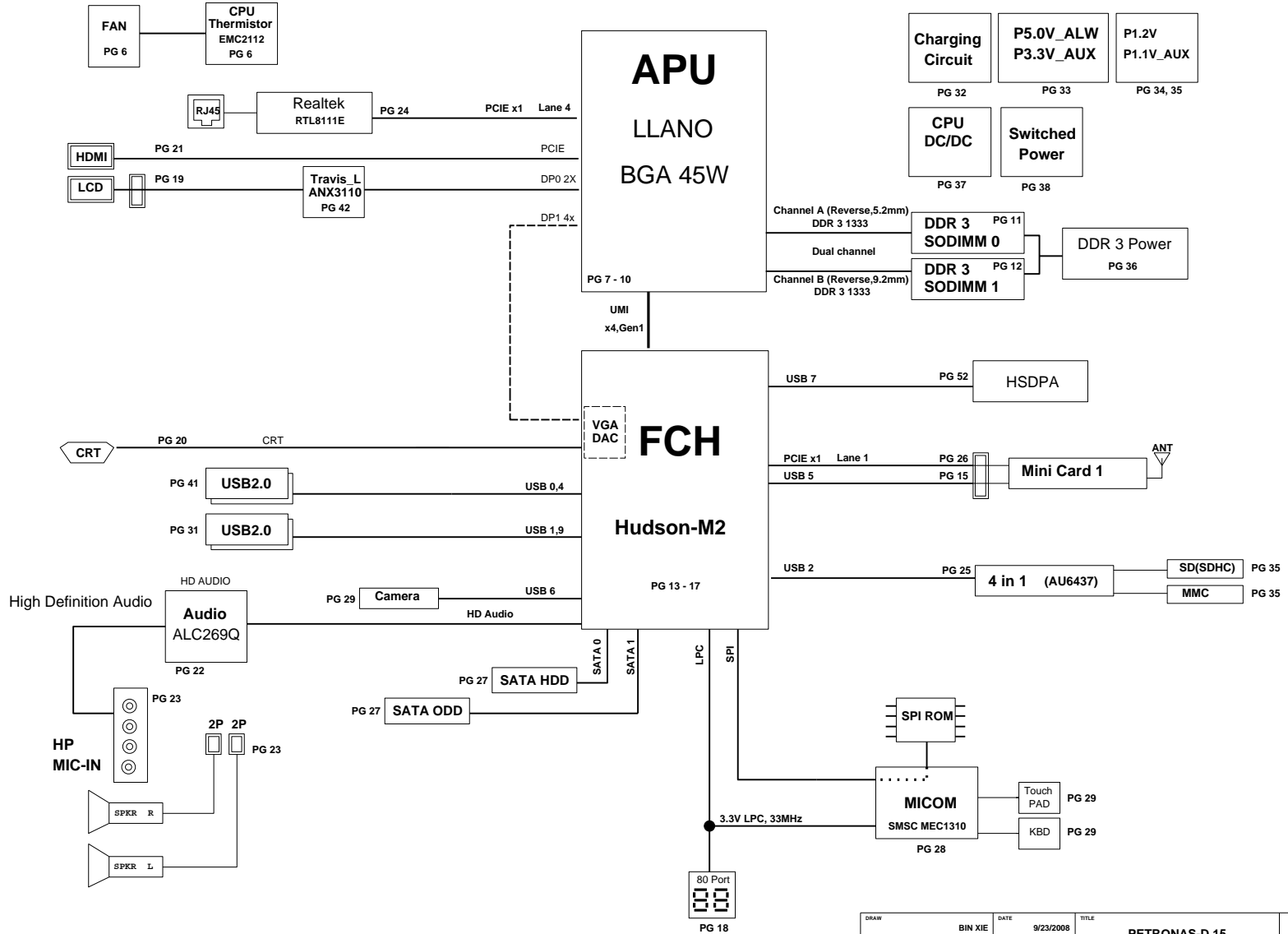
- sheet01 : Cover
- sheet02 : BLOCK DIAGRAM
- sheet03 : BOARD INFORMATION
- sheet04 : POWER DIAGRAM
- sheet05 : CLOCK DISTRIBUTION
- sheet06 : Thermal Sensor
- sheet07 : APU
- sheet08 : APU
- sheet09 : APU
- sheet10 : APU
- sheet11 : DDR3 SODIMM #0
- sheet12 : DDR3 SODIMM #1
- sheet13 : FCH-Hudson M2
- sheet14 : FCH-Hudson M2
- sheet15 : FCH-Hudson M2
- sheet16 : FCH-Hudson M2
- sheet17 : FCH-Hudson M2
- sheet18 : 80 port
- sheet19 : GPU
- sheet20 : GPU
- sheet21 : GPU
- sheet22 : GPU
- sheet23 : GPU
- sheet24 : VRAM
- sheet25 : VRAM
- sheet26 : VRAM
- sheet27 : VRAM
- sheet28 : GPU STRAPS

- sheet29 : LVDS/CAMERA
- sheet30 : CRT
- sheet31 : HDMI
- sheet32 : Audio - ALC269
- sheet33 : Audio - HP/MIC
- sheet34 : LAN (Realtek RTL8111E)
- sheet35 : 4-in-1 card (AU6437)
- sheet36 : WLAN
- sheet37 : SATA interface
- sheet38 : MICOM / BIOS
- sheet39 : MICOM Glue Logic (KBD / TP)
- sheet40 : LED for 15"
- sheet41 : USB connector
- sheet42 : Power - charger
- sheet43 : Power - P3.3V_AUX / P5.0V_AUX
- sheet44 : Power - P1.1V_AUX (Chipset Power)
- sheet45 : Power - P1.2V (Chipset Power)
- sheet46 : Power - DDR3
- sheet47 : Power - CPU VRM
- sheet48 : Power - GPU CORE
- sheet49 : Power - Switched Power 1
- sheet50 : Power - Switched Power 2
- sheet51 : Power - Power Discharge
- sheet52 : Mount Hole / Thermal Hole
- sheet53 : USB Sub B'D
- sheet54 : Travis_L

DRAW	BIN XIE	DATE	10/10/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	MAIN		
APPROVAL	BC LEE	REV	REV 1.0	COVER	PART NO.	
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM		BA41-####A	
			PAGE	1	OF	54

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BLOCK DIAGRAM



DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15 MAIN BLOCK DIAGRAM	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	LEI GUO	DEV. STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT				
				May 10, 2011 10:53:25 AM	PAGE	2 OF 54

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BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails	Active in
VDC P3.3V_MICOM Primary DC system power supply (7 to 21V) P5.0V_ALW 3.3V always power rail (for Micom) P5.0V_STB 5.0V always power rail P5.0V_STB 5.0V always power rail	S4 - S5
P5.0V_AUX 5.0V switched on power rail (off in S4-S5) P3.3V_AUX 3.3V switched on power rail (off in S4-S5) P1.1V_AUX 1.5V power rail for DDR (off in S4-S5)	S3
P5.0V 5.0V switched power rail (off in S3-S5) P3.3V 3.3V switched power rail (off in S3-S5) P1.1V 1.1V switched power rail (off in S3-S5) P0.75V 0.75V power rail for DDR (off in S3-S5)	S0
CPU_CORE Core Voltage for CPU CPU_VDDNB Core Voltage for CPU P1.2V (VDDP/VDDR) VCC for APU	S0

Crystal / Oscillator			
TYPE	FREQ	DEVICE	USAGE
Crystal	32.768KHz	FCH	Real Time Clock
Crystal	25MHz	LAN	Wired LAN
Crystal	25MHz	FCH	

LCD Pannel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

USB PORT Assign		PCI Express Assign	
PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	SYSTEM PORT 1	1	Mini Card 1 (WLAN)
1	SYSTEM PORT 2	2	NC
2	MMC 14"	3	NC
3	USIM	4	NC
4	SYSTEM PORT 3	5	NC
5	Mini Card 1 (WLAN)	6	NC
6	Camera	7	NC
7	HSDPA	8	NC
8	BLUETOOTH		
9	SYSTEM PORT 4		
10	NC		
11	NC		
12	NC		
13	NC		

I ² C / SMB Address			
Devices	Address	Hex	Bus
IBEX PEAK	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	-

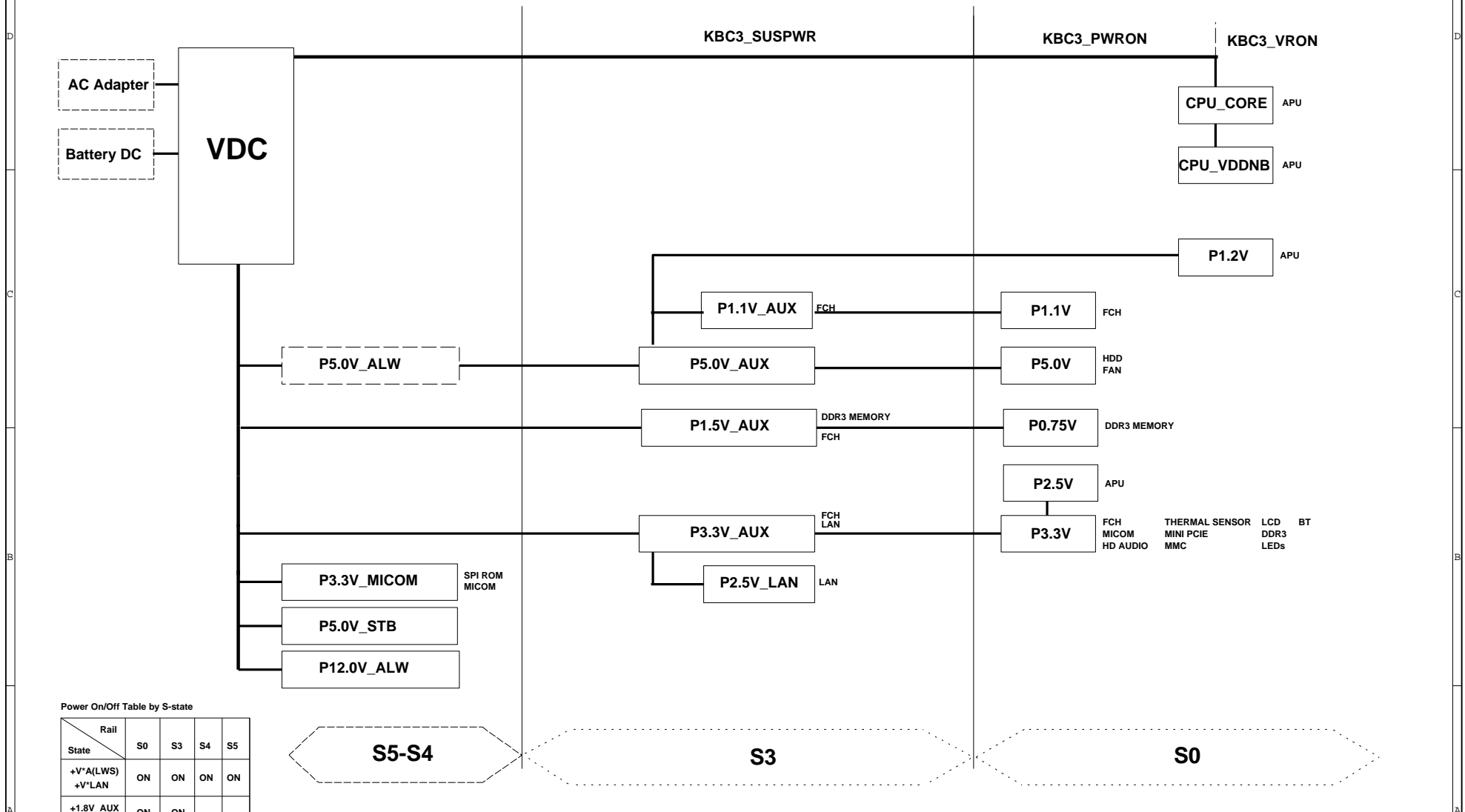
SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD
1	ODD
2	NC
3	NC
4	NC
5	NC

DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15 MAIN BOARD INFO	SAMSUNG ELECTRONICS PART NO: BA41-####A
CHECK	LEI GUO	DEV. STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE 3 OF 54		

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POWER DIAGRAM

Rev 0.1



Power On/Off Table by S-state

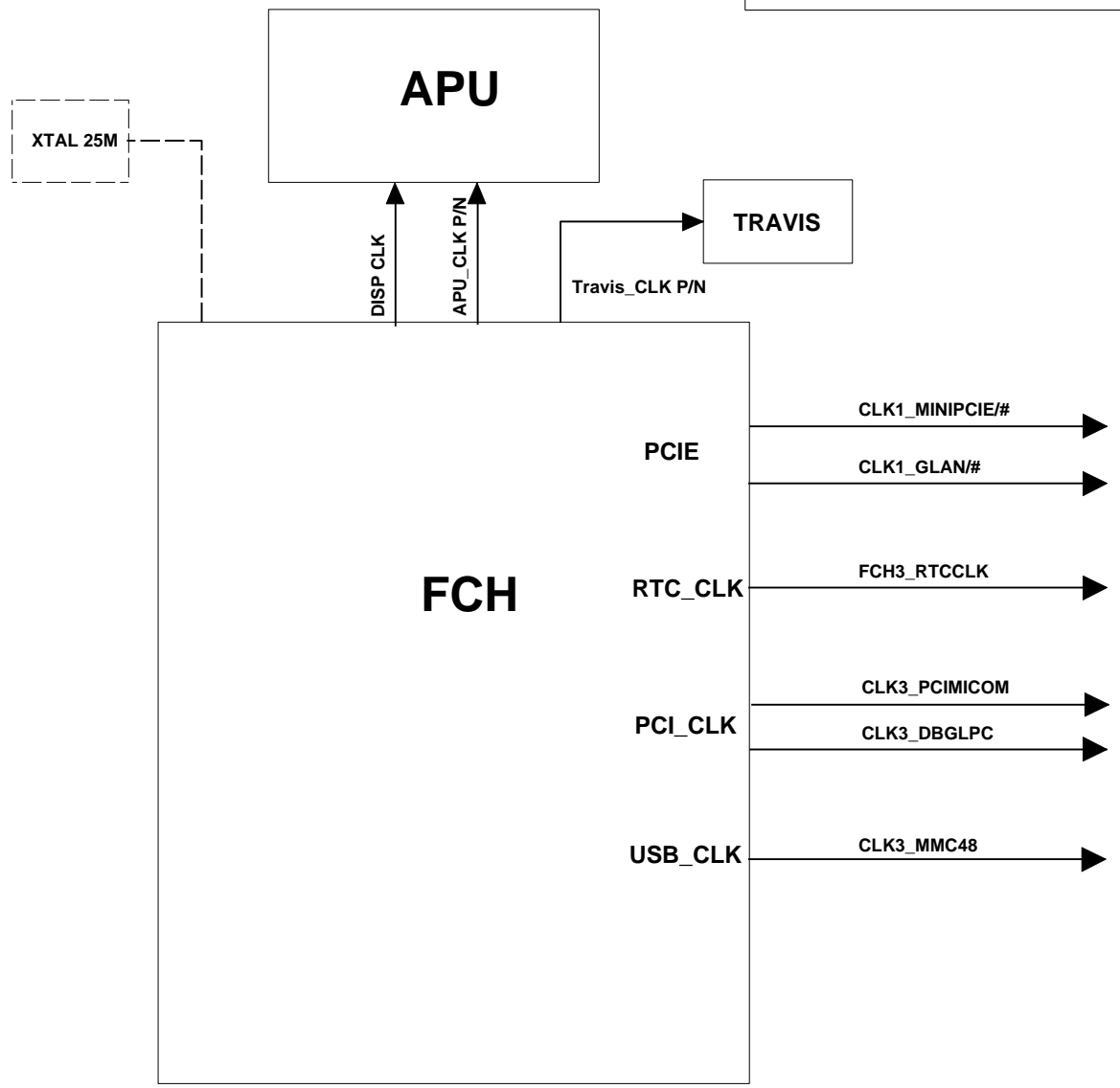
Rail \ State	S0	S3	S4	S5
+V*A(LWS)	ON	ON	ON	ON
+V*LAN	ON	ON	ON	ON
+1.8V_AUX	ON	ON	---	---
+0.9V	ON	ON	---	---
+V*AUX	ON	ON	---	---
+V	ON	---	---	---
+V* (CORE)	ON	---	---	---



DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	MAIN		
APPROVAL	BC LEE	REV	REV 1.0	POWER DIAGRAM	PART NO.	BA41-####A
MODULE CODE		LAST EDIT			May 10, 2011 10:53:25 AM	PAGE 4 OF 54

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CLOCK DISTRIBUTION Rev. 0.1



DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15 MAIN CLOCK DIAGRAM	SAMSUNG ELECTRONICS <small>PART NO. BA41-####A</small>
CHECK	LEI GUO	DEV. STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM			
				PAGE	5	OF 54

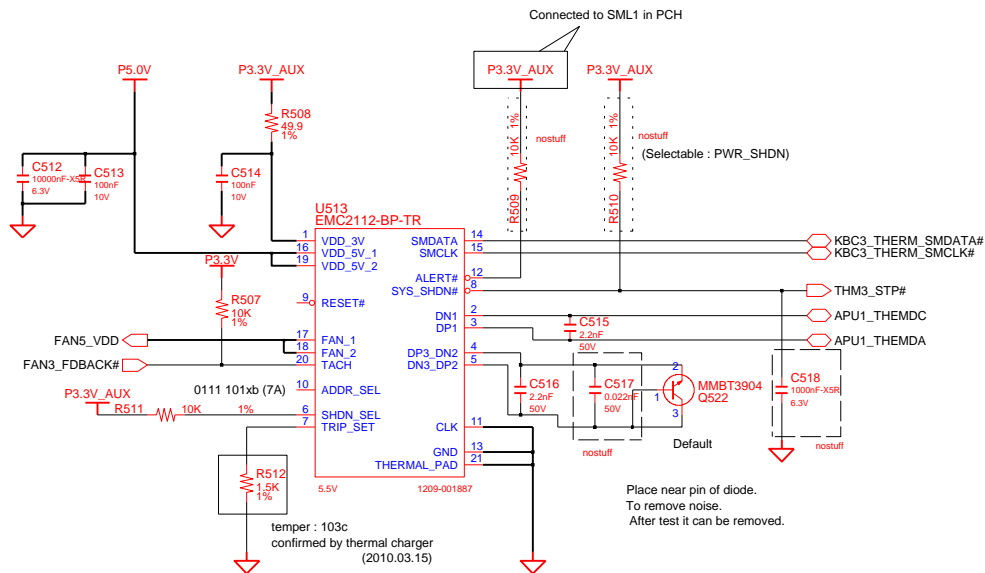
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THERMAL SENSOR & FAN CONTROL

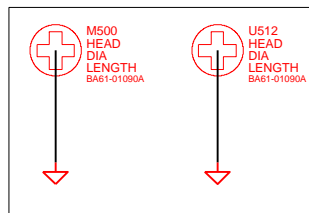
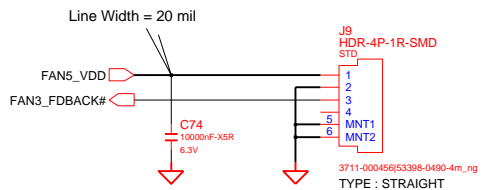
ADDRESSSEL MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

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



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

FAN PEM

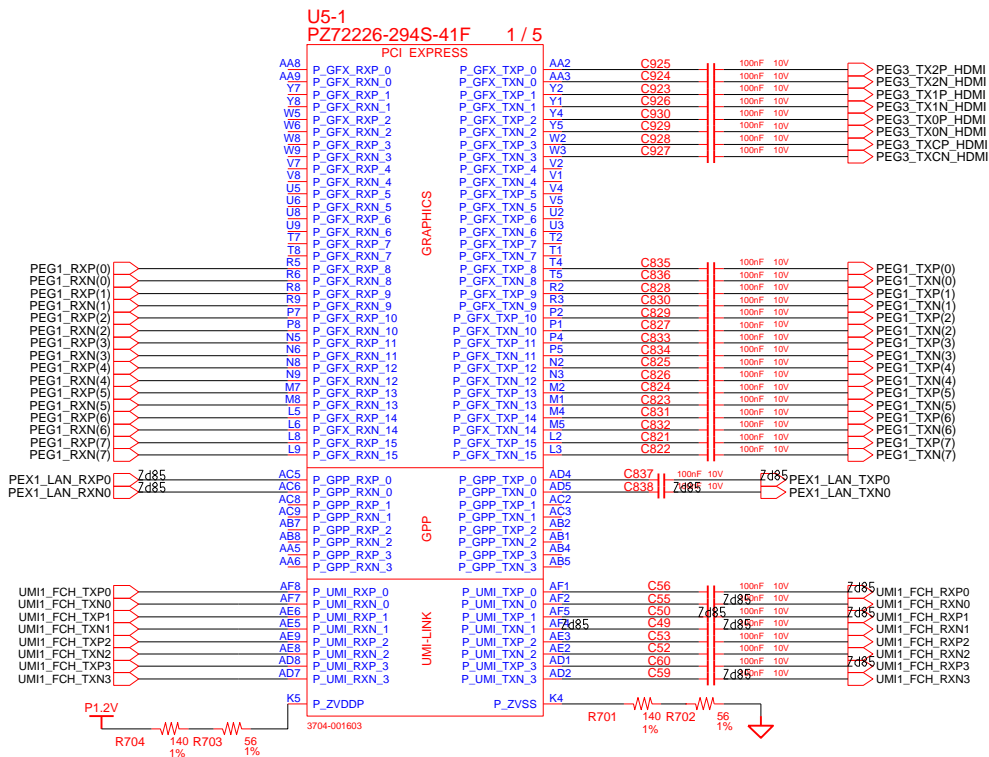


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CHECK	LEI GUO	DEV.STEP	PV	THERMAL SENSOR		
APPROVAL	BC LEE	REV	REV 1.0	THERMAL SENSOR EMC2112	PART NO.	BA41-####A
MODULE CODE		LAST EDIT				
				May 10, 2011 10:53:25 AM	PAGE	6 OF 54

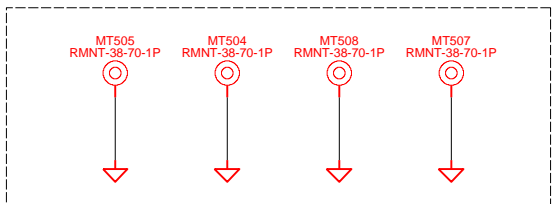
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Llano Processor (FS1)



CPU MOUNT

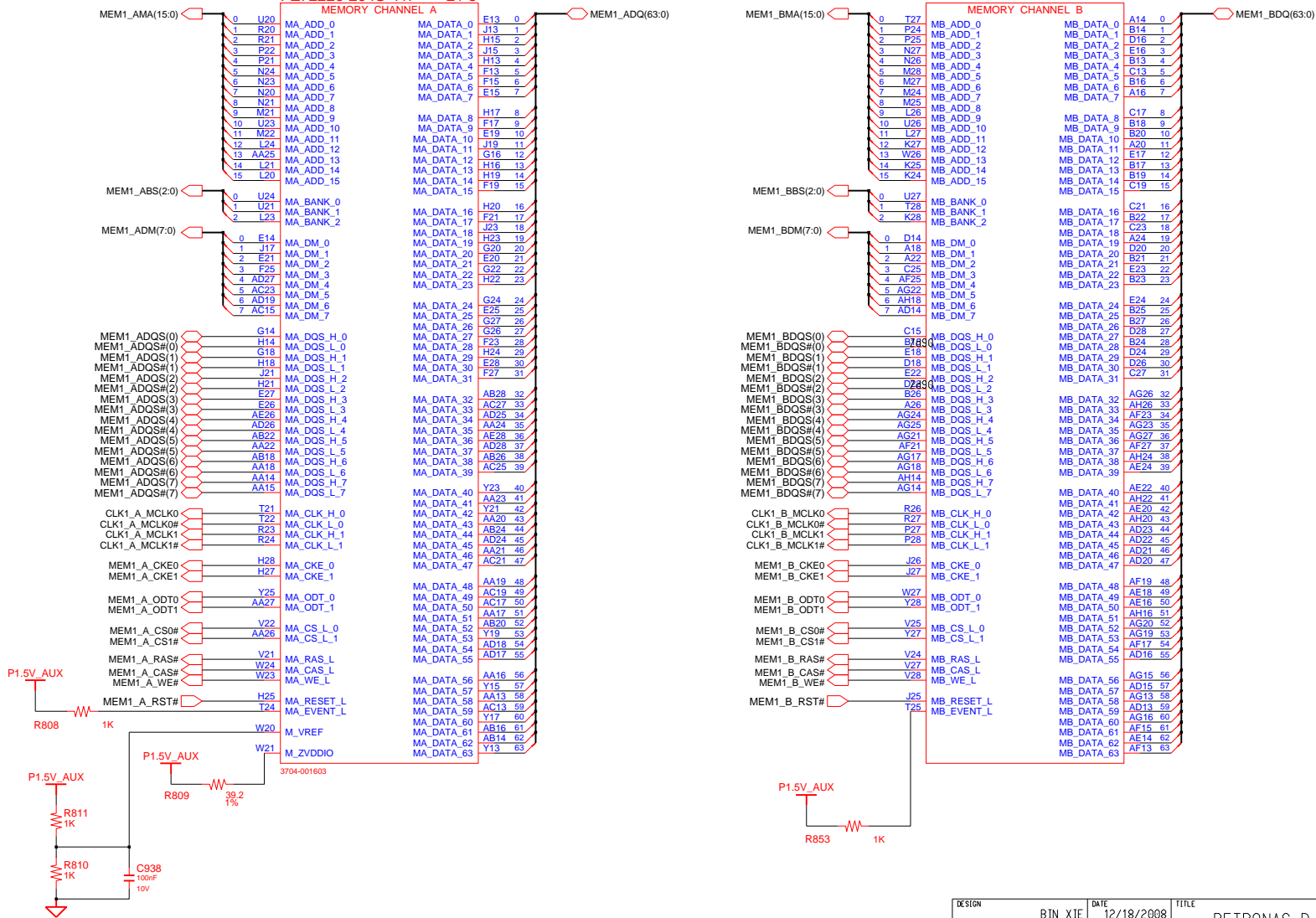


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CHECK	LEI GUO	DEV. STEP	PV	Llano		
APPROVAL	BC LEE	REV	REV 1.0	1/4		PART NO. BA41-####A
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE	7 OF 54

