

SCALA2-AMD

CPU : ZACATE
Chip Set : HUDSON-M1
GFX : SEYMOUR-S3
Remarks : AMD Brazos Platform

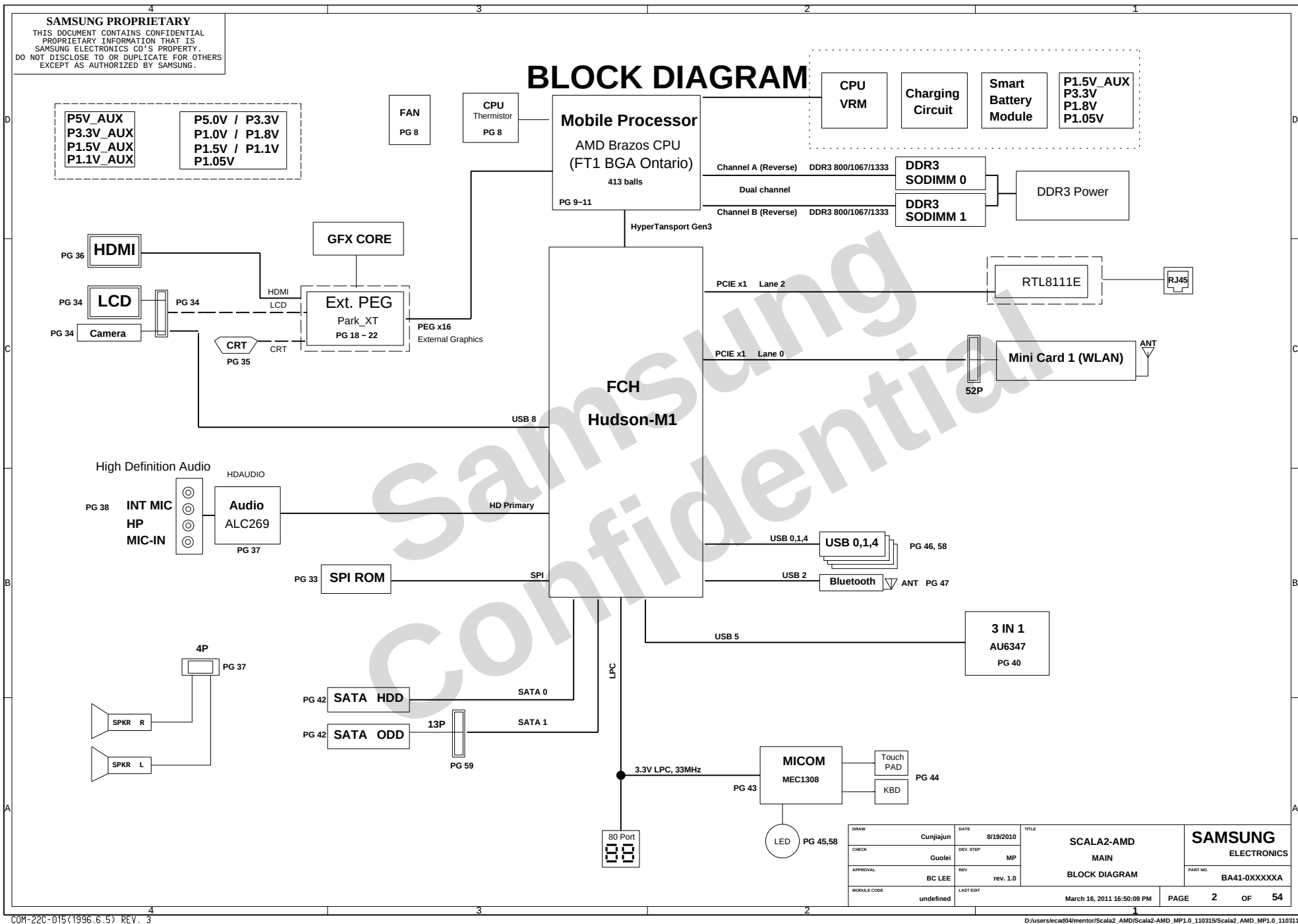
Model Name : SCALA2-AMD
PBA Name : MAIN
PCB Code : BA41-01533A (GCE)
BA41-01534A (NY)
BA41-01532A (HAN)
Dev. Step : MP
Revision : 1.0
T.R. Date : 2011.03.11

Design	CHECK	APPROVAL
Cun jia jun	Lei Guo	BC LEE

Owner : SEC IT Solution N/P LAB Signature : wanni

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DRAW	Cunjiajun	DATE	03/11/2011	TITLE	SCALA2-AMD	SAMSUNG
CHECK	Guo lei	DEV. STEP	MP	MAIN		ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.0	COVER		PART NO. BA41-0XXXXXA
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	1	OF 54



BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails		Active in
VDC P12.0V_ALW P3.3V_MICOM P5.0V_ALW P5.0V_STB	Primary DC system power supply (7 to 21V) 12.0V always power rail 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 P1.5V_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 DDR (off in S4-S5)	
P5.0V P3.3V P1.8V P1.5V P1.05V P0.75V	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) 1.05V power rail for chipset (off in S3-S5) 0.9V power rail for DDR (off in S3-S5)	
VCC_CORE IGFX_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for IGFX Core Voltage for GPU VCC for Arrandale & IBEX Peak	

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	NC	5	NC
5	NC	6	NC
6	NC (N/A WITH HM55)	7	NC (N/A WITH HM55)
7	NC (N/A WITH HM55)	8	NC (N/A WITH HM55)
8	NC		
9	SYSTEM PORT 2 (SUB BOARD)		
10	Bluetooth		
11	Camera		
12	NC		
13	NC		

SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD
1	ODD
2	(N/A WITH HM55)
3	(N/A WITH HM55)
4	
5	

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	IBEX-PEAK	Real Time Clock
Crystal	14.318MHz	CLOCK-Generator	CK-505
Crystal	25MHz	LAN	Intel LAN

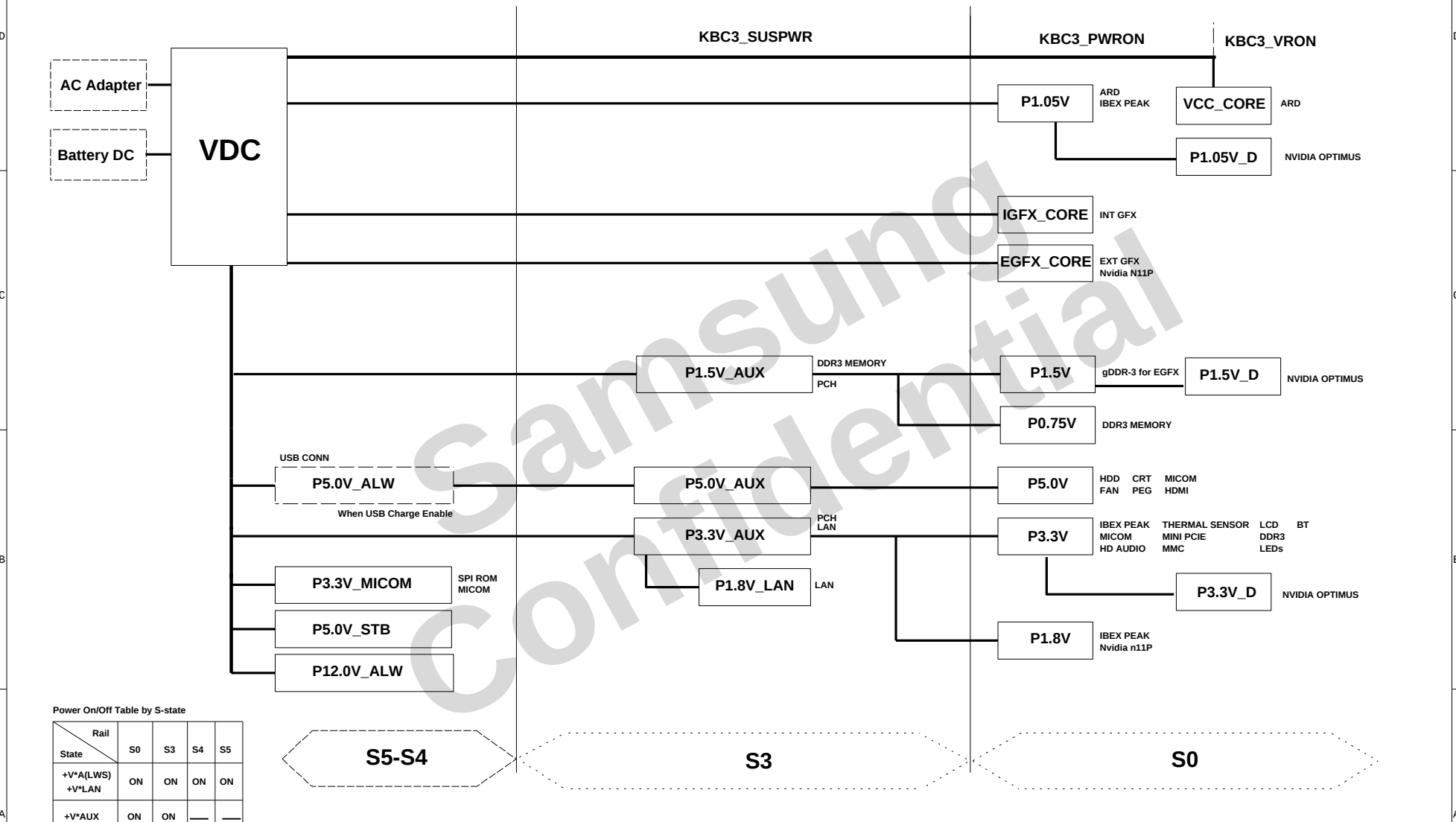
LCD Pannel Detect		
Devices	Resolution	PANNEL_DETECT_0
LTN140AT17	HD(1366x768)	SEC3250

I ² C / SMB Address			
Devices	Address	Hex	Bus
IBEX PEAK	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	
SODIMM0	1010 000x	A0h	Thermal Sensor
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
CK-505M Shrink(Clock Generator)	1101 001x	D2h	Clock, Unused Clock Output Disable
Thermal Sensor on board	1101 100x	98h	
Power thermal management TS	1101 011x	96h	

DRAW	Cunjajun	DATE	8/19/2010	TITLE SCALA2-AMD MAIN BOARD INFO	SAMSUNG ELECTRONICS PART NO. BA41-0XXXXXA
CHECK	Guolei	DEV. STEP	MP		
APPROVAL	BC LEE	REV	rev. 1.0		
MODULE CODE	undefined	LAST EDIT	March 16, 2011 16:50:09 PM		
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POWER DIAGRAM



