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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

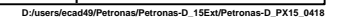
Design	CHECK	APPROVAL

Owner : SEC Mobile R & D Signature : X

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

苹果笔记本维修交流群群号：325742634



## BOARD INFORMATION

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## SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

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

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		

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

## 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

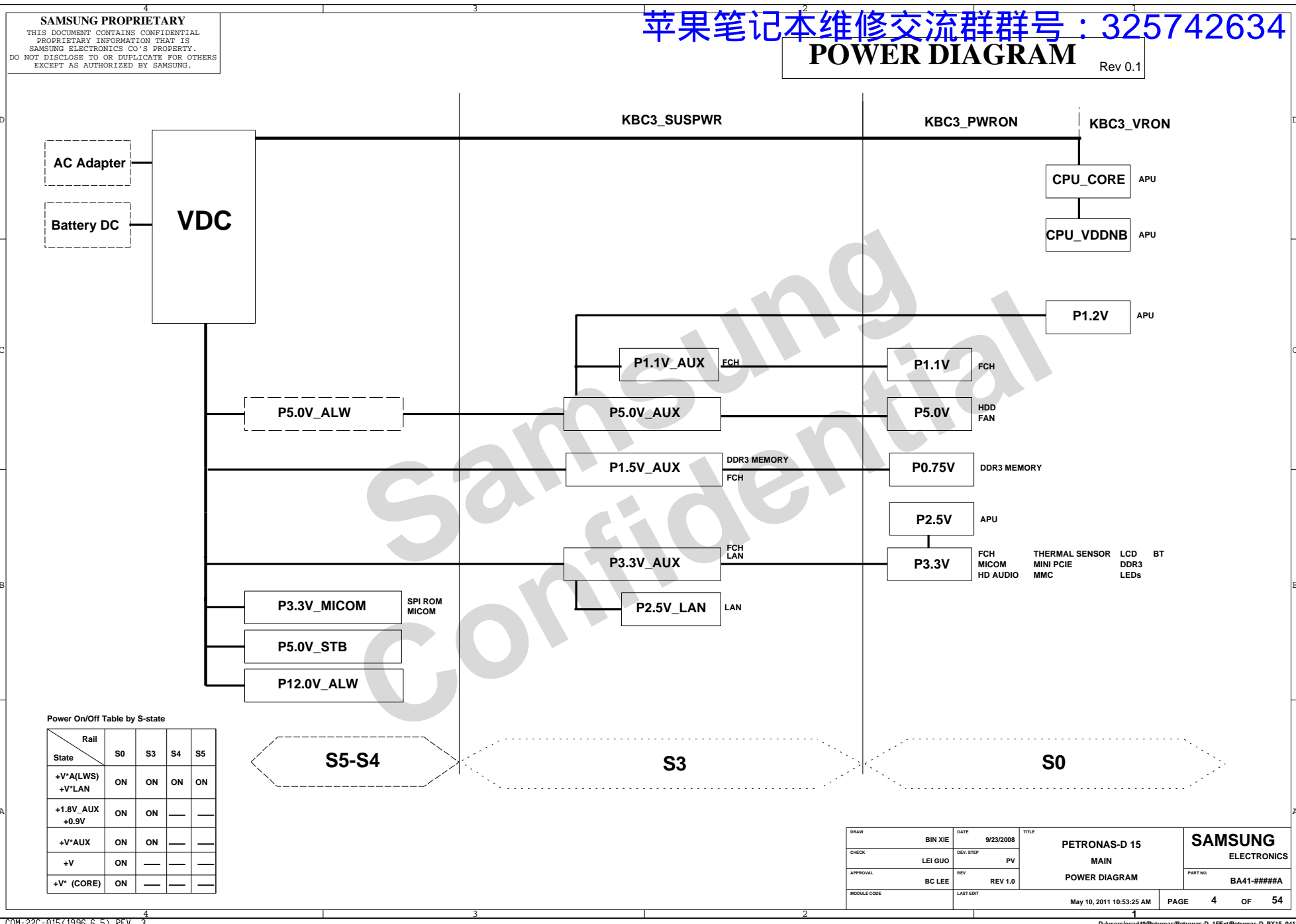
I<sup>2</sup>C / SMB Address

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	-

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

Rev 0.1

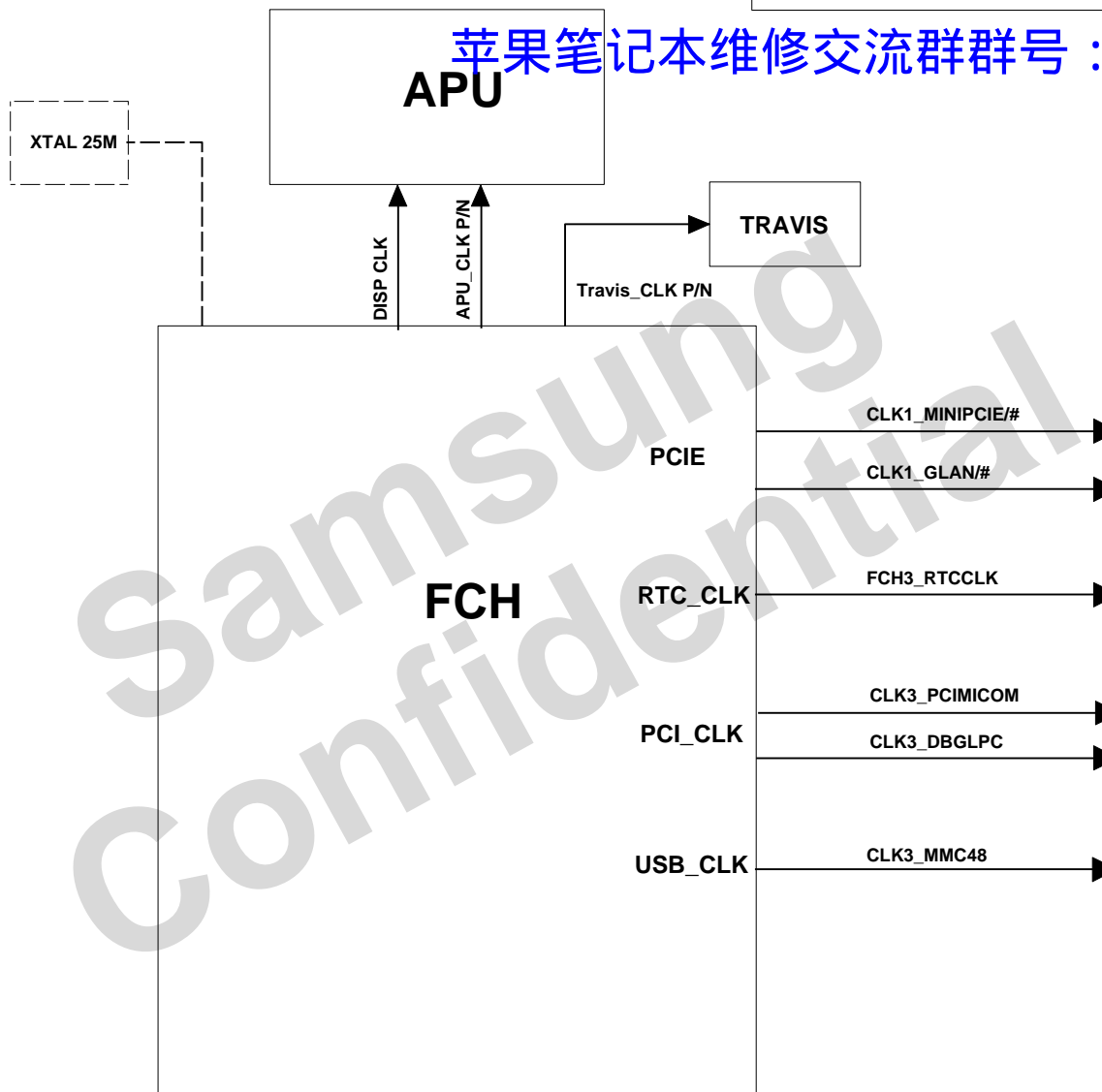


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## CLOCK DISTRIBUTION Rev. 0.1

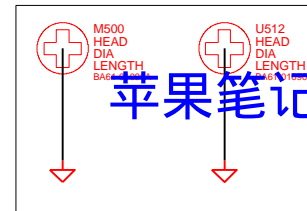
苹果笔记本维修交流群群号：325742634



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

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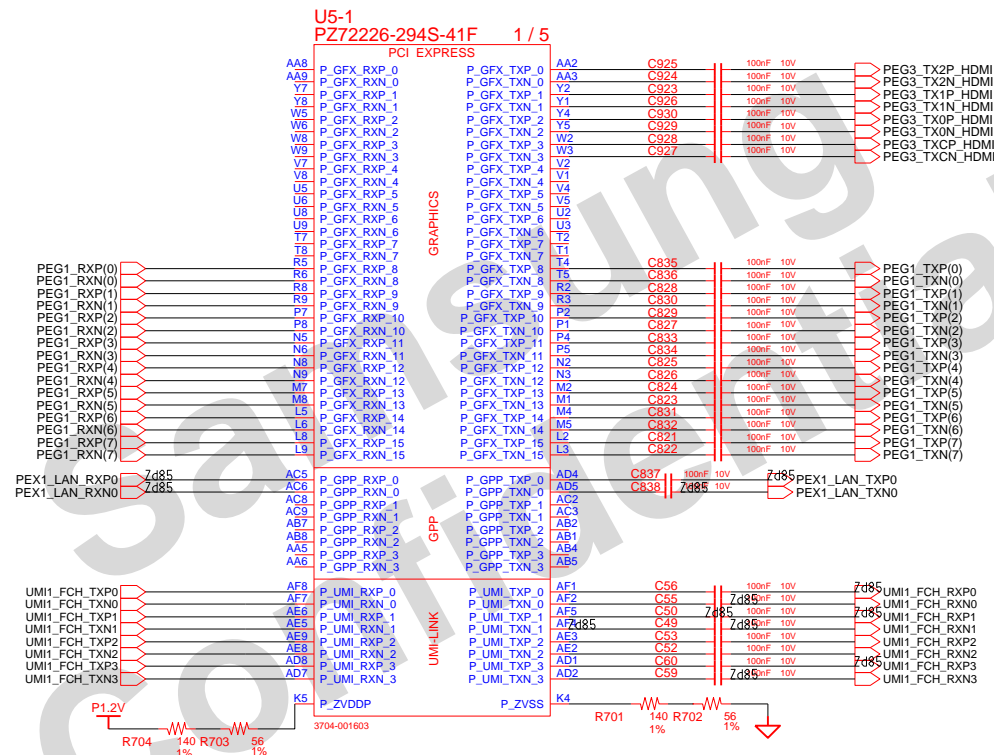
苹果笔记本维修交流群群号：325742634

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

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# Llano Processor (FS1)



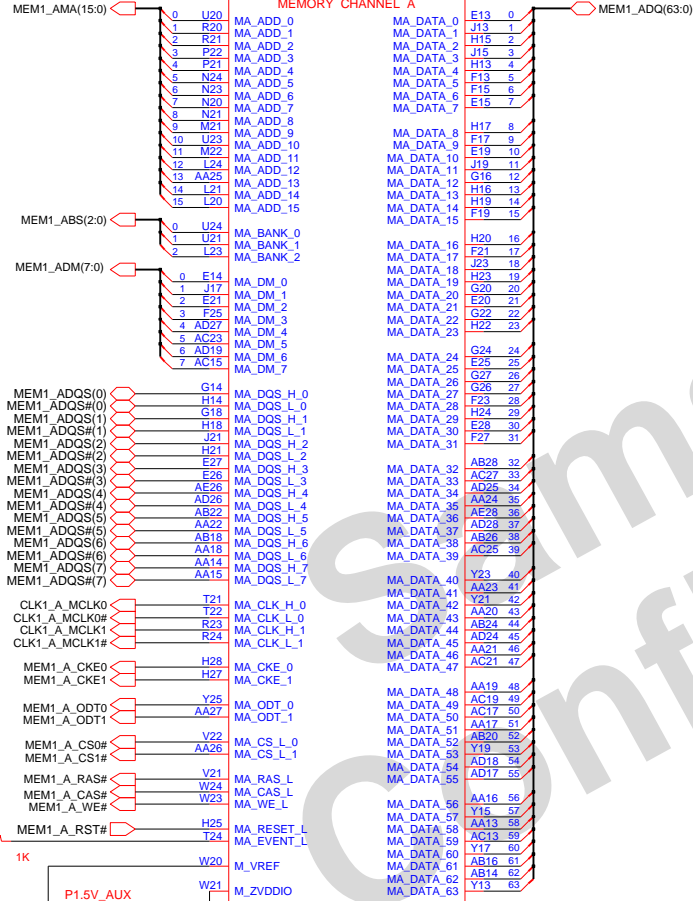
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CHECK	LEI GUO	DEV. STEP	PV	Llano		
APPROVAL	BC LEE	REV	REV 1.0	1/4		
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U5-2  
PZ72226-294S-41F 2 / 5