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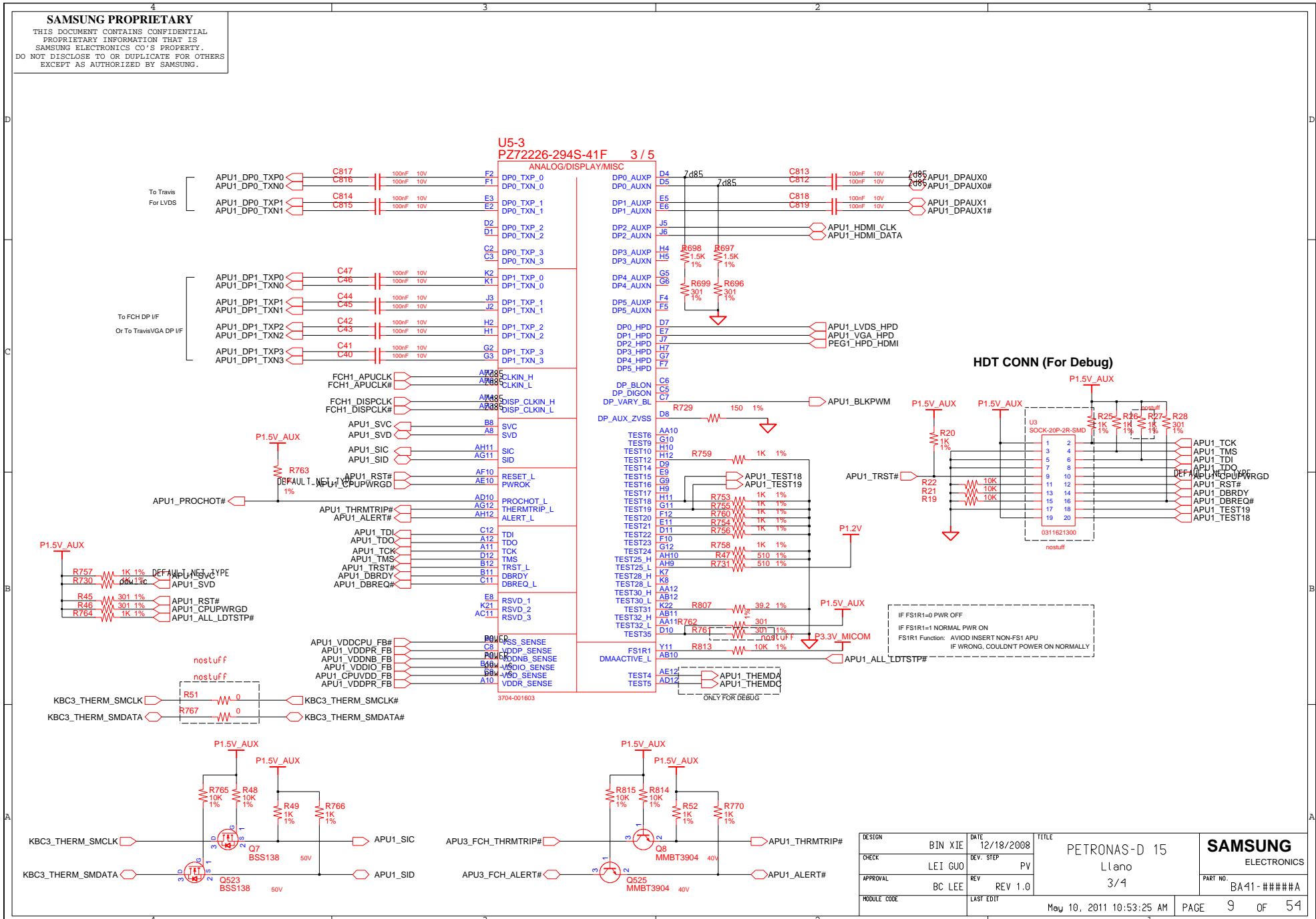
**U5-2
PZ72226-294S-41F 2 / 5**



DESIGN	BIN XIE	DATE	12/18/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-#####A
CHECK	LEI GUO	DEV. STEP	PV	Llano		
APPROVAL	BC LEE	REV	REV 1.0	2/4		
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 8 OF 54	

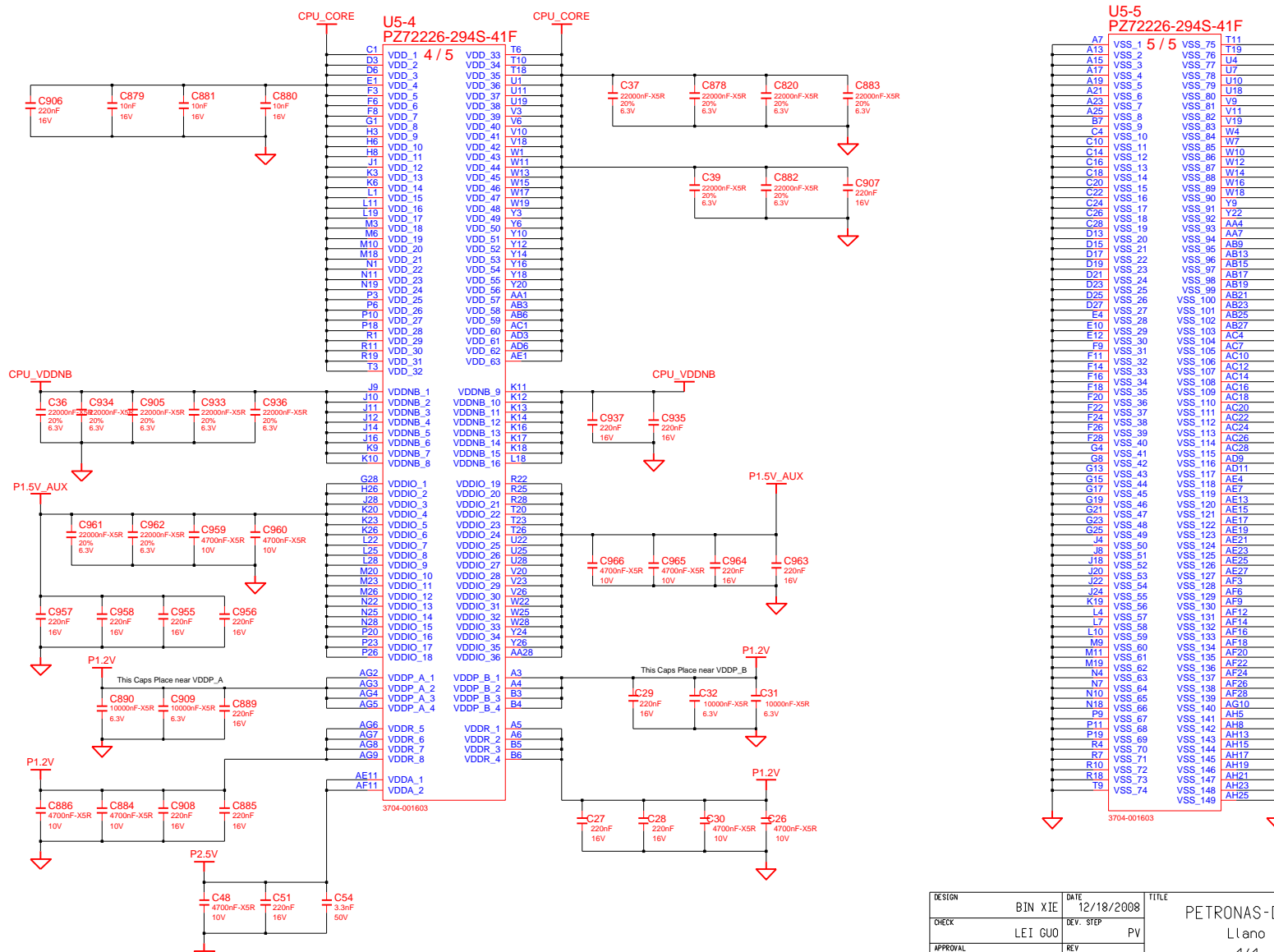
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DESIGN	BIN XIE	DATE	12/18/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-#####
CHECK	LEI GUO	DEV. STEP	PV	Llano		
APPROVAL	BC LEE	REV	REV 1.0	4/4		
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 10 OF 54	

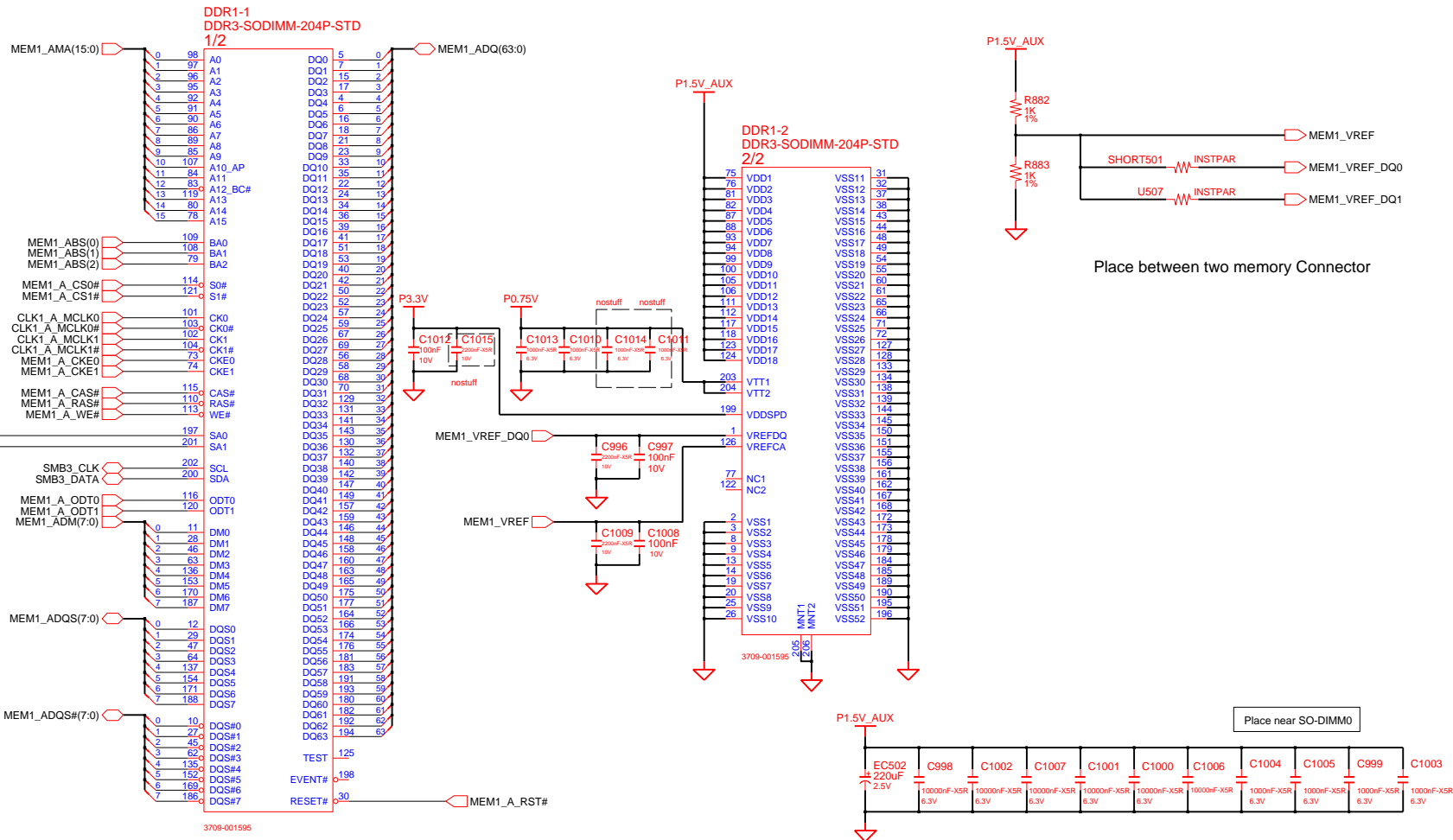
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SO-DIMM#0 : 2nd SO-DIMM

DDR SO-DIMM #0

Height : 9.2 mm (STD)



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

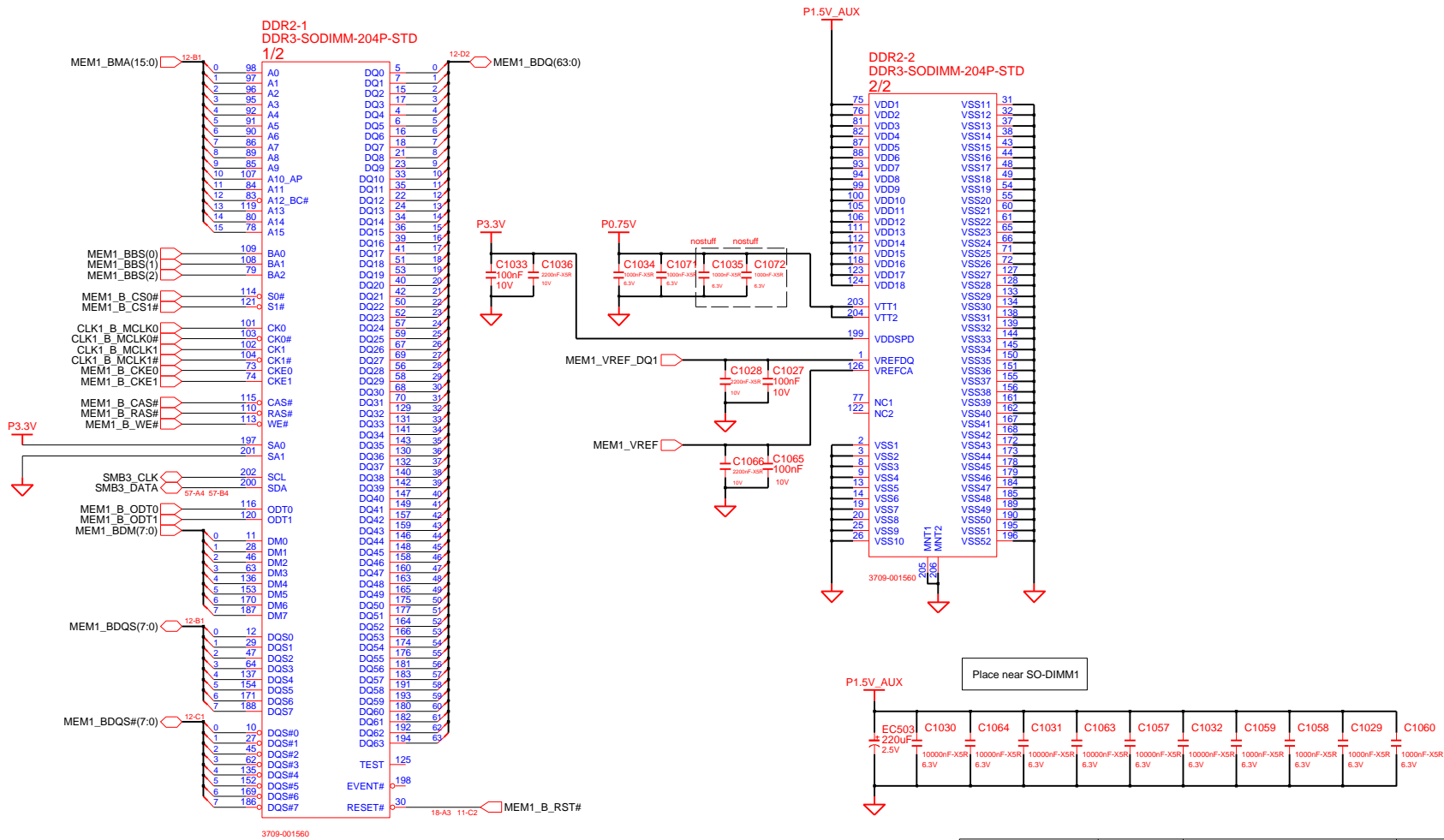
DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	SODIMM 0		
APPROVAL	BC LEE	REV	REV 1.0	DDR3		PART NO. BA41-####A
MODULE CODE	undefined	LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	11	OF 54

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SO-DIMM#1 : 1st SO-DIMM

DDR SO-DIMM #1

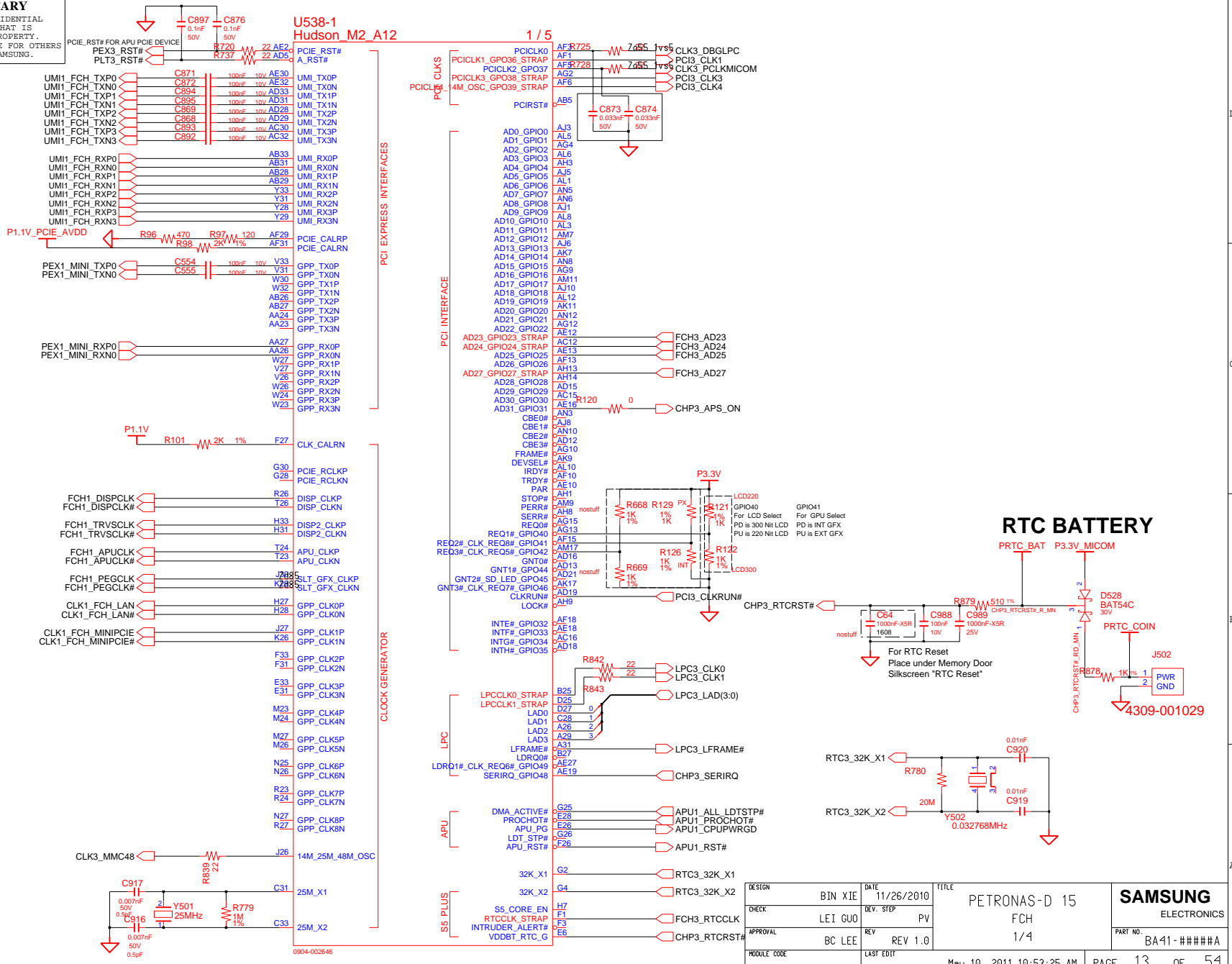
Height : 4.0mm (STD)



DRAW	BIN XIE	DATE	2/27/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	SODIMM 1		
APPROVAL	BC LEE	REV	REV 1.0	DDR3		PART NO. BA41-####A
MODULE CODE	LAST ENT		May 10, 2011 10:53:25 AM		PAGE	12 OF 54

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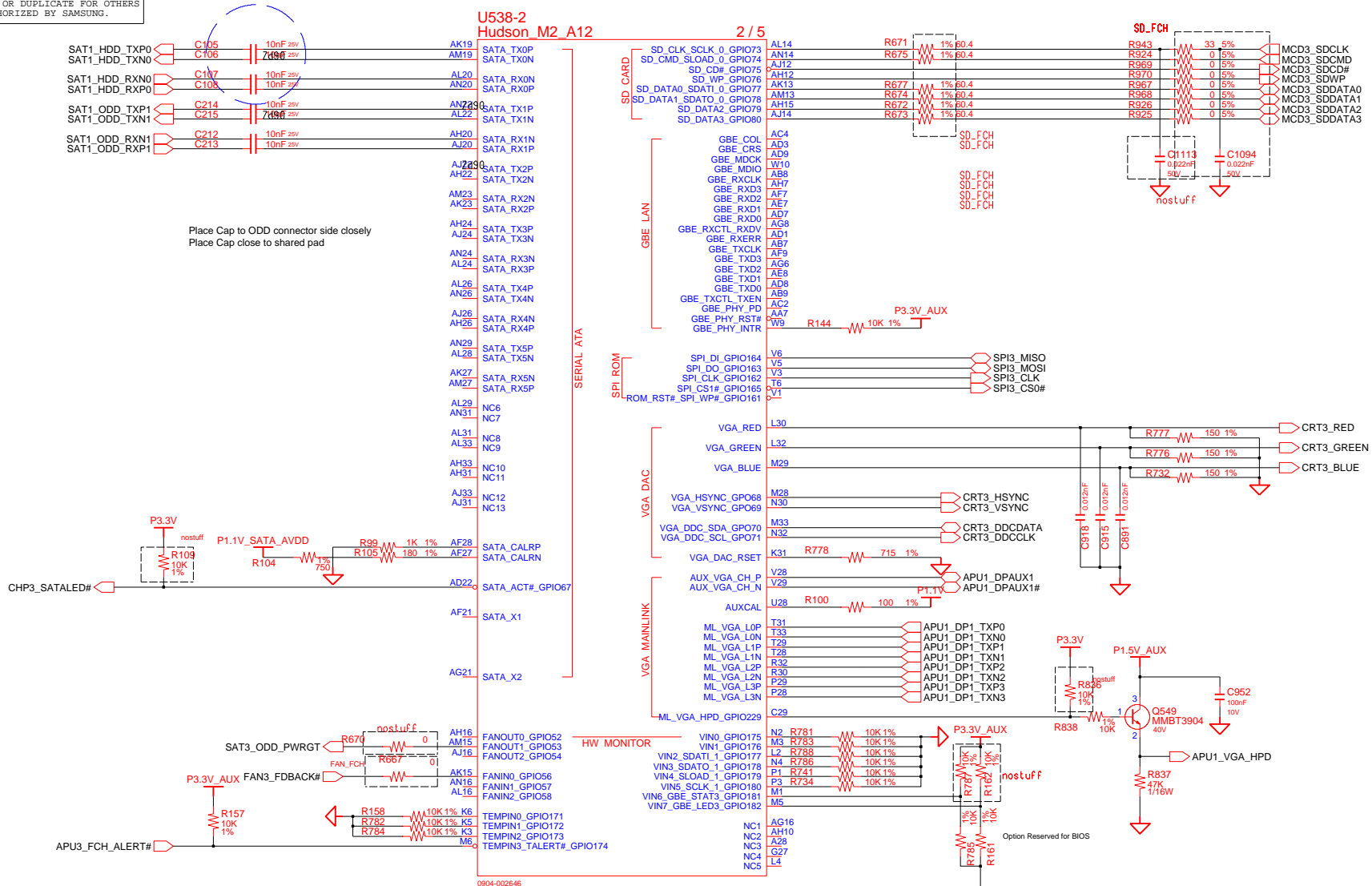