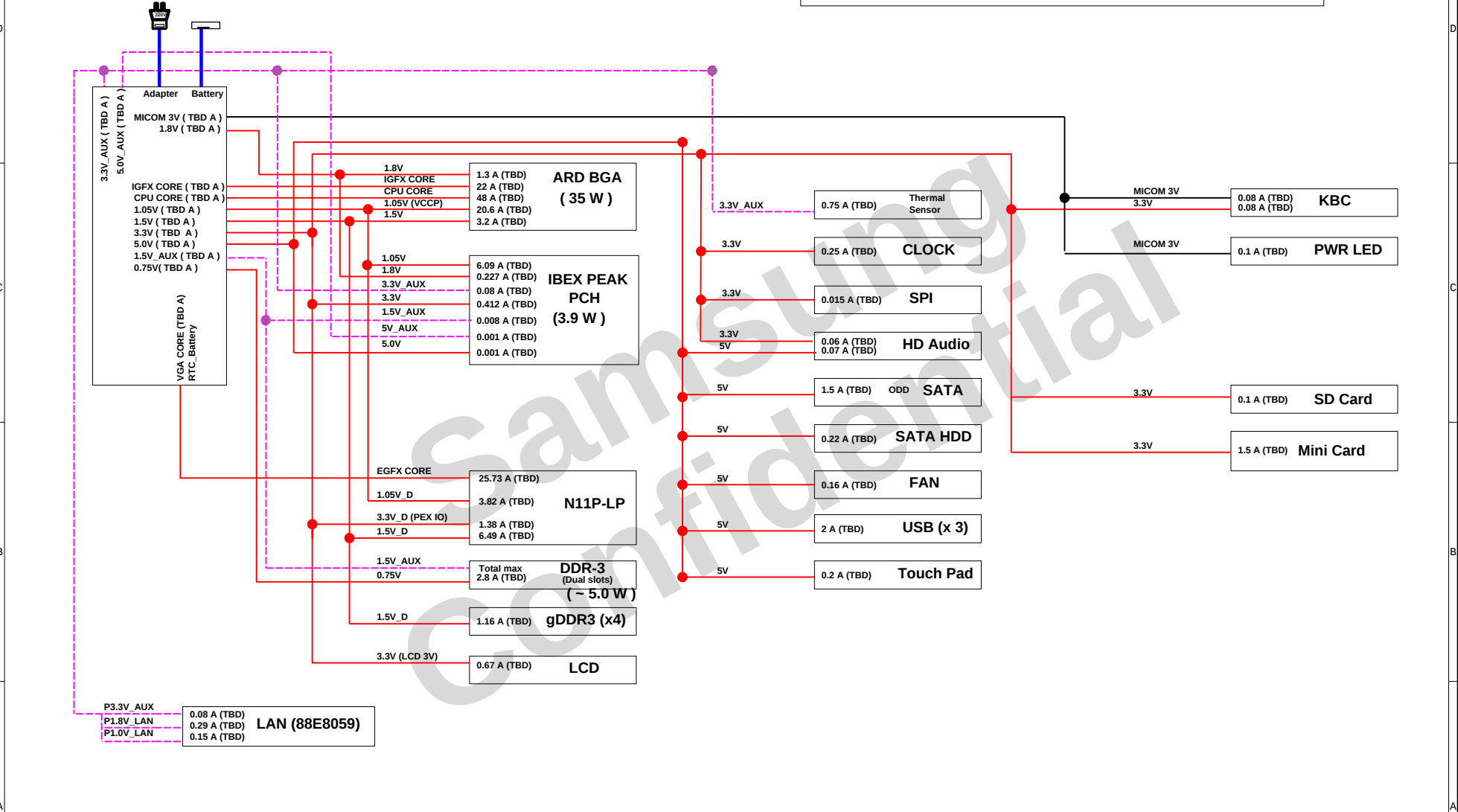
Power On/Off Table by S-state

Rail \ State	S0	S3	S4	S5
+V*A(LWS)	ON	ON	ON	ON
+V*LAN	ON	ON	ON	ON
+V*AUX	ON	ON	—	—
+V	ON	—	—	—
+V* (CORE)	ON	—	—	—

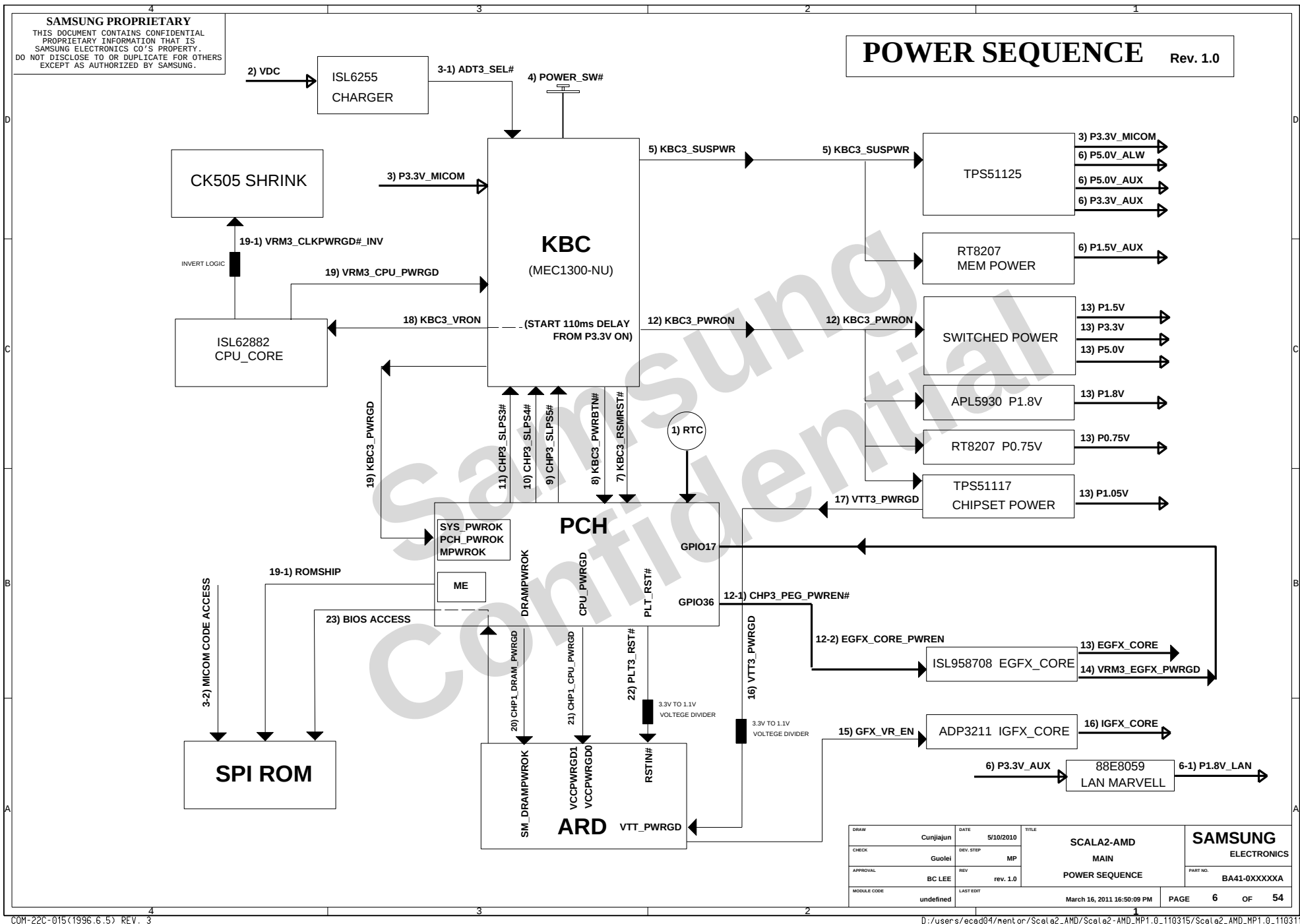
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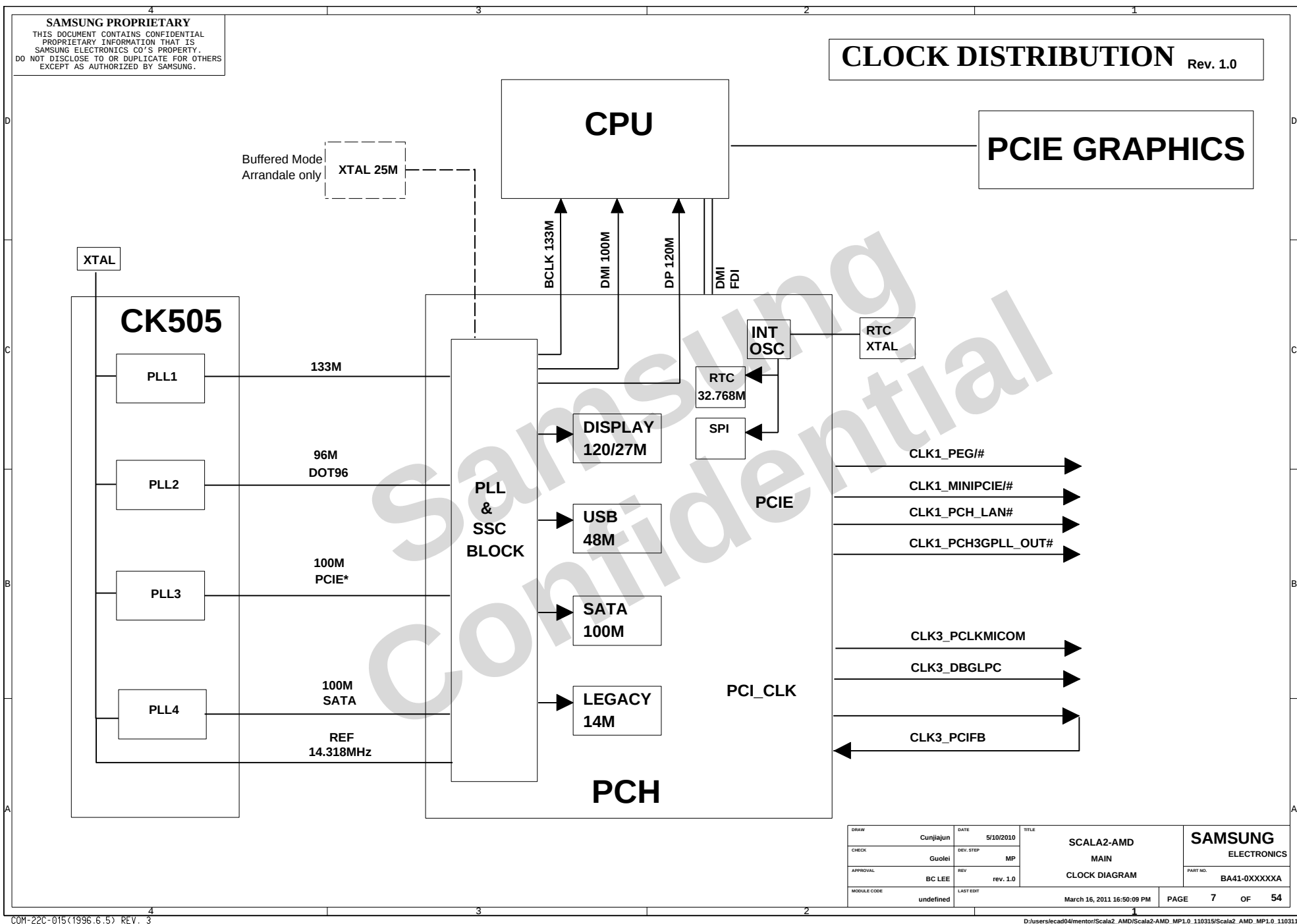
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POWER RAILS ANALYSIS



DRAW	Cunjiajun	DATE	5/10/2010	TITLE	SCALA2-AMD MAIN POWER RAILS	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
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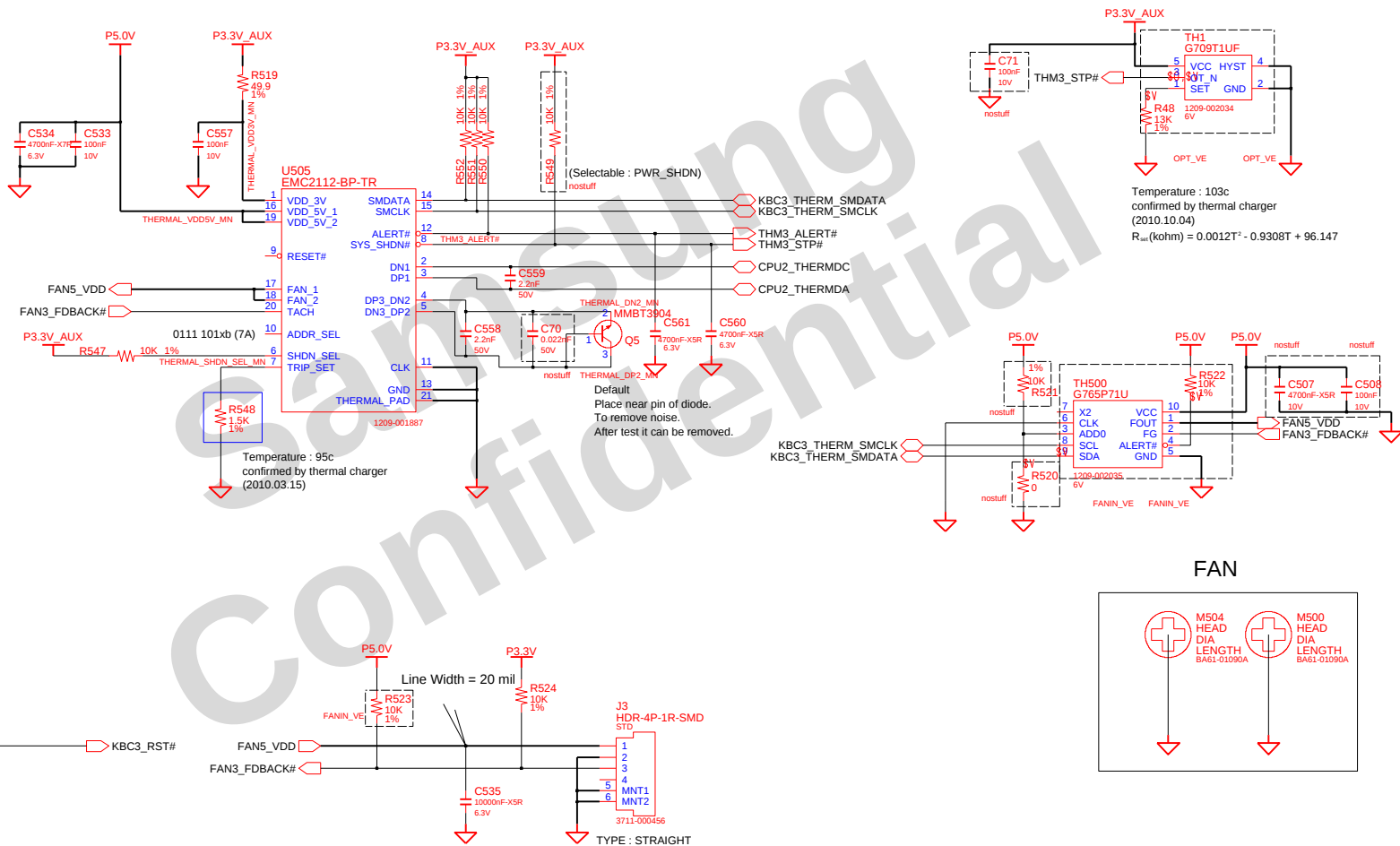




THERMAL SENSOR & FAN CONTROL

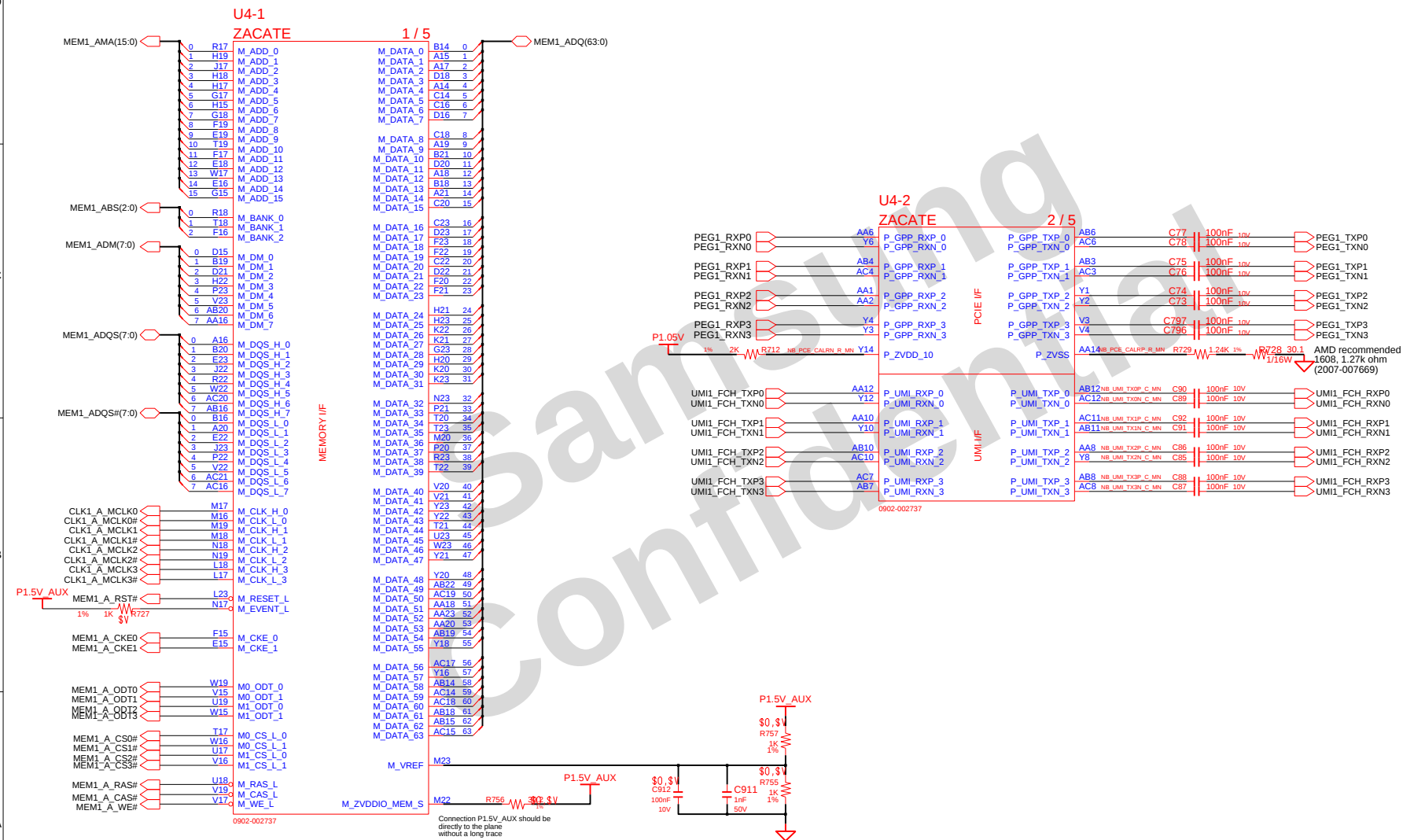
ADDRESSSEL MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

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



DESIGN	Cunhajun	DATE	8/19/2010	TITLE	SCALA2-AMD THERMAL SENSOR THERMAL SENSOR EMC2112	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	8	OF 54

CPU_ZACATE



DRAW	Cunjujun	DATE	9/23/2008	TITLE	SCALA2-AMD	SAMSUNG
CHECK	Guolei	DEV. STEP	MP	CPU	ELECTRONICS	
APPROVAL	BC LEE	REV	rev. 1.0	culv	PART NO.	BA41-0XXXXXA
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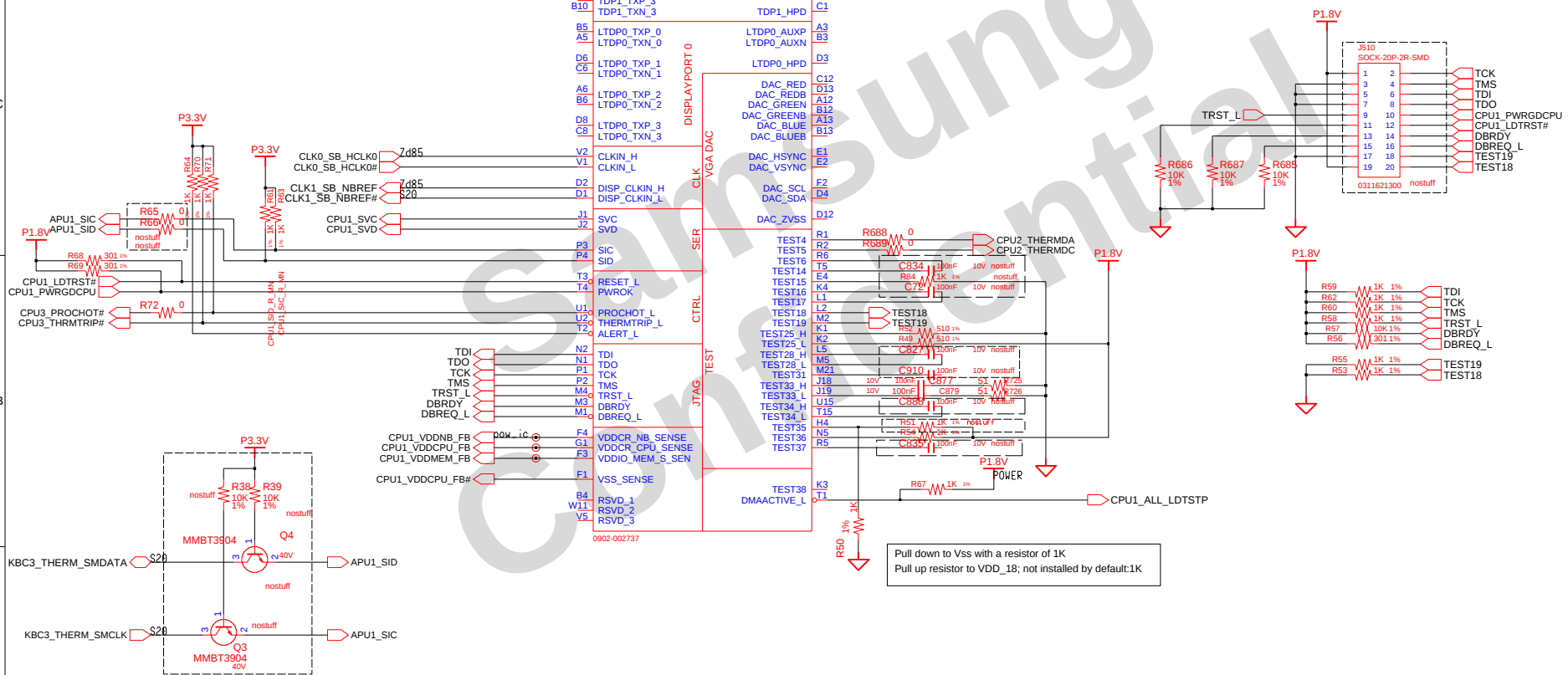
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CPU_ZACATE