**MEMORY CHANNEL A**



P1.5V\_AUX

R808

1K

P1.5V\_AUX

R811

1K

R810

1K

C938

100uF

10V

P1.5V\_AUX

R809

39.2

1%

P1.5V\_AUX

R811

1K

R810

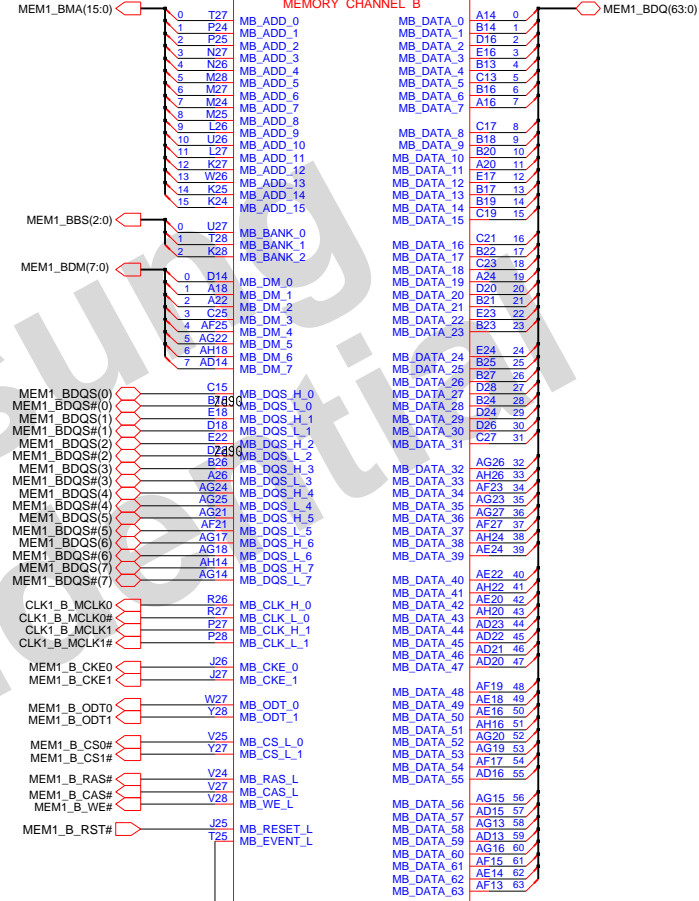
1K

C938

100uF

10V

**MEMORY CHANNEL B**



P1.5V\_AUX

R853

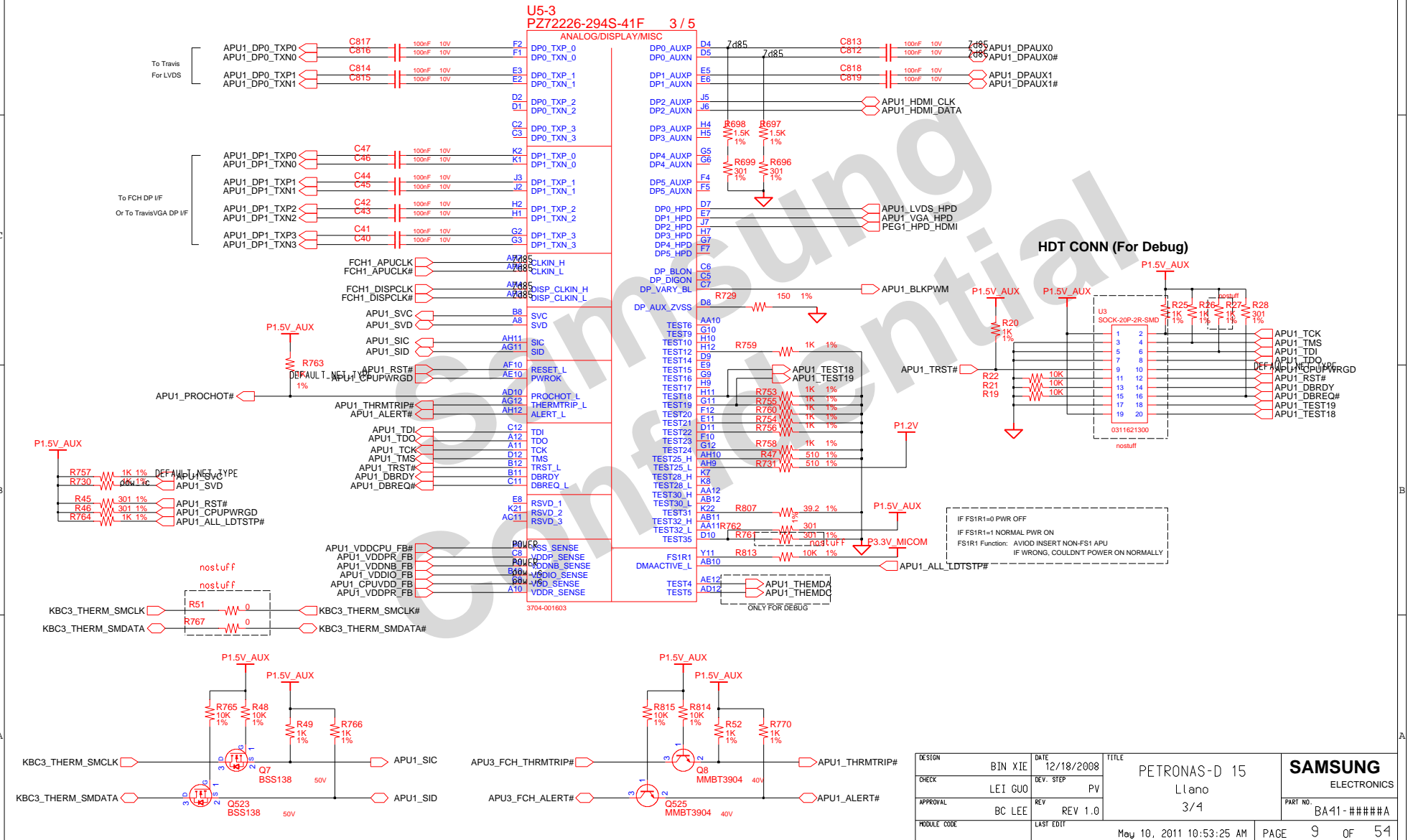
1K

DESIGN	BIN XIE	DATE	12/18/2008	TITLE	PETRONAS-D 15	<b>SAMSUNG</b> 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				
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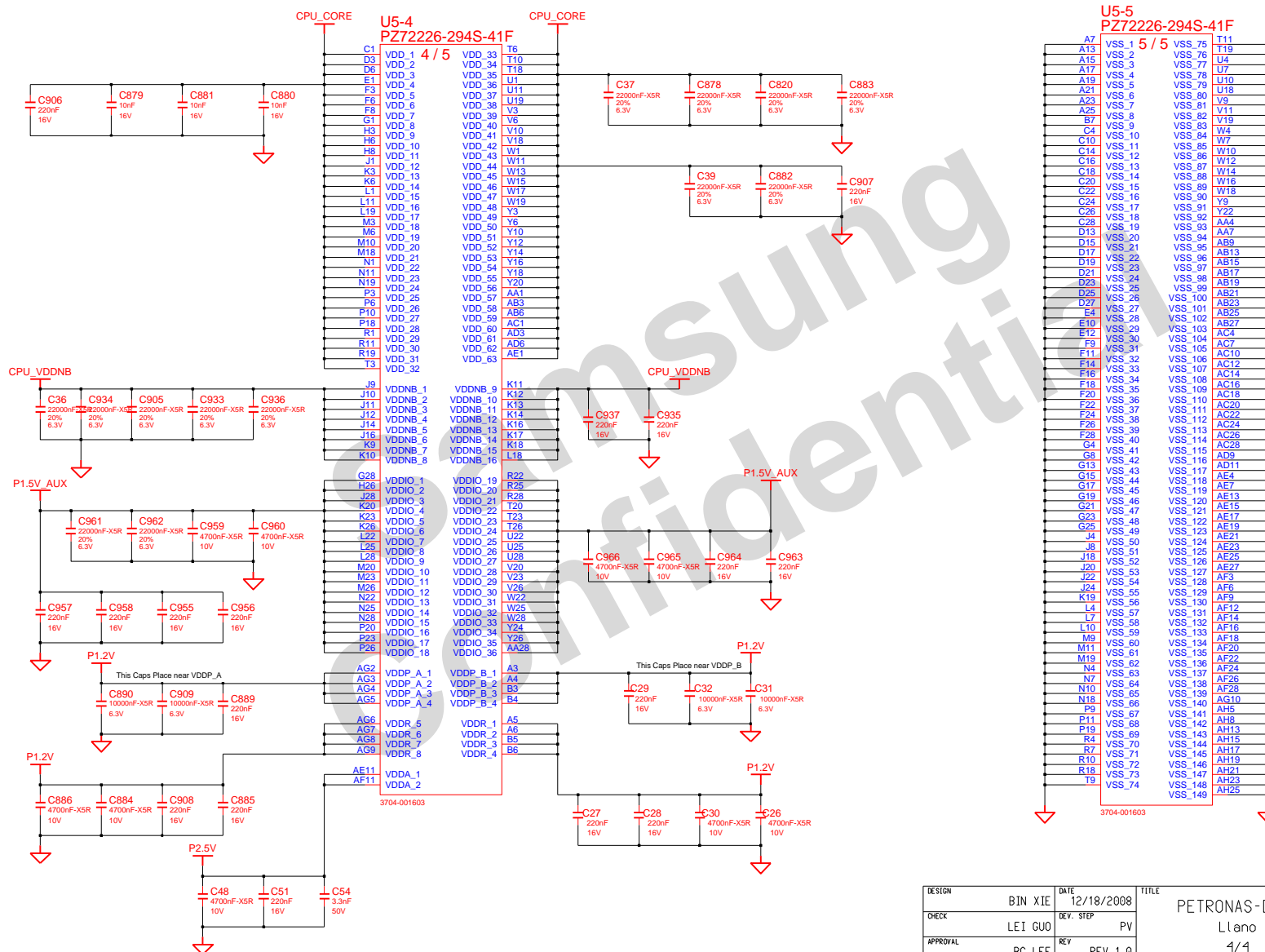
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CHECK	LEI GUO	DEV. STEP	PV		Llano	
APPROVAL	BC LEE	REV	REV 1.0		4/4	
MODULE CODE		LAST EDIT				
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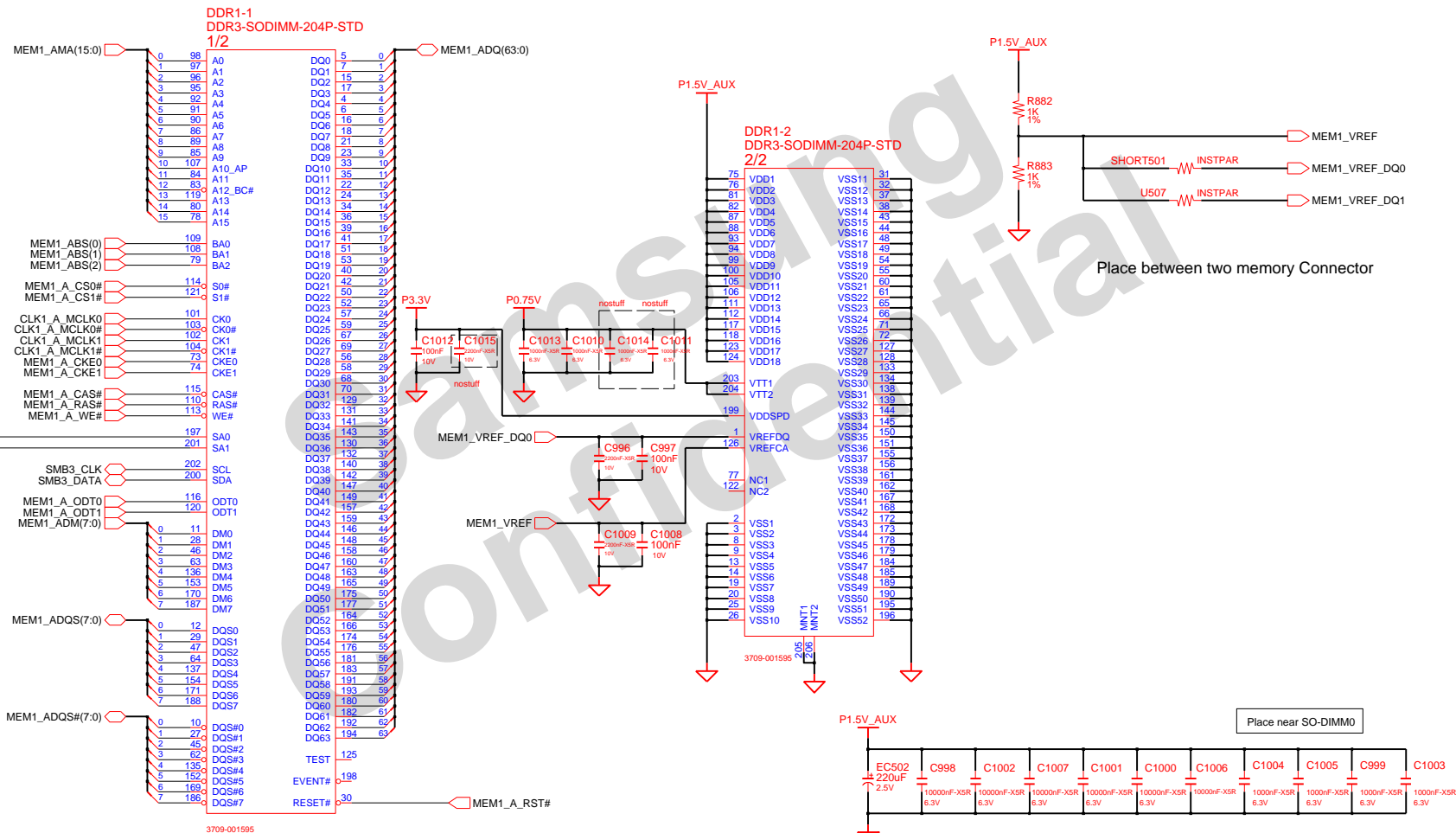
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**SO-DIMM#0 : 2nd SO-DIMM**

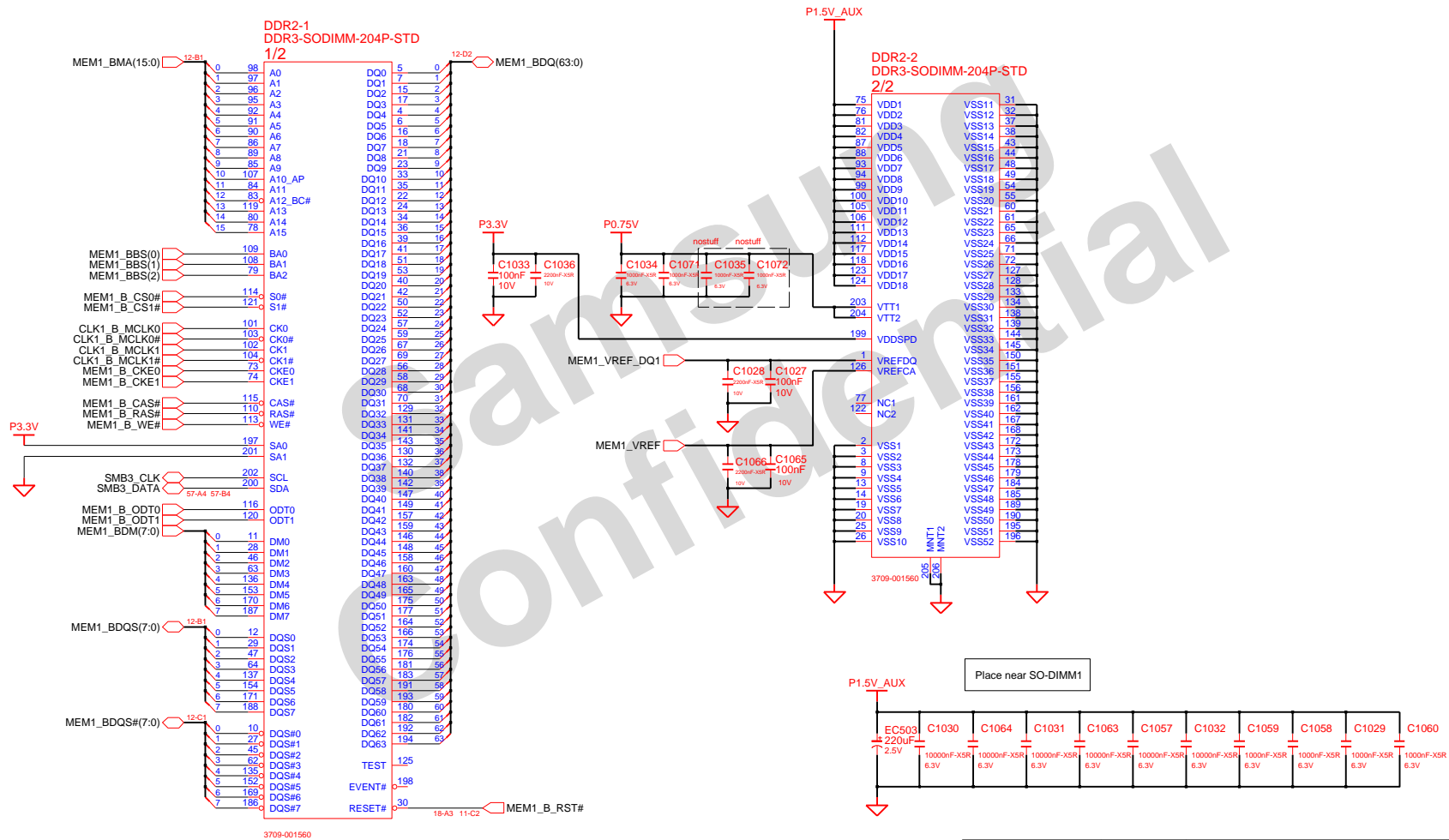
**DDR SO-DIMM #0**

Height : 9.2 mm (STD)

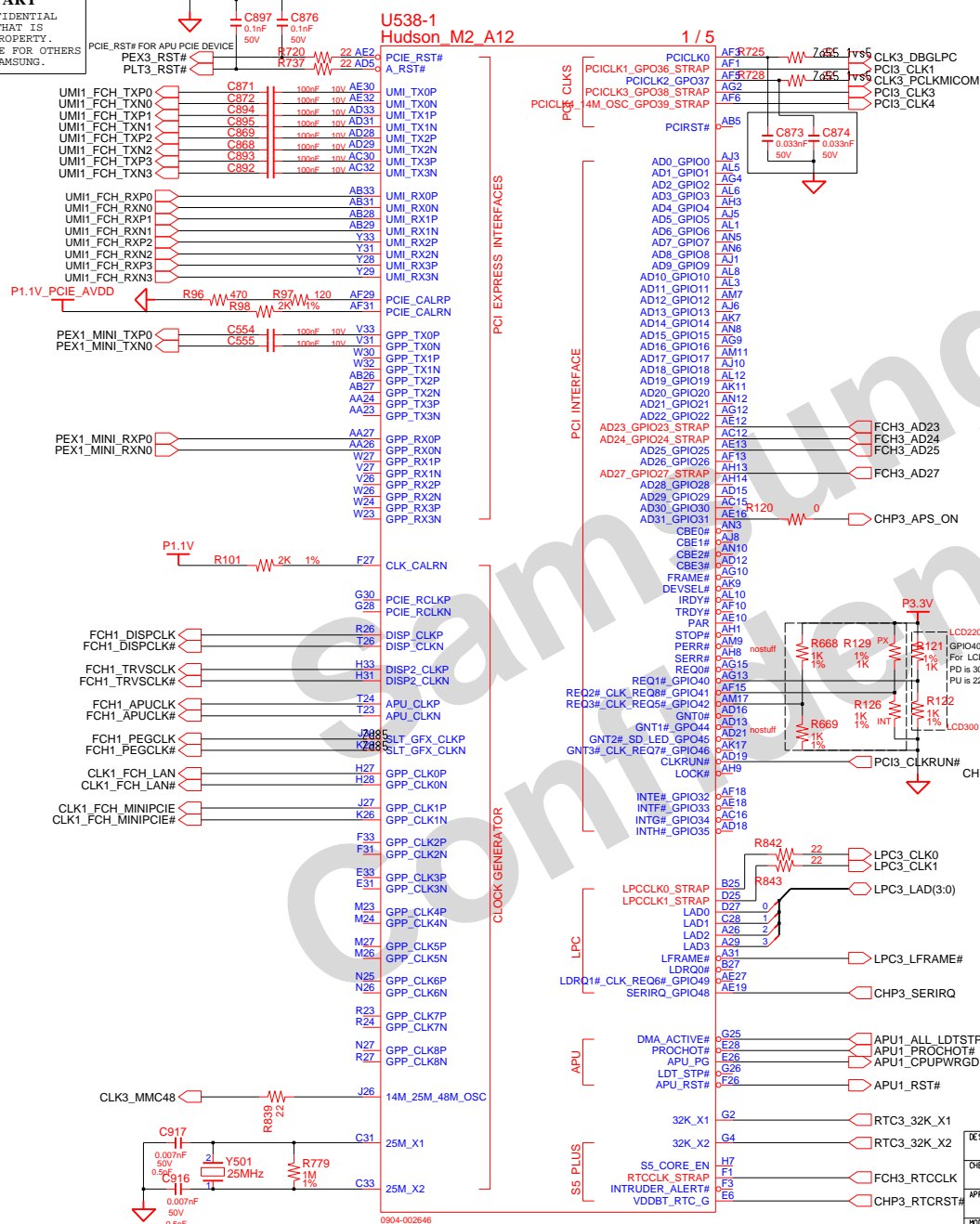


DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG
CHECK	LEI GUO	DEV. STEP	PV		SODIMM 0	ELECTRONICS
APPROVAL	BC LEE	REV	REV 1.0		DDR3	PART NO.
MODULE CODE	undefined	LAST EDIT	May 10, 2011 10:53:25 AM			BA41-####A
			PAGE	11	OF	54

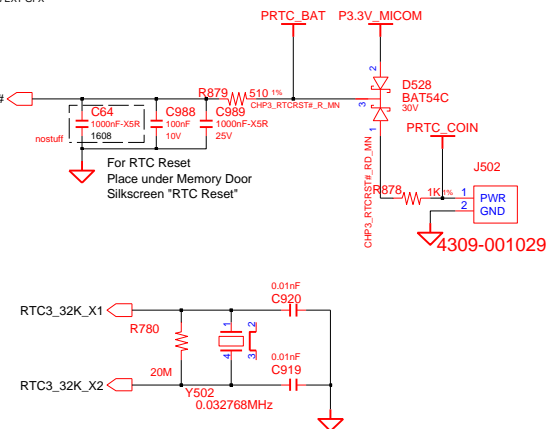
Height : 4.0mm (STD)