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CHECK	LEI GUO	DEV. STEP	PV	FCH	1/4		PART NO. BA41-#####A
APPROVAL	BC LEE	REV	REV 1.0				
MODULE CODE		LAST EDIT					
May 10, 2011 10:53:25 AM						PAGE	13 OF 54

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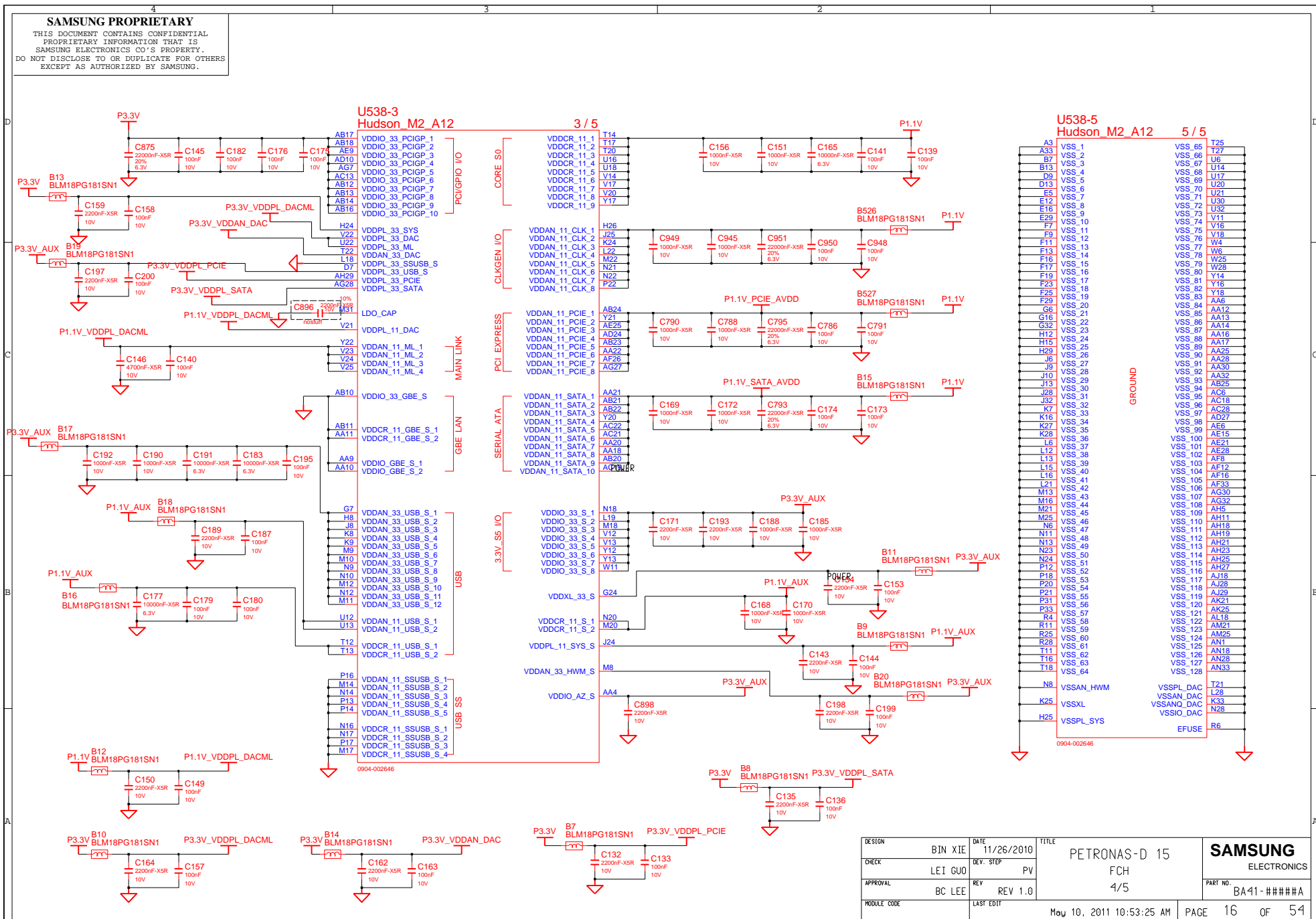
Place Cap to HDD connector side closely



DESIGN	BIN XIE	DATE	11/26/2010	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-#####A
CHECK	LEI GUO	DEV. STEP	PV	FCH		
APPROVAL	BC LEE	REV	REV 1.0	2/4		
MODULE CODE		LAST EDIT				
				May 10, 2011 10:53:25 AM	PAGE 14 OF 54	

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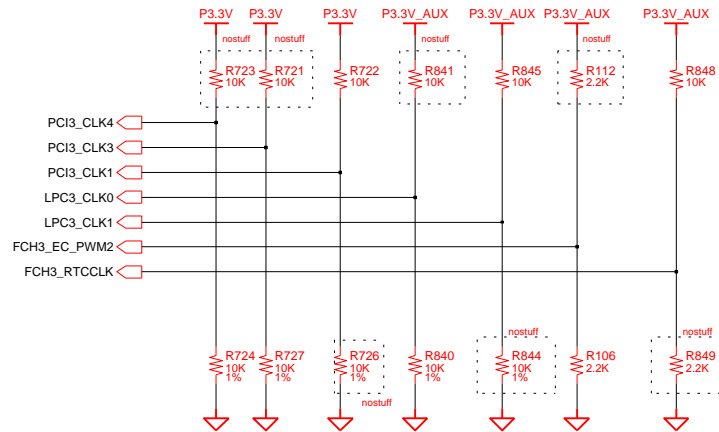
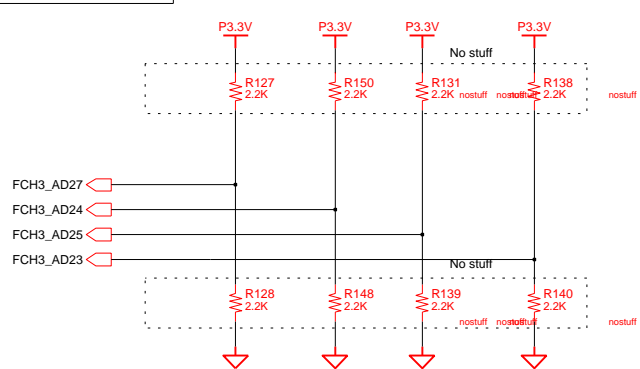
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DESIGN	BIN XIE	DATE	11/26/2010	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-#####A
CHECK	LEI GUO	DEV. STEP	PV	FCH		
APPROVAL	BC LEE	REV	REV 1.0	4/5		
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 16 OF 54	

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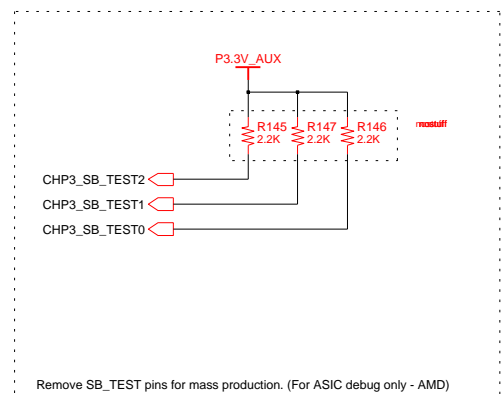
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DEBUG STRAPS

	PCI3_AD(27)	PCI3_AD(25)	PCI3_AD(24)	PCI3_AD(23)
STRAP HIGH	USE PCI PLL	Normal REFCLK Termination	DISABLE I2C ROM	DISABLED BOOT FROM PCI MEM
STRAP LOW	BYPASS PCI PLL	Inverted REFCLK Termination	ENABLE I2C ROM	ENABLED BOOT FROM PCI MEM

	PCI3_CLK1	PCI3_CLK3	PCI3_CLK4	LPC3_CLK0	LPC3_CLK1	EC_PWM2	RTC_CLK
STRAP HIGH	ALLOW PCIE GEN2 DEFAULT	USER DEBUG STRAPS	NON_FUSION CLOCK MODE	EC ENABLED	CLKGEN ENABLED	LPC ROM	S5 PLUS MODE DISABLE DEFAULT
STRAP LOW	FORCE PCIE GEN1	IGNORE DEBUG STRAPS	FUSION CLOCK MODE DEFAULT	EC DISABLED	CLKGEN DISABLED	SPI ROM DEFAULT	S5 PLUS MODE ENABLED

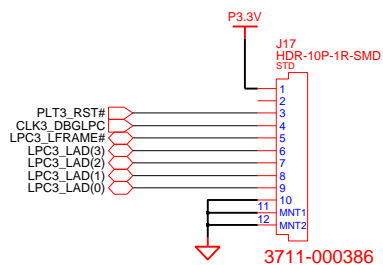


DRAW	BIN XIE	DATE	09/16/2010	TITLE	PETRONAS-D 15 FCH Strap	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV.STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0		PART NO.	BA41-####A
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE	17 OF 54

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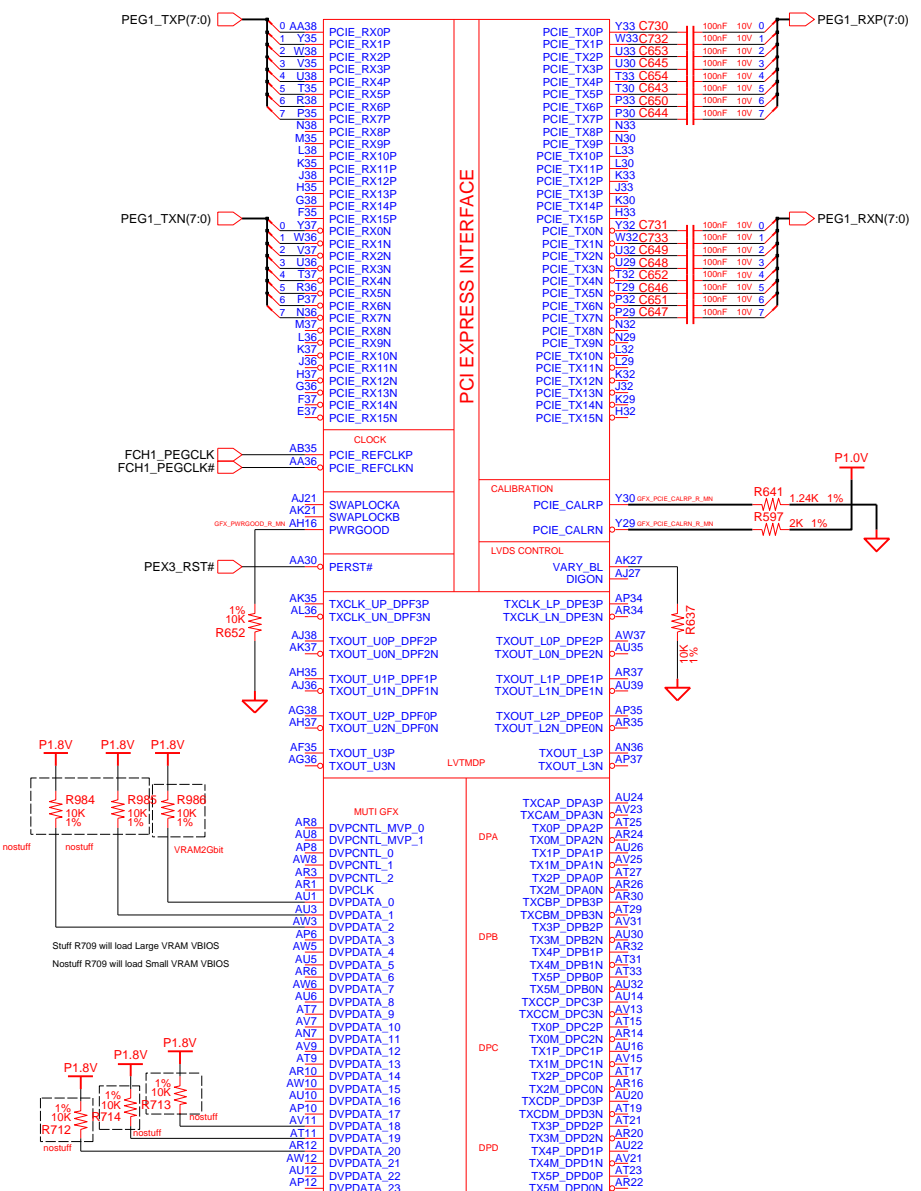
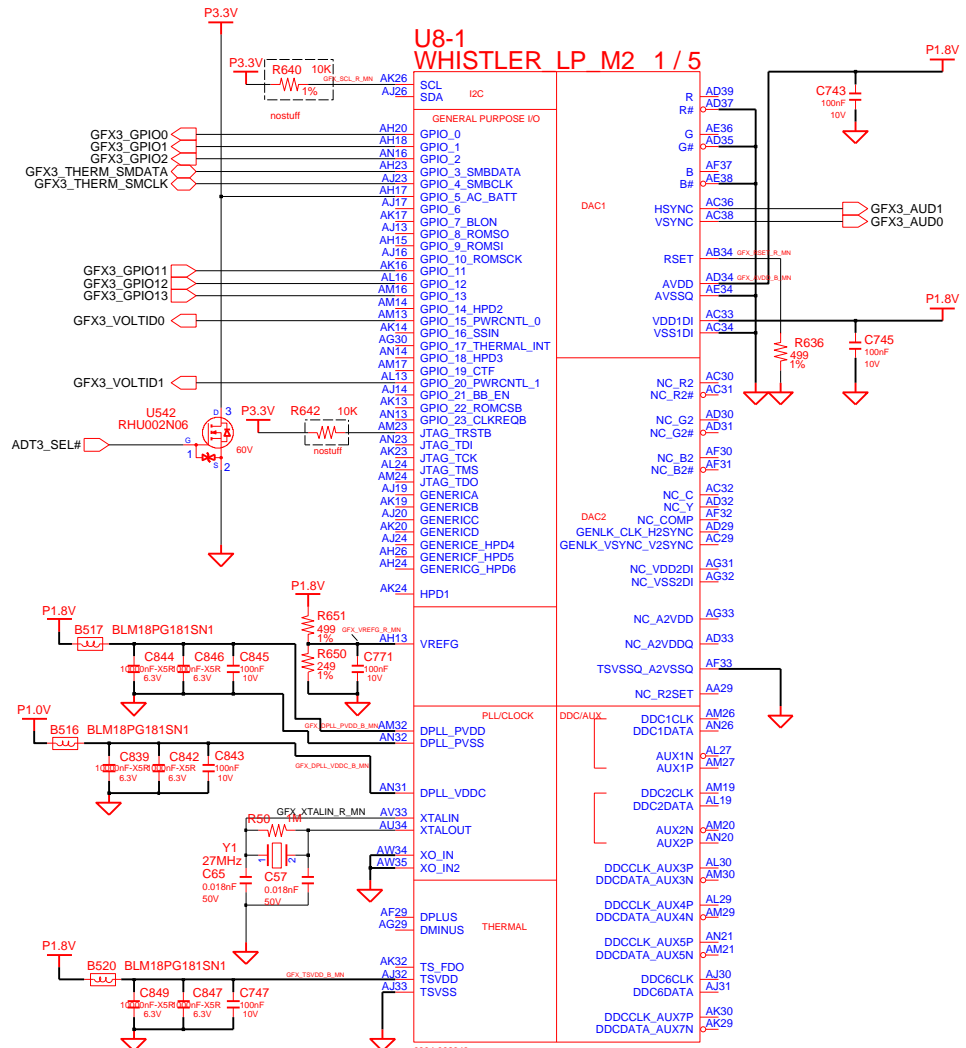
80H PORT DEBUG



DESIGN	BIN XIE	DATE	11/10/2008	TITLE	PETRONAS-D 15 DEBUG PORT 80H DECODER	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0	PART NO.	BA41-####A	
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	18	OF 54

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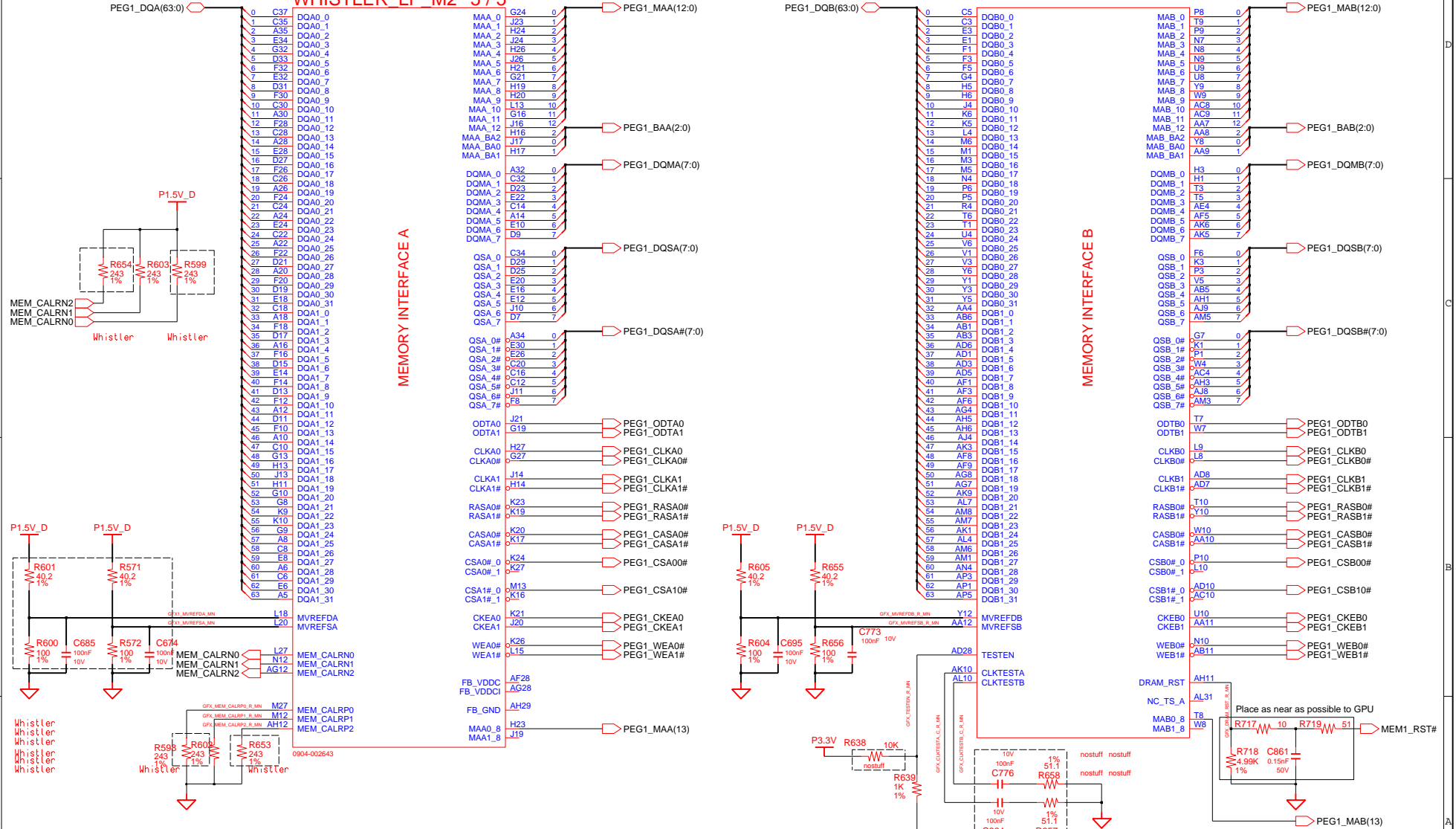
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DESIGN	BIN XIE	DATE	03/14/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-#####A
CHECK	LEI GUO	DEV. STEP	PV		N10X_40NM(1/5)	
APPROVAL	BC LEE	REV	REV 1.0		N10X_40NM(1/5)	
MODULE CODE		LAST EDIT				
				May 10, 2011 10:53:25 AM	PAGE	19 OF 54

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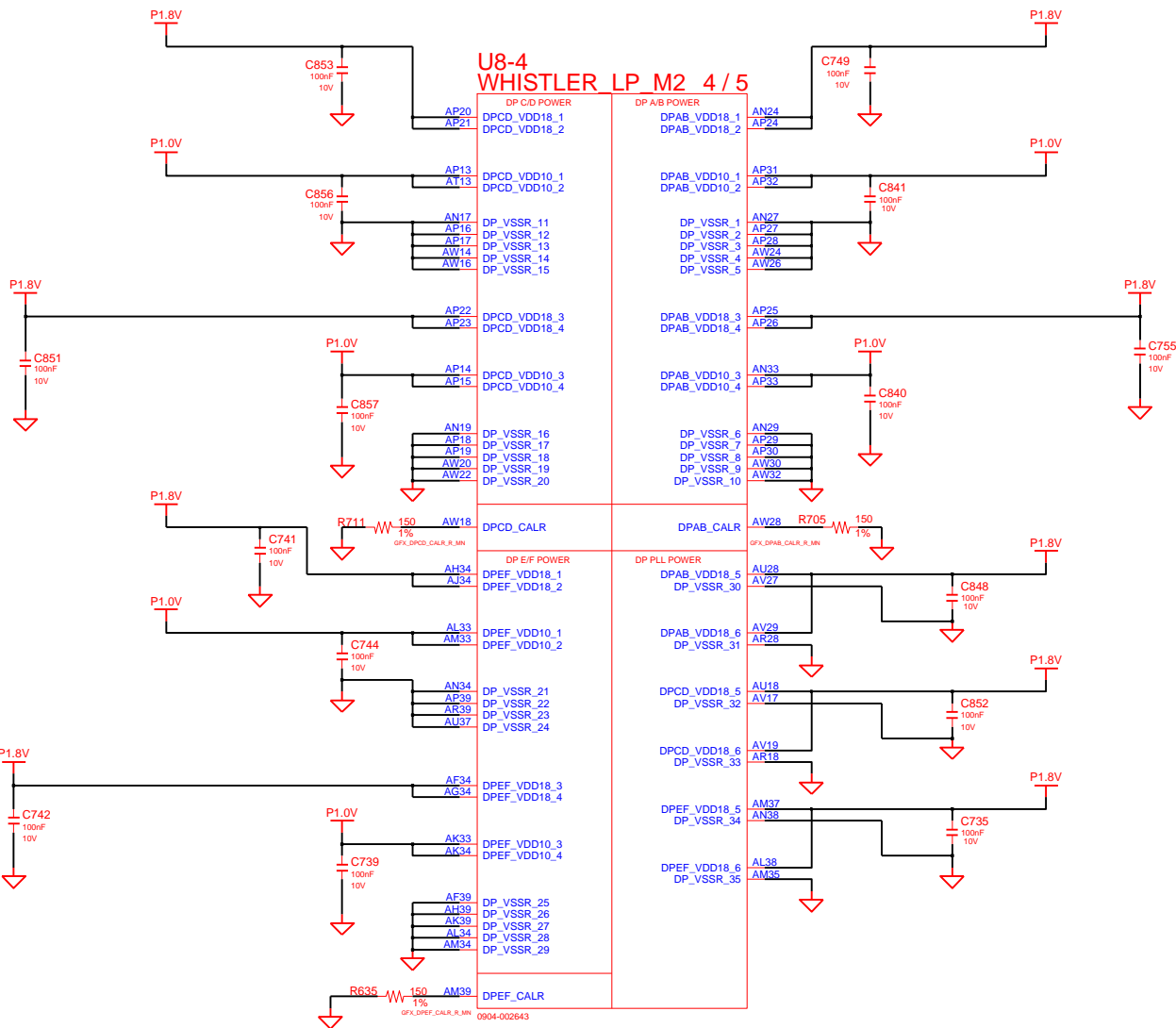
**U8-5
 WHISTLER LP_M2 5 / 5**