U4-3
ZACATE

3 / 5

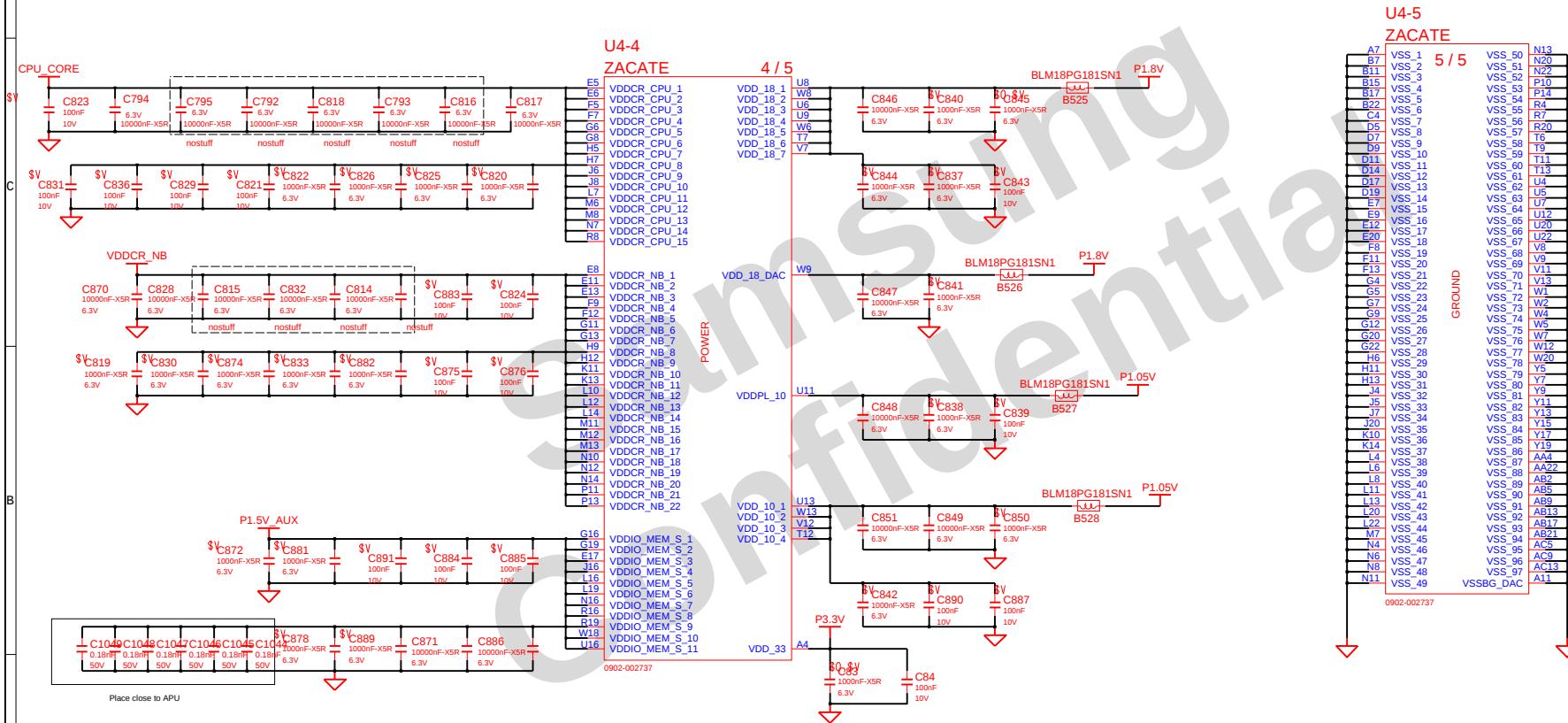
HDT HEADER



DRAW	Cunjaun	DATE	9/23/2008	TITLE	SCALA2-AMD	SAMSUNG
CHECK	Guolei	DEV. STEP	MP		CPU	ELECTRONICS
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CPU_ZACATE



DESIGN	Cunjiajun	DATE	1/29/2010	TITLE	SCAL2-AMD CPU_IC UNDEFINED	SAMSUNG ELECTRONICS
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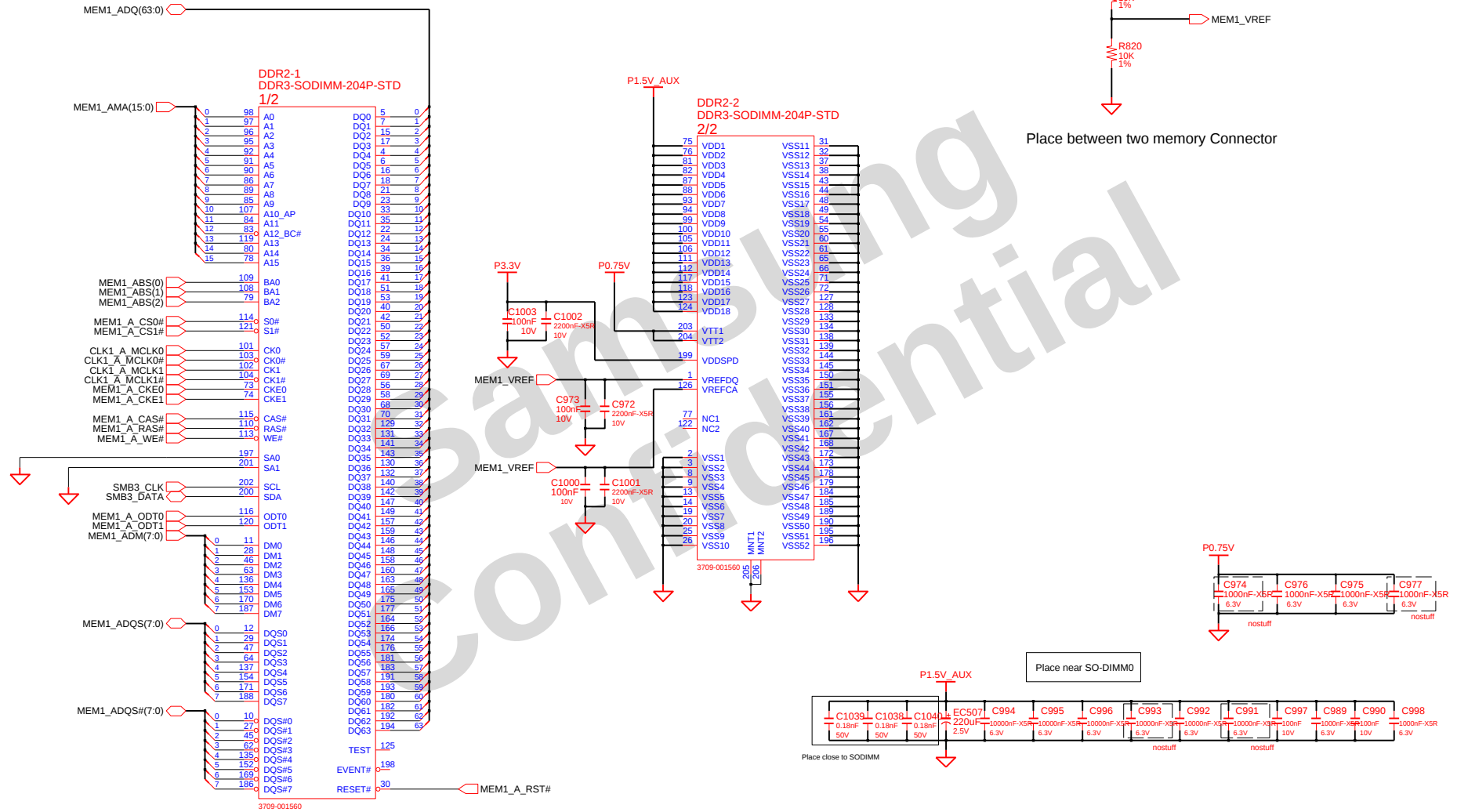
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DDR SO-DIMM #0

Height : 8 mm (STANDARD)

P/N : 3709-001615 (FOXCONN)

P/N : 3709-001622 (CONCRAFT)



DRAW	Currijun	DATE	8/19/2010	TITLE	SCALA2-AMD	SAMSUNG
CHECK	Guolei	DEV. STEP	MP		SODIMM B	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.0		DDR3	PART NO.
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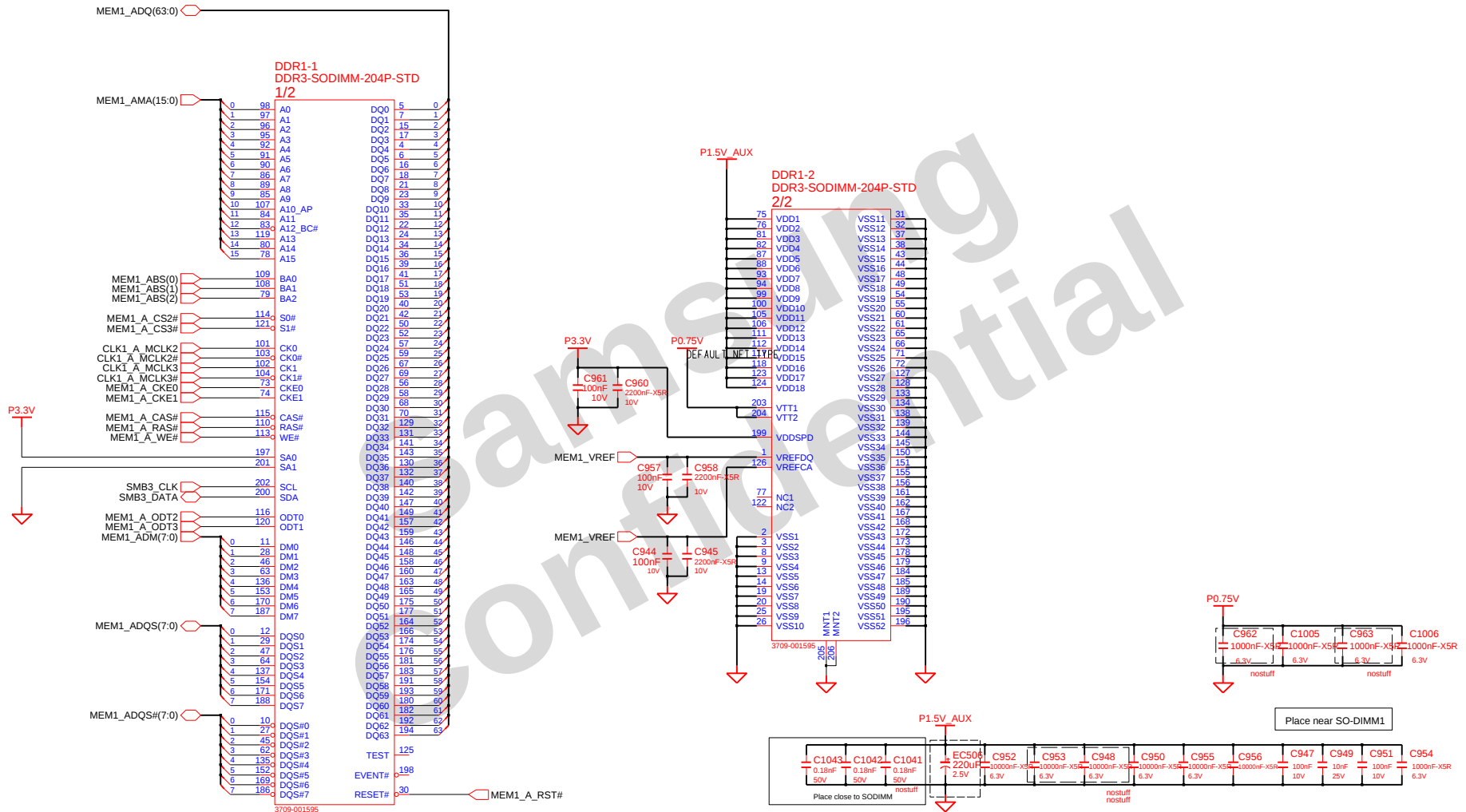
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DDR SO-DIMM #1

Height : 4 mm (STANDARD)

P/N : 3709-001560 (FOXCONN)

P/N : 3709-001607 (CONCRAFT)



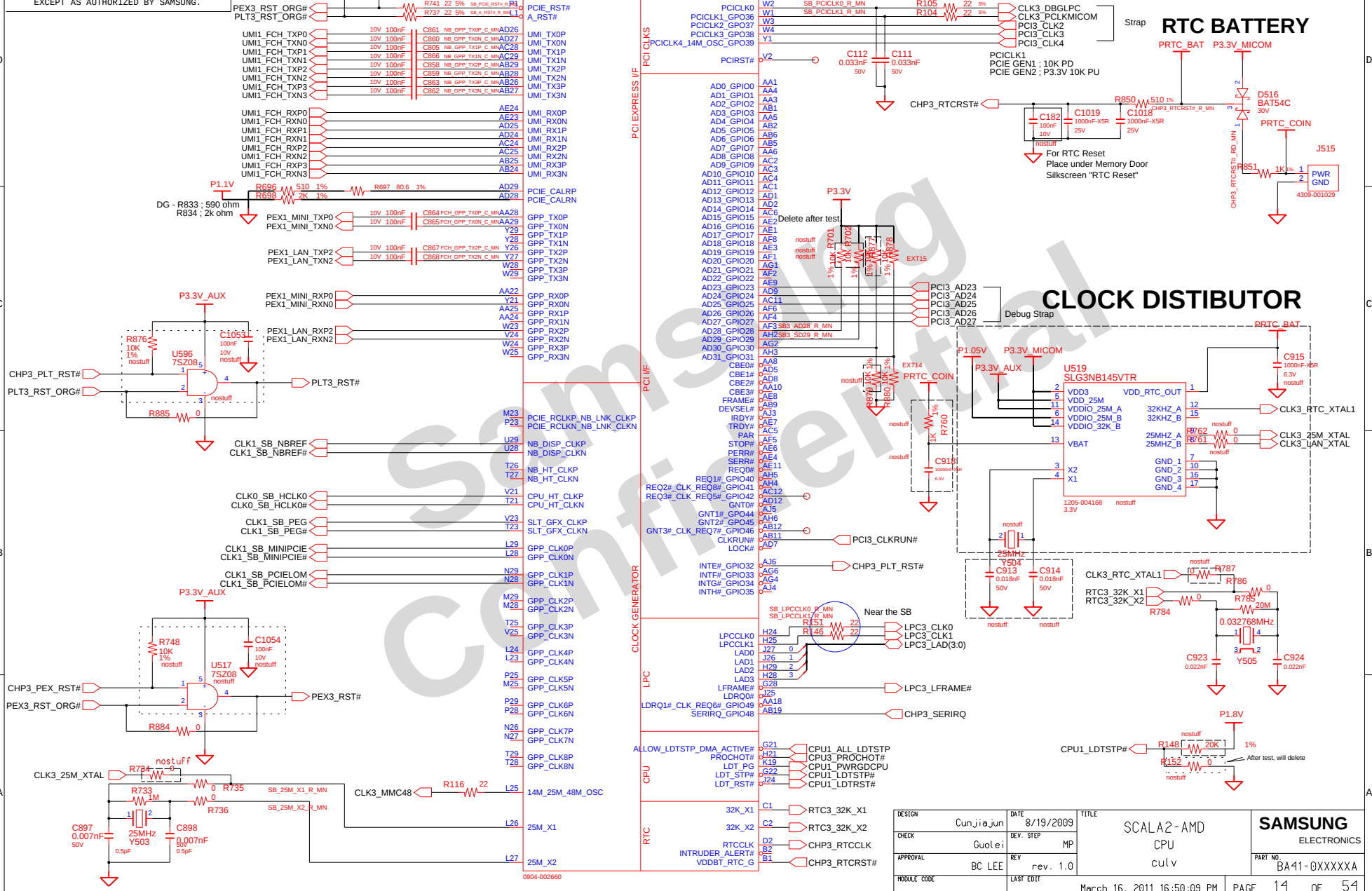
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APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	13	OF 54

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FCH_HUDSON

U516-1
HUDSON-M1

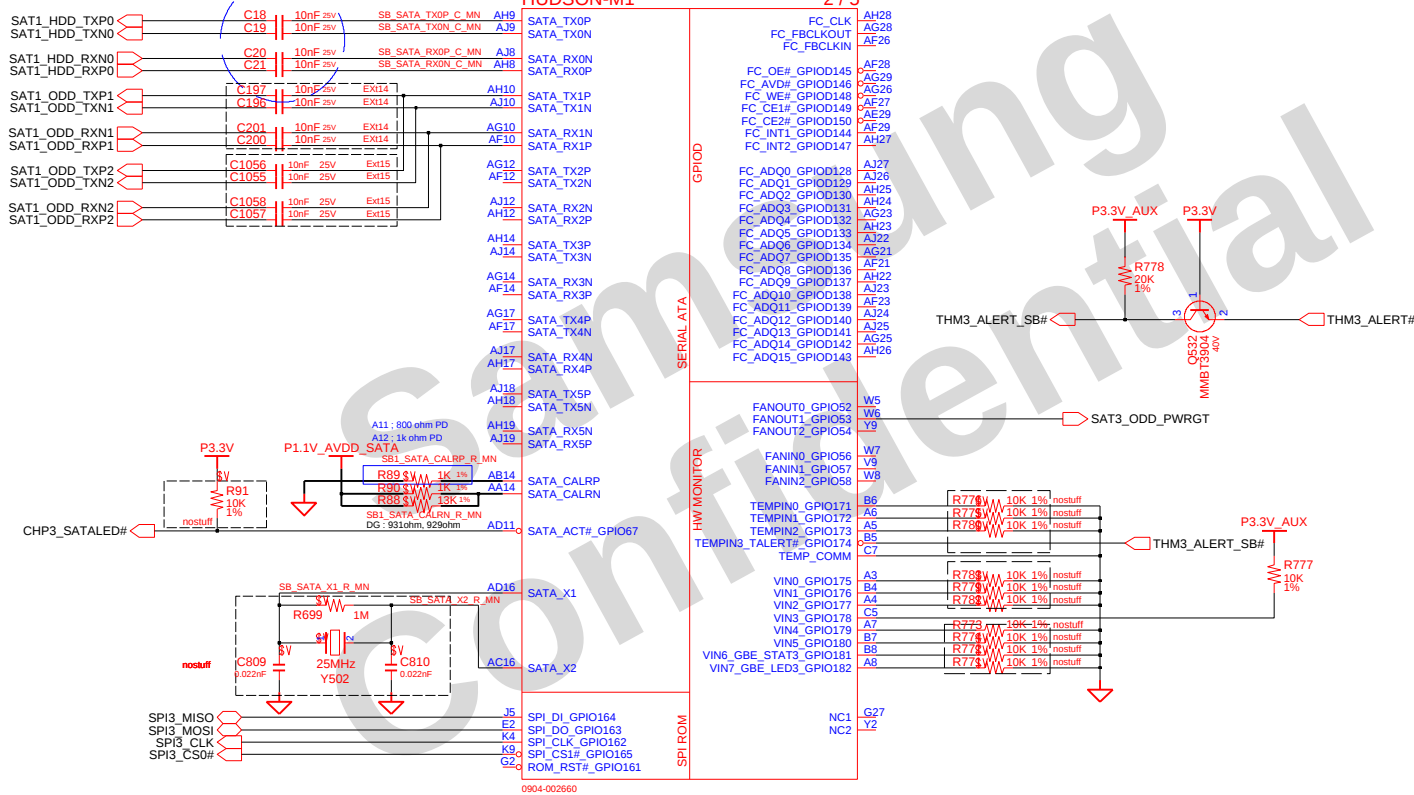
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APPROVAL	BC LEE	REV	rev. 1.0		culv	
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM			
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U516-2
HUDSON-M1