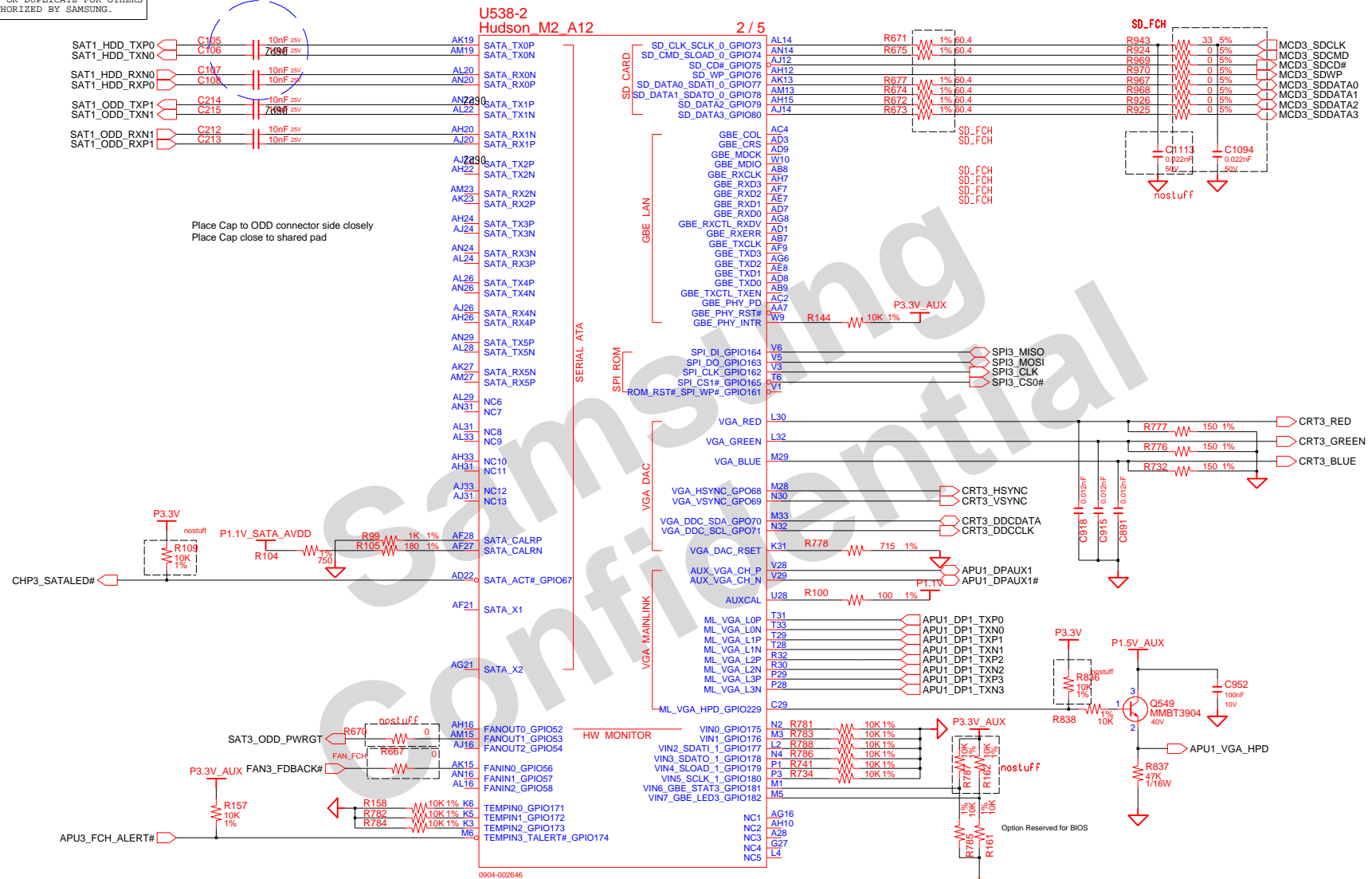
BRAND	BIN XIE	DATE	2/27/2008	PETRONAS-D 15 SODIMM 1 DDR3	SAMSUNG ELECTRONICS			
CHECK	LEI GUO	DEV. STEP	PV					
APPROVAL	BC LEE	REV	REV 1.0				PART NO.	BA41-####A
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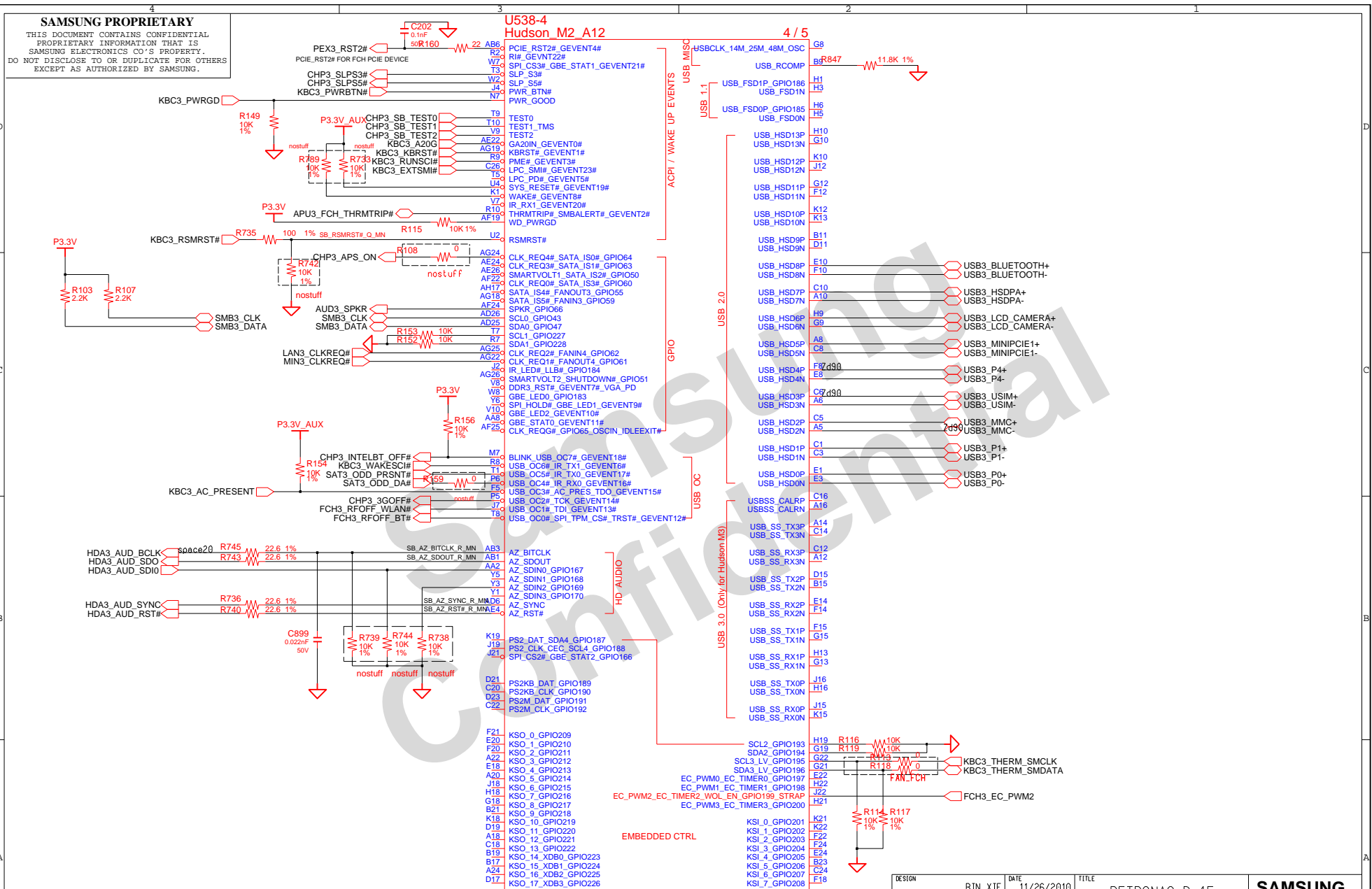
## RTC BATTERY



DESIGN	BIN XIE	DATE	11/26/2010	TITLE	PETRONAS-D 15	
CHECK	LEI GUO	DEV. STEP	PV	FCH		
APPROVAL	BC LEE	REV	REV 1.0	1/4		
MODULE CODE	LAST EDIT		May 10, 2011 10:53:25 AM		PAGE 13 OF 54	

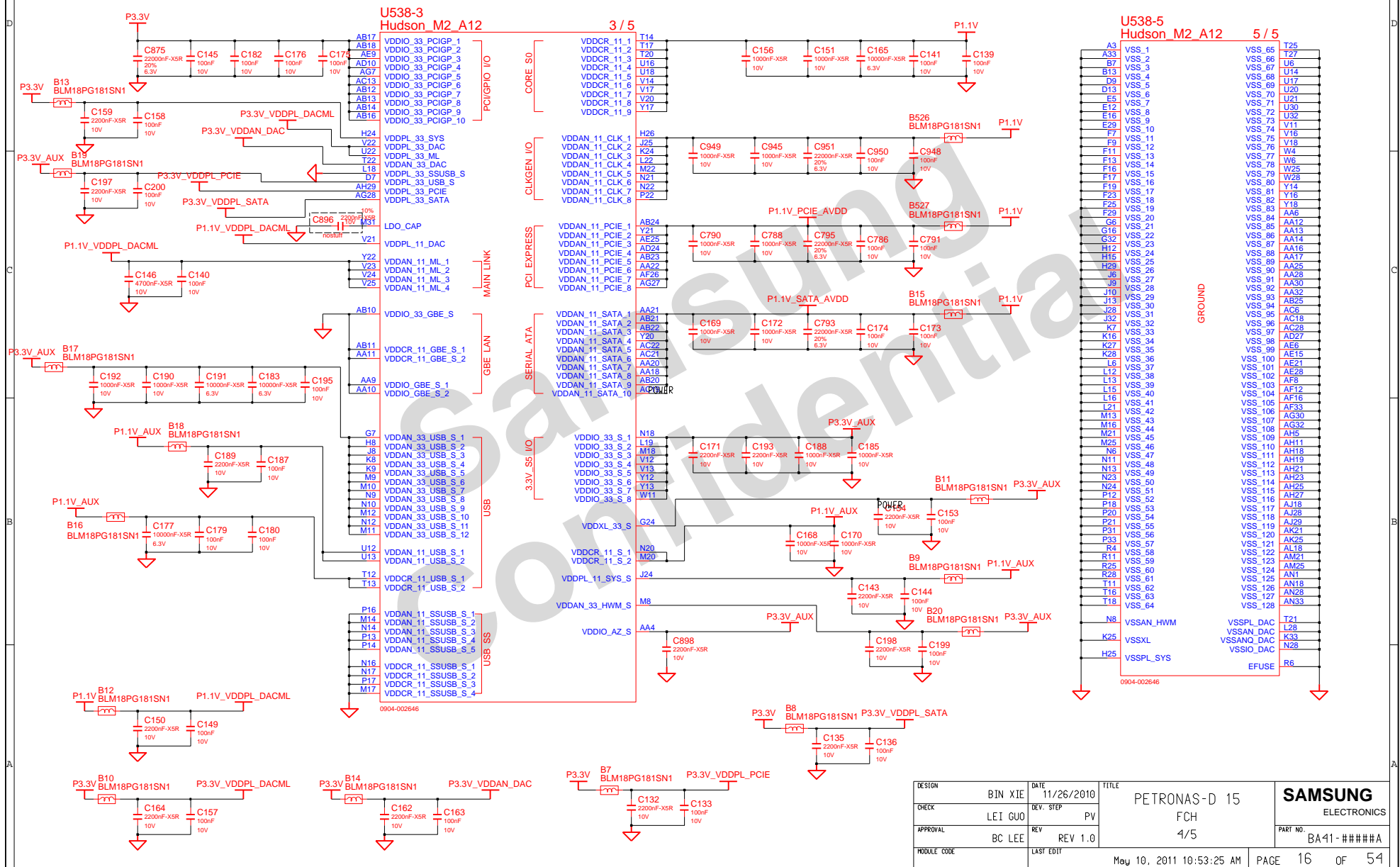


DESIGN	BIN XIE	DATE	11/26/2010	TITLE	PETRONAS-D 15	<b>SAMSUNG</b> ELECTRONICS
CHECK	LEI GUO	REV.	STEP	PV	FCH	
APPROVAL	BC LEE	REV	REV 1.0		2/4	
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM		PAGE	
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DESIGN	BIN XIE	DATE	11/26/2010	TITLE		<b>SAMSUNG</b> ELECTRONICS
CHECK	LEI GUO	REV.	STEP	PV	FCH	
APPROVAL	BC LEE	REV	REV 1.0		3/4	
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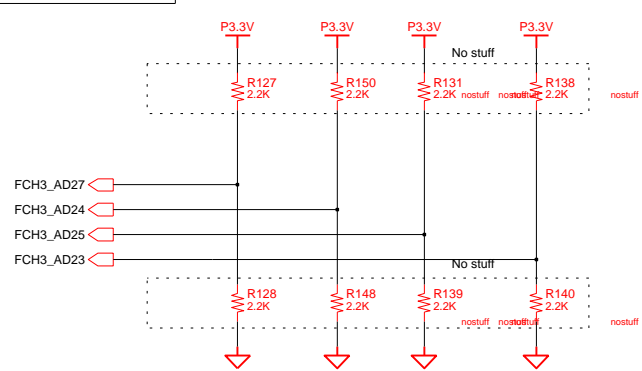






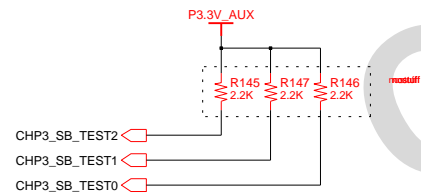
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**DEBUG STRAPS**

STRAP	PCI3_AD(27)	PCI3_AD(25)	PCI3_AD(24)	PCI3_AD(23)
	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

STRAP	PCI3_CLK1	PCI3_CLK3	PCI3_CLK4	LPC3_CLK0	LPC3_CLK1	EC_PWM2	RTC_CLK
	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

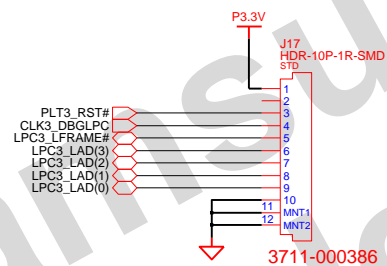


Remove SB\_TEST pins for mass production. (For ASIC debug only - AMD)

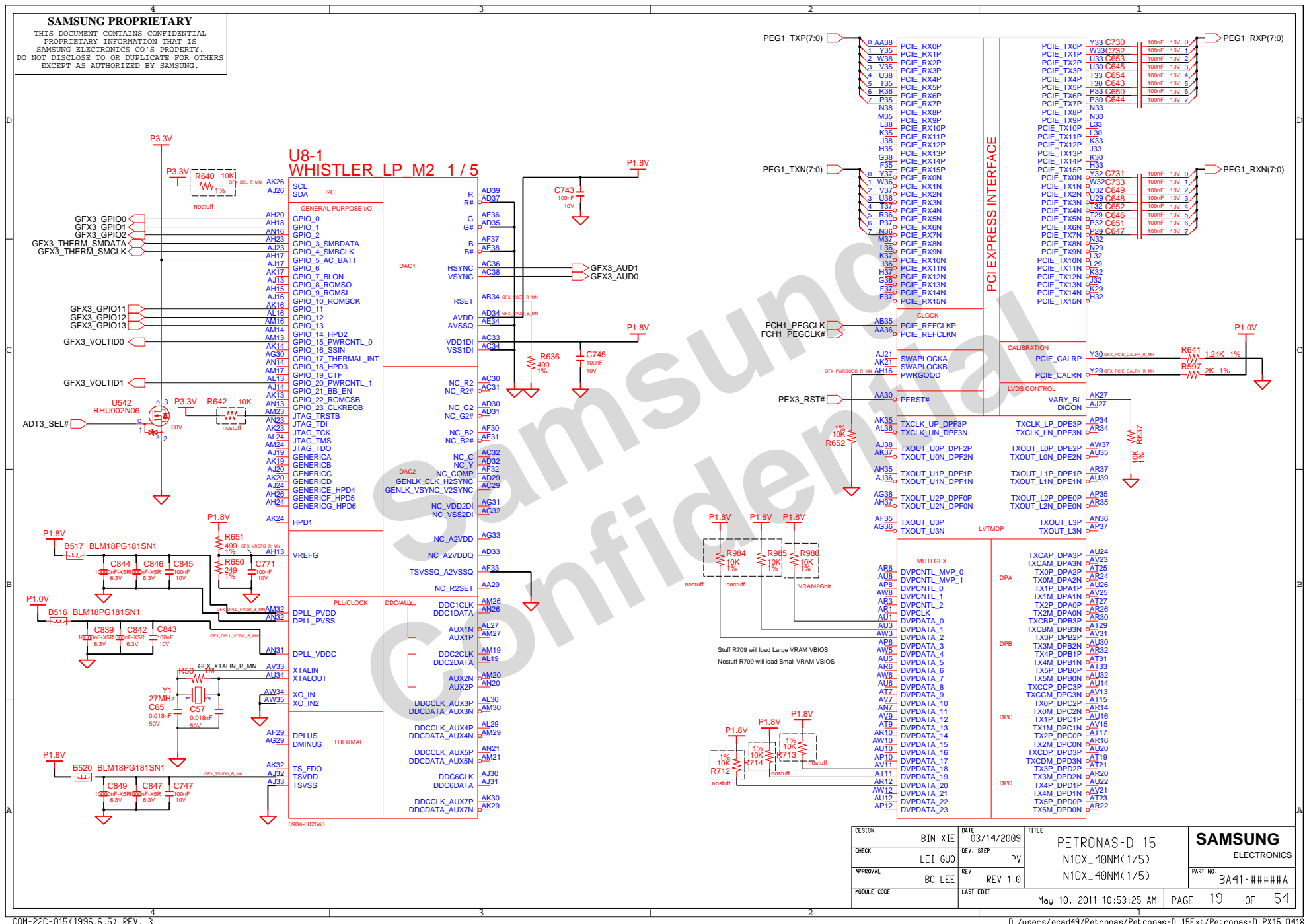
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CHECK	LEI GUO	DEV. STEP	PV		FCH Strap	
APPROVAL	BC LEE	REV	REV 1.0			PART NO. BA41-####A
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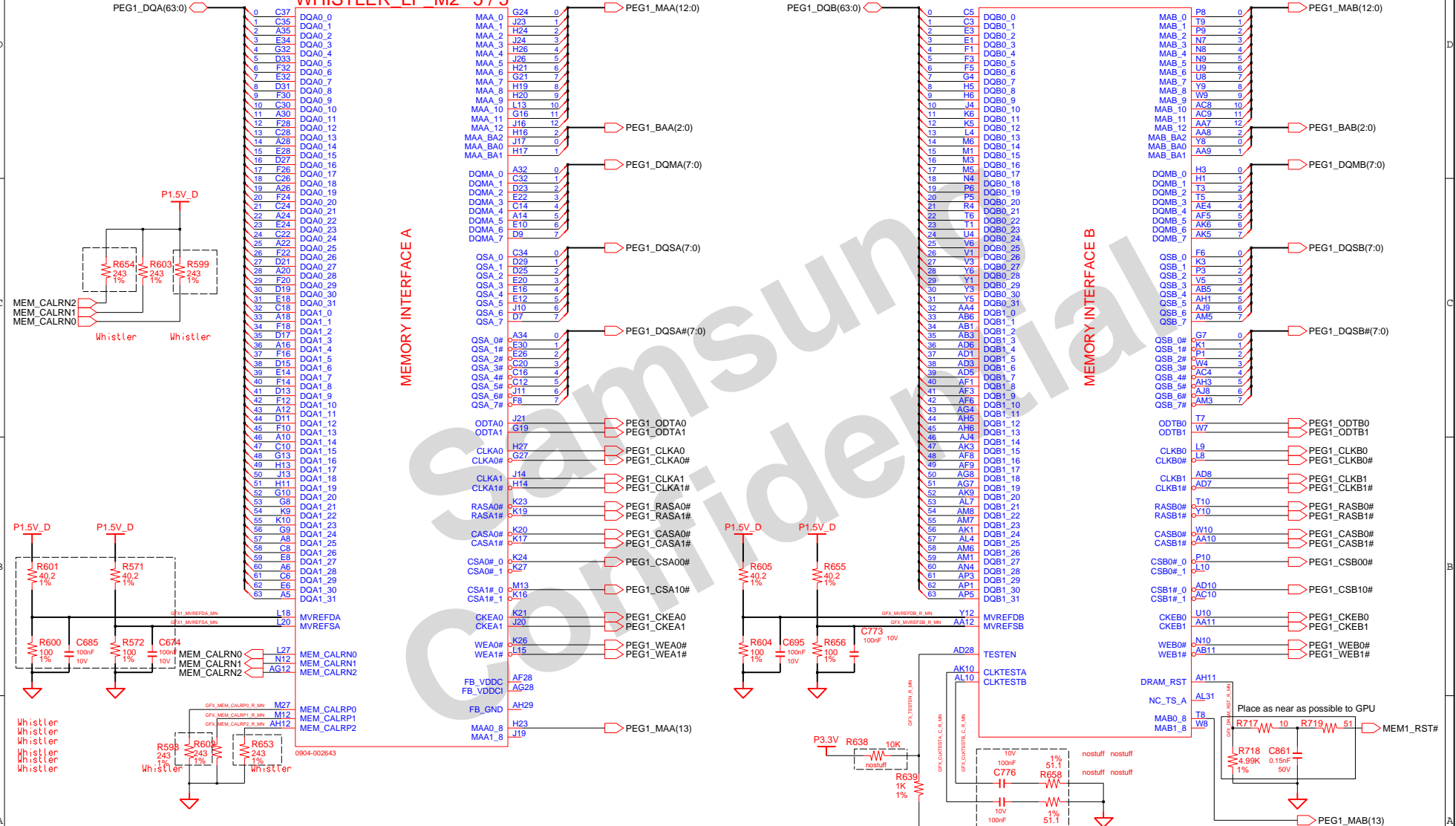
**80H PORT DEBUG**