DESIGN	BIN XIE	DATE	03/14/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-#####A
CHECK	LEI GUO	DEV. STEP	PV		N10X_40NM(2/5)	
APPROVAL	BC LEE	REV	REV 1.0		N10X_40NM(2/5)	
MODULE CODE		LAST EDIT				

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DESIGN	BIN XIE	DATE	03/14/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	LEI GUO	DEV. STEP	PV	N10X_40NM(3/5)		
APPROVAL	BC LEE	REV	REV 1.0	N10X_40NM(3/5)		
MODULE CODE		LAST EDIT				
				May 10, 2011 10:53:25 AM	PAGE	21 OF 54

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U8-3 WHISTLER LP M2 3 / 5

MEM I/O

- G11 VDDR1_1
- G14 VDDR1_2
- G17 VDDR1_3
- G20 VDDR1_4
- G23 VDDR1_5
- G26 VDDR1_6
- G29 VDDR1_7
- H10 VDDR1_8
- J7 VDDR1_9
- J9 VDDR1_10
- K6 VDDR1_11
- K11 VDDR1_12
- K13 VDDR1_13
- L7 VDDR1_14
- L12 VDDR1_15
- L16 VDDR1_16
- L21 VDDR1_17
- L23 VDDR1_18
- L26 VDDR1_19
- M11 VDDR1_20
- N11 VDDR1_21
- P7 VDDR1_22
- R11 VDDR1_23
- U7 VDDR1_24
- U11 VDDR1_25
- Y7 VDDR1_26
- Y11 VDDR1_27
- AC7 VDDR1_28
- AD11 VDDR1_29
- AF7 VDDR1_30
- AG10 VDDR1_31
- AJ7 VDDR1_32
- AK8 VDDR1_33
- AL9 VDDR1_34

LEVEL TRANSLATION

- AF26 VDD_CT_1
- U7 VDD_CT_2
- AG26 VDD_CT_3
- AG27 VDD_CT_4

I/O

- AF23 VDDR3_1
- AF24 VDDR3_2
- AG23 VDDR3_3
- AG24 VDDR3_4
- AD12 VDDR4_1
- AF11 VDDR4_2
- AF12 VDDR4_3
- AF13 VDDR4_4
- AF15 VDDR4_5
- AG11 VDDR4_6
- AG13 VDDR4_7
- AG15 VDDR4_8

MEM CLK

- M20 NC_VDDRHA
- M21 NC_VSSRHA
- V12 NC_VDDRHB
- U12 NC_VSSRHB

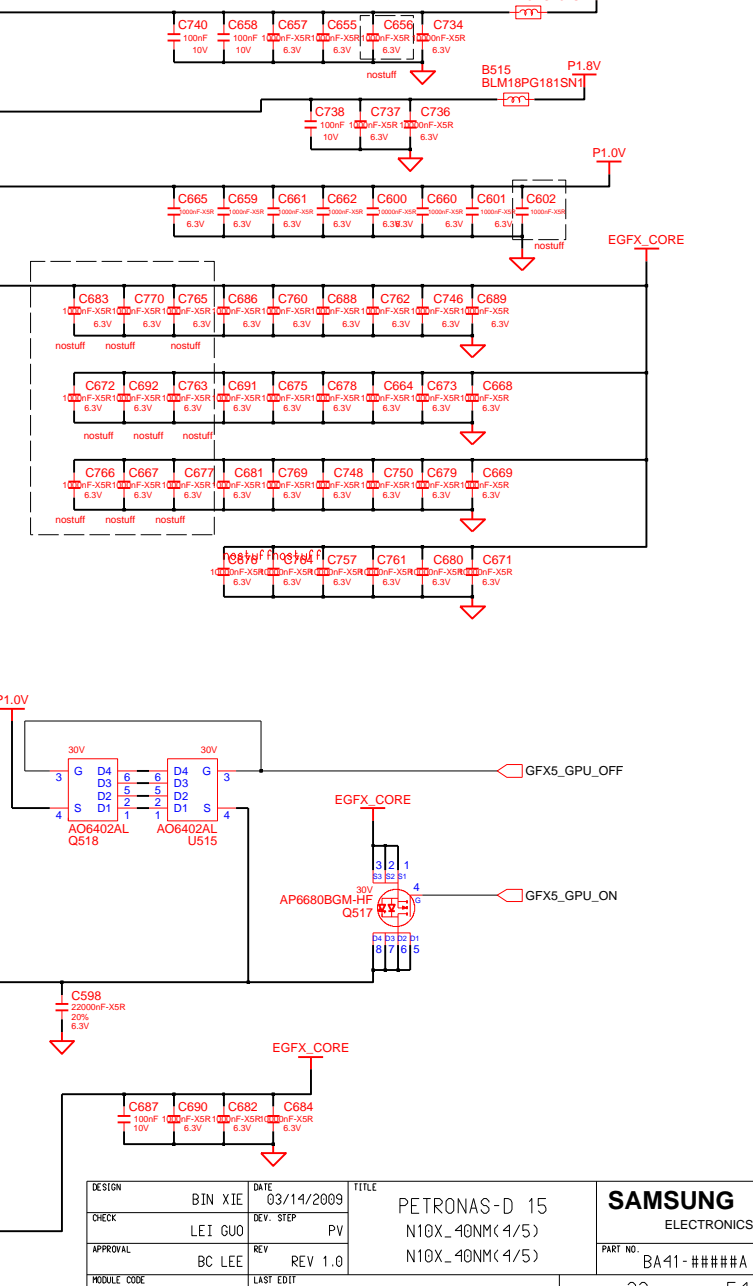
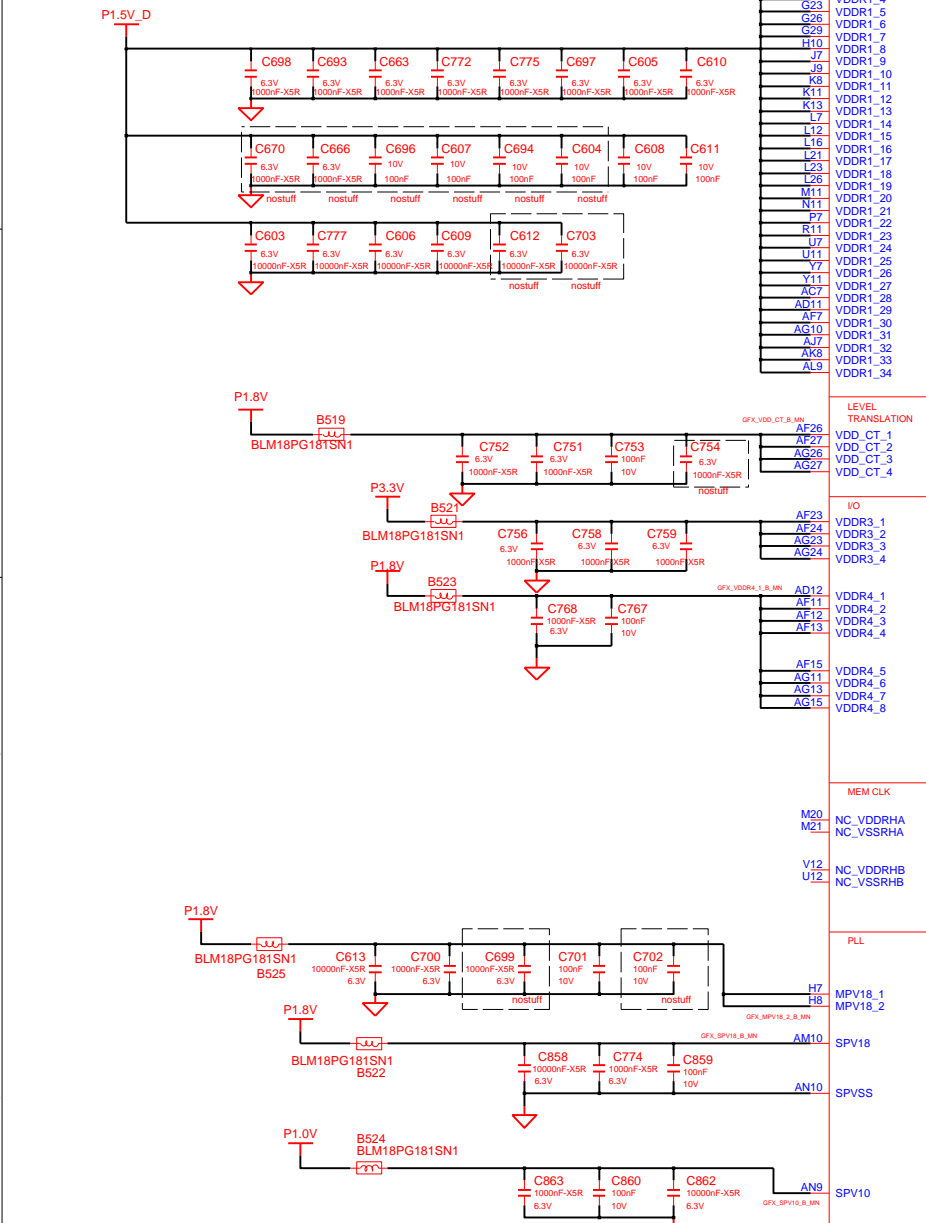
PLL

- H7 MPV18_1
- H8 MPV18_2
- AM10 SPV18
- AN10 SPVSS
- AN9 SPV10

0904-002643

POWER

- PCIE_VDDR_1 V28
- PCIE_VDDR_2 W28
- PCIE_VDDR_3 Y31
- PCIE_VDDR_4 AA31
- PCIE_VDDR_5 AA32
- PCIE_VDDR_6 AA33
- PCIE_VDDR_7 AA38
- PCIE_VDDR_8 AB37
- PCIE_VDDR_9 G30
- PCIE_VDDC_2 G31
- PCIE_VDDC_3 H30
- PCIE_VDDC_4 J29
- PCIE_VDDC_5 J30
- PCIE_VDDC_6 L28
- PCIE_VDDC_7 M28
- PCIE_VDDC_8 N28
- PCIE_VDDC_9 R28
- PCIE_VDDC_10 T28
- PCIE_VDDC_11 U28
- PCIE_VDDC_12 U28
- VDDC_1 M26
- VDDC_2 N24
- VDDC_3 R18
- VDDC_4 R23
- VDDC_5 R26
- VDDC_6 R26
- VDDC_7 T17
- VDDC_8 T22
- VDDC_9 T24
- VDDC_10 U16
- VDDC_11 U18
- VDDC_12 U18
- VDDC_13 U23
- VDDC_14 U26
- VDDC_15 V17
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- VDDC_22 Y21
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- VDDC_25 Y26
- VDDC_26 Y28
- VDDC_27 AA15
- VDDC_28 AA17
- VDDC_29 AA20
- VDDC_30 AA22
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- VDDC_32 AA27
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- VDDC_36 AB28
- VDDC_37 AB28
- VDDC_38 AC17
- VDDC_39 AC17
- VDDC_40 AC20
- VDDC_41 AC22
- VDDC_42 AC24
- VDDC_43 AC27
- VDDC_44 AD18
- VDDC_45 AD21
- VDDC_46 AD23
- VDDC_47 AD28
- VDDC_48 AF17
- VDDC_49 AF20
- VDDC_50 AG18
- VDDC_51 AG18
- VDDC_52 AG18
- VDDC_53 AG21
- VDDC_54 AH22
- VDDC_55 AH27
- VDDC_56 AH28
- BIF_VDDC_57 N27
- BIF_VDDC_58 T27
- VDDCI_1 AA13
- VDDCI_2 AB13
- VDDCI_3 AC12
- VDDCI_4 AC15
- VDDCI_5 AD13
- VDDCI_6 AD18
- VDDCI_7 M15
- VDDCI_8 M16
- VDDCI_9 M18
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- VDDCI_11 N13
- VDDCI_12 N15
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- VDDCI_15 N22
- VDDCI_16 R12
- VDDCI_17 R13
- VDDCI_18 R16
- VDDCI_19 T12
- VDDCI_20 T15
- VDDCI_21 V15
- VDDCI_22 Y13



DESIGN	BIN XIE	DATE	03/14/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	N10X_40NM(4/5)	PART NO.	
APPROVAL	BC LEE	REV	REV 1.0	N10X_40NM(4/5)	BA41-#####A	
MODULE CODE		LAST EDIT			May 10, 2011 10:53:25 AM	PAGE 22 OF 54

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U8-2 WHISTLER LP M2 2/5

- E39 PCIE_VSS_1
- F34 PCIE_VSS_2
- F39 PCIE_VSS_3
- G33 PCIE_VSS_4
- G34 AD9
- H31 PCIE_VSS_5
- H34 PCIE_VSS_6
- H39 PCIE_VSS_7
- J31 PCIE_VSS_8
- J34 PCIE_VSS_9
- K31 PCIE_VSS_10
- K34 PCIE_VSS_11
- K39 PCIE_VSS_12
- L31 PCIE_VSS_13
- L34 PCIE_VSS_14
- M34 PCIE_VSS_15
- M39 PCIE_VSS_16
- N31 PCIE_VSS_17
- N34 PCIE_VSS_18
- P31 PCIE_VSS_19
- P34 PCIE_VSS_20
- P39 PCIE_VSS_21
- R34 PCIE_VSS_22
- T31 PCIE_VSS_23
- T34 PCIE_VSS_24
- T39 PCIE_VSS_25
- U31 PCIE_VSS_26
- U34 PCIE_VSS_27
- V34 PCIE_VSS_28
- V39 PCIE_VSS_29
- W31 PCIE_VSS_30
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- AB39 PCIE_VSS_34
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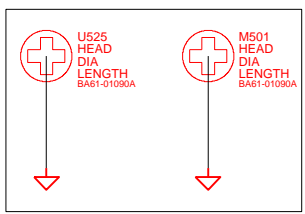
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- GND_2 A37
- GND_3 B7
- GND_4 B9
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- GND_8 B17
- GND_9 B19
- GND_10 B21
- GND_11 B23
- GND_12 B25
- GND_13 B27
- GND_14 B29
- GND_15 B33
- GND_16 C1
- GND_17 C39
- GND_18 E5
- GND_19 E35
- GND_20 F7
- GND_21 F9
- GND_22 F11
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- GND_24 F15
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- GND_29 F25
- GND_30 F27
- GND_31 F29
- GND_32 F31
- GND_33 F33
- GND_34 G2
- GND_35 G6
- GND_36 H9
- GND_37 J2
- GND_38 J6
- GND_39 J8
- GND_40 J27
- GND_41 K7
- GND_42 K14
- GND_43 L2
- GND_44 L6
- GND_45 L11
- GND_46 L17
- GND_47 L22
- GND_48 L24
- GND_49 M17
- GND_50 M22
- GND_51 M24
- GND_52 N2
- GND_53 N6
- GND_54 N16
- GND_55 N18
- GND_56 N21
- GND_57 N23
- GND_58 N26
- GND_59 N26
- GND_60 R2

- AC21 GND_120
- AC23 GND_121
- AC26 GND_122
- AC28 GND_123
- AD15 GND_124
- AD17 GND_125
- AD20 GND_126
- AD22 GND_127
- AD24 GND_128
- AD27 GND_129
- AE2 GND_130
- AE6 GND_131
- AE6 GND_132
- AF10 GND_133
- AF9 GND_134
- AF18 GND_135
- AF21 GND_136
- AG2 GND_137
- AG6 GND_138
- AG9 GND_139
- AG17 GND_140
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- AG22 GND_142
- AH21 GND_143
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- AJ11 GND_147
- AJ28 GND_148
- AK7 GND_149
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- AL6 GND_153
- AL8 GND_154
- AL11 GND_155
- AL14 GND_156
- AL17 GND_157
- AL20 GND_158
- AR5 GND_159
- AL23 GND_160
- AL26 GND_161
- AM9 GND_162
- AM11 GND_163
- AM31 GND_164
- AN11 GND_165
- AN2 GND_166
- AN6 GND_167
- AN8 GND_168
- AN30 GND_169
- AP7 GND_170
- AP9 GND_171
- AP11 GND_172
- AL21 GND_173

- R6 GND_61
- R15 GND_62
- R17 GND_63
- R20 GND_64
- R22 GND_65
- R24 GND_66
- R27 GND_67
- T11 GND_68
- T13 GND_69
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- T23 GND_73
- T26 GND_74
- U6 GND_75
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- U15 GND_77
- U17 GND_78
- U20 GND_79
- U22 GND_80
- U24 GND_81
- U27 GND_82
- V11 GND_83
- V13 GND_84
- V16 GND_85
- V18 GND_86
- V21 GND_87
- V23 GND_88
- V26 GND_89
- W2 GND_90
- W6 GND_91
- Y15 GND_92
- Y17 GND_93
- Y20 GND_94
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- AA6 GND_99
- AA6 GND_100

GND

GPU Thermal

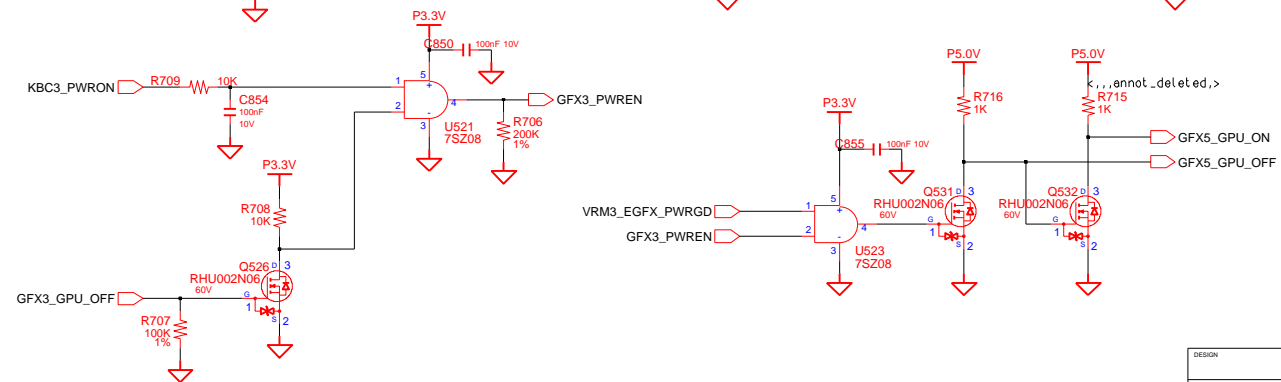


GFX3_GPU_OFF

PX_EN

VSS_MECH_1
VSS_MECH_2
VSS_MECH_3

A39
AW1
AW39



DESIGN	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV		N11X_40NM(5/5)	
APPROVAL	BC LEE	REV	REV 1.0		N11X_40NM(5/5)	
MODULE CODE		LAST EDIT				PART NO. BA41-####A
				May 10, 2011 10:53:25 AM	PAGE	23 OF 54

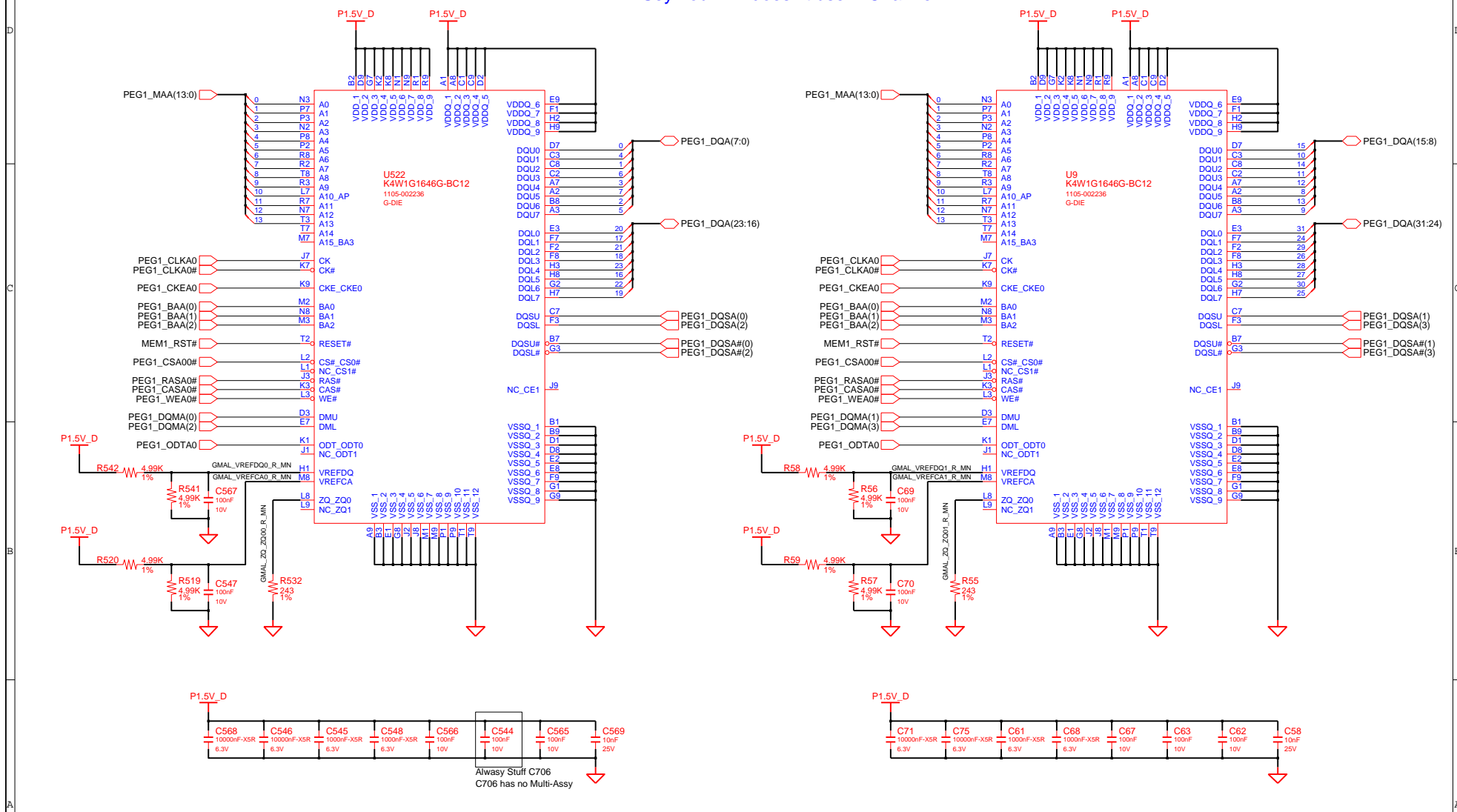
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A-channel Lower Data