Place Cap to HDD connector side closely



DESIGN	Cunjiajun	DATE	3/25/2010	TITLE SCAL2-AMD MAIN CLOCK DIAGRAM	SAMSUNG ELECTRONICS
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APPROVAL	BC LEE	REV	rev. 1.0		
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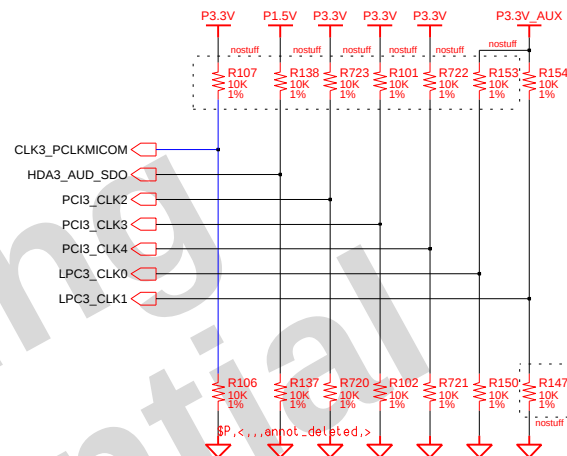
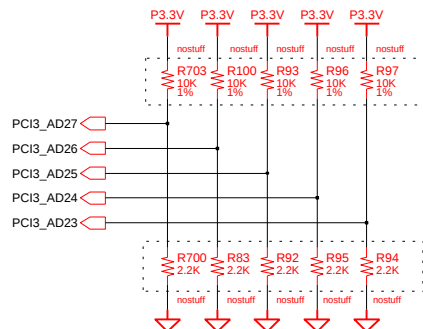
A B C D

C9 10⁷ 7
 C9 22 20 6.3 7
 P1
 C1 10⁷ 10⁷
 3V 181
 P3
 B
 F
 85



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

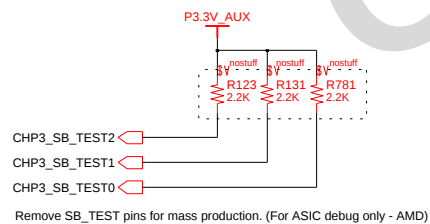
Strap



DEBUG STRAPS

	PCI3_AD(27)	PCI3_AD(26)	PCI3_AD(25)	PCI3_AD(24)	PCI3_AD(23)
	Bypass PCI PLL	ILA auto run Enable	Bypass FC CLK	I2C ROM Enable	Booting from PCI memory
STRAP HIGH	USE PCI PLL DEFAULT	DISABLE ILA AUTORUN DEFAULT	USE FC PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	DISABLE PCI MEM BOOT DEFAULT
STRAP LOW	BYPASS PCI PLL	ENABLE ILA AUTORUN	BYPASS FC PLL	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT

PULL HIGH	HDA3_AUD_SDO AZ_SDOOUT	PCI3_CLK2	PCI3_CLK3	PCI_CLK4	LPC3_CLK0	LPC3_CLK1
	LOW POWER MODE	Watchdog Timer Enabled	USE DEBUG STRAP	non_Fusion CLOCK MODE	EC ENABLE	CLKGEN ENABLE DEFAULT
PULL LOW	PERFORMANCE MODE DEFAULT	Watchdog Timer Disabled DEFAULT	IGNORE DEBUG STRAP DEFAULT	FUSION CLOCK MODE DEFAULT	EC DISABLED DEFAULT	CLKGEN DISABLED



80H PORT DEBUG



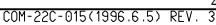
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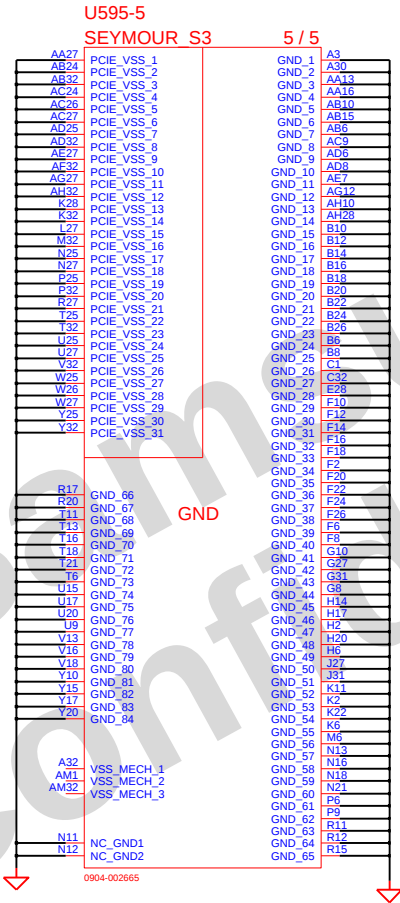
A

D:\users\ecad04\mentor\Scala2_AMD\Scala2-AMD MP1.0 110315\Scala2_AMD MP1.0 110315

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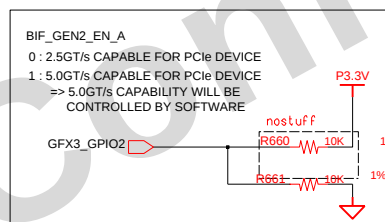
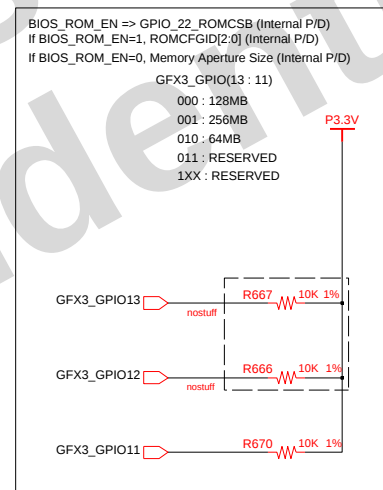
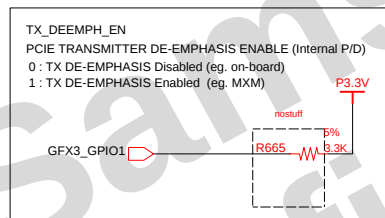
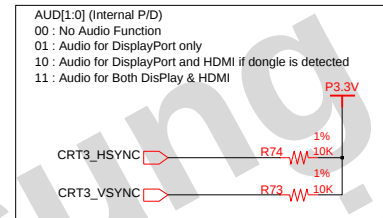
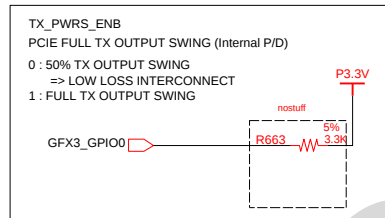
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DESIGN	Cunjiajun	DATE	09/16/2010	TITLE	SCALA2-AMD Programmable Oscillator	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	24	OF 54

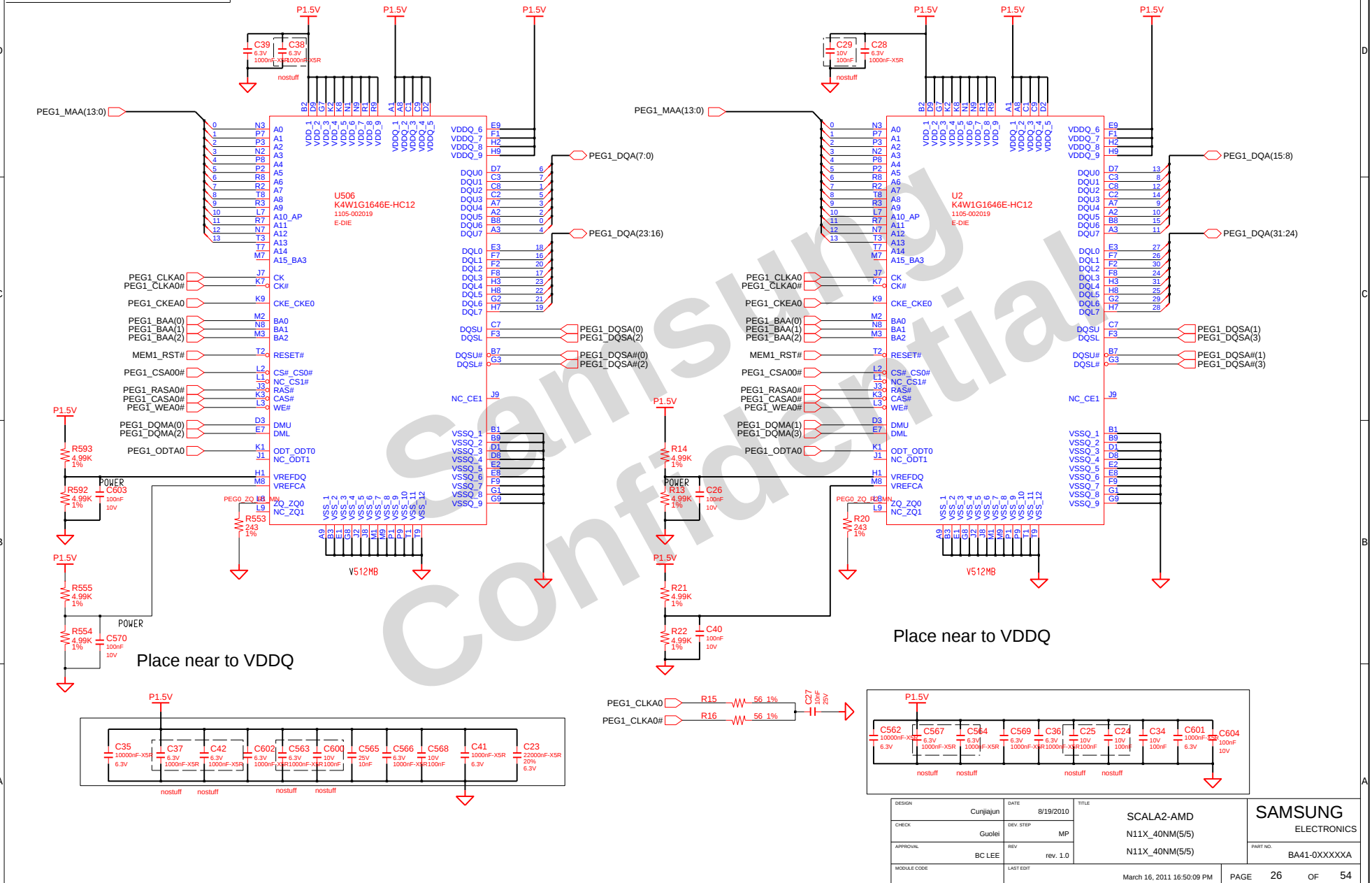
SEYMOUR/WHISTLER S3 Straps



DESIGN	Cunjiajun	DATE	9/3/2009	TITLE	SCALA2-AMD ICH	SAMSUNG ELECTRONICS
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APPROVAL	BC LEE	REV	rev. 1.0		SB710 (1/5)	PART NO. BA41-0XXXXXA
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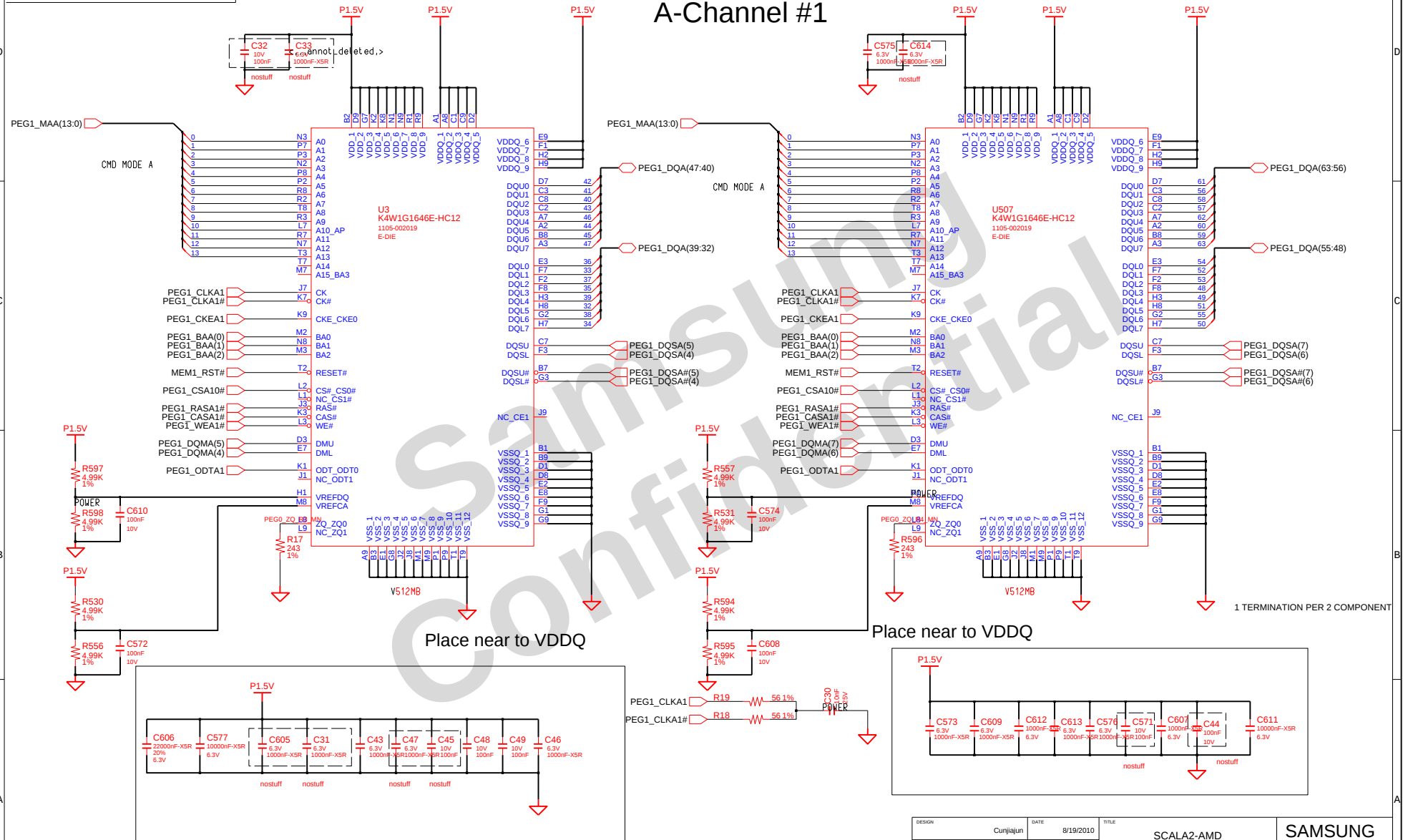
A-Channel #0

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A-Channel #1



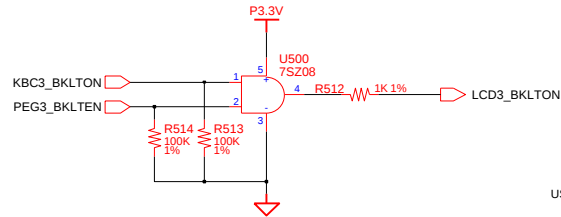
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APPROVAL	BC LEE	REV	rev. 1.0		GRAPHIC_MEM A#0
MODULE CODE		LAST EDIT			
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SAMSUNG	
ELECTRONICS	
PART NO.	BA41-0XXXXXA

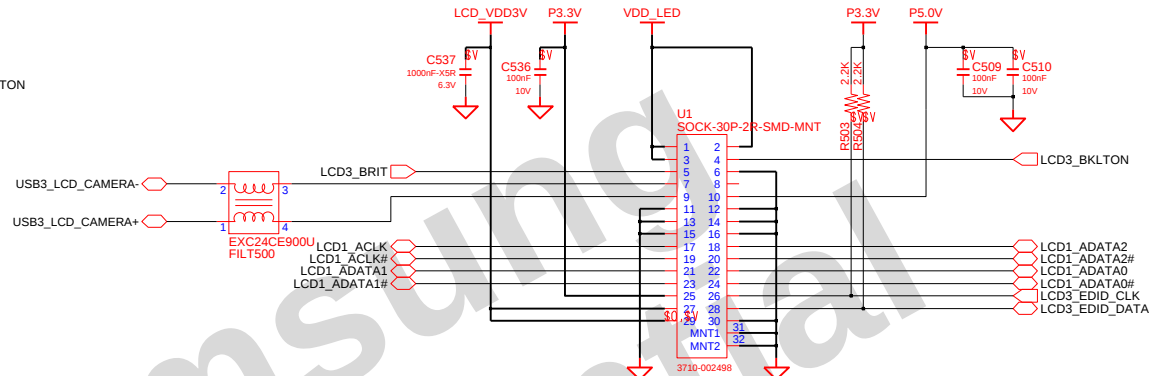
LVDS LOGIC

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Backlight On

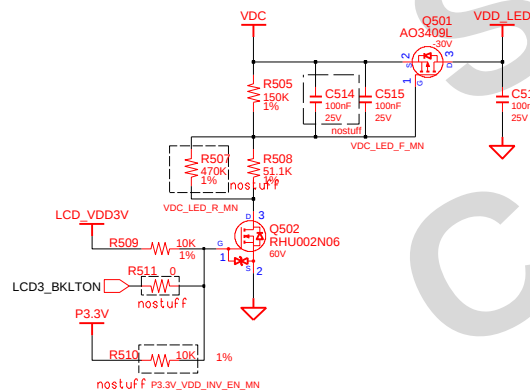


LCD Connector + CAMERA

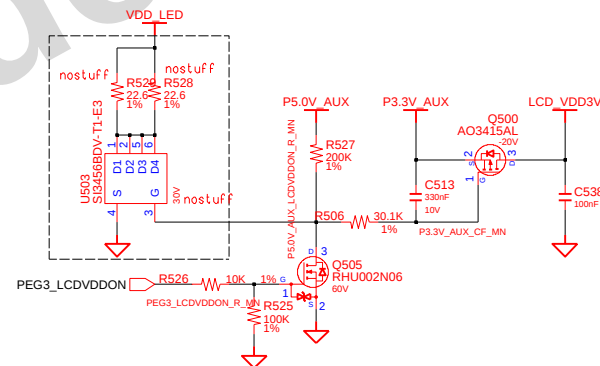


TYPE: ANGLE

LED Power



LCD Power



DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD GRAPHICS_IF LVDS	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
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D