DESIGN	BIN XIE	DATE	11/10/2008	TITLE	PETRONAS-D 15 DEBUG PORT 80H DECODER	<b>SAMSUNG</b> ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
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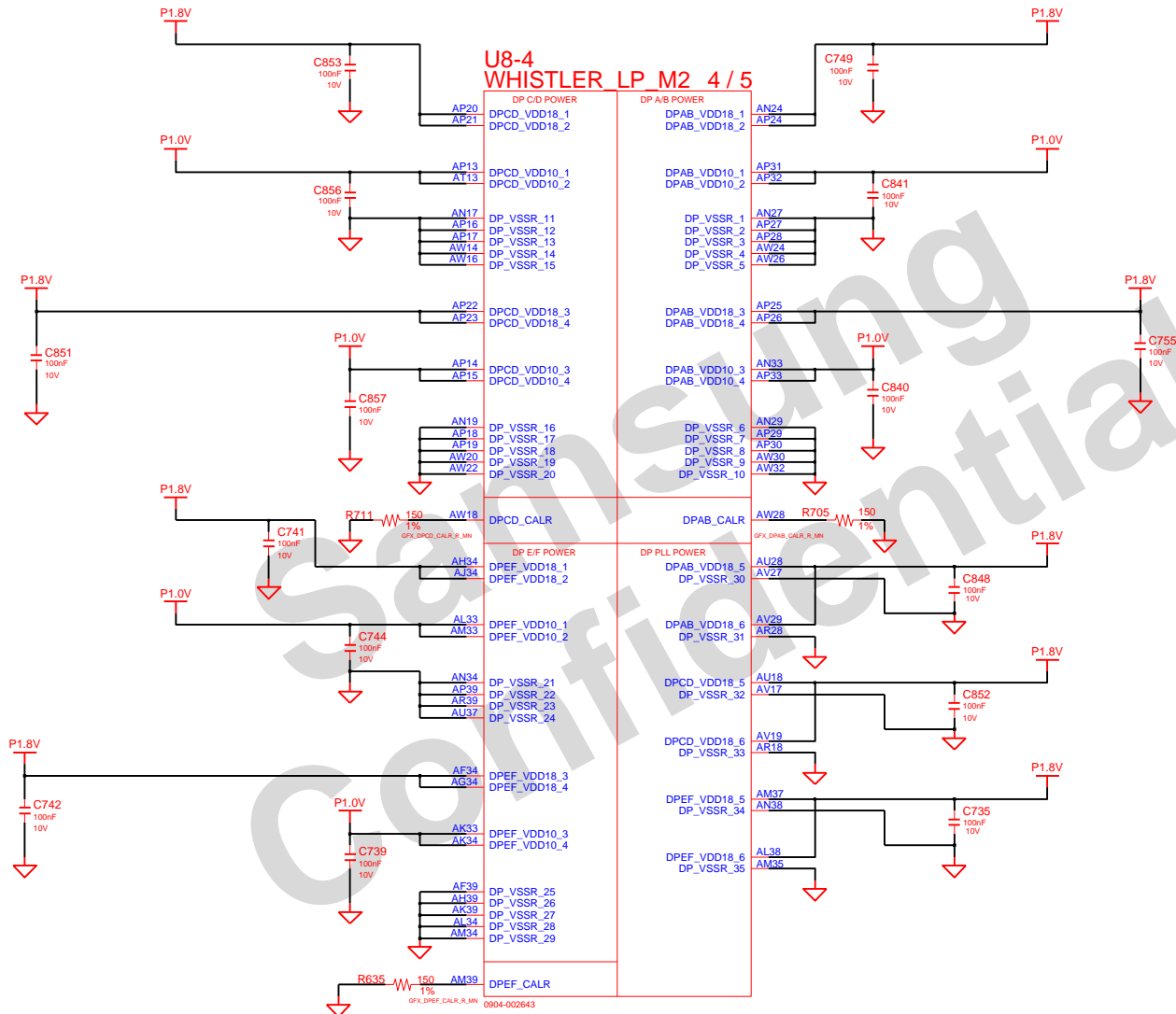
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**U8-5  
WHISTLER LP M2 5 / 5**



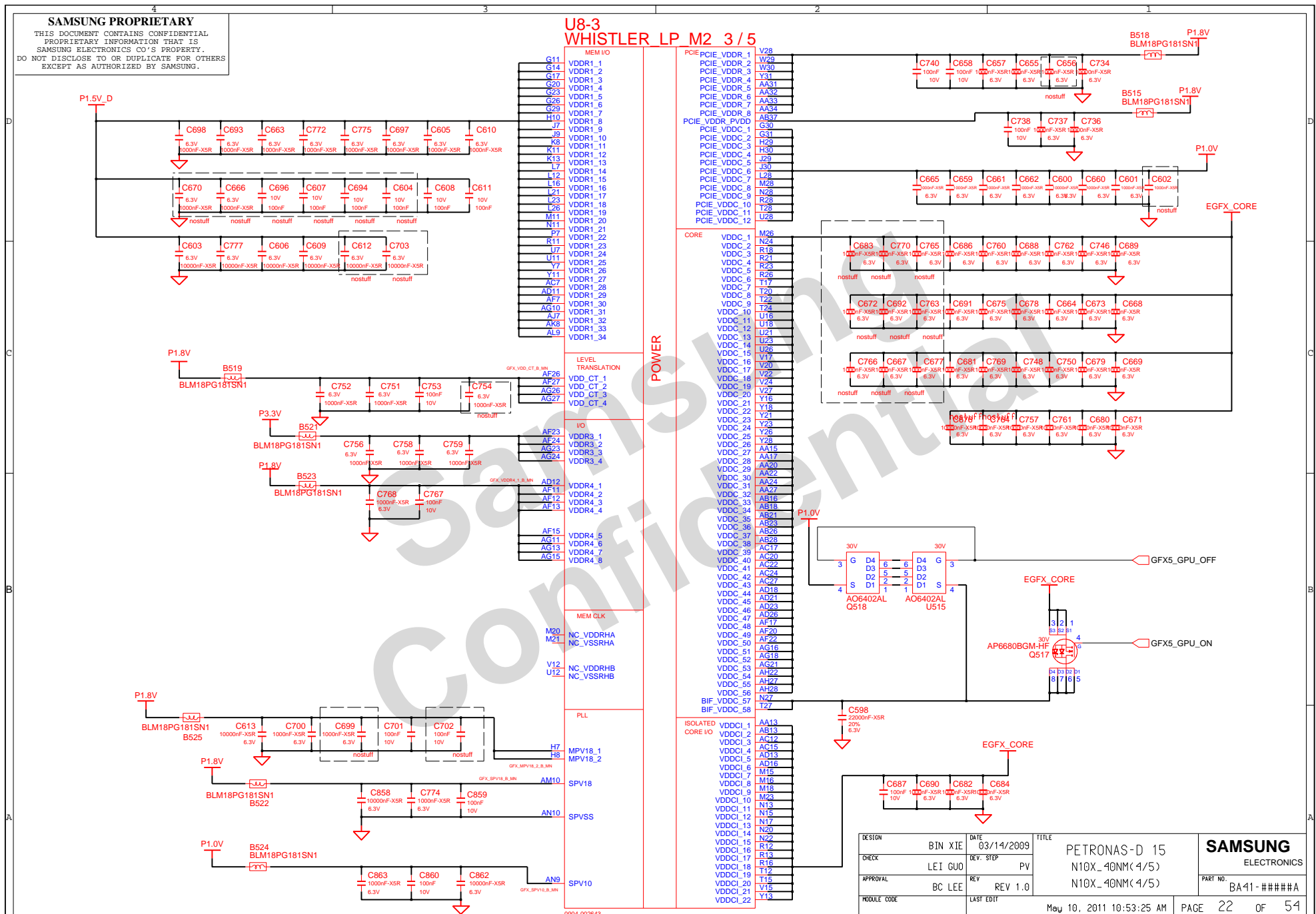
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CHECK	LEI GUO	DEV. STEP	PV		N10X_40NM(2/5)	
APPROVAL	BC LEE	REV	REV 1.0		N10X_40NM(2/5)	
MODULE CODE		LAST EDIT				
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DESIGN	BIN XIE	DATE	03/14/2009	TITLE	PETRONAS-D 15	<b>SAMSUNG</b> ELECTRONICS PART 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				
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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  
H31 PCIE\_VSS\_5  
H34 PCIE\_VSS\_6  
H39 PCIE\_VSS\_7  
J31 PCIE\_VSS\_8  
K31 PCIE\_VSS\_9  
K34 PCIE\_VSS\_10  
K39 PCIE\_VSS\_11  
L31 PCIE\_VSS\_12  
L34 PCIE\_VSS\_13  
M34 PCIE\_VSS\_14  
N39 PCIE\_VSS\_15  
N31 PCIE\_VSS\_16  
N34 PCIE\_VSS\_17  
P31 PCIE\_VSS\_18  
P34 PCIE\_VSS\_19  
P39 PCIE\_VSS\_20  
R34 PCIE\_VSS\_21  
T31 PCIE\_VSS\_22  
T34 PCIE\_VSS\_23  
T39 PCIE\_VSS\_24  
U31 PCIE\_VSS\_25  
U34 PCIE\_VSS\_26  
V34 PCIE\_VSS\_27  
W31 PCIE\_VSS\_28  
W34 PCIE\_VSS\_29  
Y39 PCIE\_VSS\_30  
Y34 PCIE\_VSS\_31  
Y39 PCIE\_VSS\_32  
Y39 PCIE\_VSS\_33  
Y39 PCIE\_VSS\_34  
AB39 PCIE\_VSS\_35

A3 GND\_1  
A37 GND\_2  
B7 GND\_3  
B9 GND\_4  
B11 GND\_5  
B13 GND\_6  
B15 GND\_7  
B17 GND\_8  
B19 GND\_9  
B21 GND\_10  
B23 GND\_11  
B25 GND\_12  
B27 GND\_13  
B29 GND\_14  
B31 GND\_15  
B33 GND\_16  
B35 GND\_17  
C1 GND\_18  
C3 GND\_19  
C5 GND\_20  
C7 GND\_21  
C9 GND\_22  
C11 GND\_23  
C13 GND\_24  
C15 GND\_25  
C17 GND\_26  
C19 GND\_27  
C21 GND\_28  
C23 GND\_29  
C25 GND\_30  
C27 GND\_31  
C29 GND\_32  
C31 GND\_33  
C33 GND\_34  
C35 GND\_35  
D3 GND\_36  
D5 GND\_37  
D7 GND\_38  
D9 GND\_39  
D11 GND\_40  
D13 GND\_41  
D15 GND\_42  
D17 GND\_43  
D19 GND\_44  
D21 GND\_45  
D23 GND\_46  
D25 GND\_47  
D27 GND\_48  
D29 GND\_49  
D31 GND\_50  
D33 GND\_51  
D35 GND\_52  
E3 GND\_53  
E5 GND\_54  
E7 GND\_55  
E9 GND\_56  
E11 GND\_57  
E13 GND\_58  
E15 GND\_59  
E17 GND\_60

AC21 GND\_120  
AC23 GND\_121  
AC26 GND\_122  
AC28 GND\_123  
AC29 GND\_124  
AD17 GND\_125  
AD19 GND\_126  
AD20 GND\_127  
AD22 GND\_128  
AD24 GND\_129  
AD27 GND\_130  
AE2 GND\_131  
AE6 GND\_132  
AE10 GND\_133  
AF16 GND\_134  
AF18 GND\_135  
AF21 GND\_136  
AG2 GND\_137  
AG6 GND\_138  
AG9 GND\_139  
AG17 GND\_140  
AG20 GND\_141  
AG22 GND\_142  
AH21 GND\_143  
AJ2 GND\_144  
AJ6 GND\_145  
AJ10 GND\_146  
AJ11 GND\_147  
AJ28 GND\_148  
AK7 GND\_149  
AK11 GND\_150  
AK31 GND\_151  
AL2 GND\_152  
AL6 GND\_153  
AL8 GND\_154  
AL11 GND\_155  
AL14 GND\_156  
AL17 GND\_157  
AL20 GND\_158  
AL23 GND\_159  
AL26 GND\_160  
AL32 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  
T16 GND\_70  
T21 GND\_71  
T23 GND\_72  
T26 GND\_73  
U2 GND\_74  
U6 GND\_75  
U13 GND\_76  
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  
Y24 GND\_95  
Y27 GND\_96  
Y29 GND\_97  
AA2 GND\_98  
AA6 GND\_99  
AA6 GND\_100

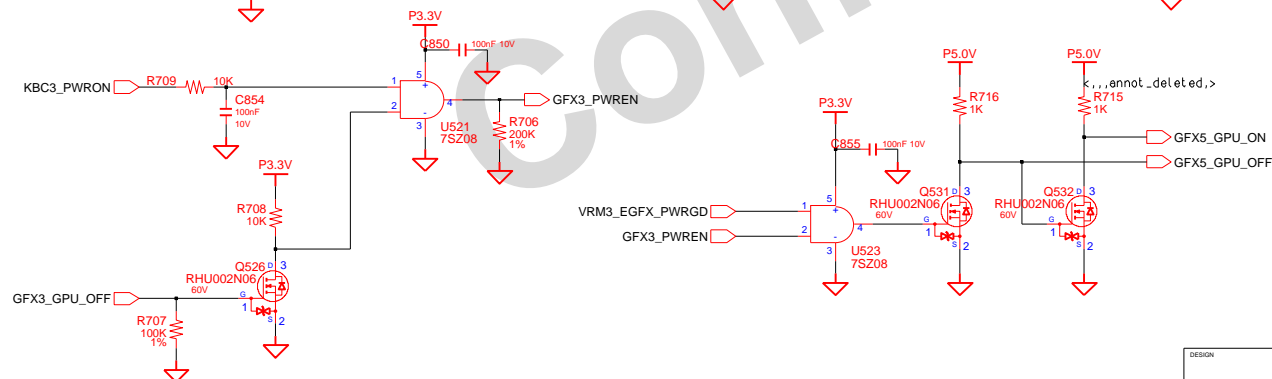
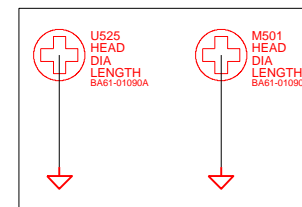
GND

VSS\_MECH\_1  
VSS\_MECH\_2  
VSS\_MECH\_3

PX\_EN

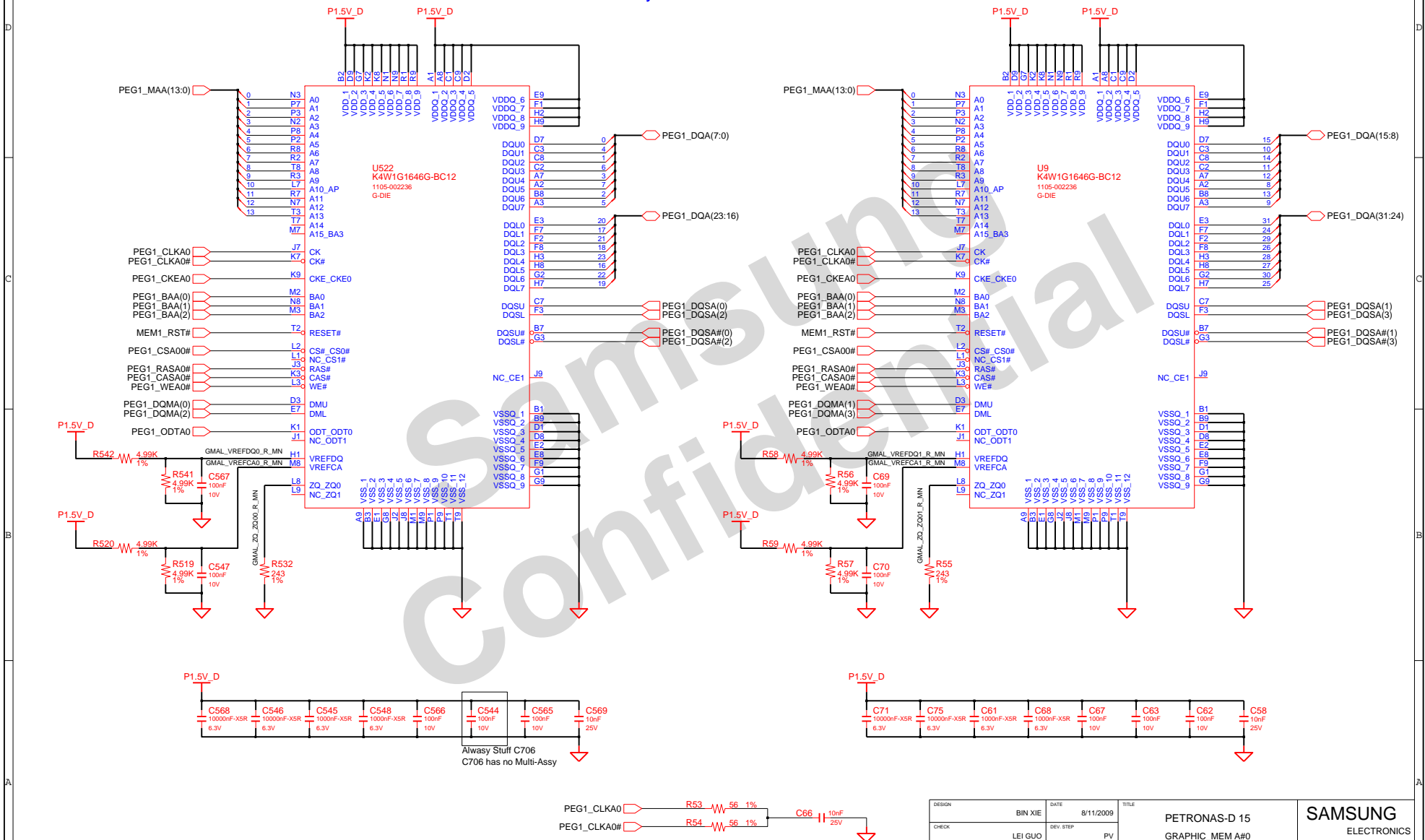
GFX3\_GPU\_OFF

**GPU Thermal**



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

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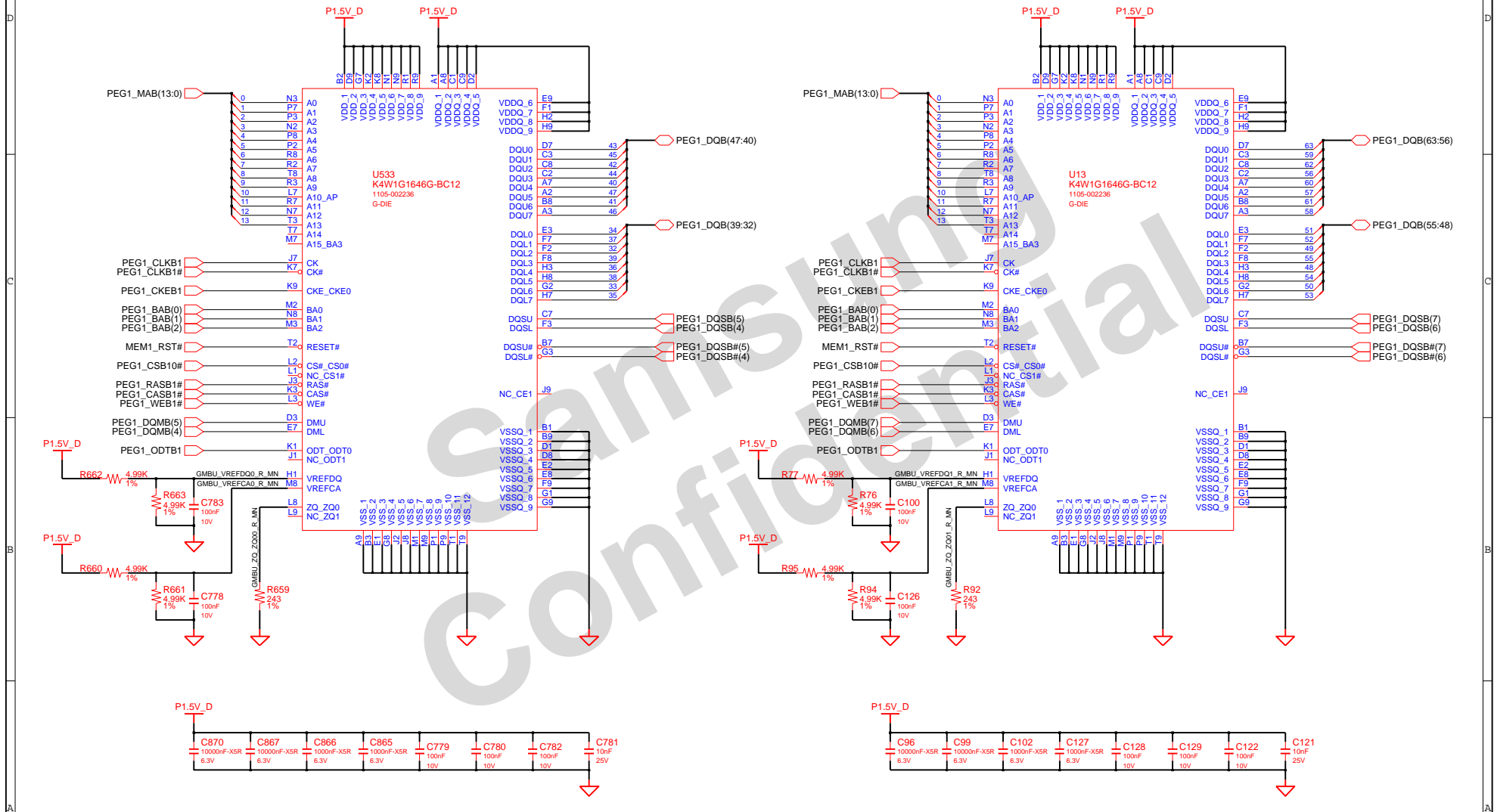