Seymour M2 doesn't use A Channel

Whistler



DESIGN	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	GRAPHIC_MEM A#0	PART NO.	
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MODULE CODE	LAST EDIT					
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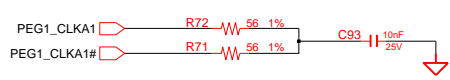
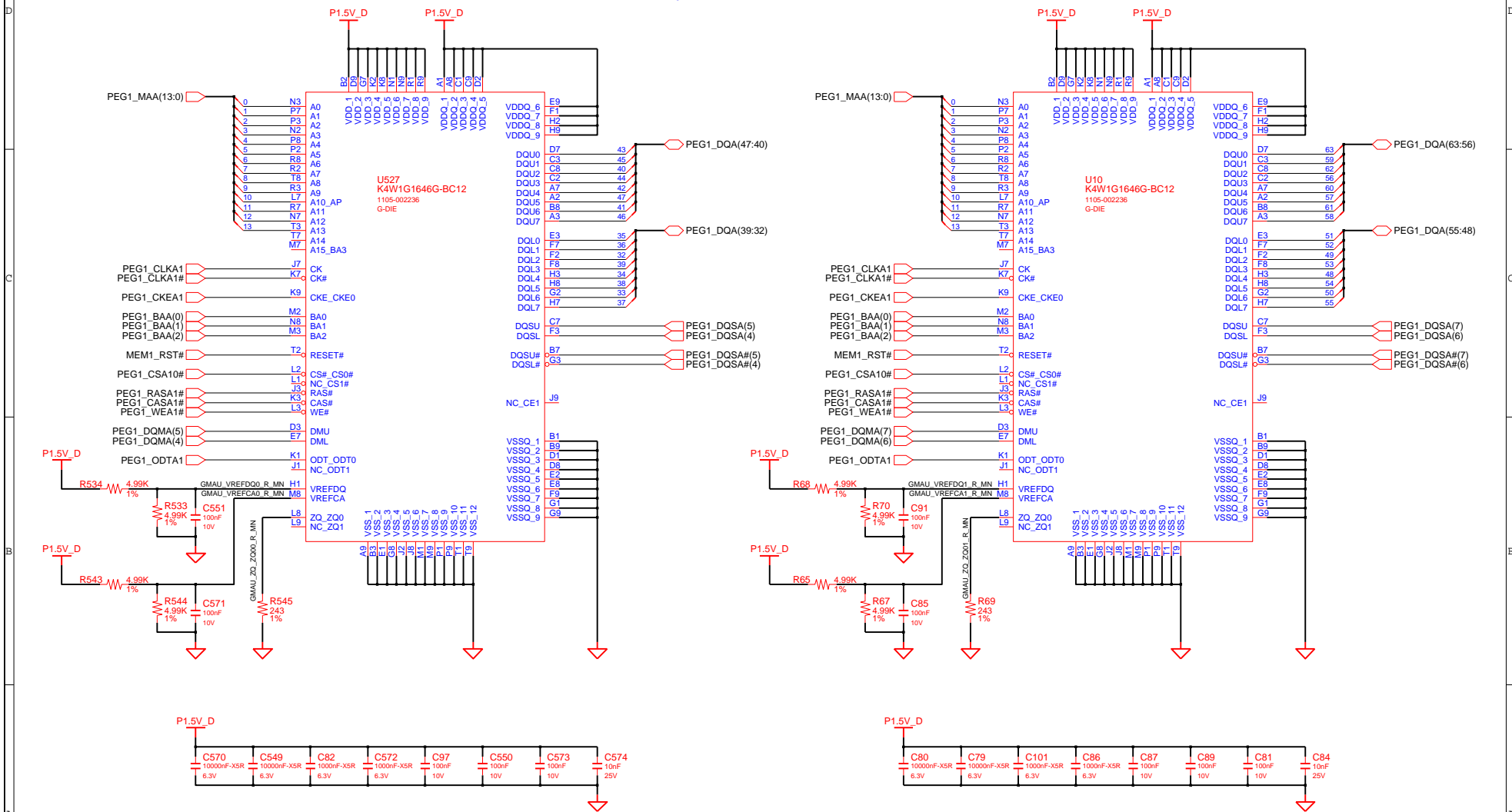
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A-channel Upper Data

Seymour M2 doesn't use A Channel

Whistler

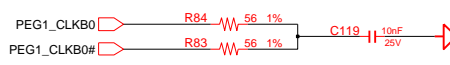
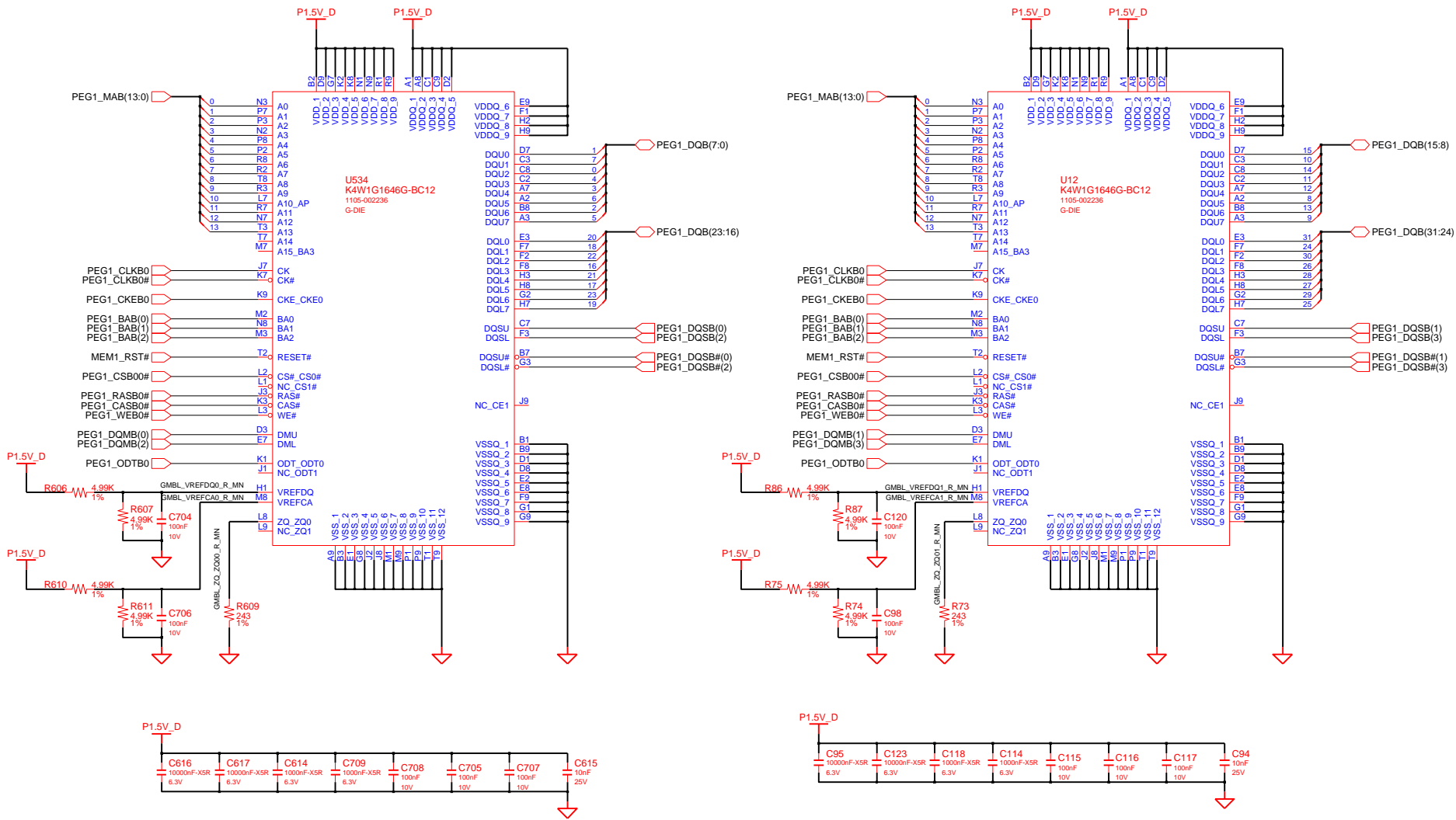


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APPROVAL	BC LEE	REV	REV 1.0		GRAPHIC_MEM A#1	PART NO. BA41-####A
MODULE CODE		LAST EDIT				PAGE 25 OF 54

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B-channel Lower Data

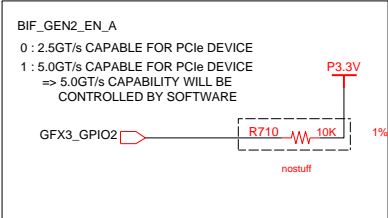
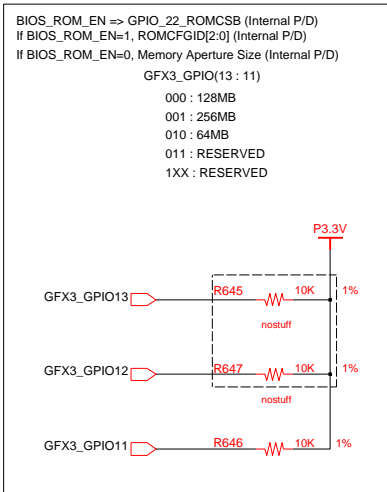
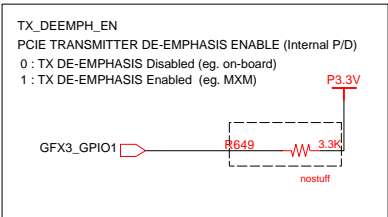
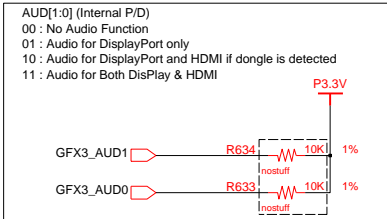
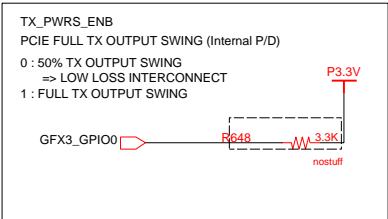


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APPROVAL	BC LEE	REV	REV 1.0	GRAPHIC_MEM C#0	PART NO.	BA41-####A
MODULE CODE		LAST EDIT			May 10, 2011 10:53:25 AM	PAGE 26 OF 54

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Straps



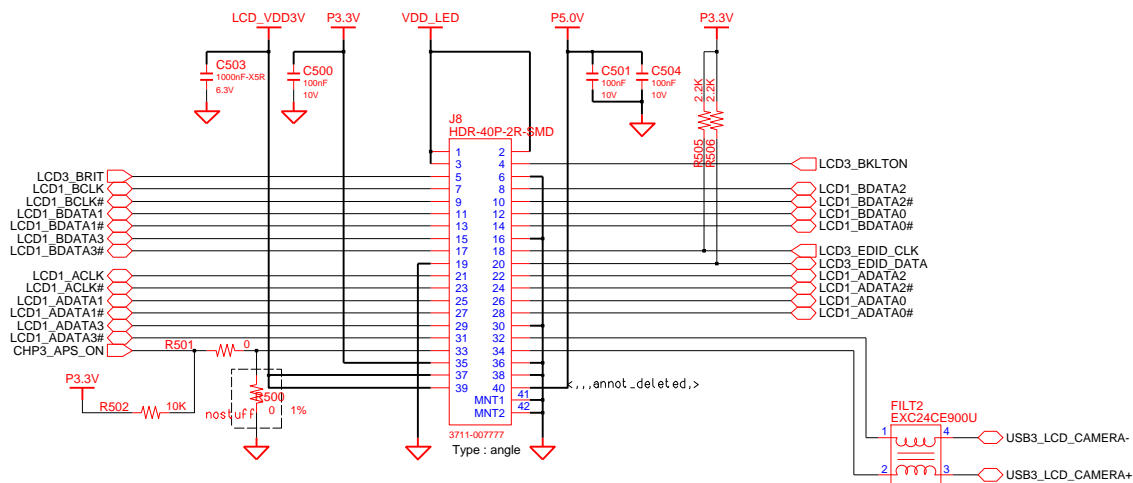
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APPROVAL	BC LEE	REV	REV 1.0	N11X_40NM STRAP	PART NO.	BA41-####A
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	28	OF 54

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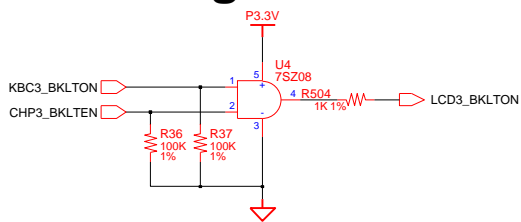
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LVDS LOGIC

1Ch. LCD Connector + CAMERA

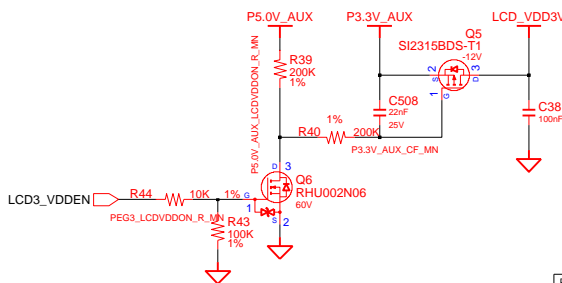


Backlight On

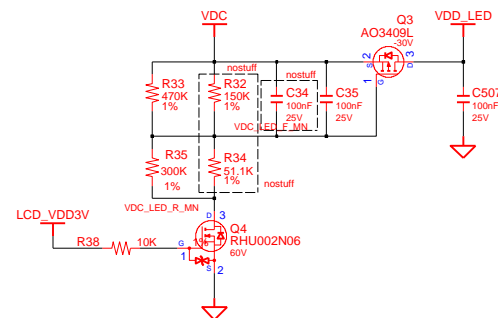


LCD Power

EBL Purpose



LED Power

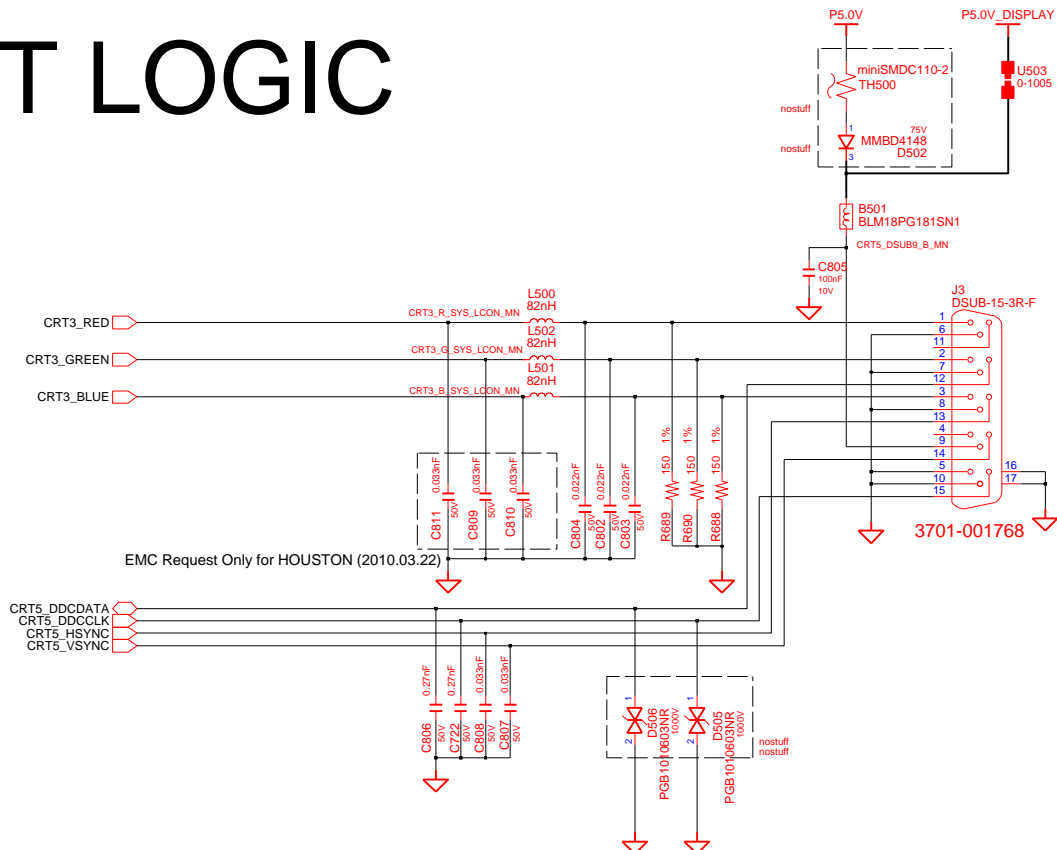
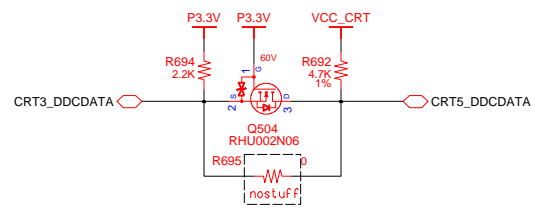
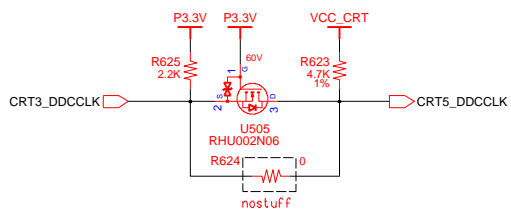
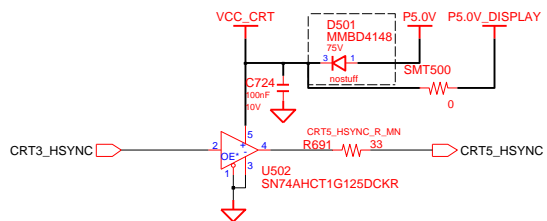
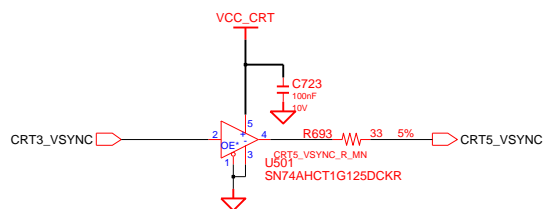


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MODULE CODE		LAST EDIT				
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CRT LOGIC



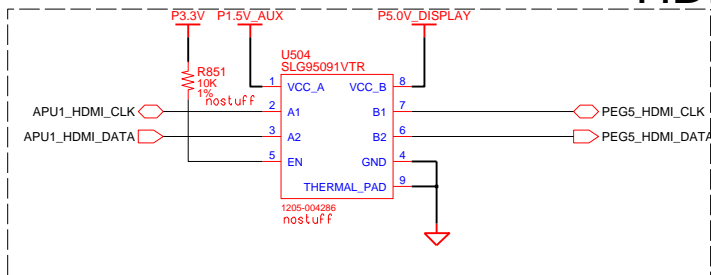
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MODULE CODE	LAST EDIT	May 10, 2011 10:53:25 AM		PAGE	30	OF 54

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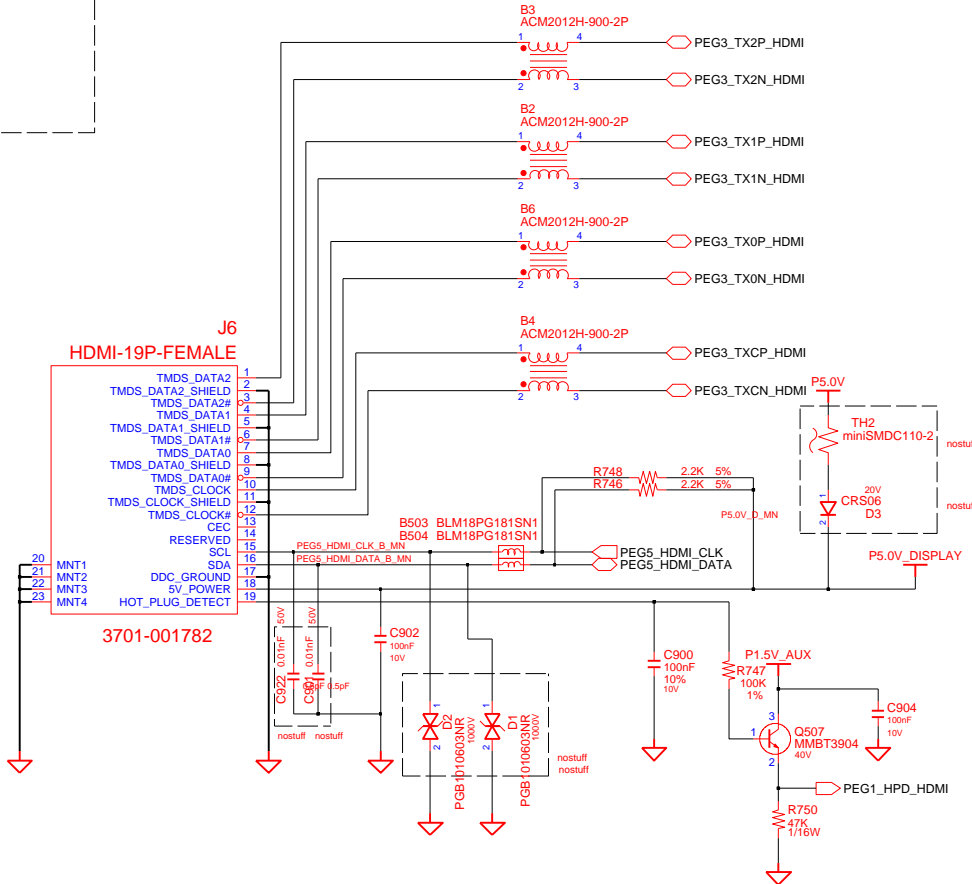
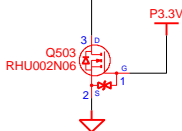
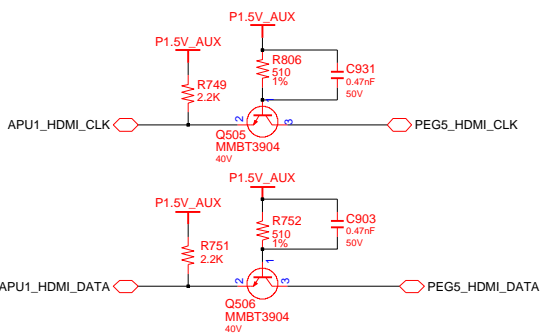
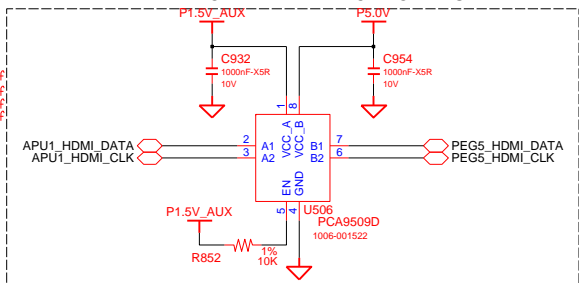
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FOR HDMI VERIFICATION TEST

HDMI Graphic



FOR HDMI VERIFICATION TEST



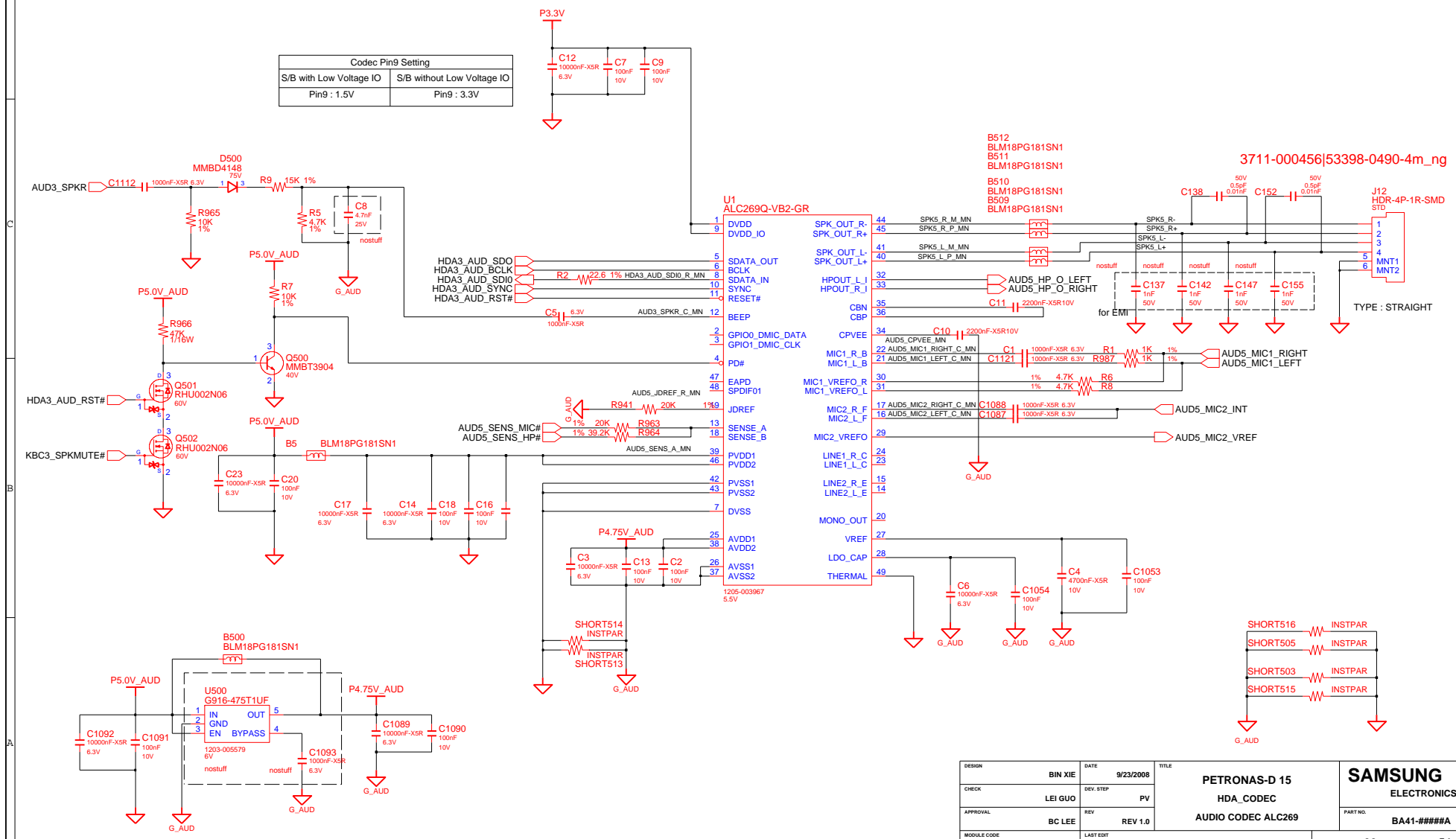
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MODULE CODE		LAST EDIT			May 10, 2011 10:53:25 AM	PAGE 31 OF 54