EMC Request Only for HOUSTON (2010.03.22)

3701-001587

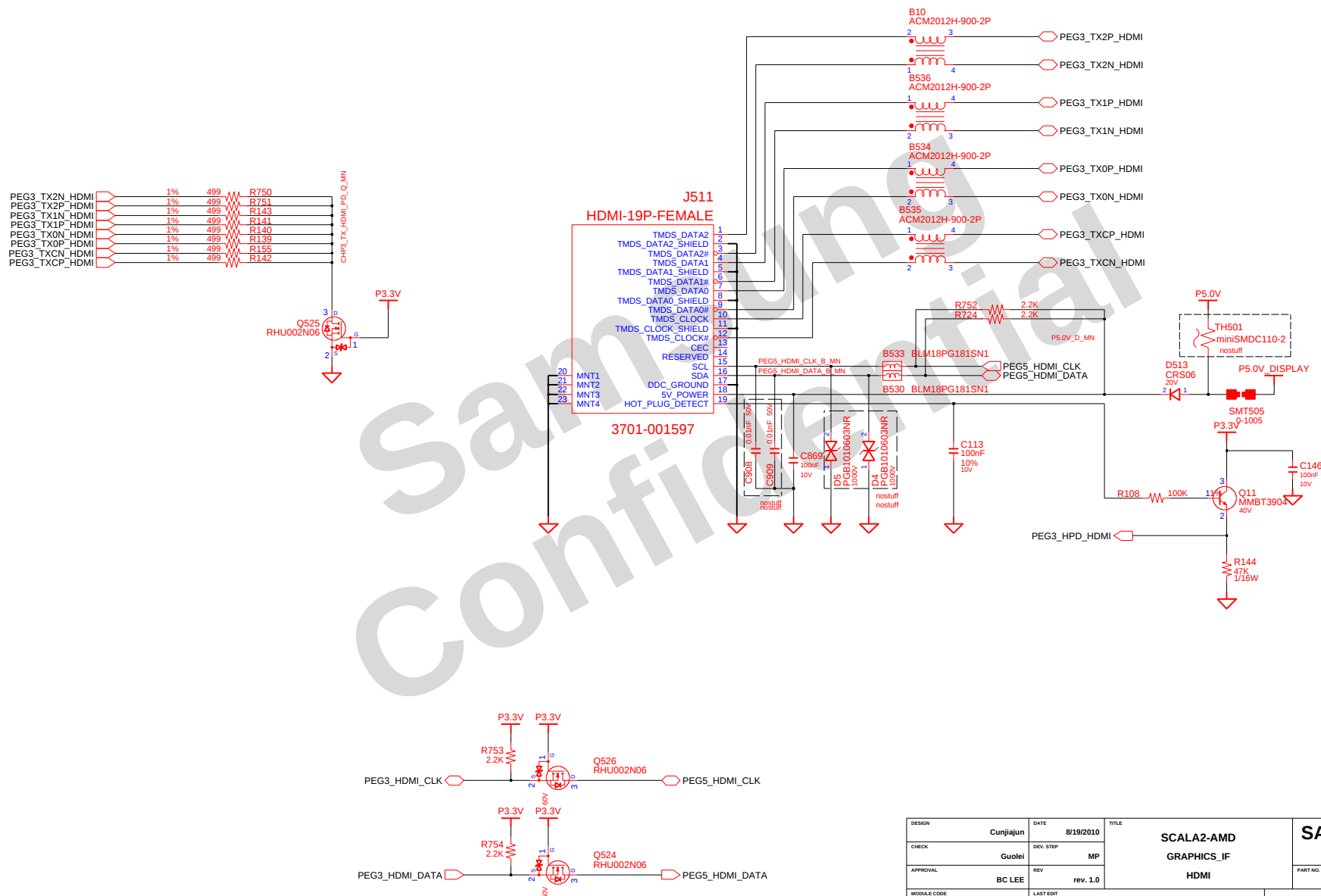
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A

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

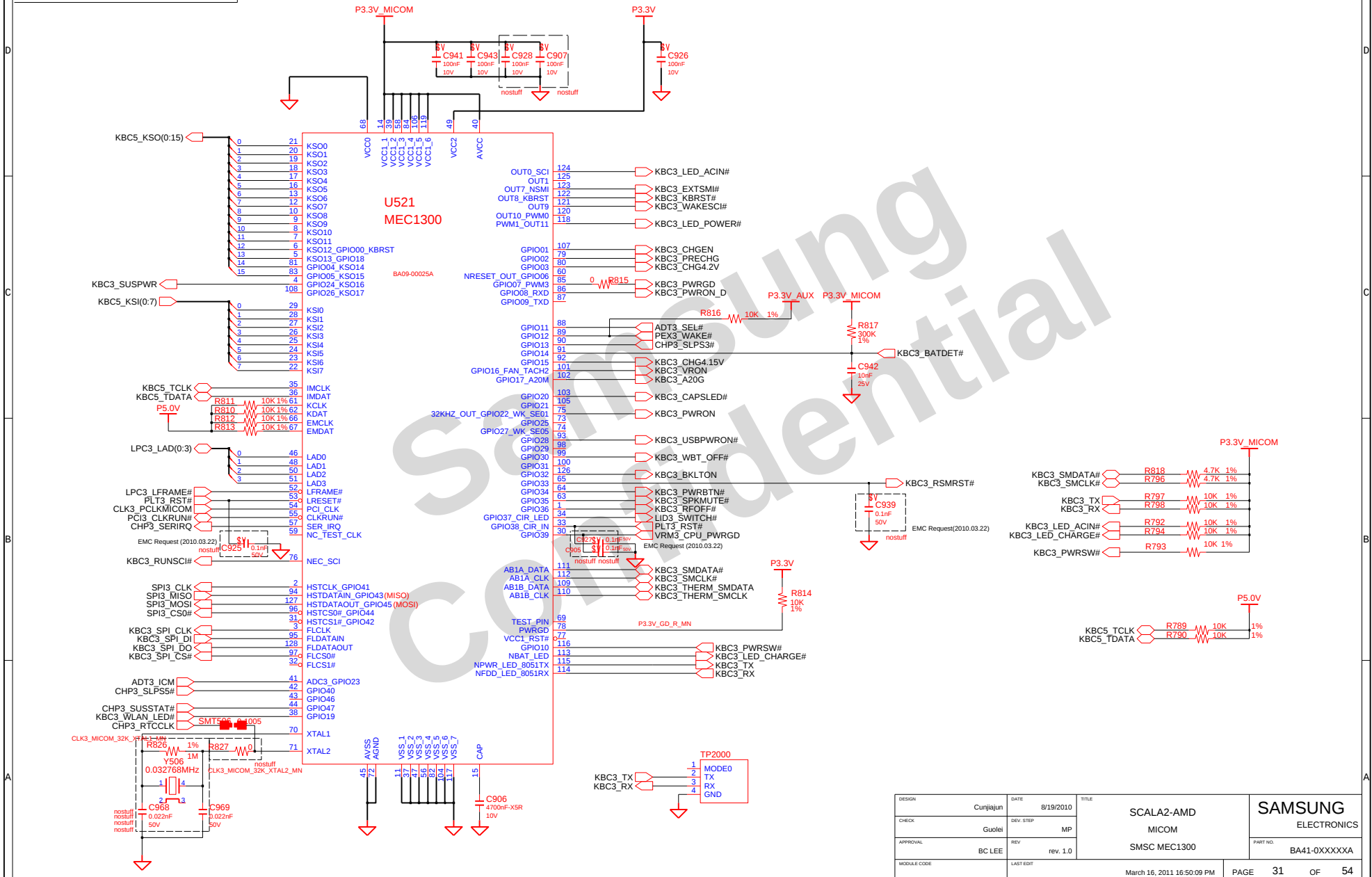
HDMI Graphic

After checking, Houston need to use CMC for each signal.
(EMC request at 2010.04.15)



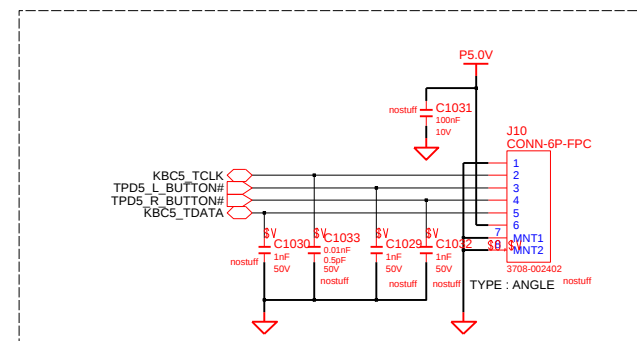
DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP	GRAPHICS_IF		
APPROVAL	BC LEE	REV	rev. 1.0	HDMI		
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	30	OF 54

MAIN BOARD (MICOM)



DESIGN	Curjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD MICOM	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0		SMSC MEC1300	
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	31	OF 54

1

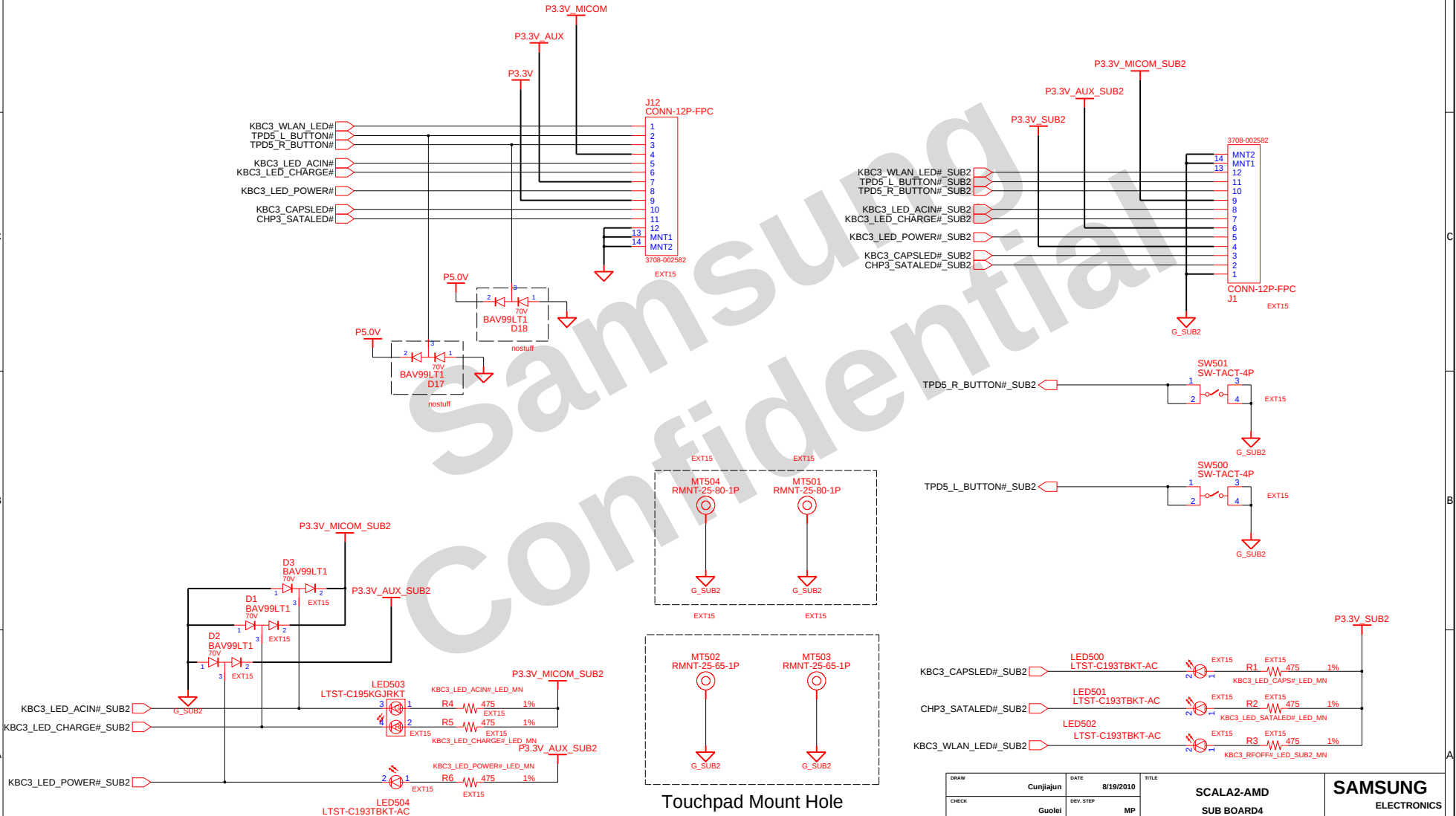


D:/users/ecad04/mentor/Scala2_AMD/Scala2-AMD_MP1.0_110315/Scala2_AMD_MP1.0_110311

15.6"

TOUCHPAD MAIN TO SUB

TOUCHPAD SUB TO MAIN



Touchpad Mount Hole

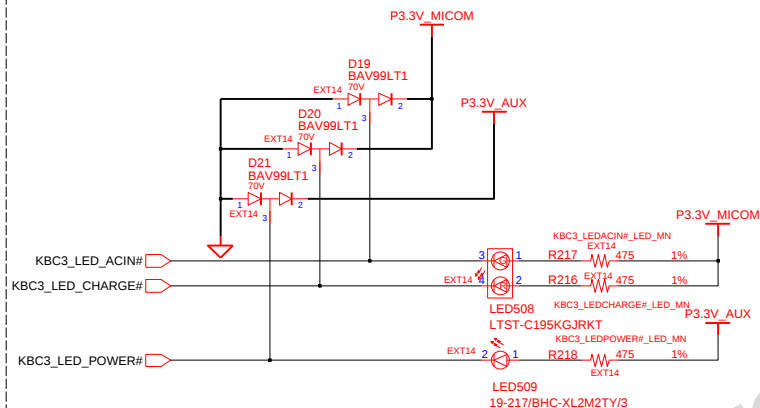
DRAW	Cunhajun	DATE	8/19/2010	TITLE	SCALA2-AMD SUB BOARD4 MULTIMEDIA SUB	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT				
March 16, 2011 16:50:09 PM						PAGE 33 OF 54

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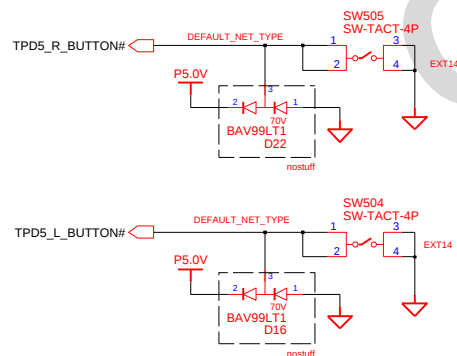
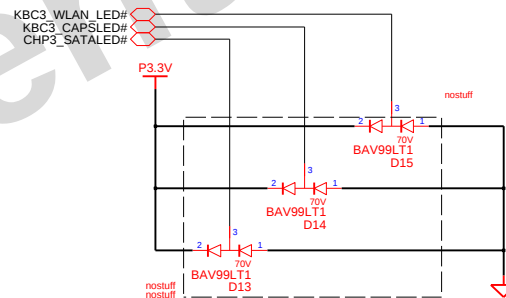
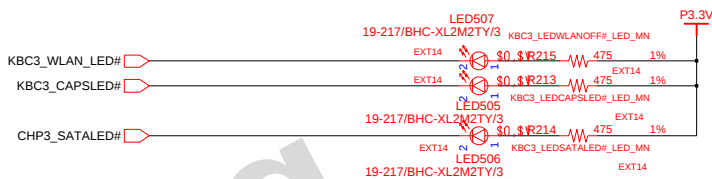
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EXT14

ADAPTERIN/CHARGING LED



ADAPTERIN/CHARGING LED

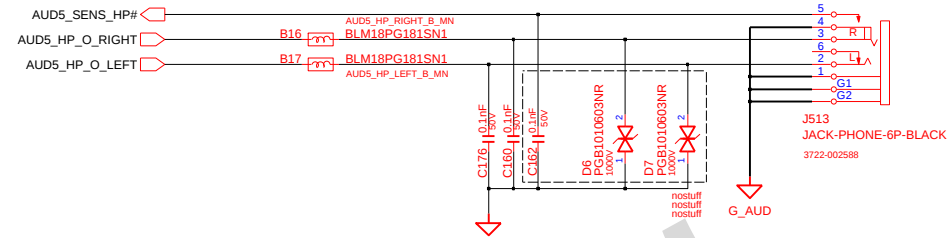


DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD	SAMSUNG
CHECK	Guolei	DEV. STEP	MP		MNT hole	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.0		MNT hole	PART NO.
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM			BA41-0XXXXXA
				PAGE	34	OF 54