COM-22C-015(1996.6.5) REV. 3

# B-channel Upper Data

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PEG1\_CLKB1 R93 56 1%  
PEG1\_CLKB1# R91 56 1% C130 10nF 25V

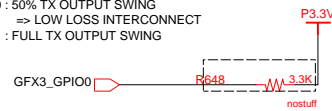
DESIGN	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV		GRAPHIC_MEM C#1	
APPROVAL	BC LEE	REV	REV 1.0		GRAPHIC_MEM C#1	
MODULE CODE		LAST EDIT				PART NO. BA41-####A
May 10, 2011 10:53:25 AM						PAGE 27 OF 54

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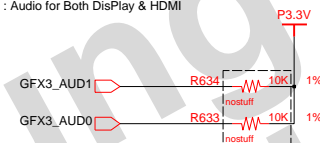
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## Straps

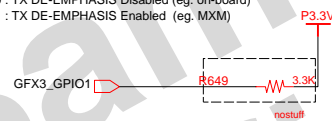
TX\_PWRS\_ENB  
PCIE FULL TX OUTPUT SWING (Internal P/D)  
0 : 50% TX OUTPUT SWING  
⇒ LOW LOSS INTERCONNECT  
1 : FULL TX OUTPUT SWING



AUD[1:0] (Internal P/D)  
00 : No Audio Function  
01 : Audio for DisplayPort only  
10 : Audio for DisplayPort and HDMI if dongle is detected  
11 : Audio for Both Display & HDMI

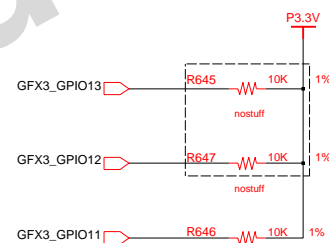


TX\_DEEMPH\_EN  
PCIE TRANSMITTER DE-EMPHASIS ENABLE (Internal P/D)  
0 : TX DE-EMPHASIS Disabled (eg. on-board)  
1 : TX DE-EMPHASIS Enabled (eg. MXM)

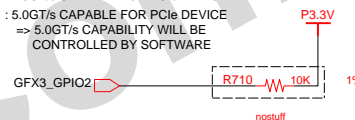


BIOS\_ROM\_EN ⇒ GPIO\_22\_ROMCSB (Internal P/D)  
If BIOS\_ROM\_EN=1, ROMCFGID[2:0] (Internal P/D)  
If BIOS\_ROM\_EN=0, Memory Aperture Size (Internal P/D)

GFX3\_GPIO[13 : 11]  
000 : 128MB  
001 : 256MB  
010 : 64MB  
011 : RESERVED  
1XX : RESERVED



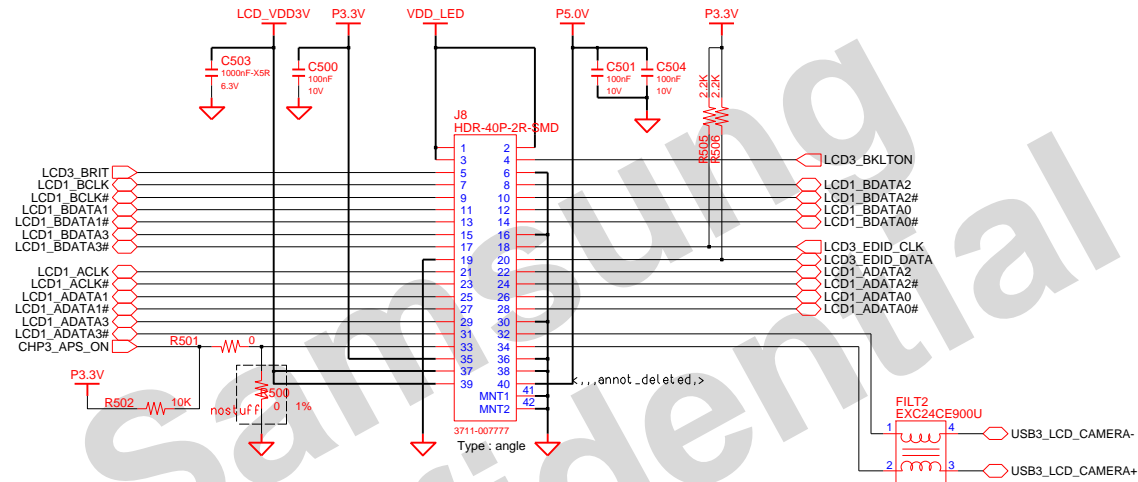
BIF\_GEN2\_EN\_A  
0 : 2.5GT/s CAPABLE FOR PCIe DEVICE  
1 : 5.0GT/s CAPABLE FOR PCIe DEVICE  
⇒ 5.0GT/s CAPABILITY WILL BE  
CONTROLLED BY SOFTWARE



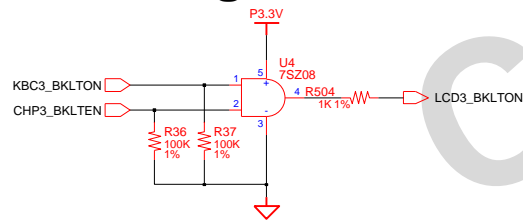
DESIGN	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG
CHECK	LEI GUO	DEV. STEP	PV		N11X_40NM STRAP	ELECTRONICS
APPROVAL	BC LEE	REV	REV 1.0		N11X_40NM STRAP	PART NO.
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	28	BA41-####A
				OF	54	

# LVDS LOGIC

## 1Ch. LCD Connector + CAMERA

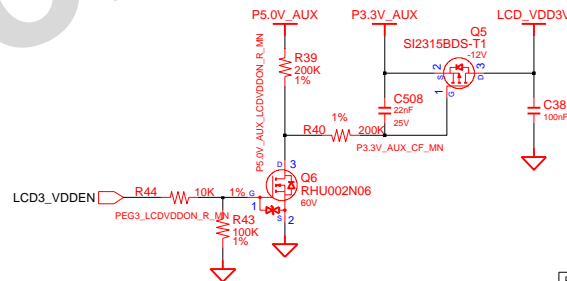


### Backlight On

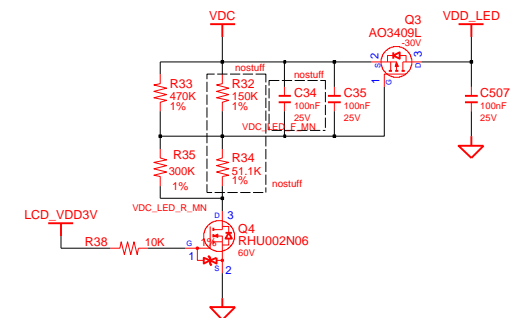


### LCD Power

EBL Purpose



### LED Power

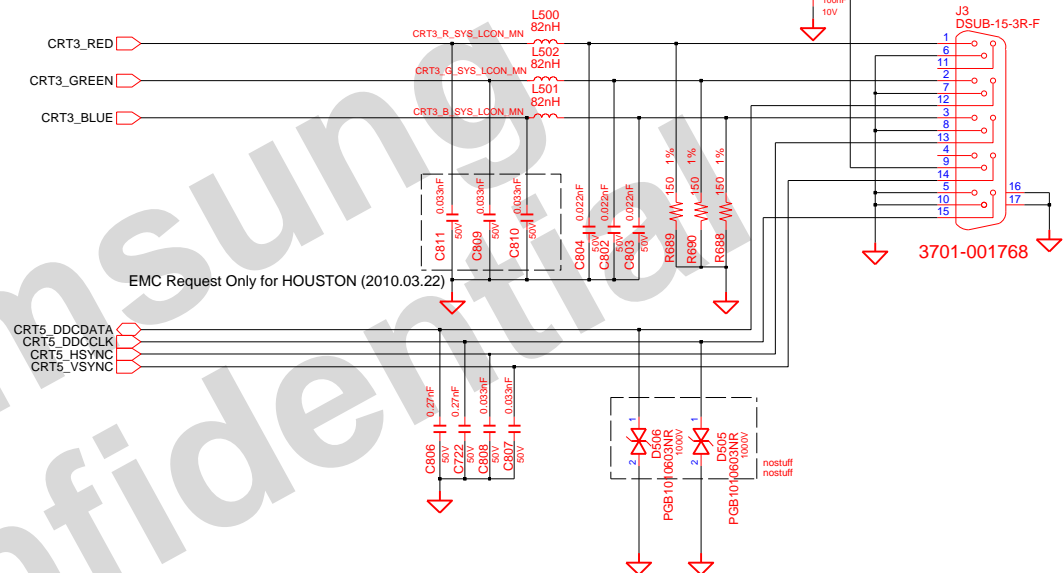
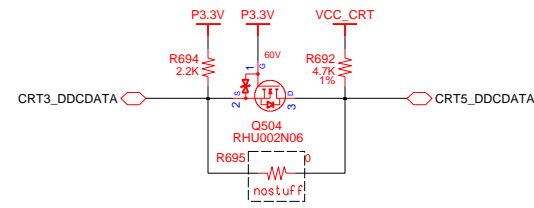
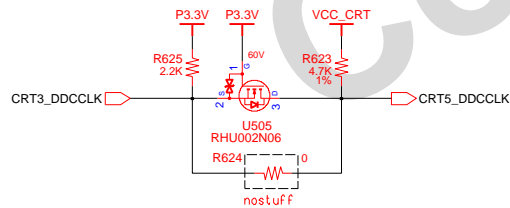
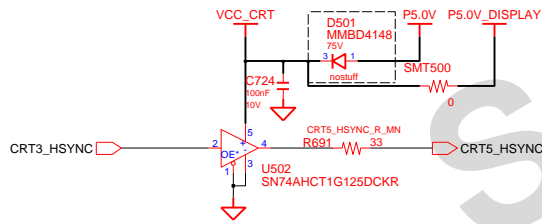
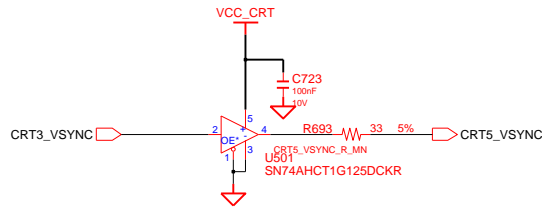


DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	GRAPHICS_IF		
APPROVAL	BC LEE	REV	REV 1.0	LVDS		
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	29	OF 54

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# CRT LOGIC



EMC Request Only for HOUSTON (2010.03.22)

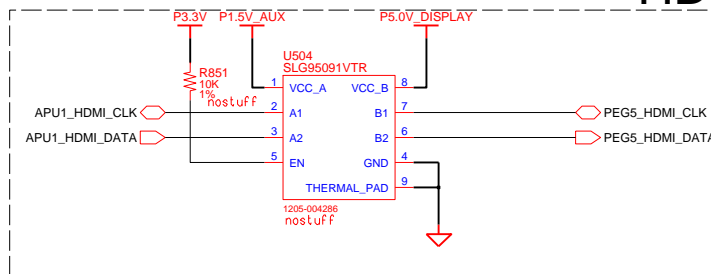
DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV	GRAPHICS_IF		
APPROVAL	BC LEE	REV	REV 1.0	CRT		
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 30 OF 54	PART NO. BA41-####A

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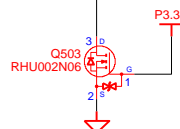
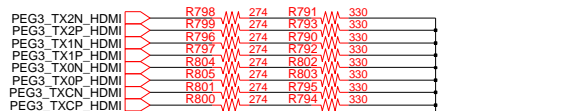
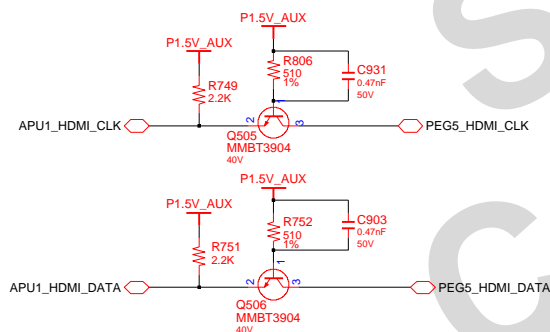
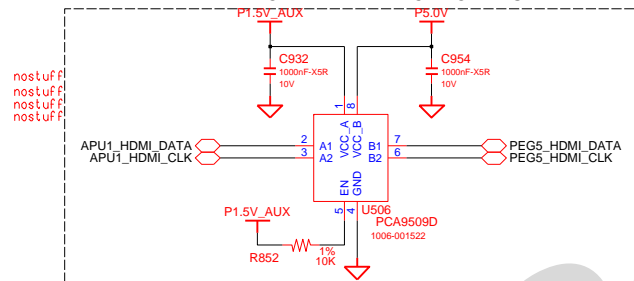
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**FOR HDMI VERIFICATION TEST**

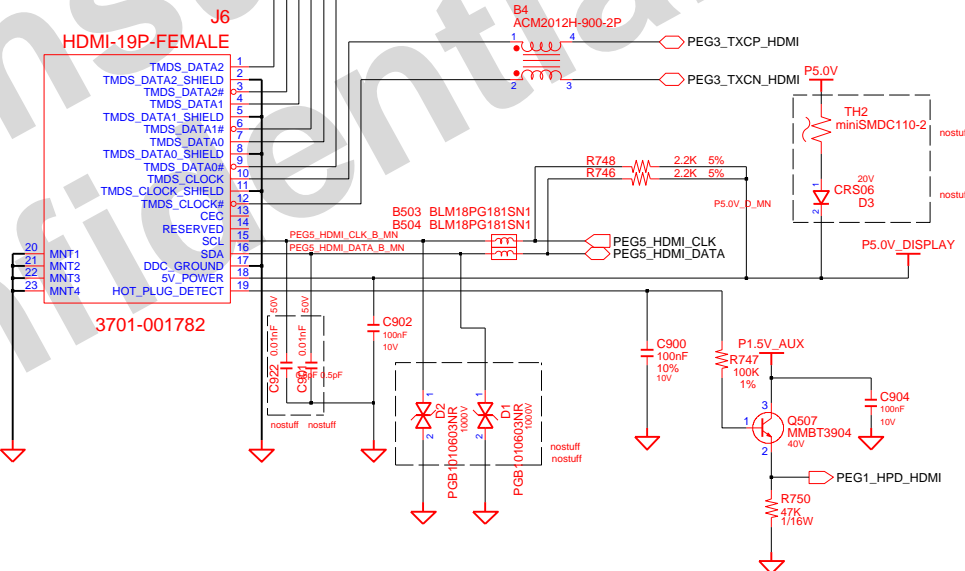
# HDMI Graphic



**FOR HDMI VERIFICATION TEST**



**HDMI-19P-FEMALE**



DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV		GRAPHICS_IF	
APPROVAL	BC LEE	REV	REV 1.0		HDMI	
MODULE CODE		LAST EDIT				PART NO. BA41-####A
				May 10, 2011 10:53:25 AM	PAGE	31 OF 54

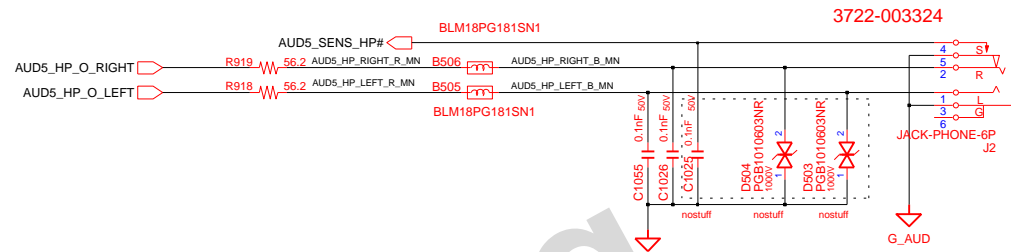




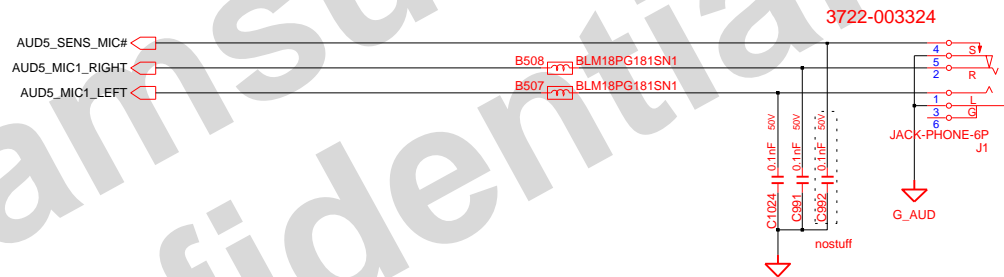
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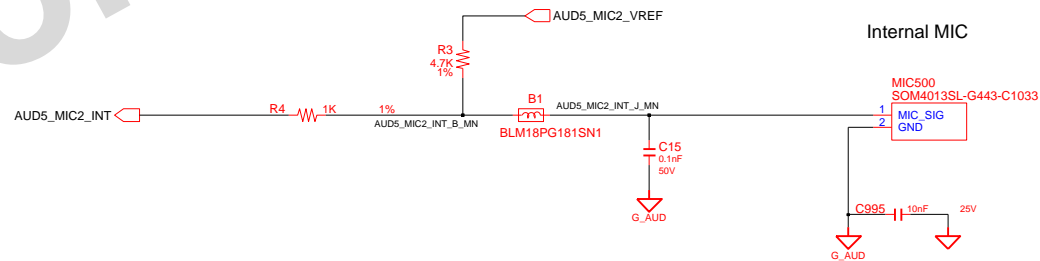
**HEADPHONE**