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HD AUDIO

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

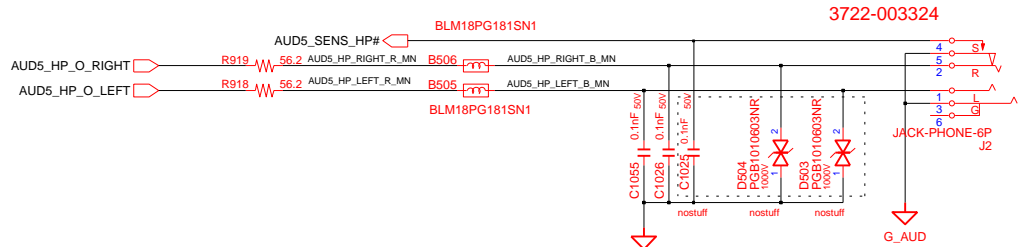


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MODULE CODE		LAST EDIT			May 10, 2011 10:53:25 AM	PAGE 32 OF 54

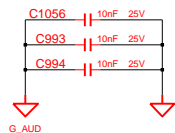
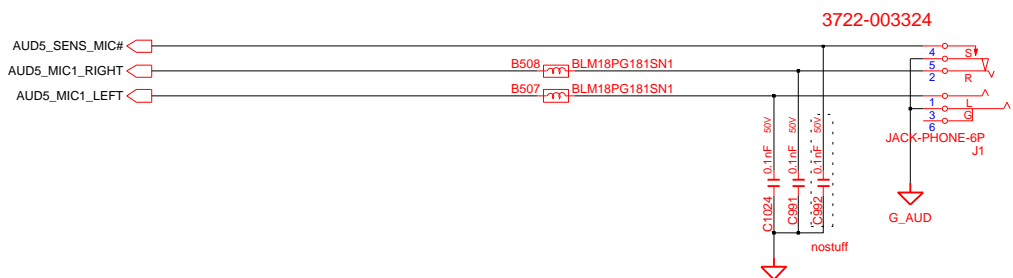
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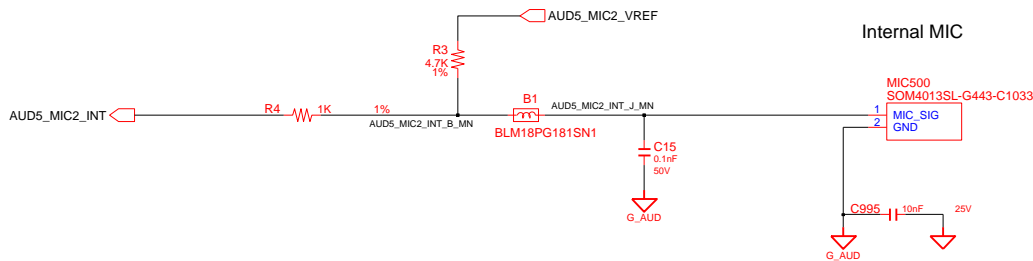
HEADPHONE



MIC JACK



Internal MIC

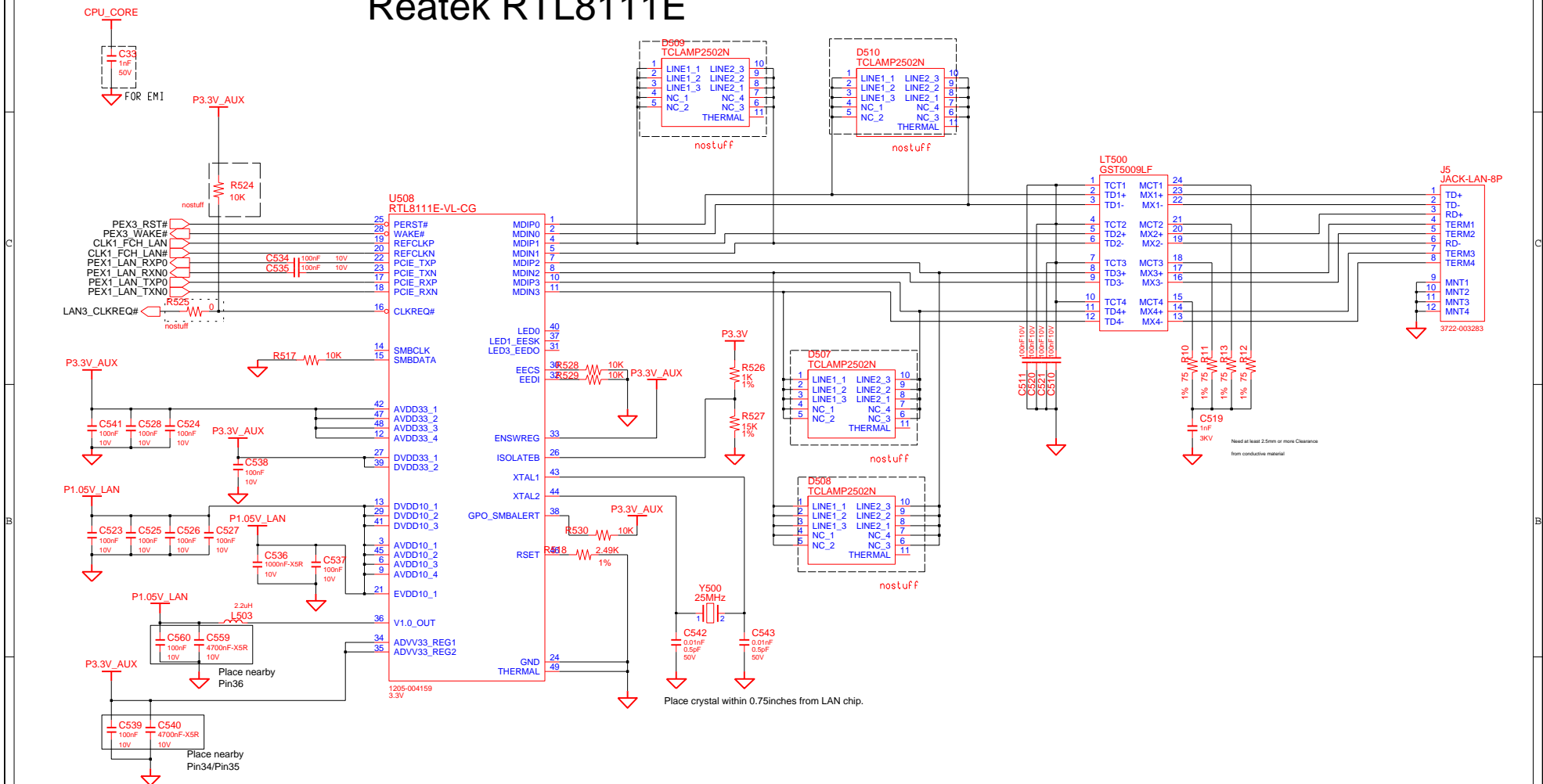


DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15 HDA_CODEC AUDIO JACK	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV.STEP	PV	PART NO.		
APPROVAL	BC LEE	REV	REV 1.0	BA41-####A		
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	33	OF 54

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Reatek RTL8111E

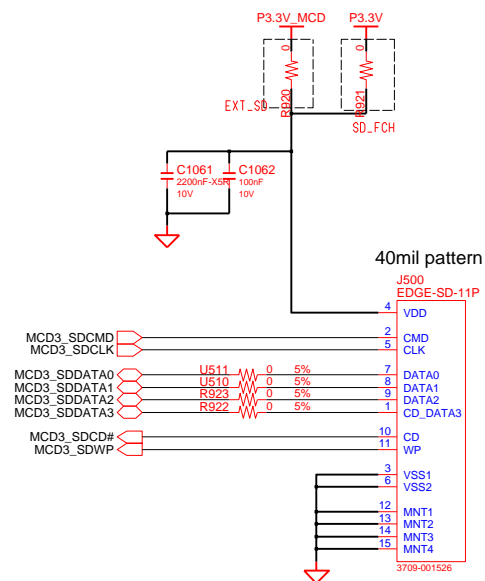
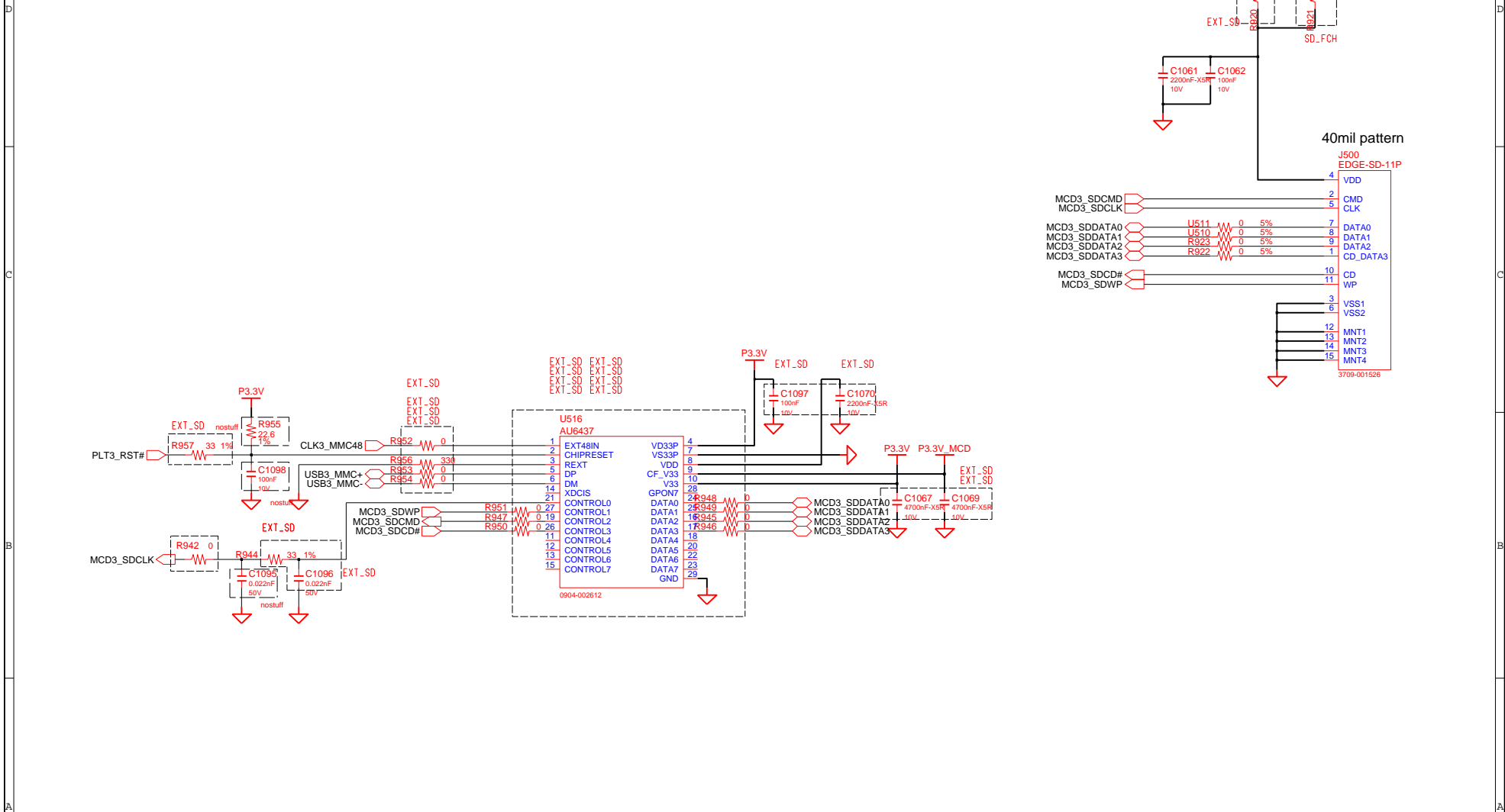


DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO: BA41-####A
CHECK	LEI GUO	DEV. STEP	PV		LAN	
APPROVAL	BC LEE	REV	REV 1.0		LAN_Reatek_RTL8103EL	
MODULE CODE		LAST EDIT			May 10, 2011 10:53:25 AM	PAGE 34 OF 54

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4 IN 1 CARD

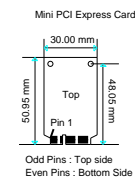
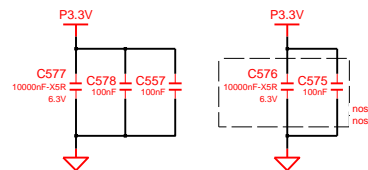
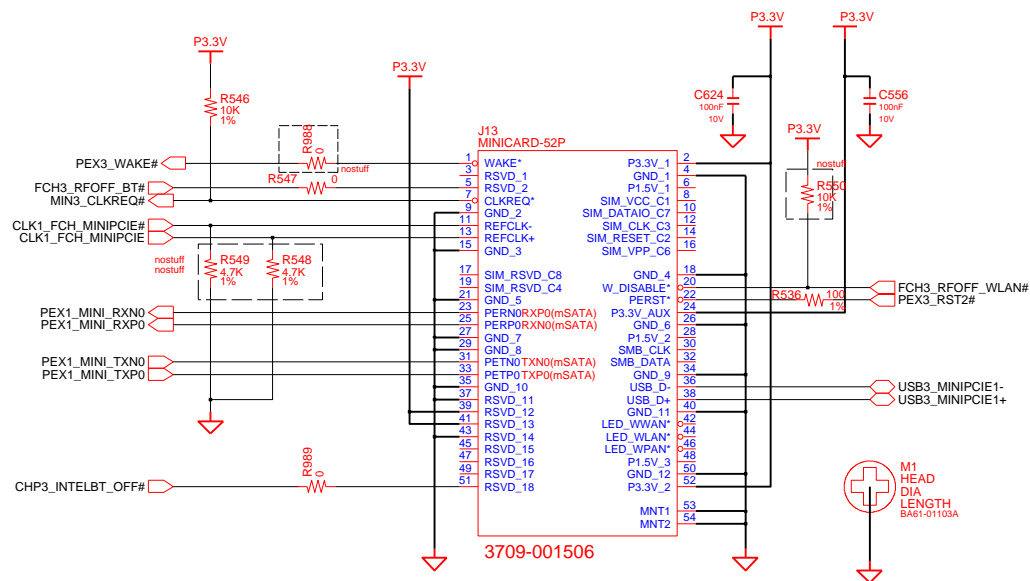


DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15 MULTICARD 3 IN 1 CARD(AU6473)	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	LEI GUO	DEV. STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE 35 OF 54		

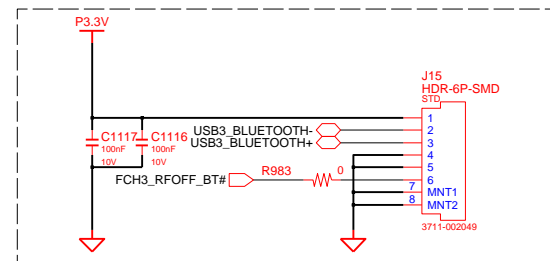
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WLAN, 7mm



Bluetooth Interface

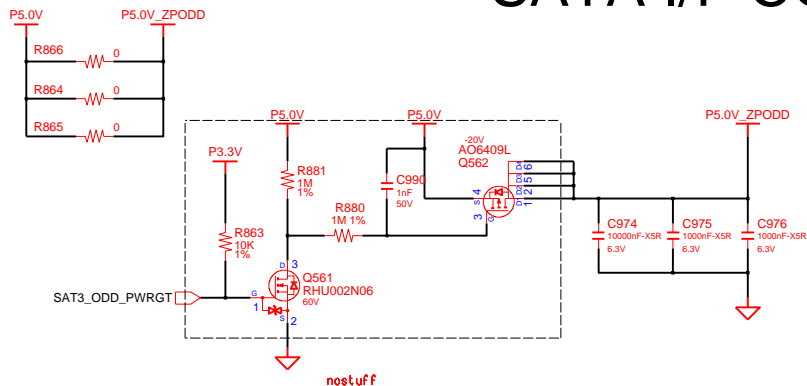


DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV		MINI_PCIE_CONN	
APPROVAL	BC LEE	REV	REV 1.0		WLAN	PART NO. BA41-####A
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 36 OF 54	

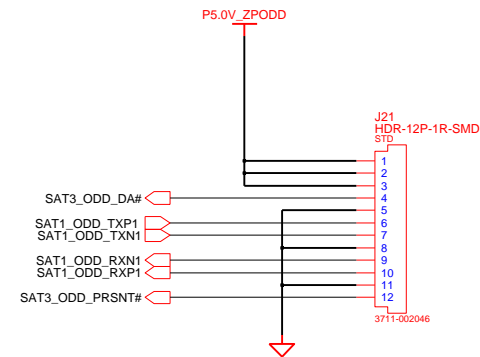
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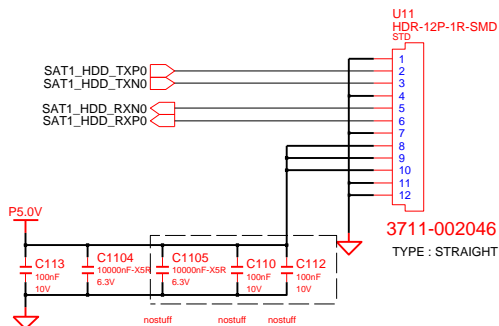
SATA I/F CONN



SATA ODD CONN 15"



SATA HDD CONN



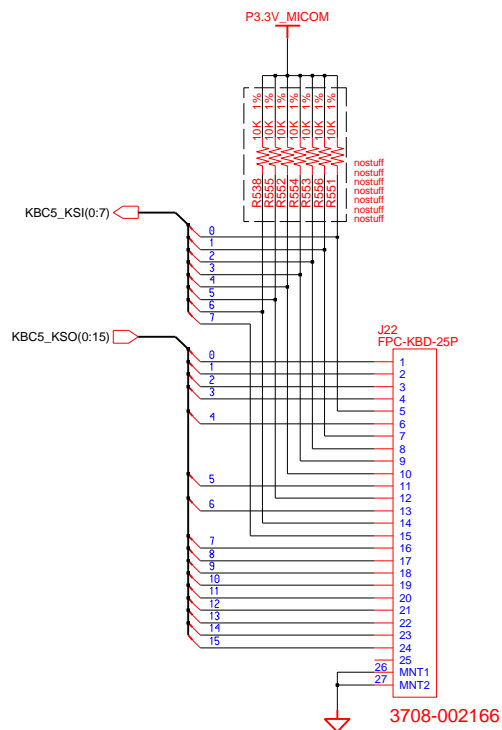
DESIGN	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15 SATA_DEVICES HDD & ODD SUB CONNECTOR	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	LEI GUO	DEV. STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM			
				PAGE	37	OF 54

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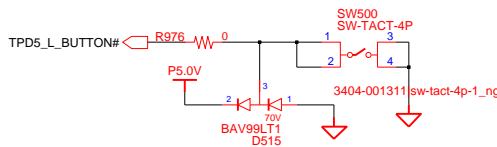
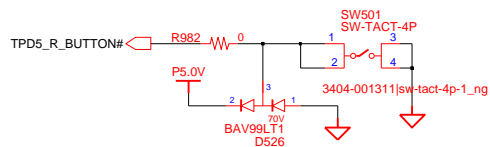
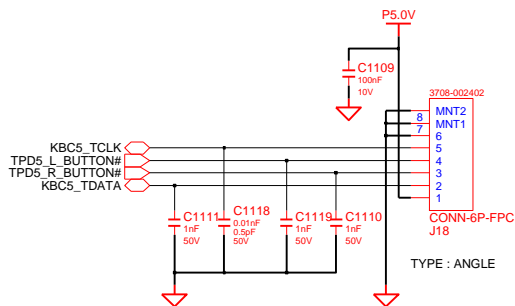
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Micom Glue Logic

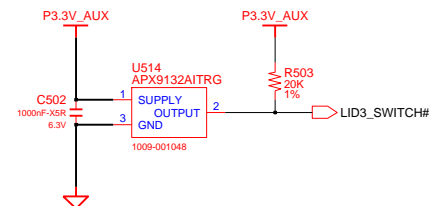
KEYBOARD



TOUCHPAD



LID_SWITCH

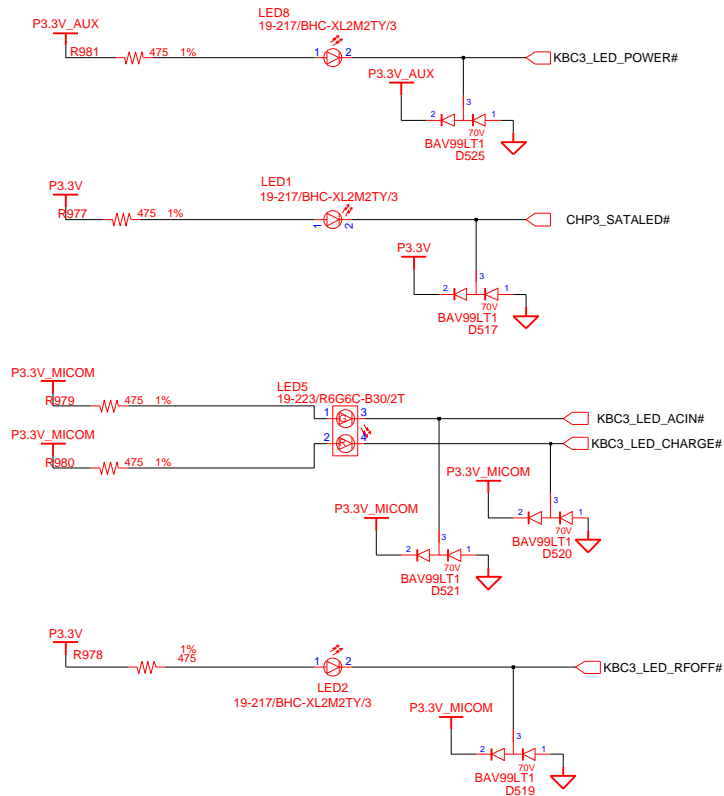


DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	MICOM GLUE LOGIC	PART NO.	
APPROVAL	BC LEE	REV	REV 1.0	KEYBOARD & TOUCHPAD	BA41-####A	
MODULE CODE		LAST EDIT			May 10, 2011 10:53:25 AM	PAGE 39 OF 54

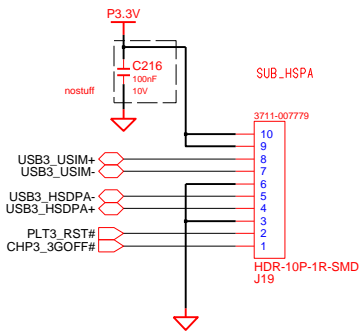
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LED MAIN