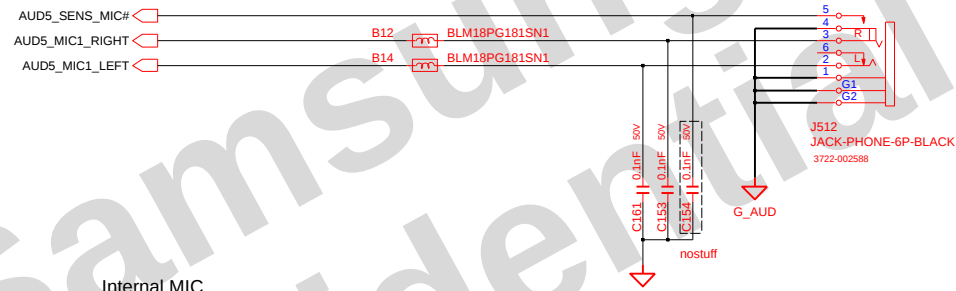
HD AUDIO

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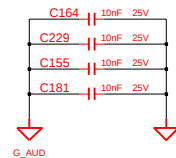
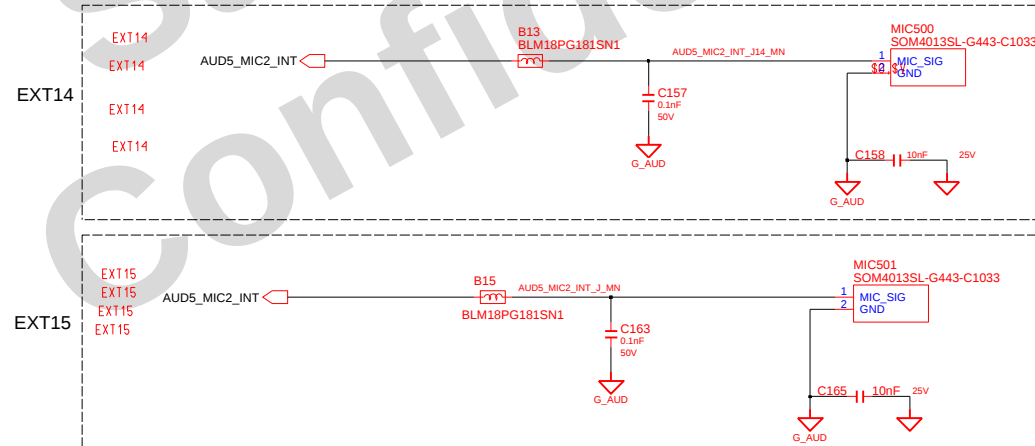
HEADPHONE



MIC JACK

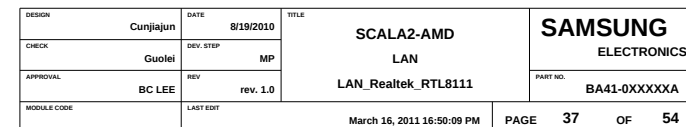


Internal MIC



DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP		HDA_CODEC & LED SUB	
APPROVAL	BC LEE	REV	rev. 1.0		AUDIO JACK & LED SUB	
MODULE CODE		LAST EDIT				
				March 16, 2011 16:50:09 PM	PAGE 36 OF 54	PART NO. BA41-0XXXXXA

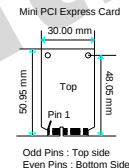
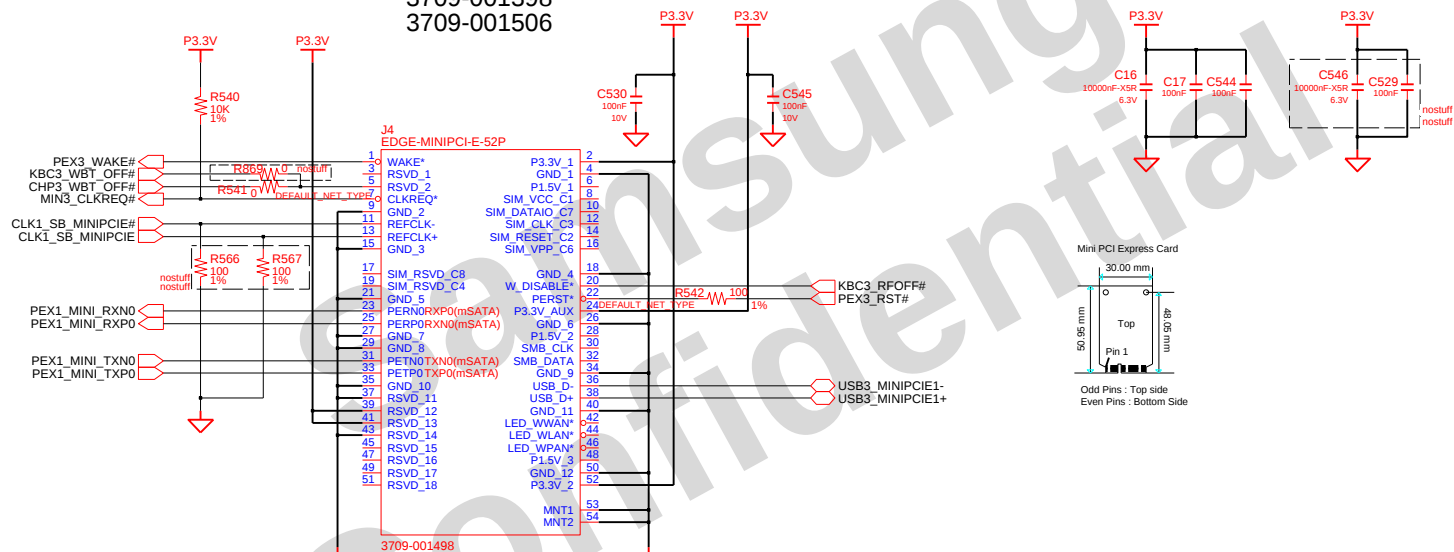
Reatek RTL8111E



WLAN

Height : 7.0mm

3709-001398
3709-001506



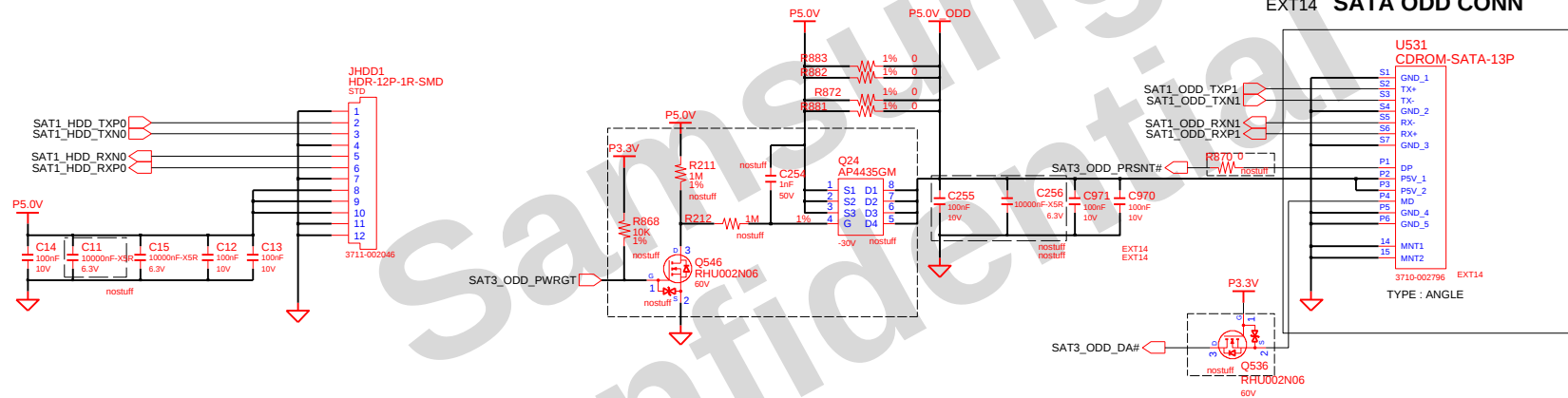
Odd Pins : Top side
Even Pins : Bottom Side

DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD MULTICARD 3 IN 1 CARD(GL827S)	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	38	OF 54

SATA I/F CONN

SATA HDD CONN

Cable Connector Type

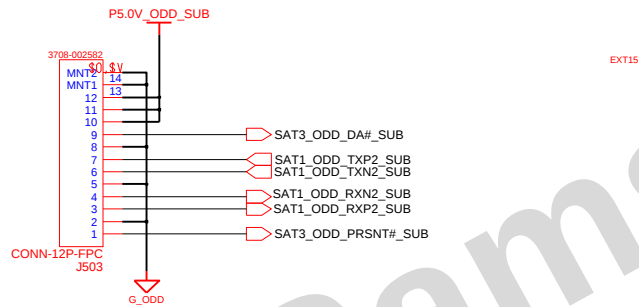


DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD	SAMSUNG
CHECK	Guolei	DEV. STEP	MP		SATA I/F	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.0		SATA I/F	PART NO.
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM			BA41-0XXXXXA
			PAGE	39	OF	54

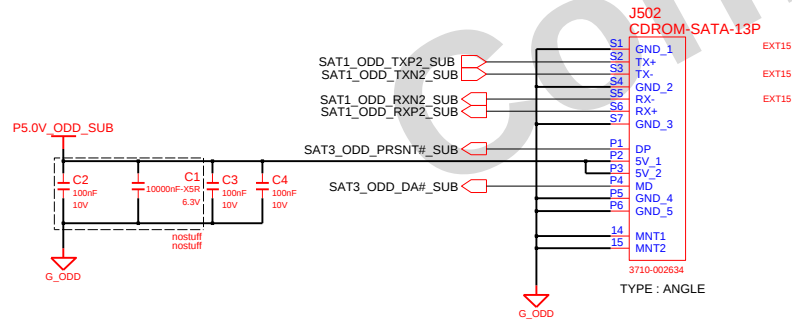
SATA ODD SUB BOARD EXT15

15.6"

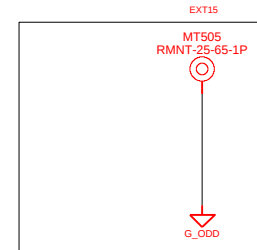
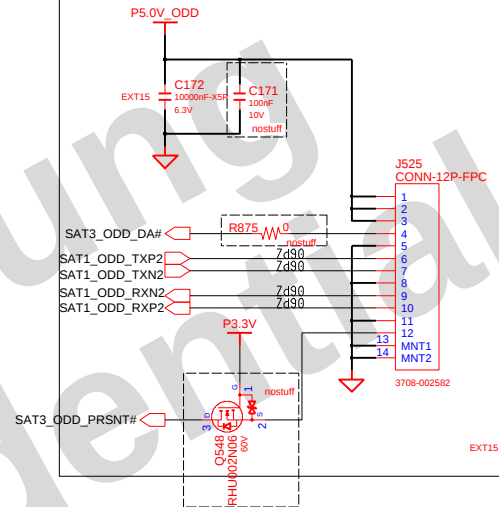
SUB TO MAIN : SATA ODD CONN



SATA ODD CONN



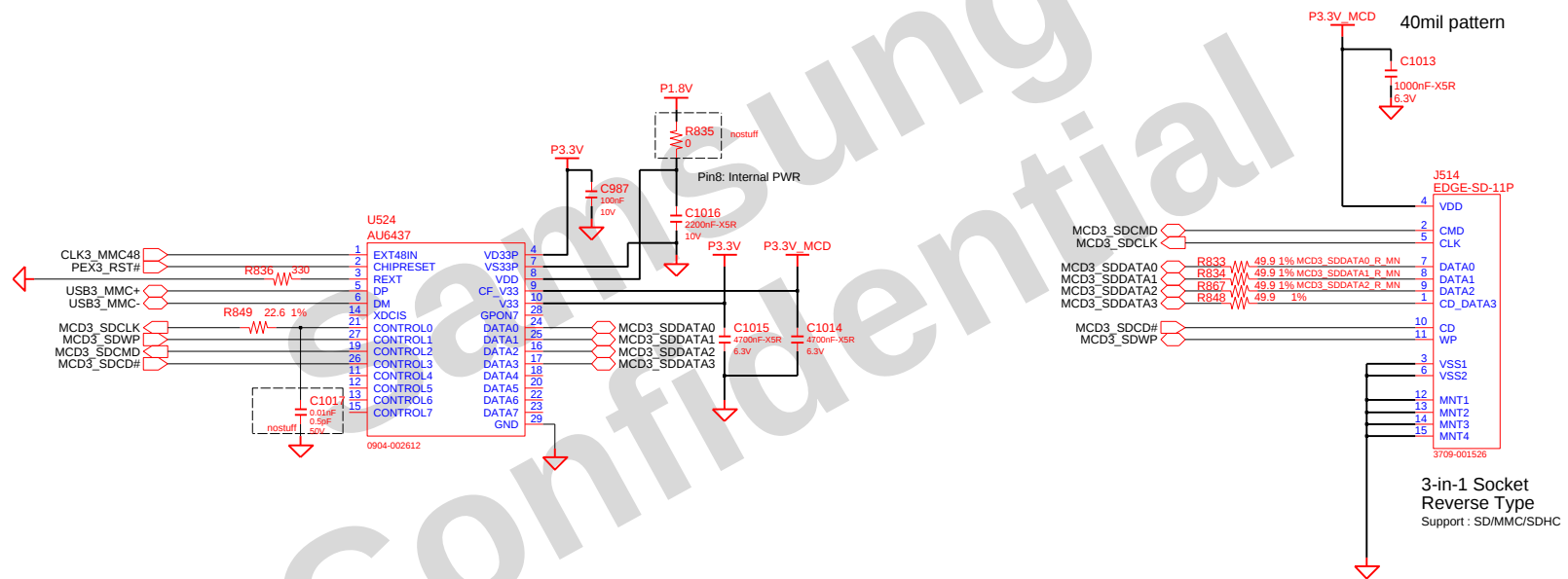
MAIN TO SUB : SATA ODD CONN



ODD sub board mount hole

DRAW	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD SUB BOARD3 ODD SUB	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT				
				March 16, 2011 16:50:09 PM	PAGE	40 OF 54

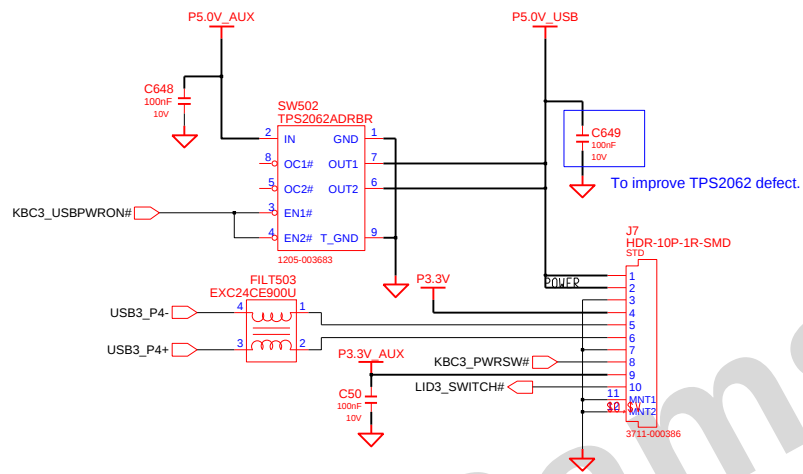
3 IN 1 CARD (AU6437)



DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD SUB BOARD2 3 in 1 SUB	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	41	OF 54

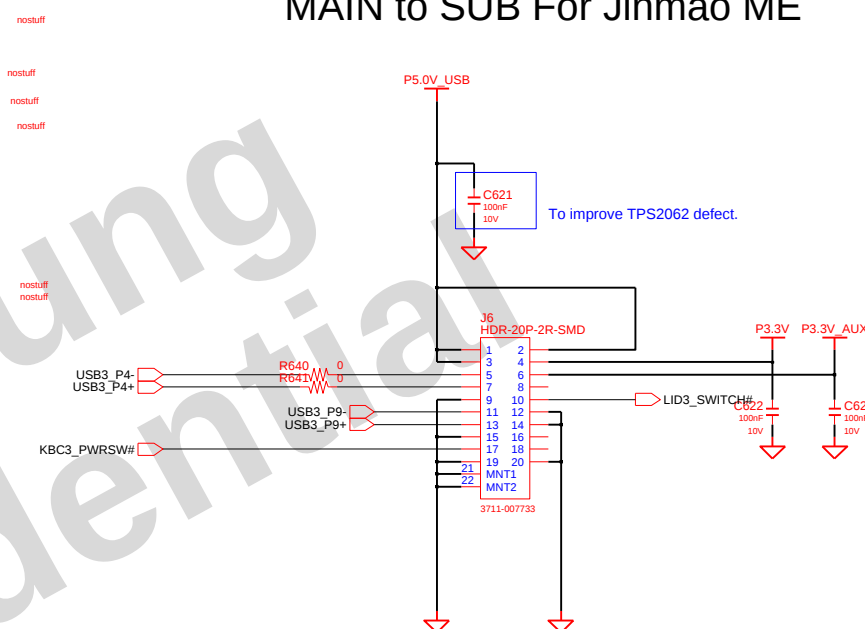
POWER S/W SUB B'D CONNECTOR

MAIN to SUB

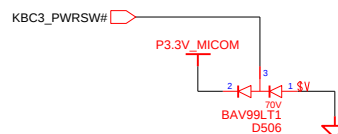
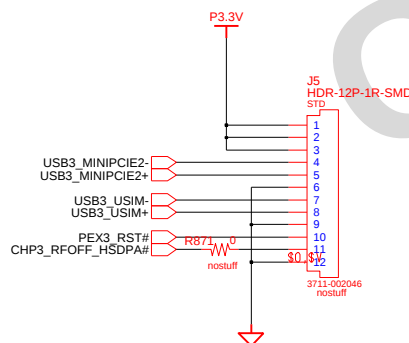