**MIC JACK**

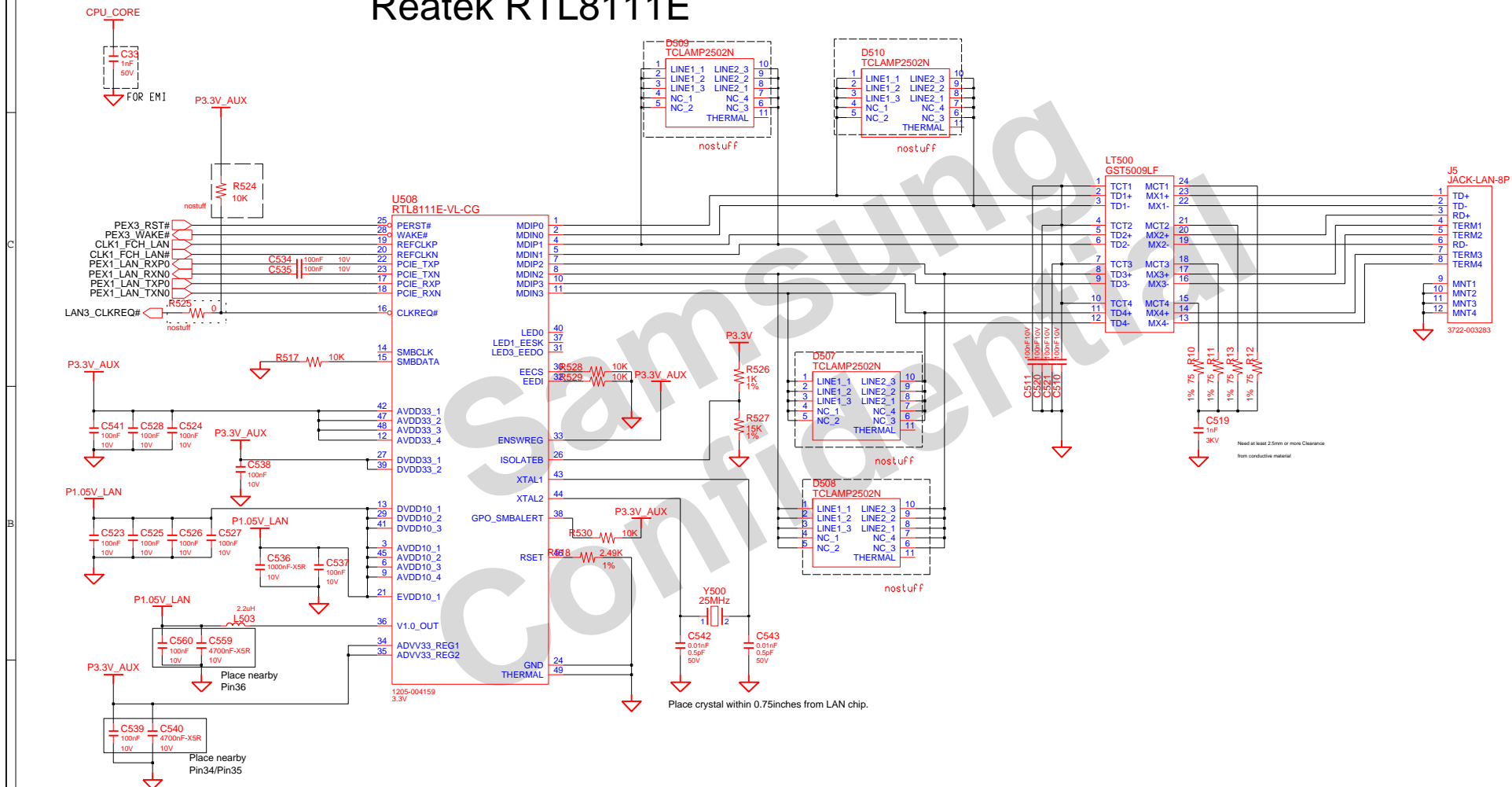


**Internal MIC**



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

## CPU\_CORE



DESIGN	BIN XIE	DATE	9/23/2008	PETRONAS-D 15 LAN LAN_Realtek_RTL8103EL	SAMSUNG ELECTRONICS	
CHECK	LEI QUO	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	34 OF 54

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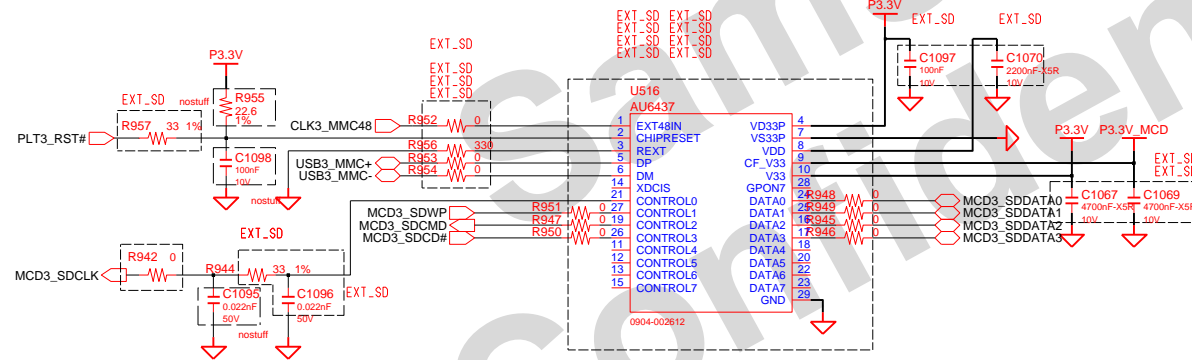
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## 4 IN 1 CARD

40mil pattern

J500  
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  
3709-001526

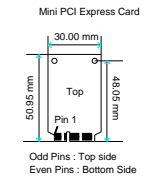


DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15 MULTICARD 3 IN 1 CARD(AU6473)	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	May 10, 2011 10:53:25 AM	PAGE	35	OF 54

**J13 MINICARD-52P**

Pin	Signal
1	WAKE*
2	P3.3V_1
3	RSVD_1
4	GND_1
5	RSVD_2
6	P1.5V_1
7	SIM_VCC_C1
8	SIM_DATAIO_C7
9	GND_2
10	SIM_CLK_C3
11	REFCLK_1
12	SIM_RESET_C2
13	REFCLK_3
14	SIM_VPP_C6
15	GND_3
16	GND_4
17	SIM_RSVD_C8
18	W_DISABLE*
19	SIM_RSVD_C4
20	PERST*
21	GND_5
22	P3.3V_AUX
23	SMB_CLK
24	GND_6
25	P1.5V_2
26	SMB_DATA
27	GND_7
28	GND_8
29	GND_9
30	GND_10
31	GND_11
32	GND_12
33	GND_13
34	GND_14
35	GND_15
36	GND_16
37	GND_17
38	GND_18
39	GND_19
40	GND_20
41	GND_21
42	GND_22
43	GND_23
44	GND_24
45	GND_25
46	GND_26
47	GND_27
48	GND_28
49	GND_29
50	GND_30
51	GND_31

**3709-001506**



P3.3V

C1117 100nF 10V

C1116 100nF 10V

USB3\_BLUETOOTH-

USB3\_BLUETOOTH+

FCH3\_RFOFF\_BT#

R983

0

J15 HDR-6P-SMD SMD

1

2

3

4

5

6

7 MNT1

8 MNT2

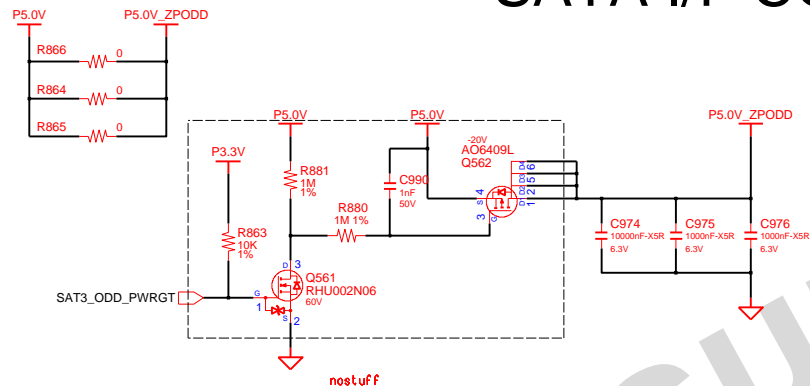
3711-002049

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

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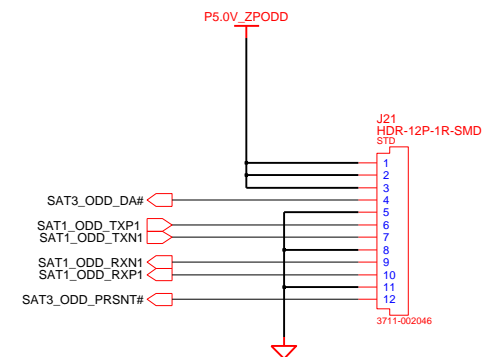
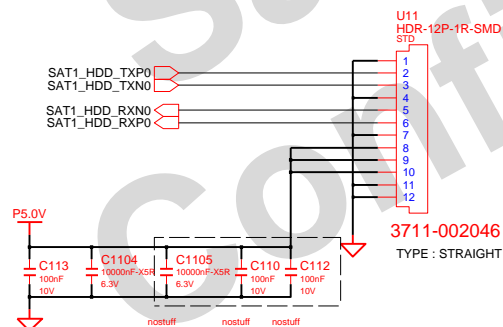
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# SATA I/F CONN



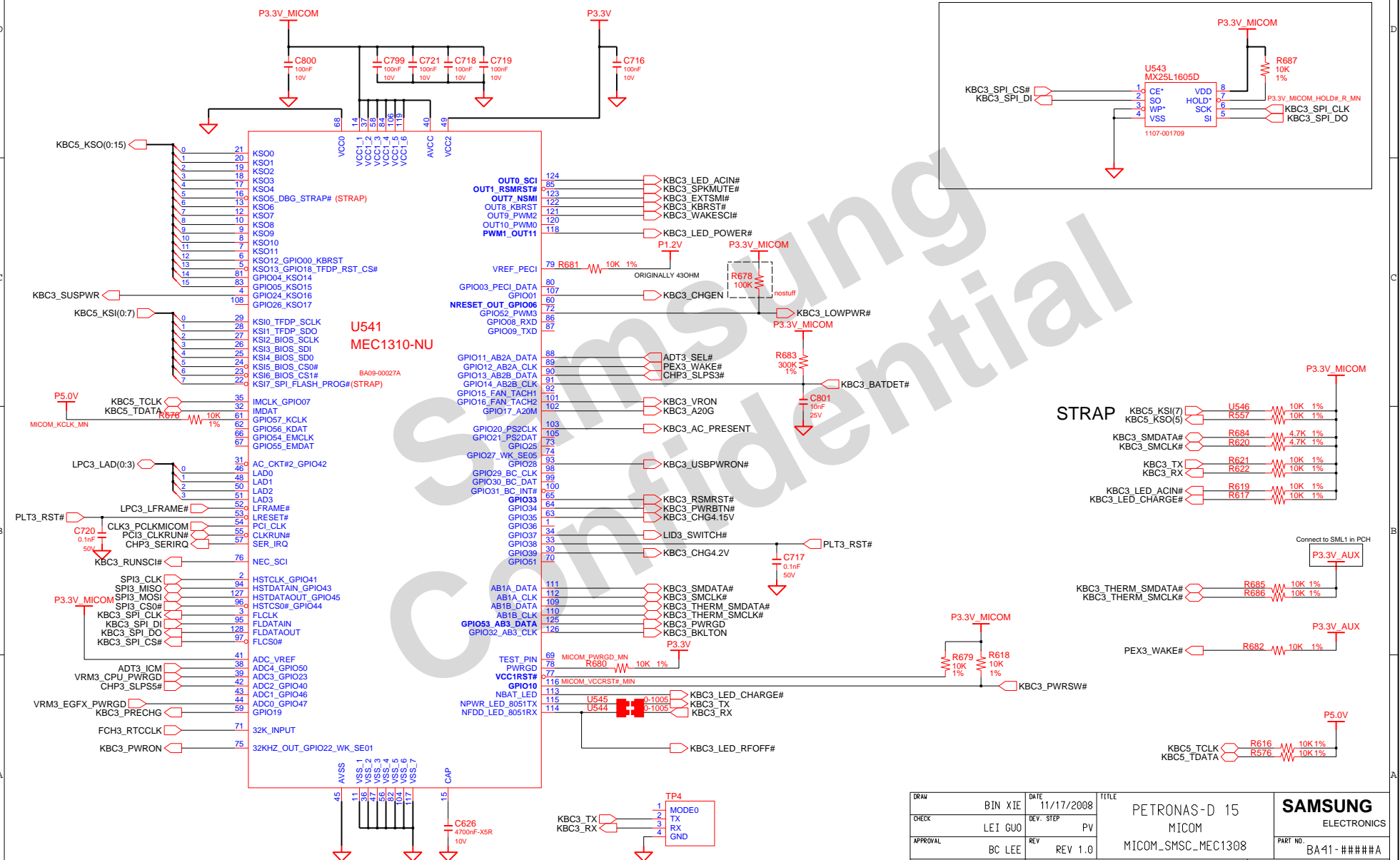
## SATA ODD CONN 15"

## SATA HDD CONN



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

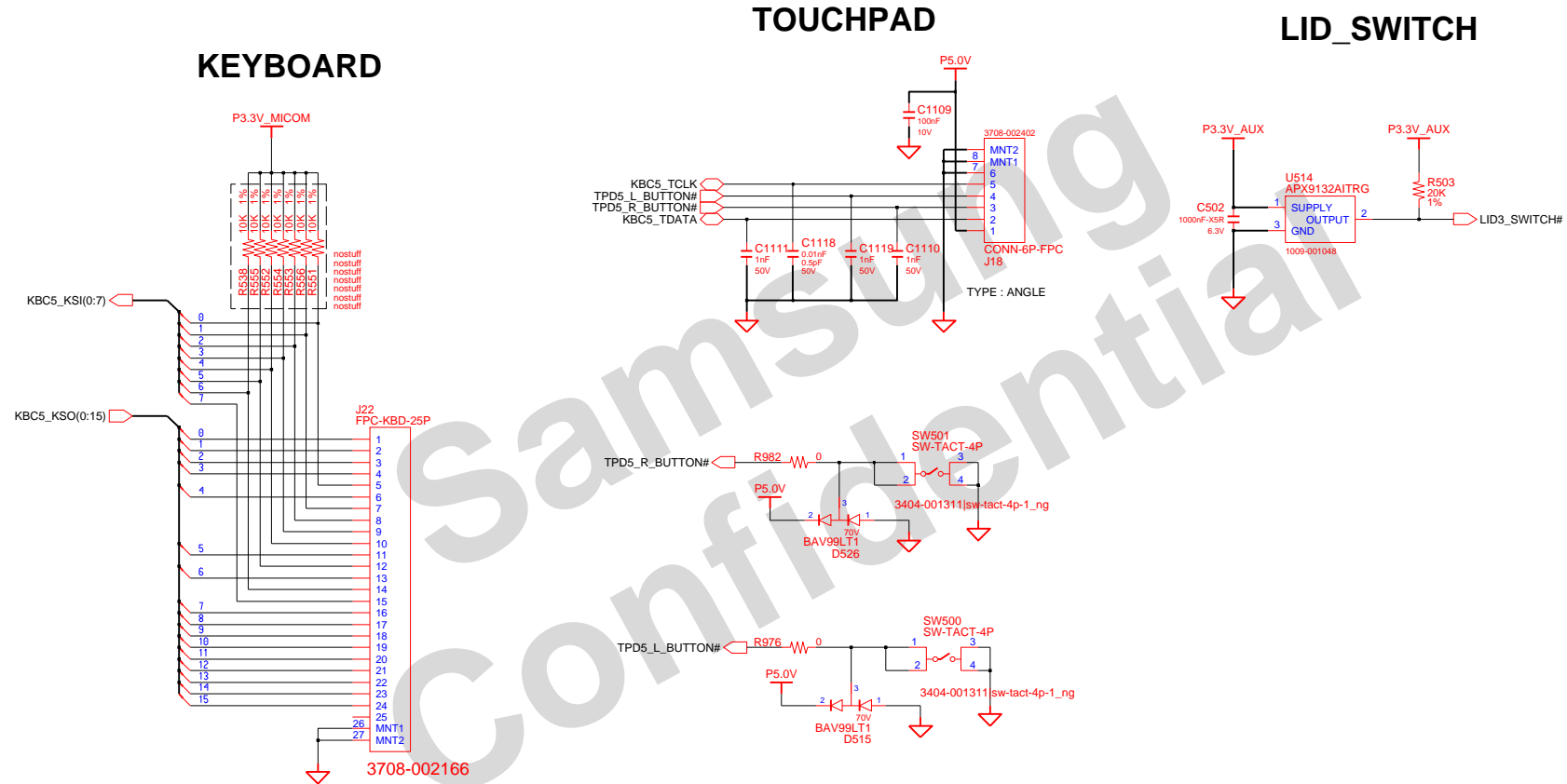
BE CAUTION SPI ROM SIZE!!