HSPA Sub board Connector

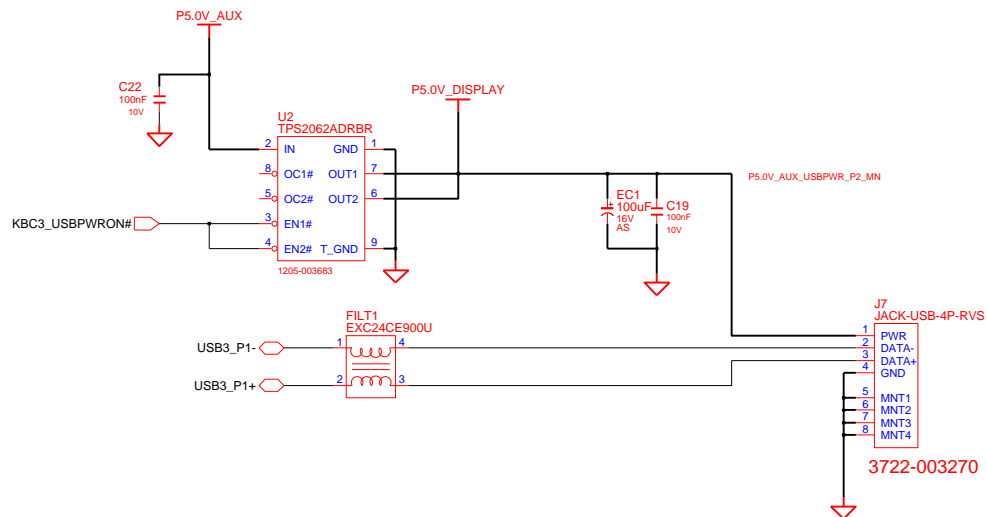


DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	LED_SWITCH	LED_SWITCH	
APPROVAL	BC LEE	REV	REV 1.0	LED_SWITCH		PART NO. BA41-####A
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM		PAGE	40 OF 54

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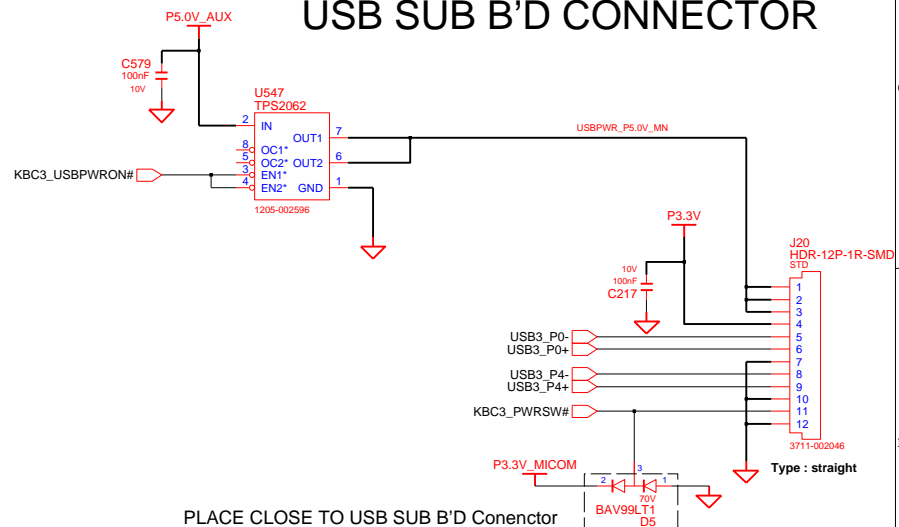
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USB Single connector

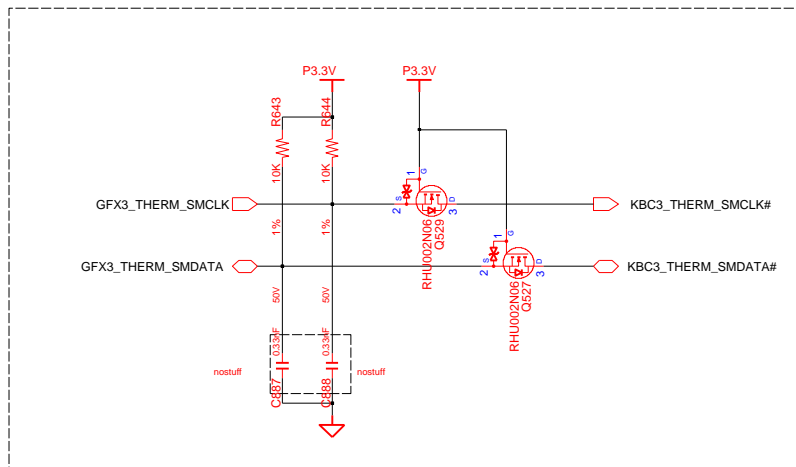


MAIN TO SUB USB CONN Right 2USB Port

USB SUB B'D CONNECTOR



GPU LEVEL SHIFTER FOR POWERXPRESS

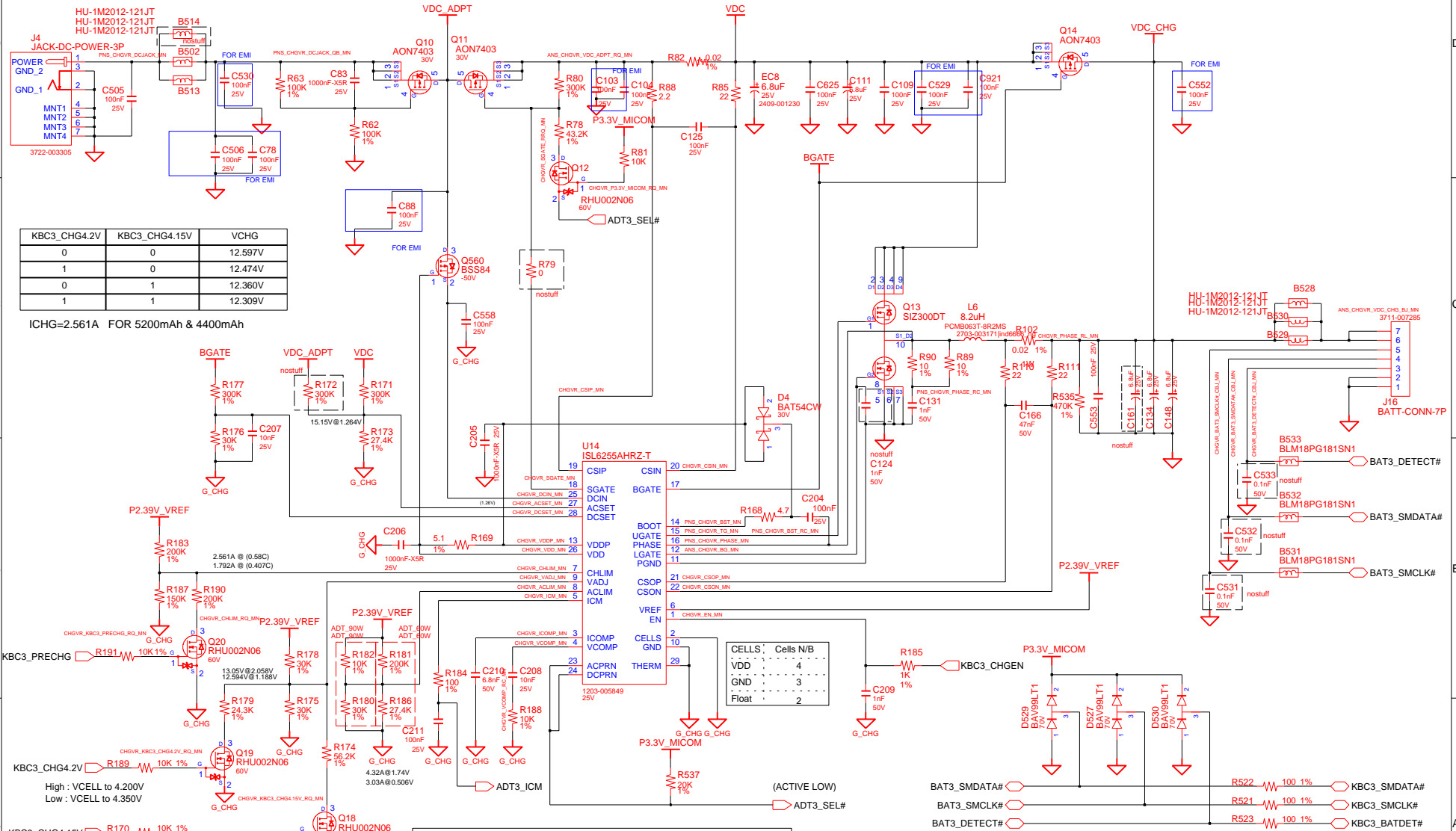


PLACE CLOSE TO USB SUB B'D Conenctor

DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	USB_CONN		
APPROVAL	BC LEE	REV	REV 1.0	USB & eSATA	PART NO. BA41-####A	
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 41	OF 54

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CHARGER & POWER MANAGEMENT



KBC3_CHG4.2V	KBC3_CHG4.15V	VCHG
0	0	12.597V
1	0	12.474V
0	1	12.360V
1	1	12.309V

ICHG=2.561A FOR 5200mAh & 4400mAh

Adapter configuration					
Sense Resistor 20mohm			Sense Resistor 10mohm		
60W / 3.03A / 96%			90W / 4.32A / 91.2%		
120W / 6.059A / 96%					
Value	SEC Code	Value	SEC Code	Value	SEC Code
Rtop 200K	2007-007334	10K	2007-007142	200K	2007-007334
Rbot 27.4K	2007-007274	30K	2007-008275	27.4K	2007-007274

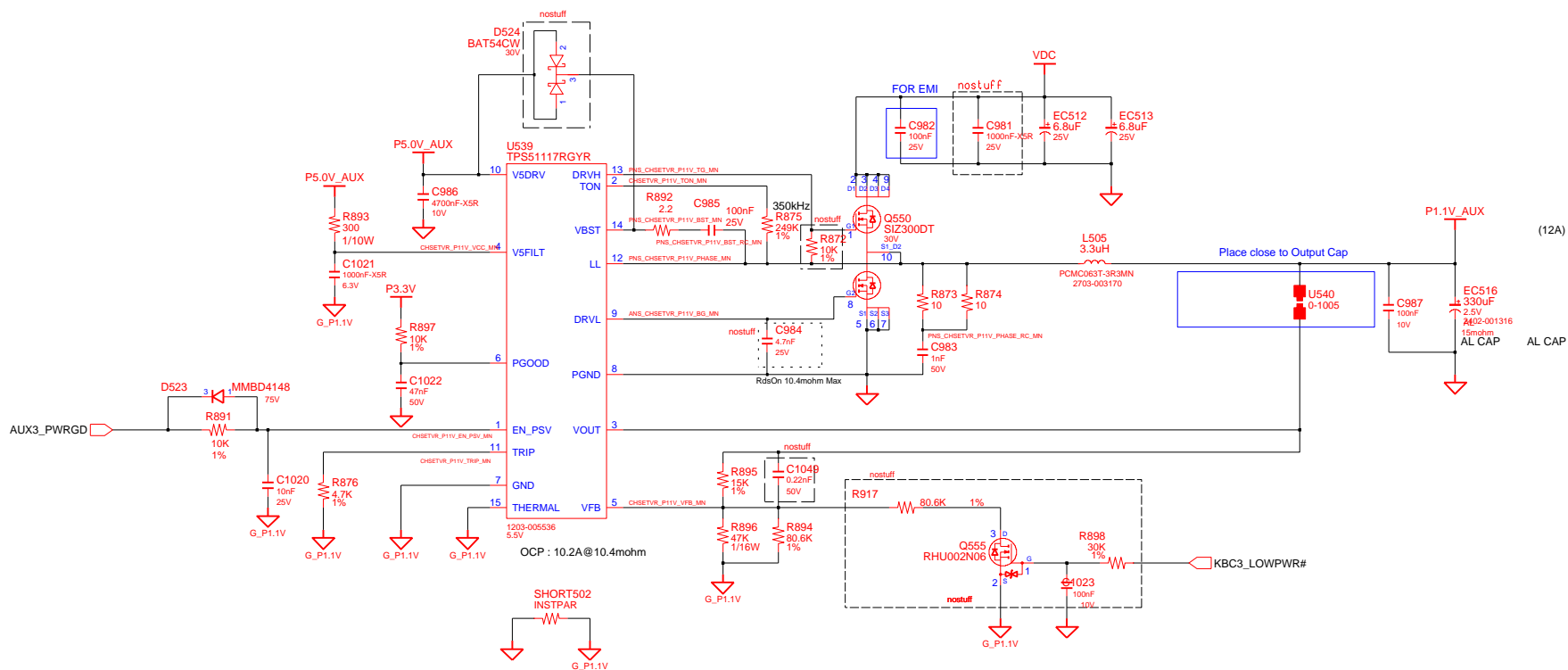
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CHECK	LEI GUO	DEV. STEP	PV		CHARGER
APPROVAL	BC LEE	REV	REV 1.0		Intersil ISL6256A
MODULE CODE	undefined	LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	42 OF 54

SAMSUNG
 ELECTRONICS
 PART NO. BA41-####A

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Chipset Power (P1.1V_AUX)

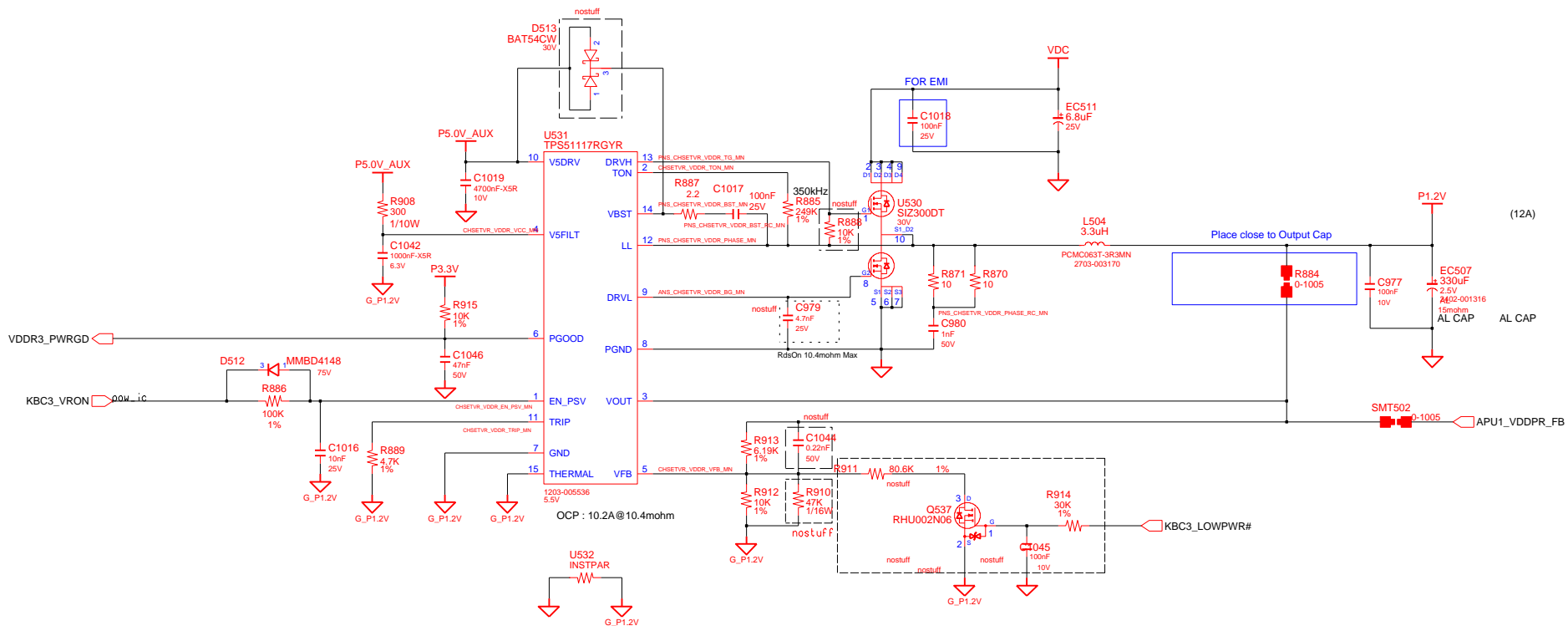


DRAW	BIN XIE	DATE	10/22/2010	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	LEI GUO	DEV. STEP	PV	P1.1V_AUX		
APPROVAL	BC LEE	REV	REV 1.0	P1.1V_AUX		
MODULE CODE	undef ined	LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	44 OF 54	

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Chipset Power (P1.2V)

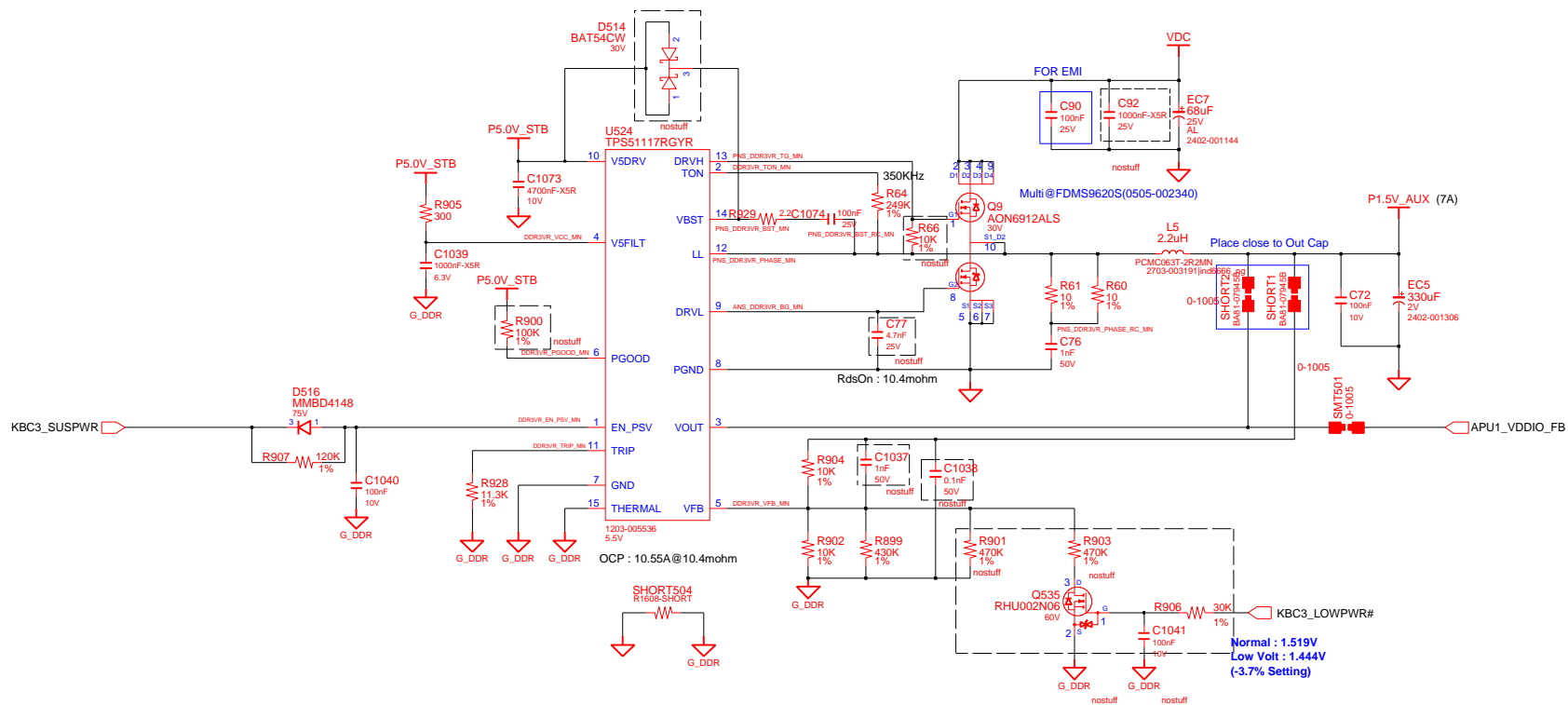


DRAW	BIN XIE	DATE	10/22/2010	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV		P1.2V	
APPROVAL	BC LEE	REV	REV 1.0		P1.2V(Chipset Power)	PART NO.
MODULE CODE	undef ined	LAST EDIT				BA41-####A
				May 10, 2011 10:53:25 AM	PAGE	45 OF 54

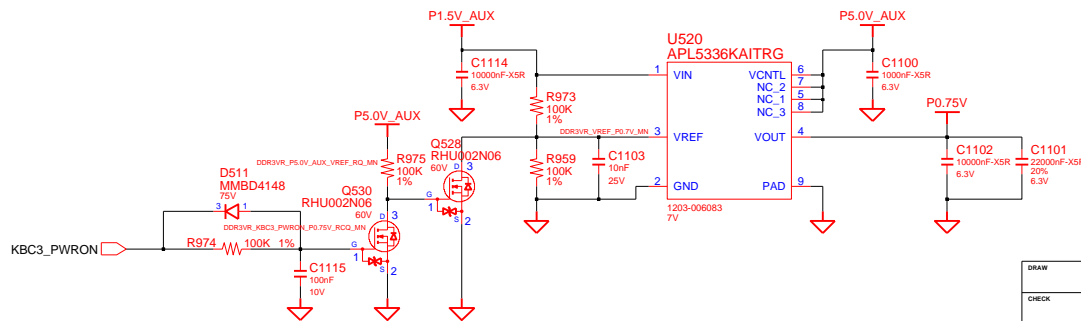
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DDR3 Power



DDR3 VTT(0.75V)



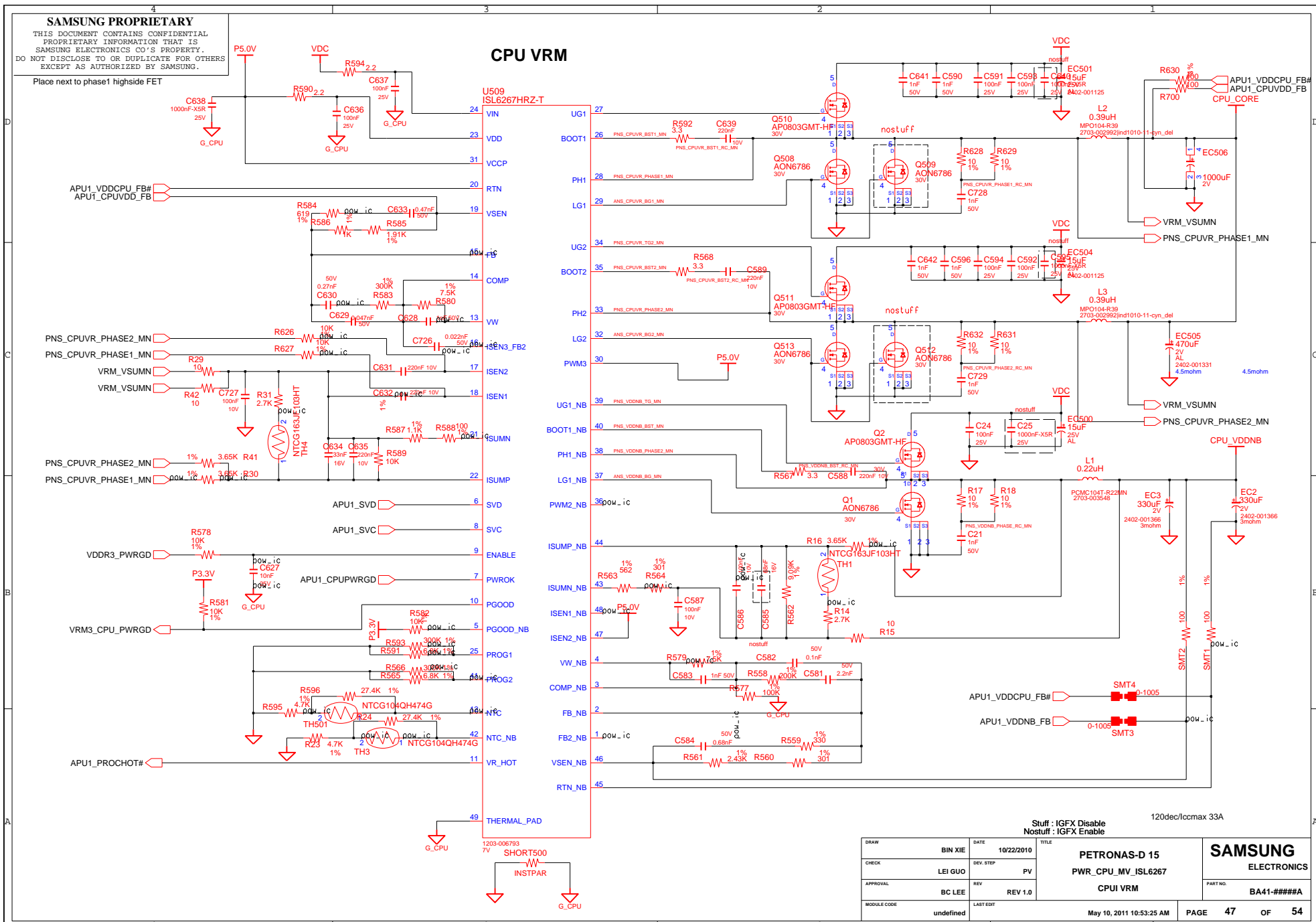
DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15 PWR_MEMORY DDR3 POWER	SAMSUNG ELECTRONICS PART NO: BA41-####A
CHECK	LEI GUO	DEV.STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	May 10, 2011 10:53:25 AM			
				PAGE	46	OF 54