POWER S/W SUB B'D CONNECTOR

MAIN to SUB For Jinmao ME



HSPA MAIN TO SUB CONN

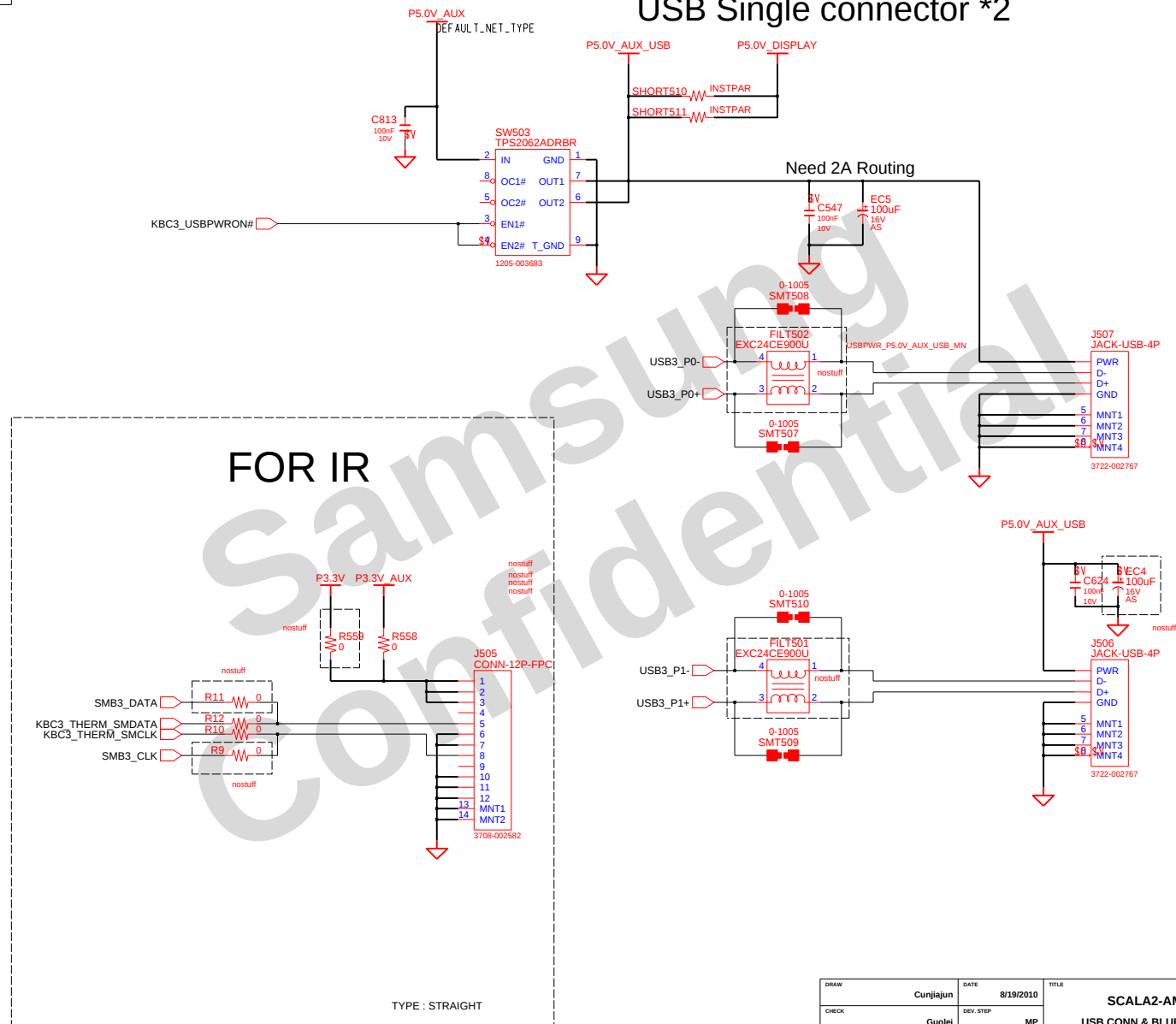


DESIGN	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD
CHECK	Guolei	DEV. STEP	MP	USB_CONN	SAMSUNG ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.0	USB CONNECTOR	PART NO. BA41-0XXXXXA
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	42 OF 54

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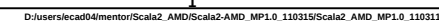
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USB Single connector *2



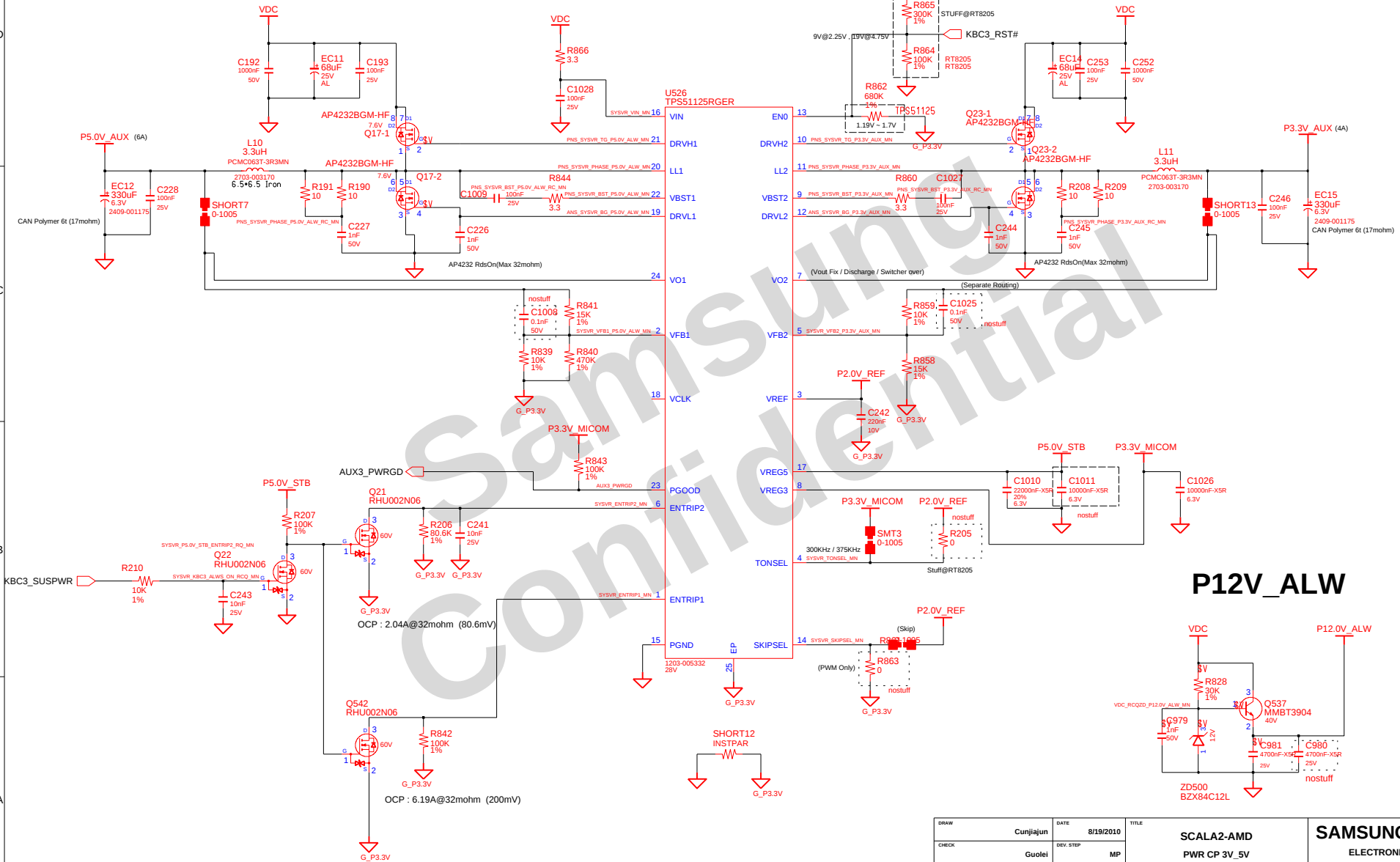
DRAW	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD	SAMSUNG
CHECK	Guolei	DEV. STEP	MP	USB CONN & BLUETOOTH	ELECTRONICS	
APPROVAL	BC LEE	REV	rev. 1.0	USB	PART NO.	BA41-0XXXXXA
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	43	OF 54

CHARGER & POWER MANAGEMENT



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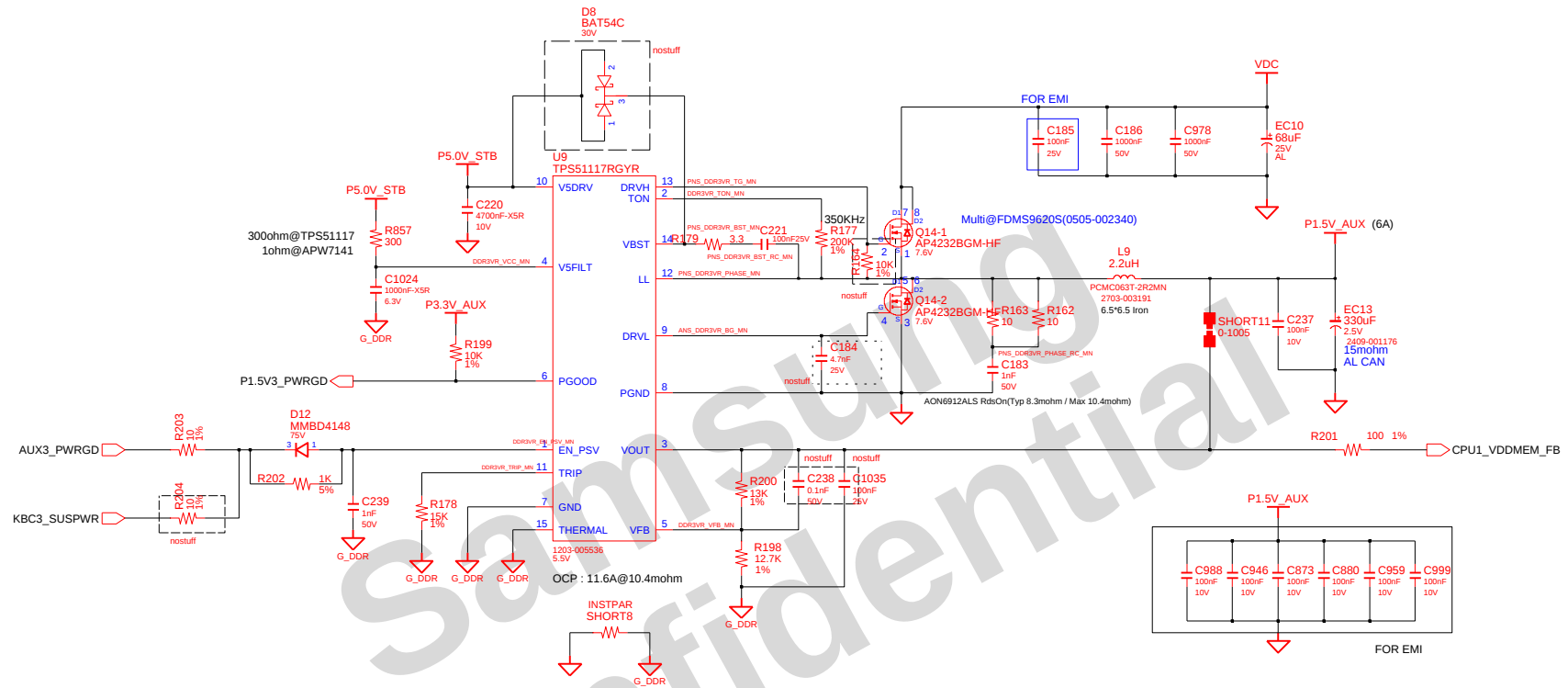
P3.3V_AUX & P5.0V_AUX



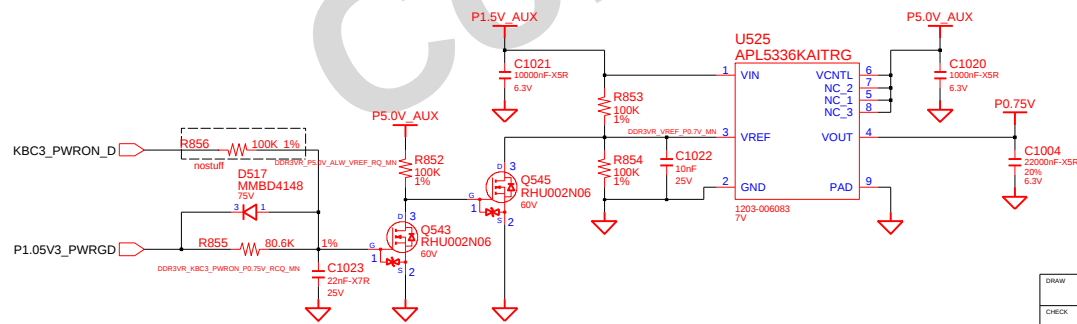
P12V_ALW

DRAW	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD PWR CP 3V_5V P3.3V_AUX / P5.0V_AUX	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE	undefined	LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	45	OF 54

DDR3 Power



DDR3 VTT(0.75V)



DRAW	Curjiajun	DATE	8/19/2010	TITLE	SCAL2-AMD PWR MEMORY	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	rev. 1.0		RT8207	PART NO. BA41-0XXXXXA
MODULE CODE	undefined	LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	47	OF 54

1

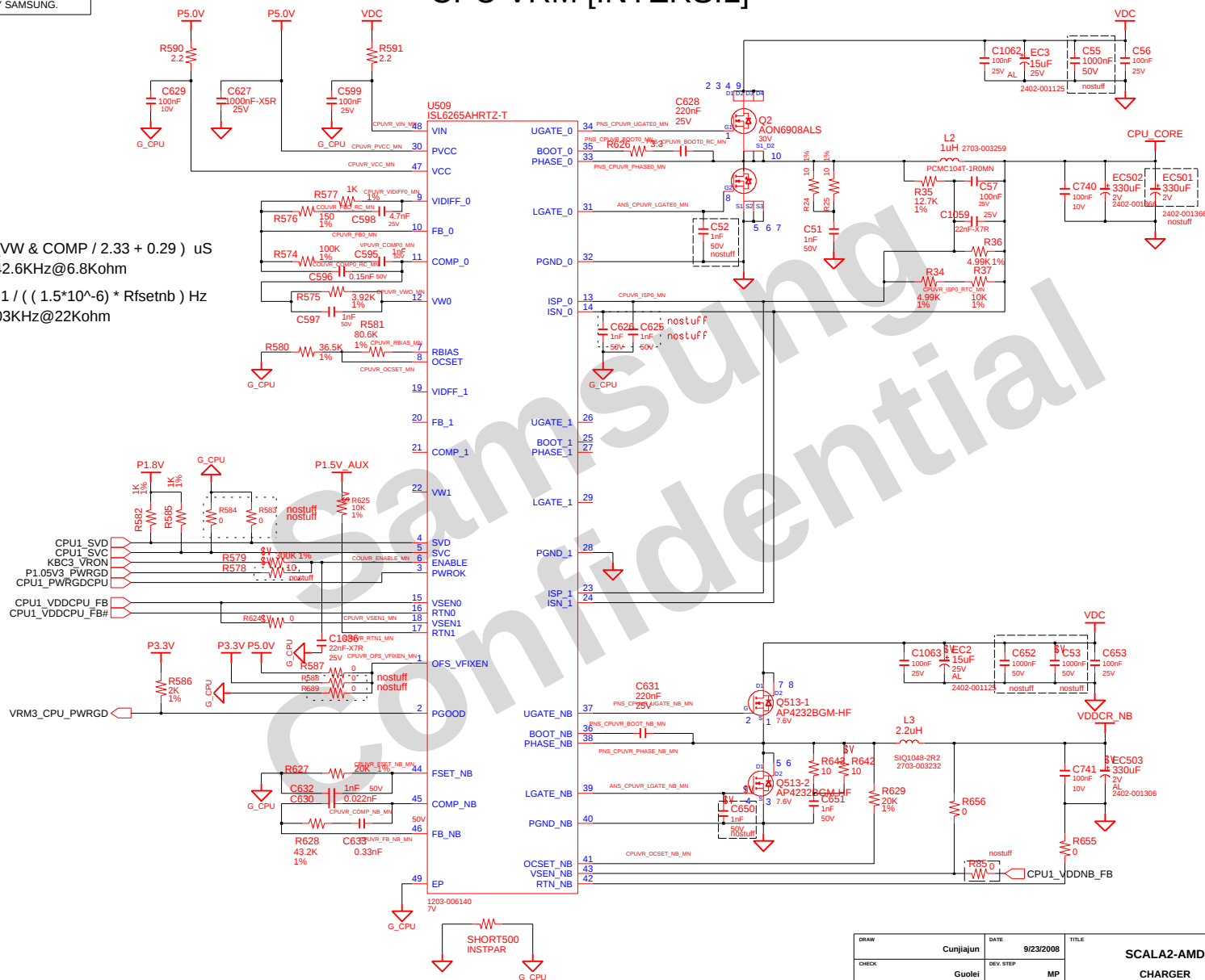


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CPU VRM [INTERSIL]