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# Micom Glue Logic



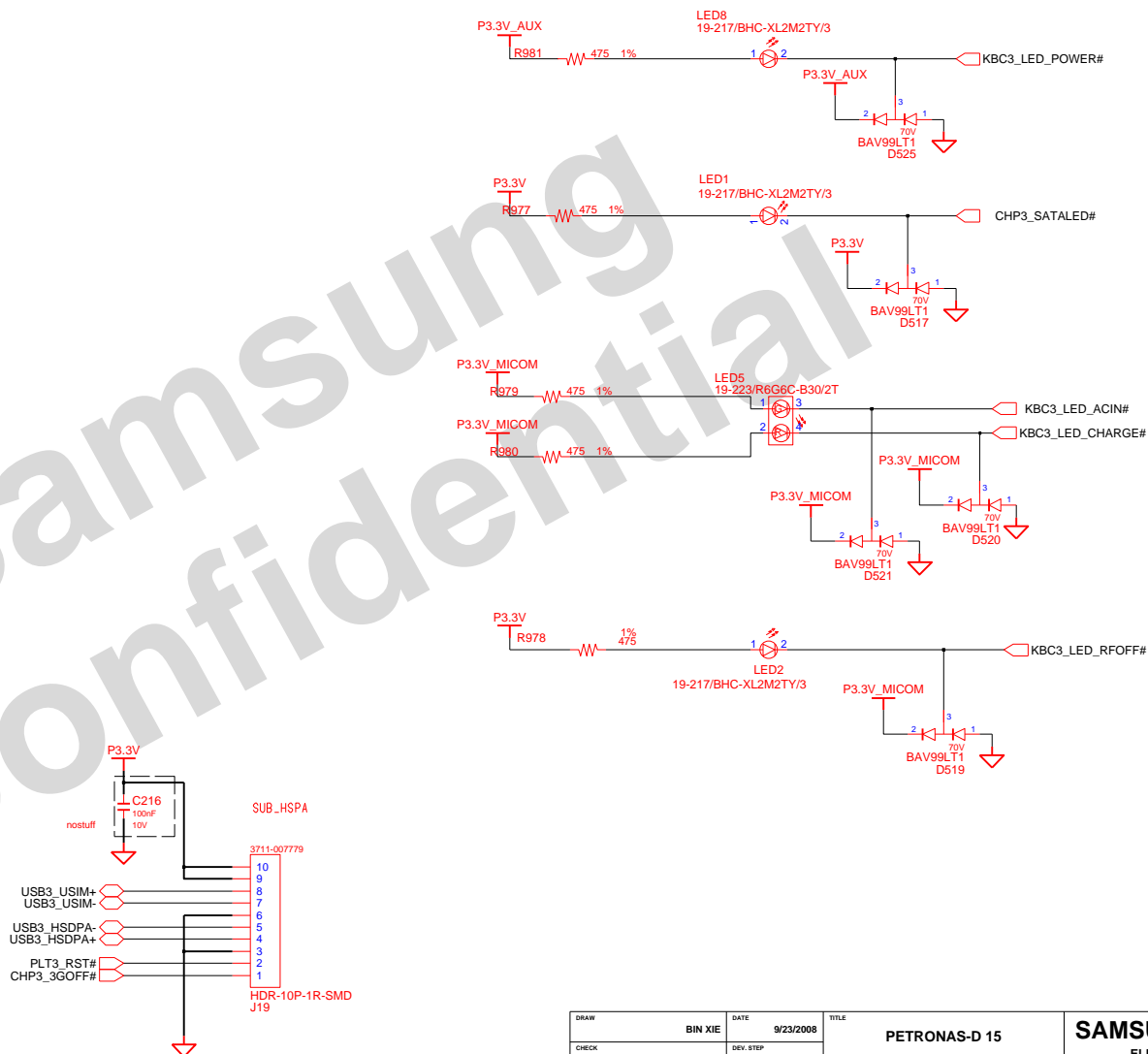
DESIGN	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV		MICOM GLUE LOGIC	
APPROVAL	BC LEE	REV	REV 1.0		KETBOARD & TOUCHPAD	PART NO.
MODULE CODE		LAST EDIT				BA41-####A
				May 10, 2011 10:53:25 AM	PAGE	39 OF 54

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**LED MAIN**

**HSPA Sub board Connector**



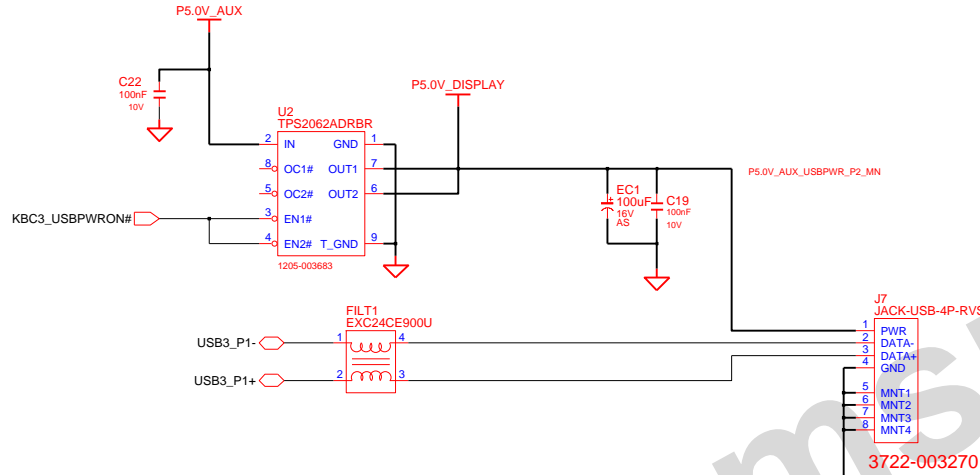
DRAW	BIN XIE	DATE	9/23/2008	TITLE	PETRONAS-D 15	SAMSUNG
CHECK	LEI GUO	DEV. STEP	PV	LED_SWITCH	LED_SWITCH	ELECTRONICS
APPROVAL	BC LEE	REV	REV 1.0	LED_SWITCH	PART NO.	BA41-####A
MODULE CODE		LAST EDIT				
				May 10, 2011 10:53:25 AM	PAGE	40 OF 54



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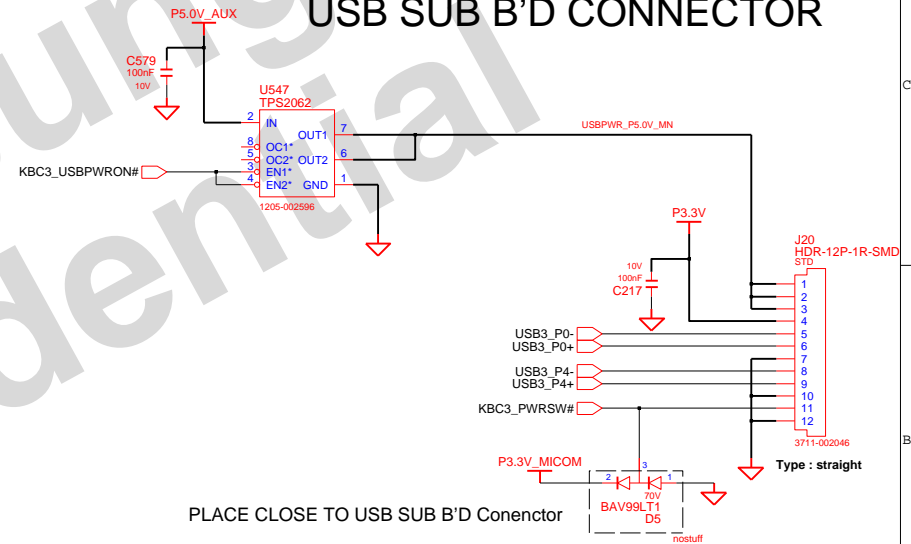
**USB Single connector**



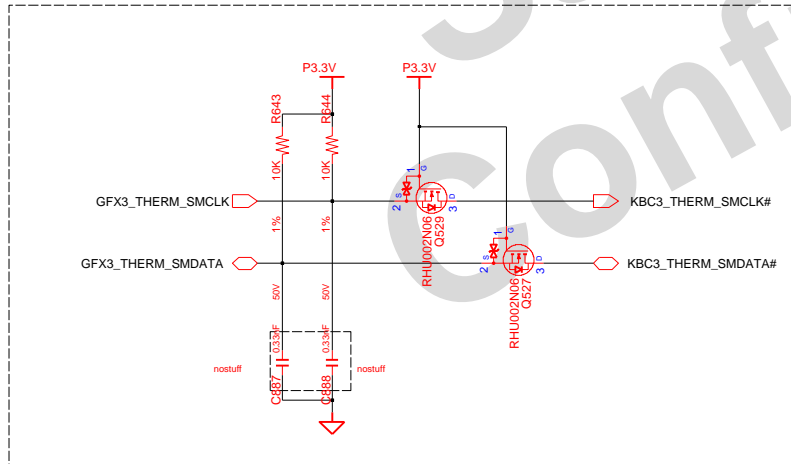
**MAIN TO SUB USB CONN**

**Right 2USB Port**

**USB SUB B'D CONNECTOR**



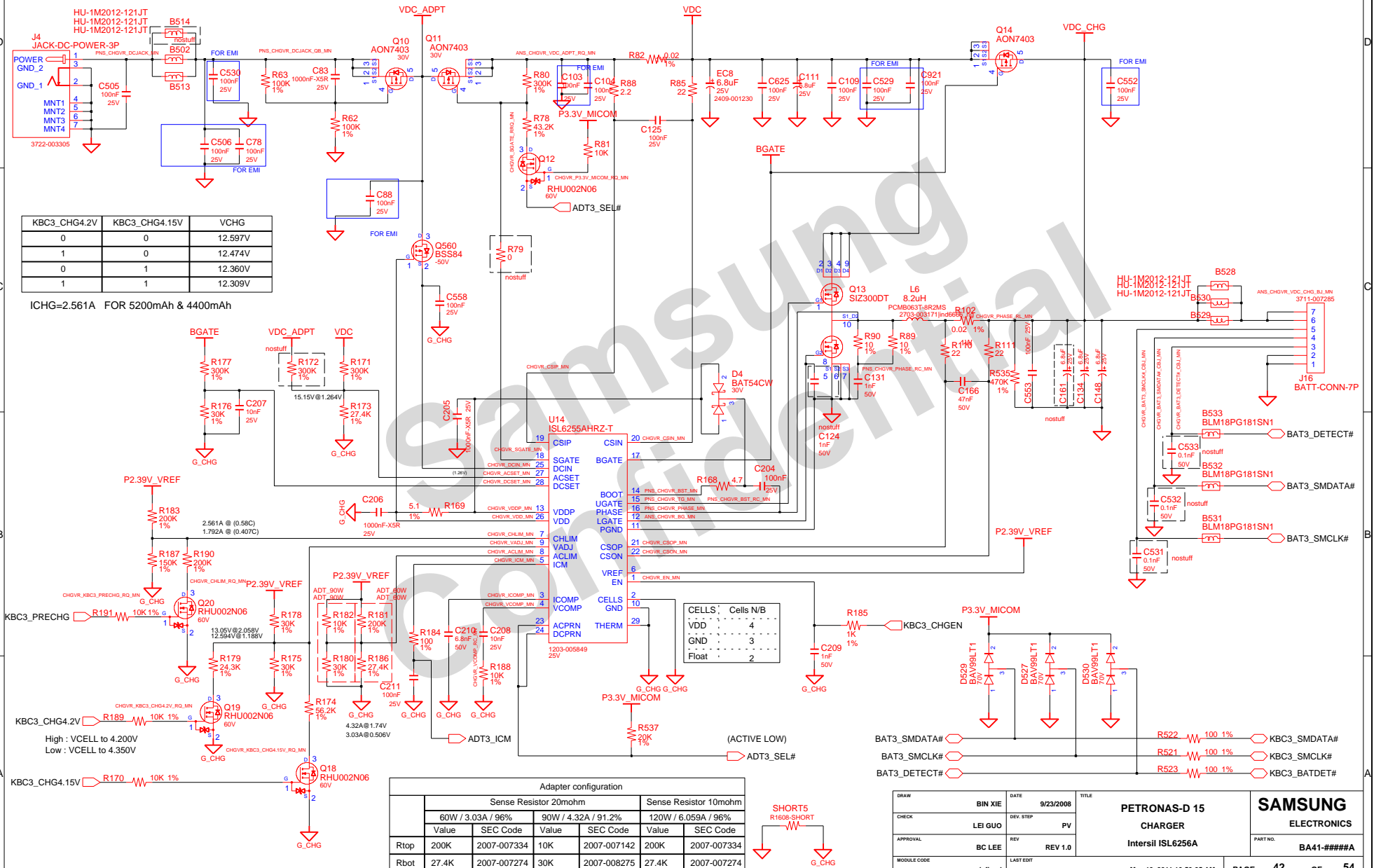
**GPU LEVEL SHIFTER FOR POWERXPRESS**



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

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# CHARGER & POWER MANAGEMENT



[illegible]

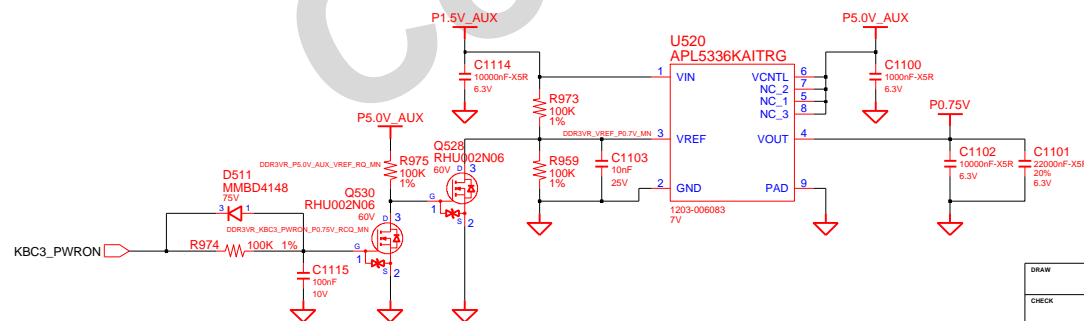
DESIGN	BIN XIE	DATE	2/2/2009	PETRONAS-D 15 P3.3V_AUX / P5.0V_ALW TI TPS51125	<b>SAMSUNG</b> ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV		
APPROVAL	BC LEE	REV	REV 1.0		
MODULE CODE	LAST EDIT		May 10, 2011 10:53:25 AM		
				PART NO.	BA41-#####

DRAM	BIN XIE	DATE	10/22/2010	TITLE	PETRONAS-D 15	<b>SAMSUNG</b> ELECTRONICS
CHECK	LEI GUO	REV.	STEP	PV	P1.1V_AUX	
APPROVAL	BC LEE	REV	REV 1.0		P1.1V_AUX	
MODULE CODE	undefined	LAST EDIT	May 10, 2011 10:53:25 AM		PAGE	
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The schematic diagram illustrates the power management section for the APU1 module. It shows the conversion of VDDR3\_PWRGD and KBC3\_VRON to APU1\_VDDPR\_FB. The circuit includes a TPS5117RGYR DC-DC converter, a MOSFET driver (U530), and various passive components like capacitors, resistors, and inductors. Key features include a 10.2A output current, a 10V output, and a 100mF output capacitor. The diagram also shows the connection to the APU1\_VDDPR\_FB pin and the APU1\_VDDPR\_FB pin.

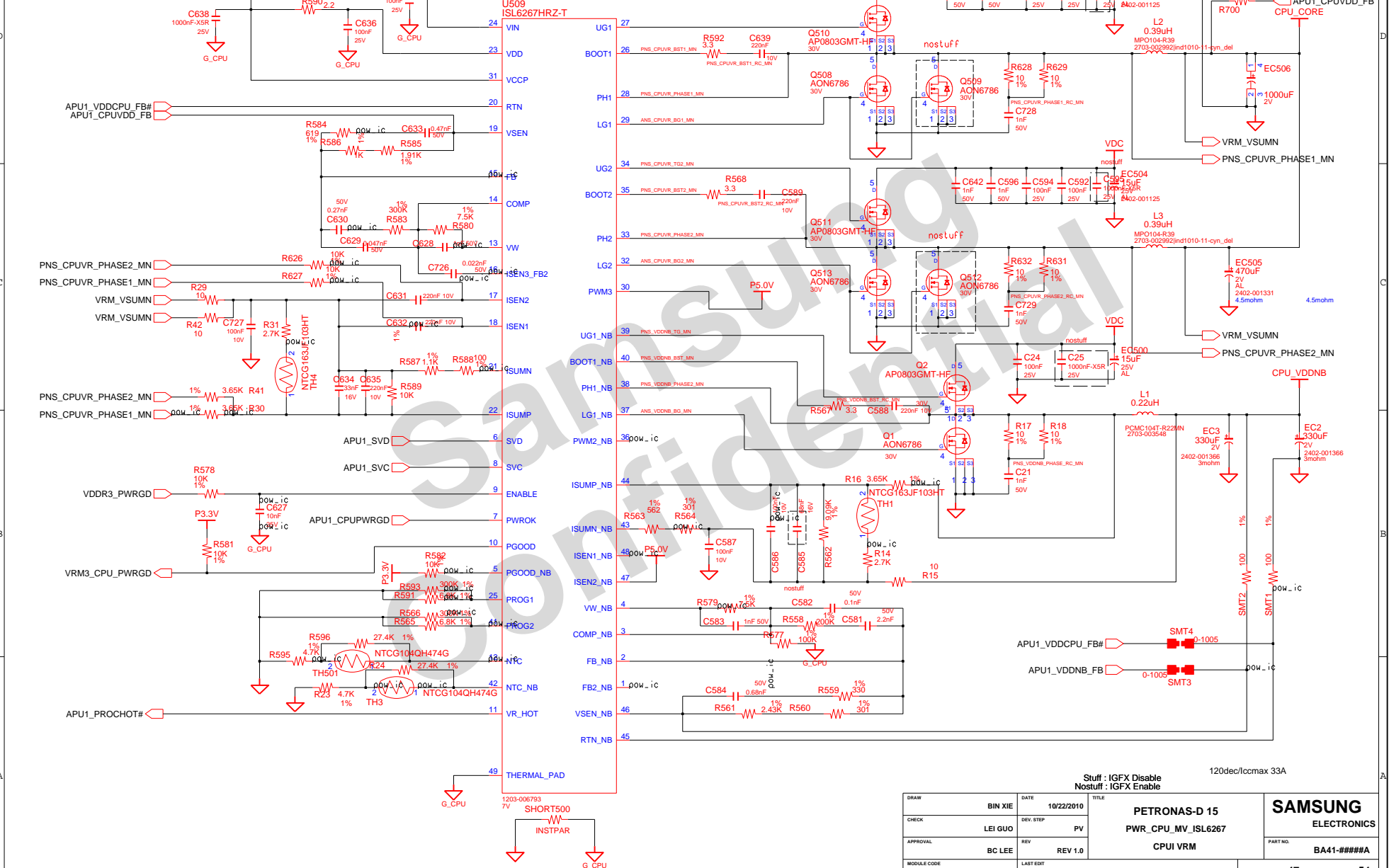
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CHECK		REV.	STEP	PV				
APPROVAL		REV	REV 1.0		PETRONAS-D 15 P1.2V P1.2V(Chipset Power)		PART NO.	
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM			BA41-#####	
undefined						PAGE		45 OF 54

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D:/users/ecad49/Petronas/Petronas-D\_15Ext/Petronas-D\_PX15\_0418

Place next to phase1 highside FET
-----------------------------------

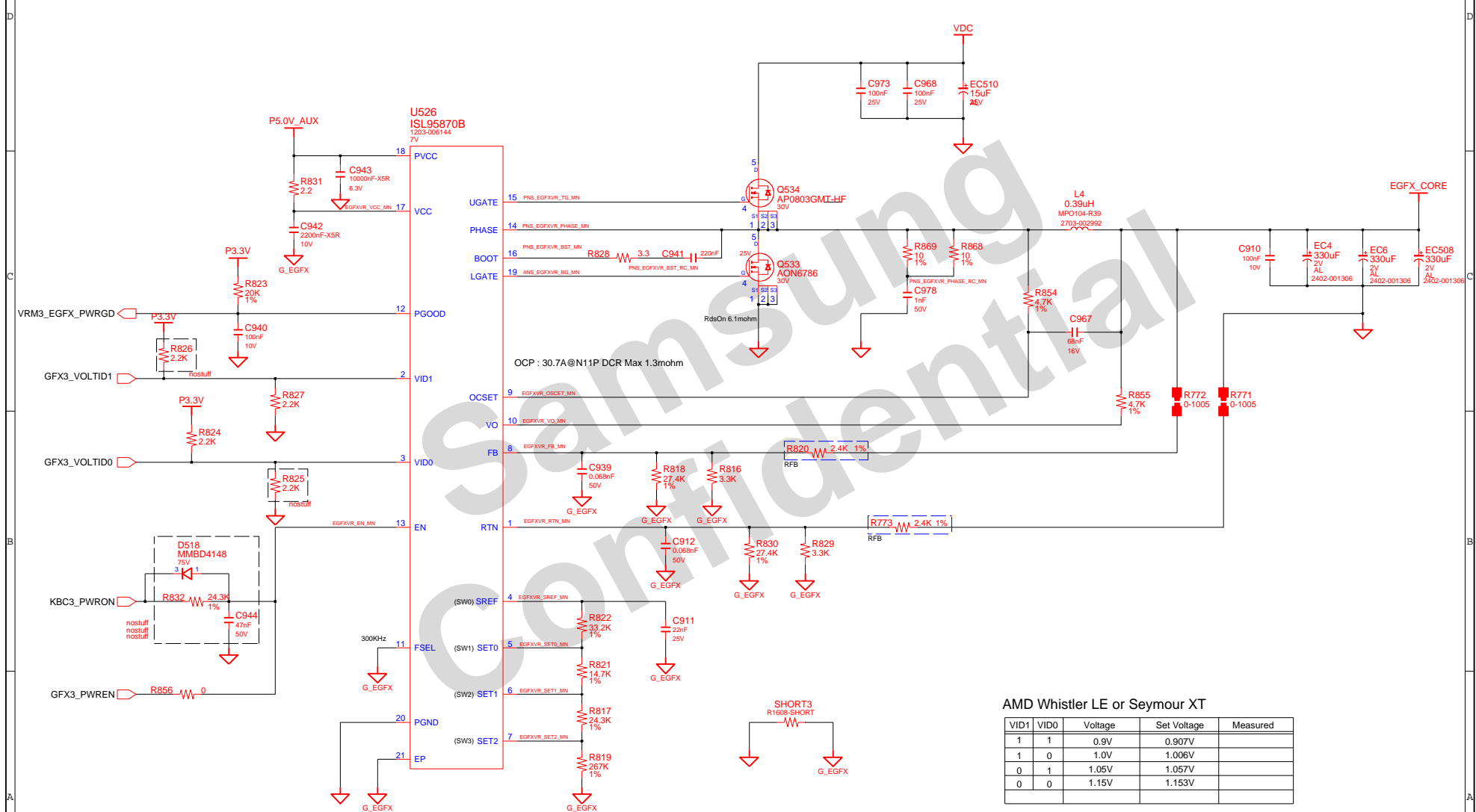


120dec/lccmax 33A

DRAW		BIN XIE		DATE	10/22/2010		TITLE		<b>PETRONAS-D 15</b> <b>PWR_CPU_MV_ISL6267</b> <b>CPUI VRM</b>		<b>SAMSUNG</b> ELECTRONICS				
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	47	OF	54