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CPU VRM

Place next to phase1 highside FET



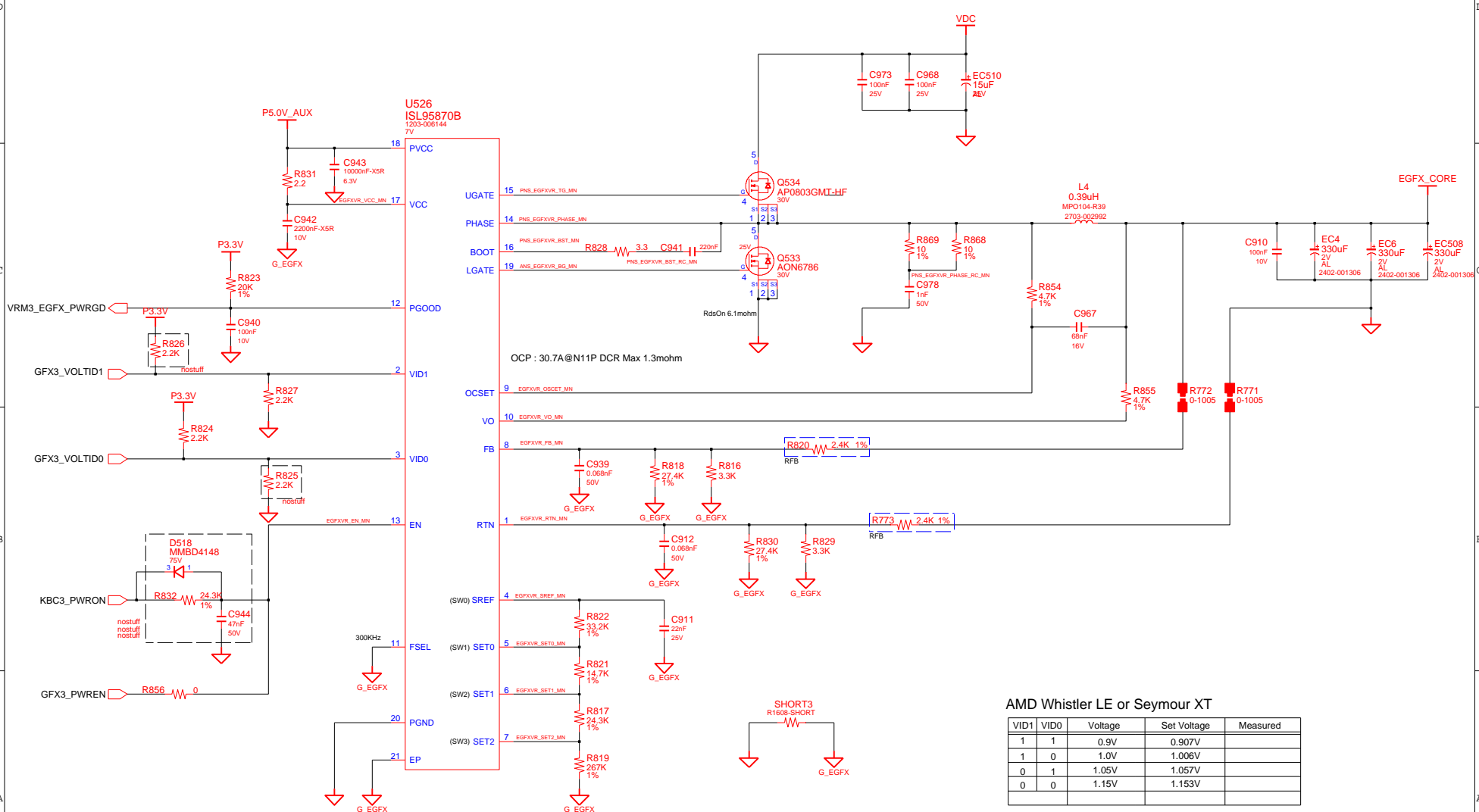
Stuff : IGFX Disable
Nostuff : IGFX Enable
120dec/lccmax 33A

DRAW	BIN XIE	DATE	10/22/2010	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	PWR_CPU_IVL_ISL6267		
APPROVAL	BC LEE	REV	REV 1.0	CPU1 VRM	PART NO.	BA41-####A
MODULE CODE	undefined	LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	47	OF 54

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External Graphic Core Power



AMD Whistler LE or Seymour XT

VID1	VID0	Voltage	Set Voltage	Measured
1	1	0.9V	0.907V	
1	0	1.0V	1.006V	
0	1	1.05V	1.057V	
0	0	1.15V	1.153V	

DRAW	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15 PWR_MV_SWITCHED SWITCHED POWER	SAMSUNG ELECTRONICS PART NO. BA41-####A			
CHECK	LEI GUO	DEV. STEP	PV						
APPROVAL	BC LEE	REV	REV 1.0						
MODULE CODE		LAST EDIT							
May 10, 2011 10:53:25 AM						PAGE	48	OF	54

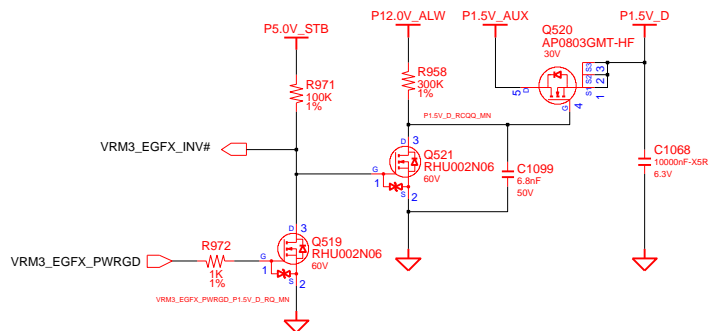
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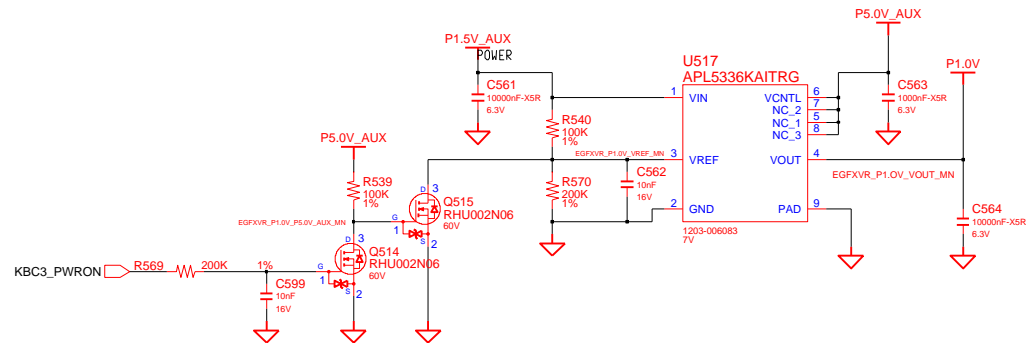
Switched Power 2 (For AMD GFX Power Sequence)

Sequence (D3.3V -> GFX Core -> D1.5V -> D1.05V)

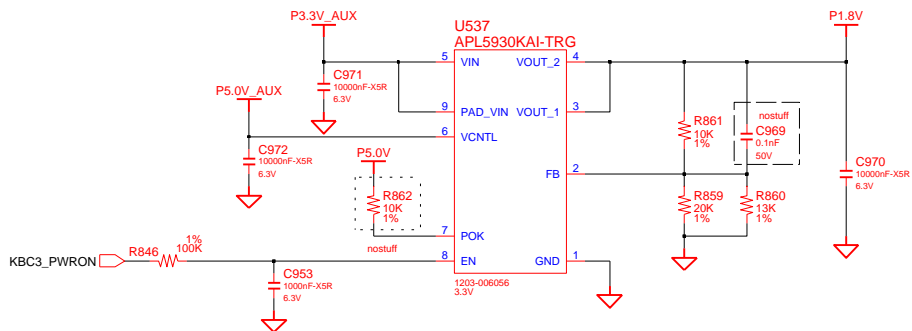
Discrete Switched Power (D1.5V : Max 5.0A)



P1.0V



P1.8V(LDO)



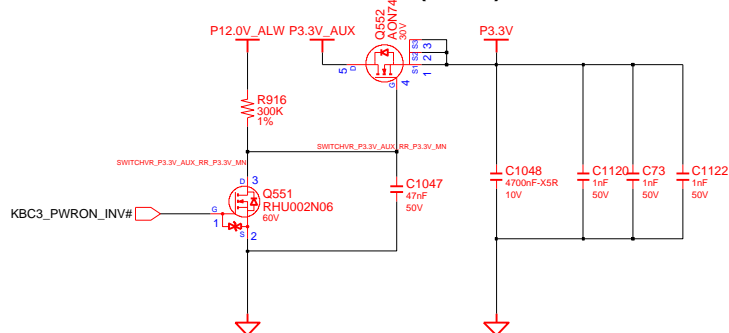
DRAW	BIN XIE	DATE	7/14/2010	TITLE	PETRONAS-D 15 Switched PWR 2 FOR OPTIMUS PWR	SAMSUNG ELECTRONICS PART NO. BA41-####A	
CHECK	LEI GUO	DEV. STEP	PV				
APPROVAL	BC LEE	REV	REV 1.0				
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	49	OF	54

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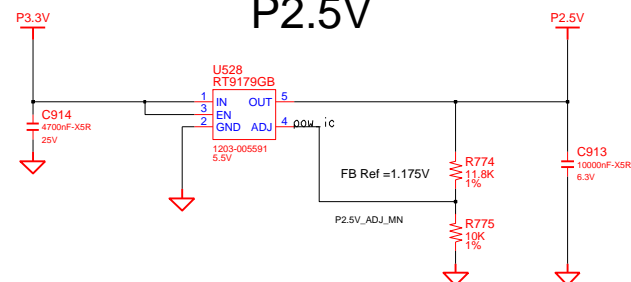
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Switched Power

Switched Power On (P3.3V)

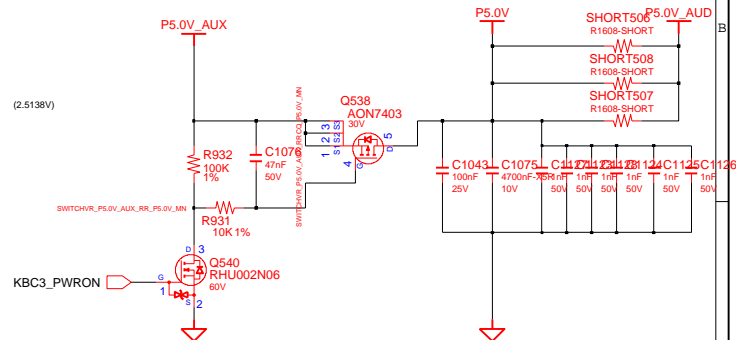


P2.5V

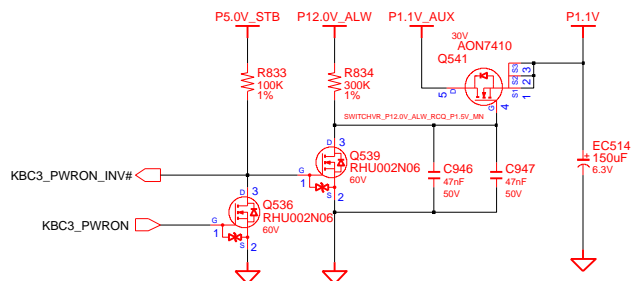


Switched Power On (P5.0V)

Multi@Si4435DDY



Switched Power On (P1.1V)

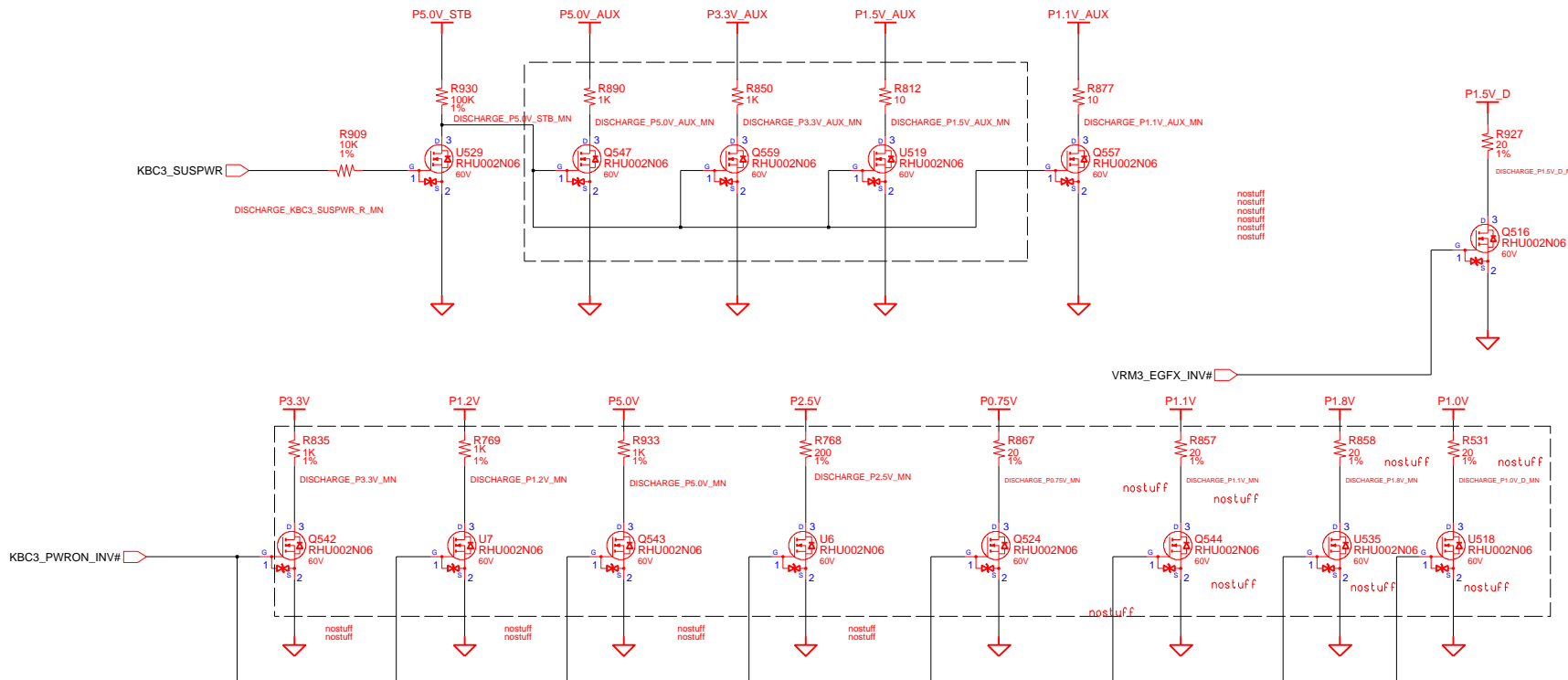


DRAW	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	PWR_SWITCH	PWR_SWITCH	
APPROVAL	BC LEE	REV	REV 1.0	SWITCH Power	SWITCH Power	PART NO. BA41-####A
MODULE CODE	undefined	LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	50	OF 54

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POWER DISCHARGER

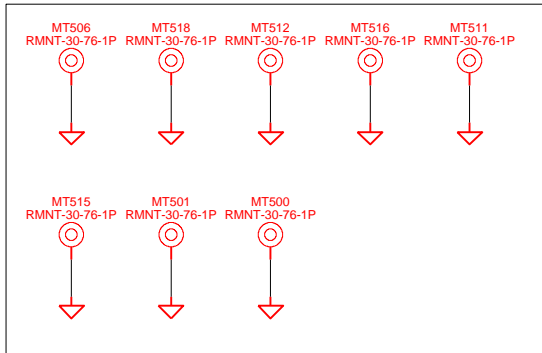


DESIGN	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO: BA41-####A
CHECK	LEI GUO	DEV. STEP	PV	PWR_DISCHARGE	PWR_DISCHARGE	
APPROVAL	BC LEE	REV	REV 1.0	PWR_DISCHARGE	PWR_DISCHARGE	
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 51	OF 54

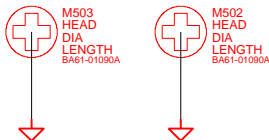
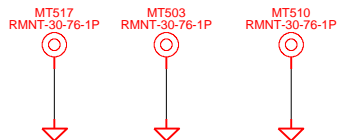
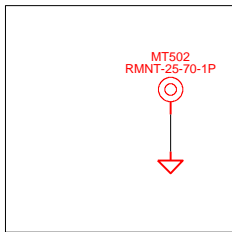
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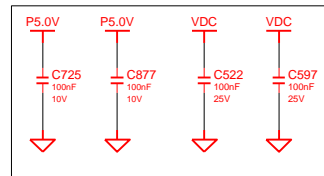
Mainboard Mount ((30-80)X8EA)



PCB FIX



For EMI

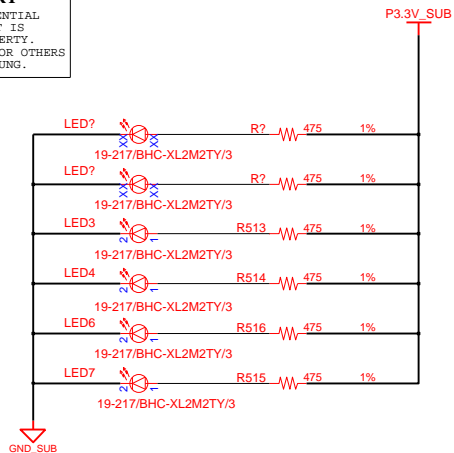


DESIGN	BIN XIE	DATE	6/4/2010	TITLE	PETRONAS-D 15 MOUNT MOUNT	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	PART NO.		
APPROVAL	BC LEE	REV	REV 1.0	LAST EDIT	May 10, 2011 10:53:25 AM	PAGE 52 OF 54
MODULE CODE						

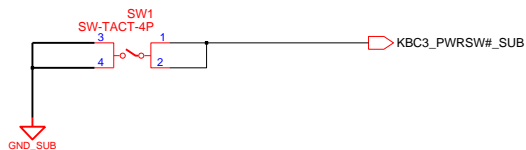
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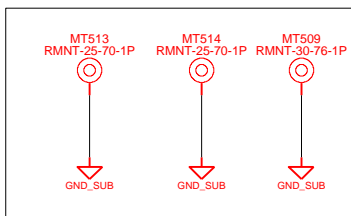
USB SUB BOARD



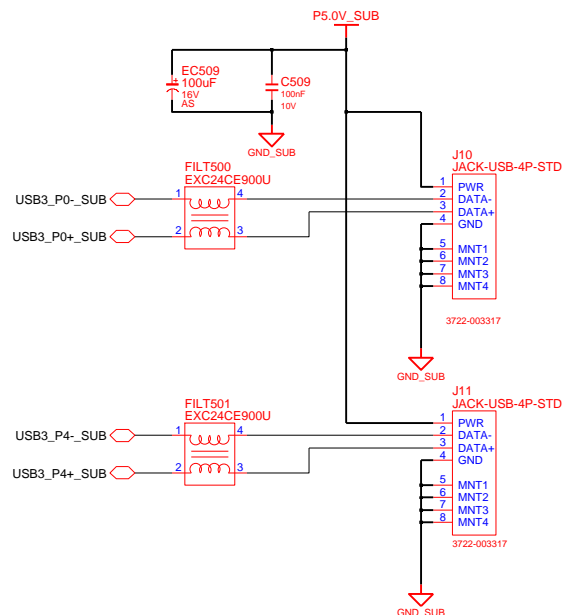
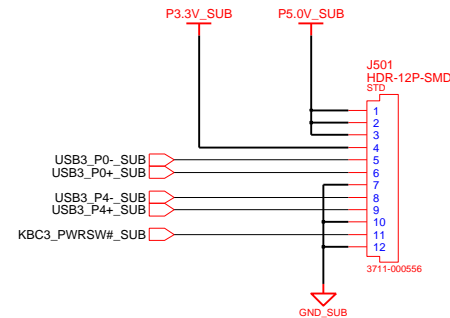
Power Switch Button



PCB Mount



SUB TO MAIN



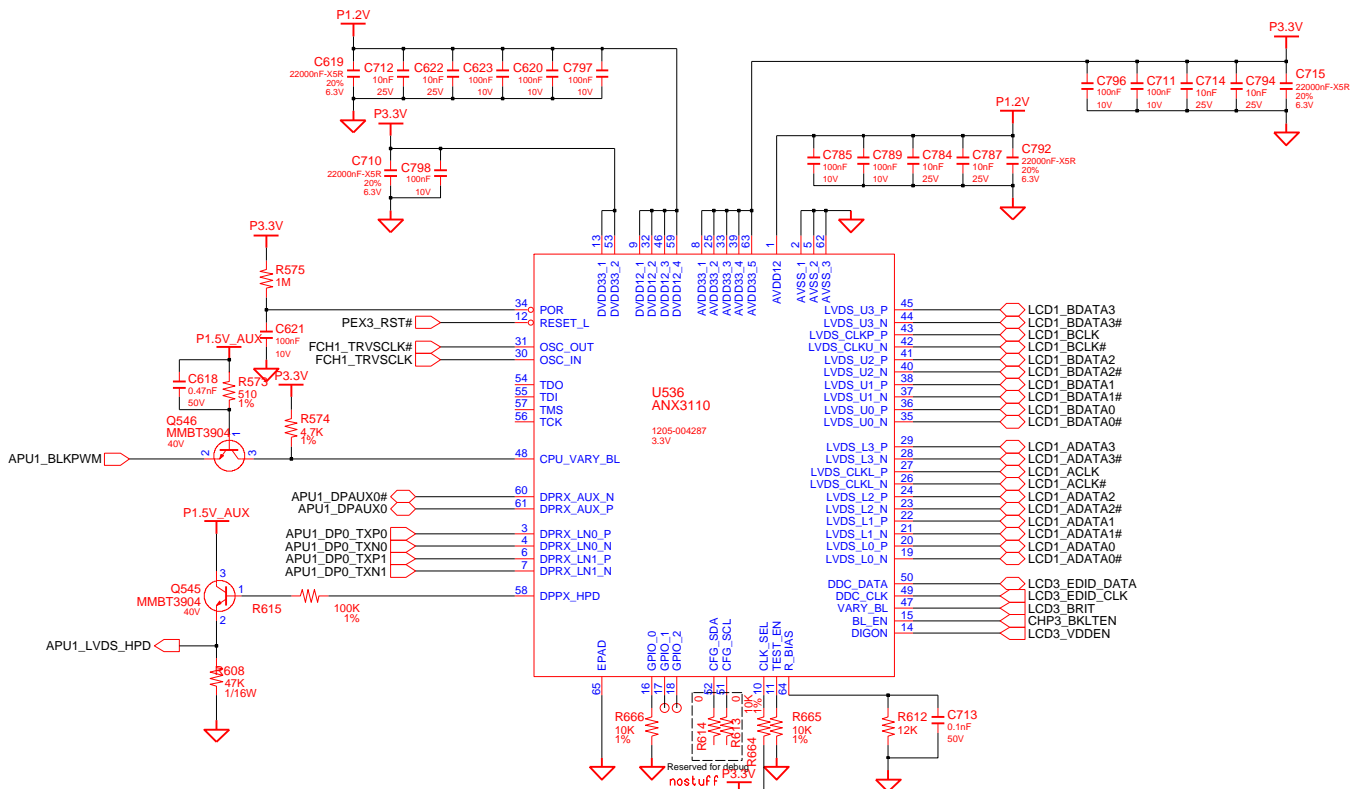
PLACE CLOSE TO USB SUB B'D Conenctor

DESIGN	BIN XIE	DATE	6/4/2010	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	LEI GUO	DEV. STEP	PV	USB SUB BOARD		
APPROVAL	BC LEE	REV	REV 1.0	SUB BOARD		
MODULE CODE		LAST EDIT				
			May 10, 2011 10:53:25 AM	PAGE	53	OF 54

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Travis_L (ANX3110)



DESIGN	BIN XIE	DATE	3/12/2011	TITLE	PETRONAS-D 15 TRAVIS_L_ANX3110 TRAVIS_L	SAMSUNG ELECTRONICS PART NO. BA41-####A
CHECK	LEI GUO	DEV. STEP	PV			
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT				
				May 10, 2011 10:53:25 AM	PAGE	54 OF 54

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