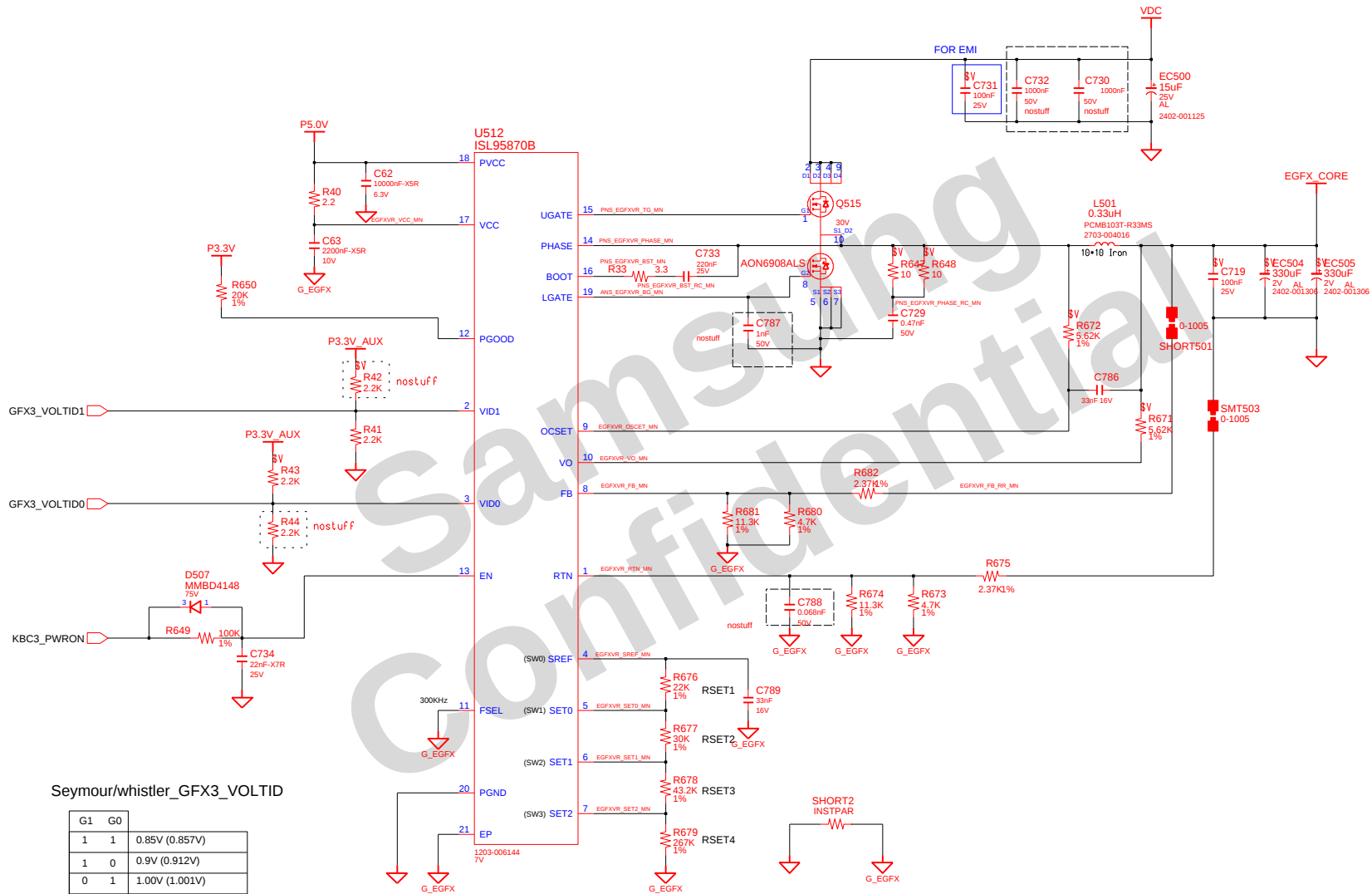
VDD Freq = (R_VW & COMP / 2.33 + 0.29) uS
: 342.6KHz@6.8Kohm

VDD_NB Freq = 1 / ((1.5*10^-6) * Rfsetnb) Hz
: 303KHz@22Kohm

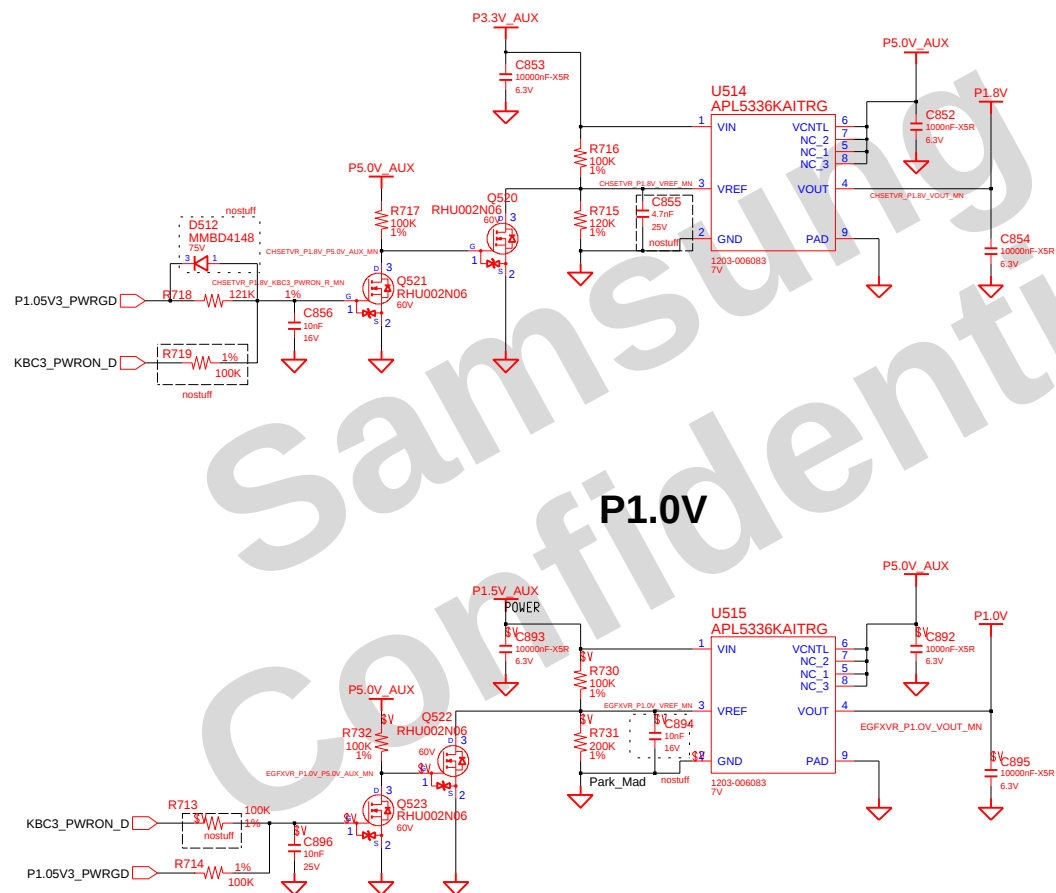


DRAW	Cunjiun	DATE	9/23/2008	TITLE	SCALA2-AMD CHARGER	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP			PART NO. BA41-0XXXXXA
APPROVAL	BC LEE	REV	rev. 1.0		Intersil ISL6256A	
MODULE CODE	undefined	LAST EDIT				
				March 16, 2011 16:50:09 PM	PAGE	49 OF 54

External GFX Core Power

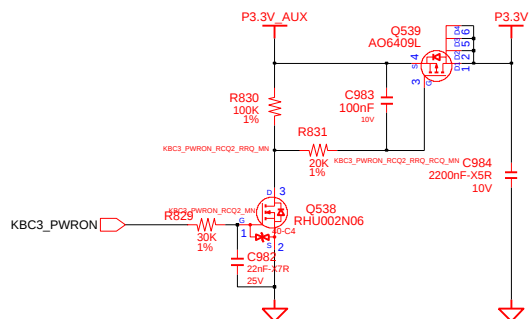


P1.0V

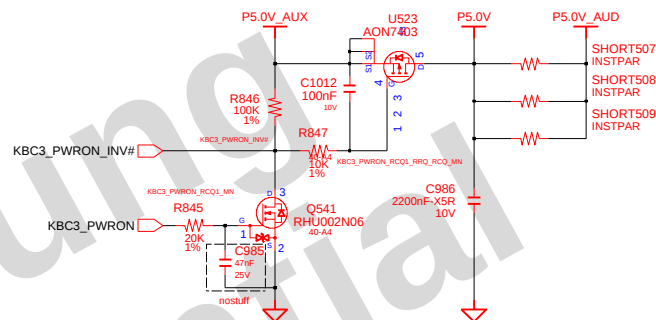


Switched Power

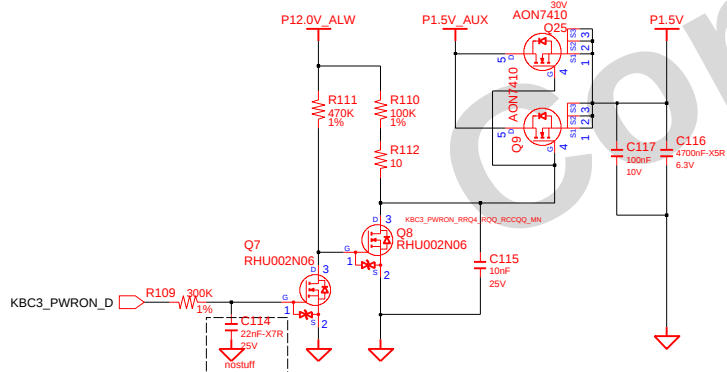
Switched Power On (P3.3V)



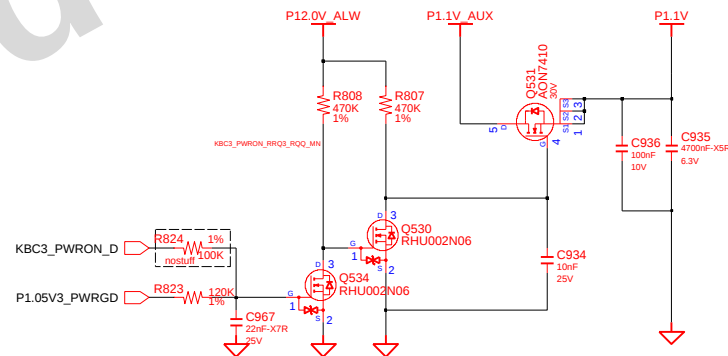
Switched Power On (P5.0V)



Switched Power On (P1.5V)



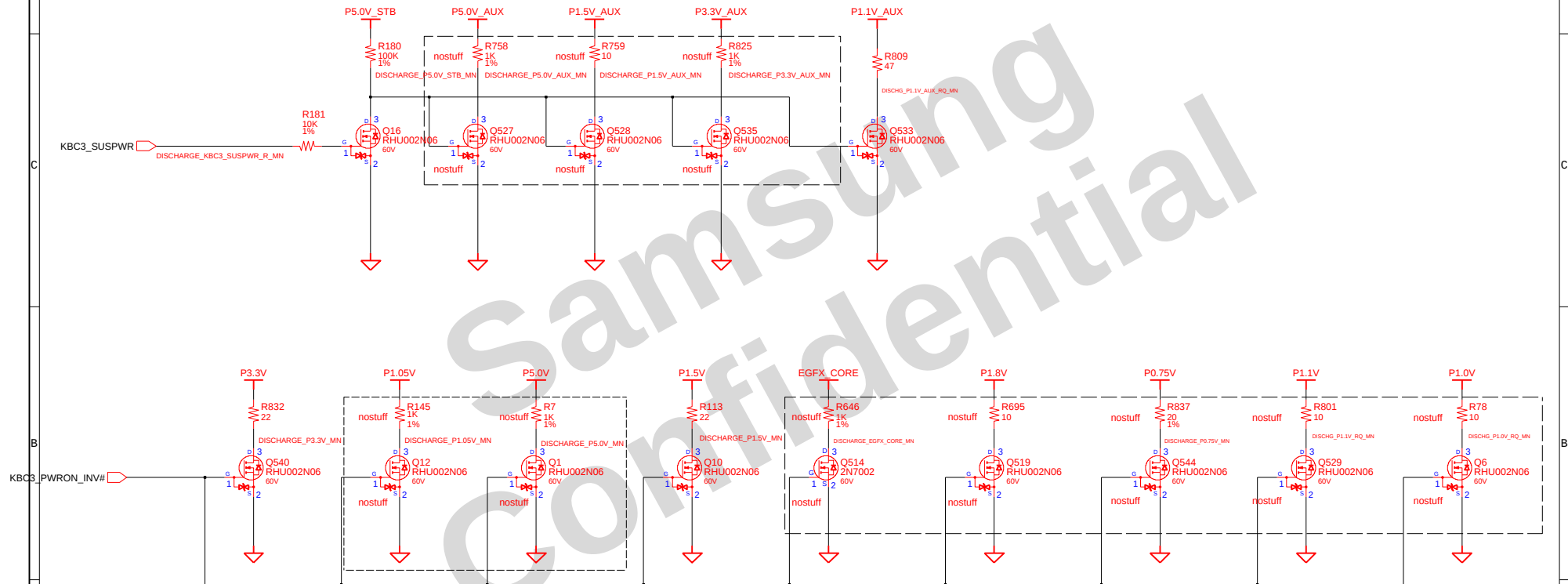
Switched Power On (P1.1V)



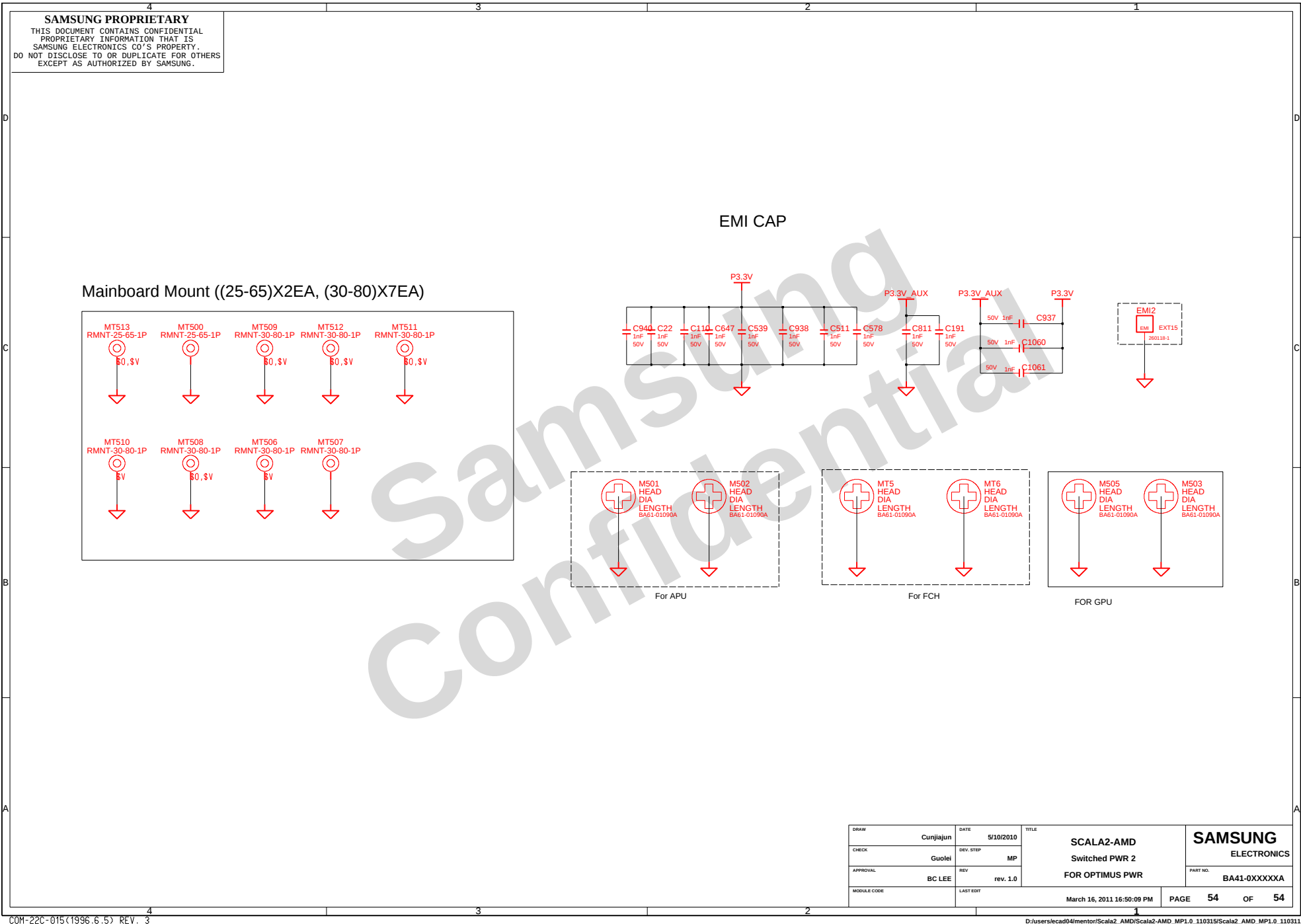
DRAW	Cunjiajun	DATE	01/09/2008	TITLE	SCALA2-AMD	SAMSUNG ELECTRONICS PART NO. BA41-0XXXXXA
CHECK	Guolei	DEV. STEP	MP		PWR_MV_1.1VTT_1.05V	
APPROVAL	BC LEE	REV	rev. 1.0		TI TPS51125	
MODULE CODE	undefined	LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	52 OF 54	

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POWER DISCHARGER



DRAW	Cunjiajun	DATE	8/19/2010	TITLE	SCALA2-AMD	SAMSUNG ELECTRONICS
CHECK	Guolei	DEV. STEP	MP	PWR_MV_DISCHARGER		
APPROVAL	BC LEE	REV	rev. 1.0	DISCHARGING LOGIC	PART NO. BA41-0XXXXXA	
MODULE CODE	undefined	LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	53	OF 54



DRAW	Cunjiajun	DATE	5/10/2010	TITLE	SCALA2-AMD Switched PWR 2 FOR OPTIMUS PWR	SAMSUNG ELECTRONICS PART NO. BA41-0XXXXXA
CHECK	Guolei	DEV. STEP	MP			
APPROVAL	BC LEE	REV	rev. 1.0			
MODULE CODE		LAST EDIT	March 16, 2011 16:50:09 PM	PAGE	54 OF 54	