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**External Graphic Core Power**

DRAW	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15
CHECK	LEI GUO	DEV. STEP	PV		PWR_MV_SWITCHED
APPROVAL	BC LEE	REV	REV 1.0		SWITCHED POWER
MODULE CODE		LAST EDIT			

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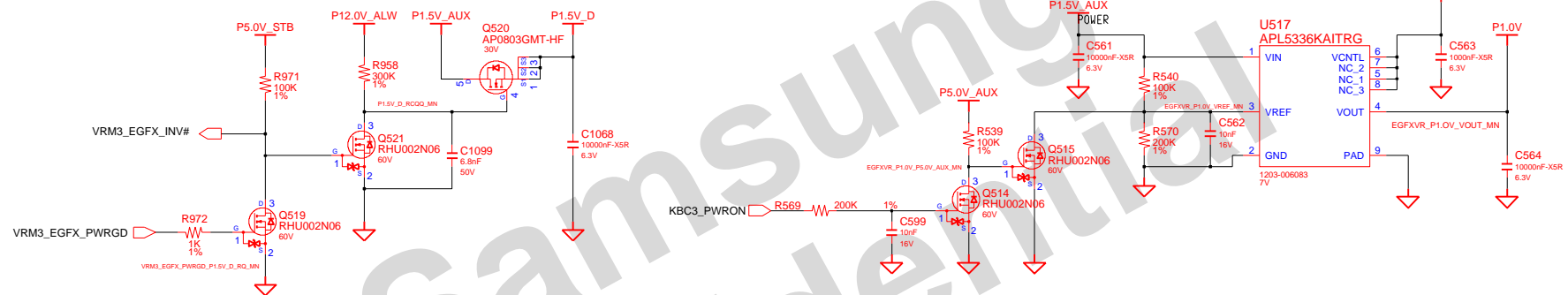
SAMSUNG ELECTRONICS

PART NO. BA41-####A

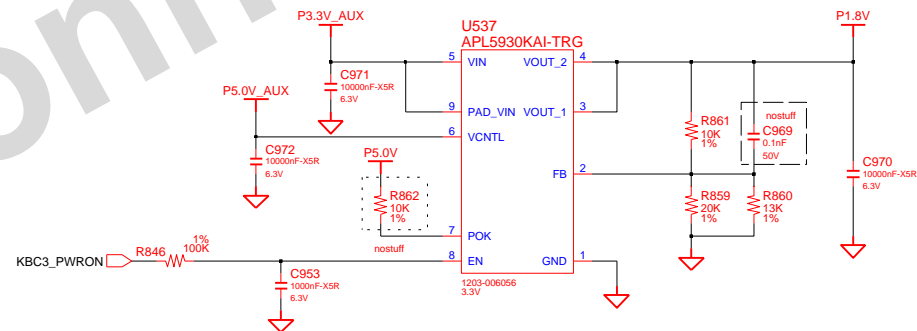


Sequence (D3.3V -> GFX Core -> D1.5V -> D1.05V)

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



P1.8V(LDO)



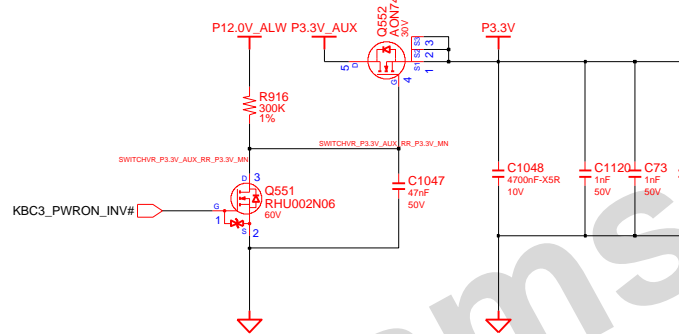
DRAW	BIN XIE	DATE	7/14/2010	TITLE  PETRONAS-D 15 Switched PWR 2 FOR OPTIMUS PWR	SAMSUNG ELECTRONICS		
CHECK	LEI GUO	DEV. STEP	PV				
APPROVAL	BC LEE	REV	REV 1.0		PART NO.	BA41-####A	
MODULE CODE	LAST EDIT		May 10, 2011 10:53:25 AM		PAGE	49 OF 54	

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# Switched Power

## Switched Power On (P3.3V)

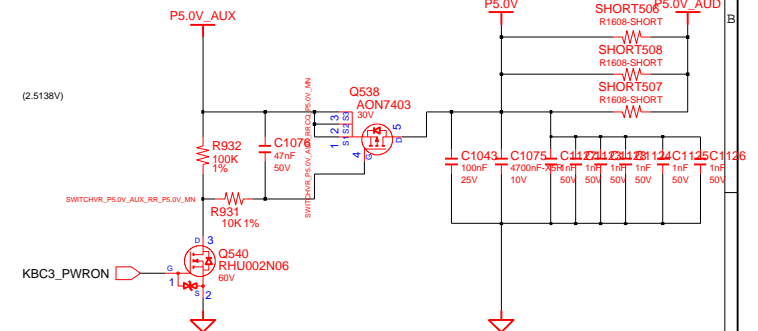
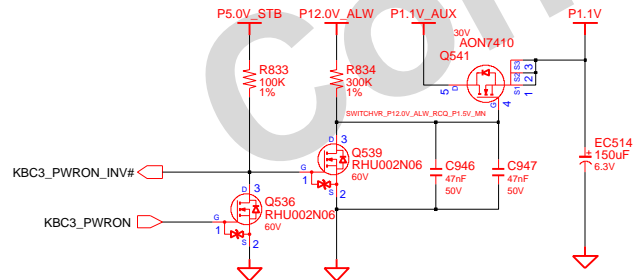


## P2.5V

## Switched Power On (P5.0V)

Multi@Si4435DDY

## Switched Power On (P1.1V)

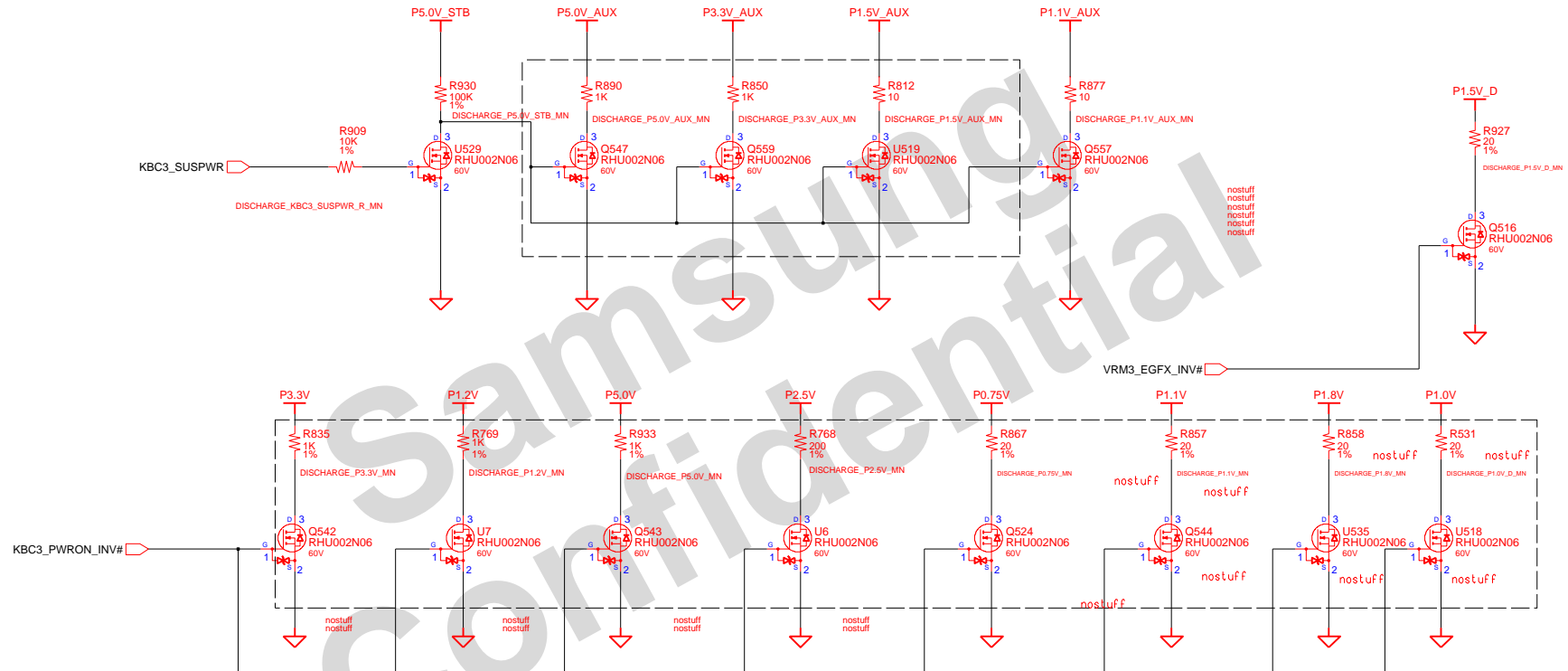


DRAW	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG
CHECK	LEI GUO	DEV. STEP	PV		PWR_SWITCH	ELECTRONICS
APPROVAL	BC LEE	REV	REV 1.0		SWITCH Power	PART NO.
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# POWER DISCHARGER

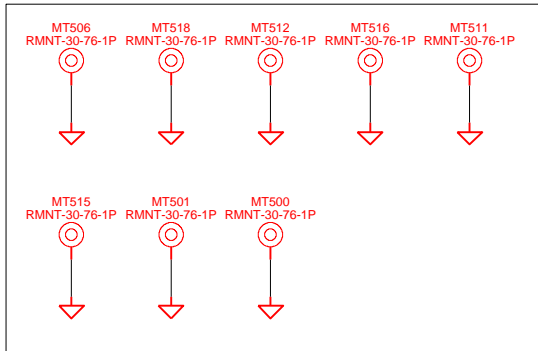


DESIGN	BIN XIE	DATE	8/11/2009	TITLE	PETRONAS-D 15	SAMSUNG ELECTRONICS
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APPROVAL	BC LEE	REV	REV 1.0		PWR_DISCHARGE	
MODULE CODE		LAST EDIT		May 10, 2011 10:53:25 AM	PAGE 51 OF 54	PART NO. BA41-####A

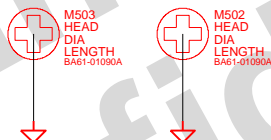
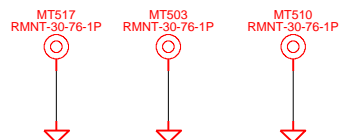
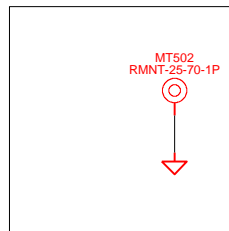
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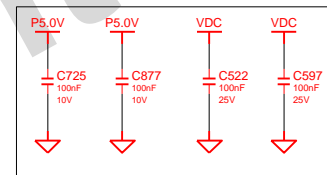
**Mainboard Mount ((30-80)X8EA)**



**PCB FIX**



For EMI

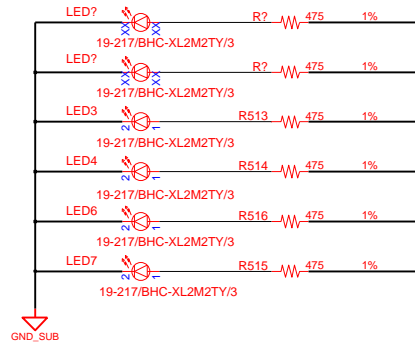


DESIGN	BIN XIE	DATE	6/4/2010	TITLE	PETRONAS-D 15 MOUNT MOUNT	SAMSUNG ELECTRONICS
CHECK	LEI GUO	DEV. STEP	PV			PART NO. BA41-####A
APPROVAL	BC LEE	REV	REV 1.0			
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# USB SUB BOARD

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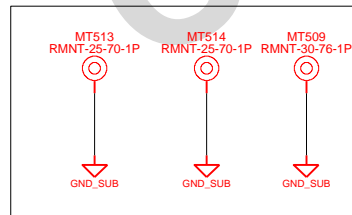
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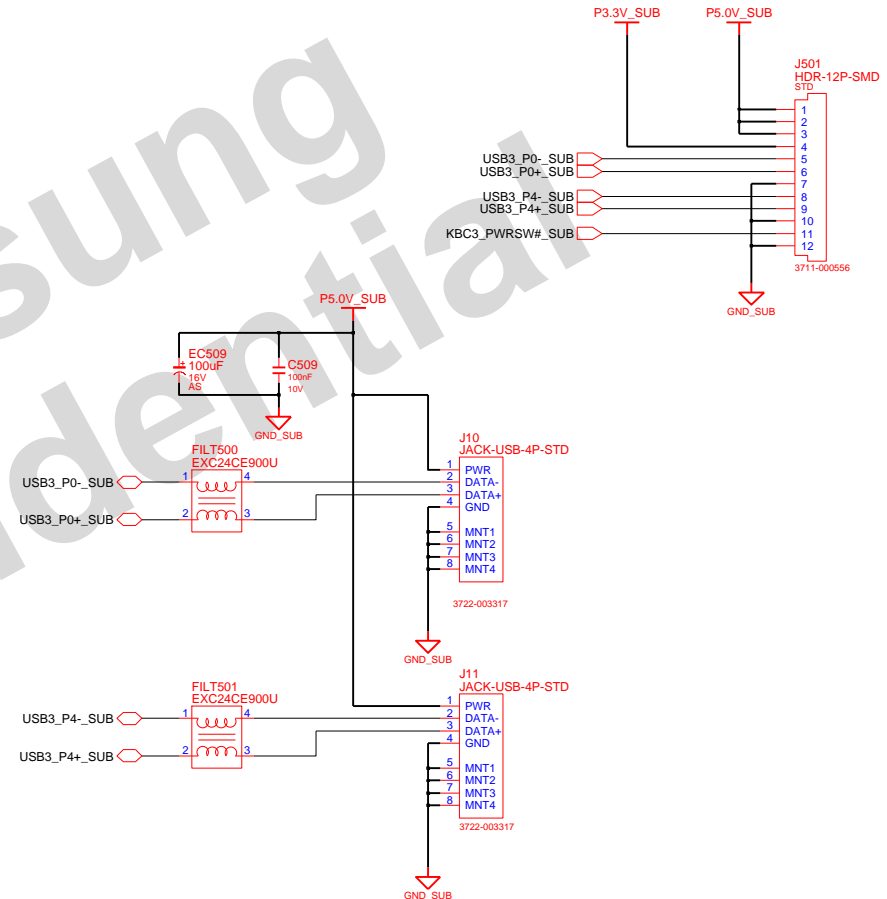
## Power Switch Button



## PCB Mount



## SUB TO MAIN



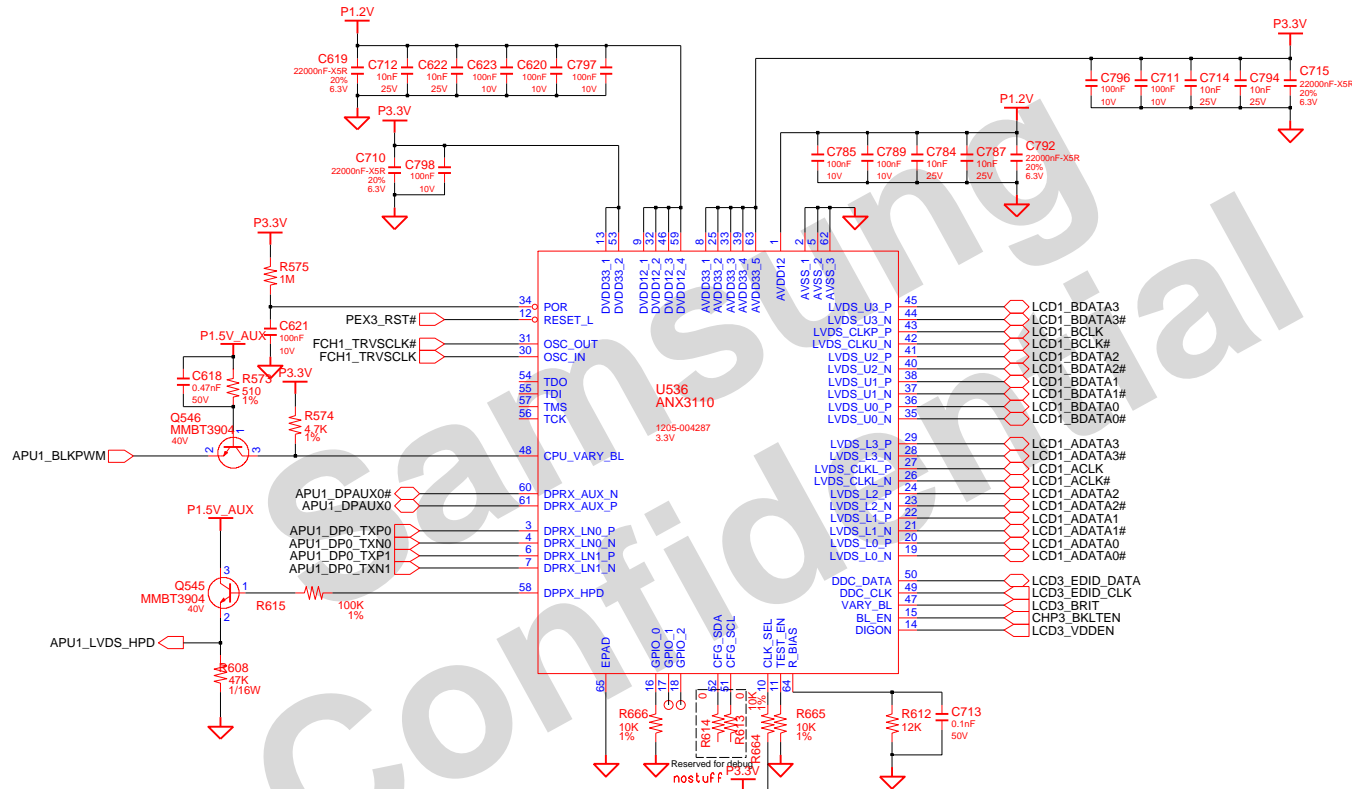
PLACE CLOSE TO USB SUB B'D Conenctor

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