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Scala2-R

CPU : Sandy Bridge PGA
Chip Set : Intel Cougar Point
GFX : N12P-GV/N12M-GE
Remarks : Huron River Platform

Model Name : Scala2-R
PBA Name : MAIN
PCB Code : BA41-01XXXA (GCE)
BA41-01XXXA (NY)
BA41-01XXXA (HAN)
BA41-01XXXA (GBM)
Dev. Step : ADV
Revision : 0.1
T.R. Date : 2011.01.20

Design	CHECK	APPROVAL
GU HUI	SJ WU	BC LEE

■ Owner : SRDC PD3

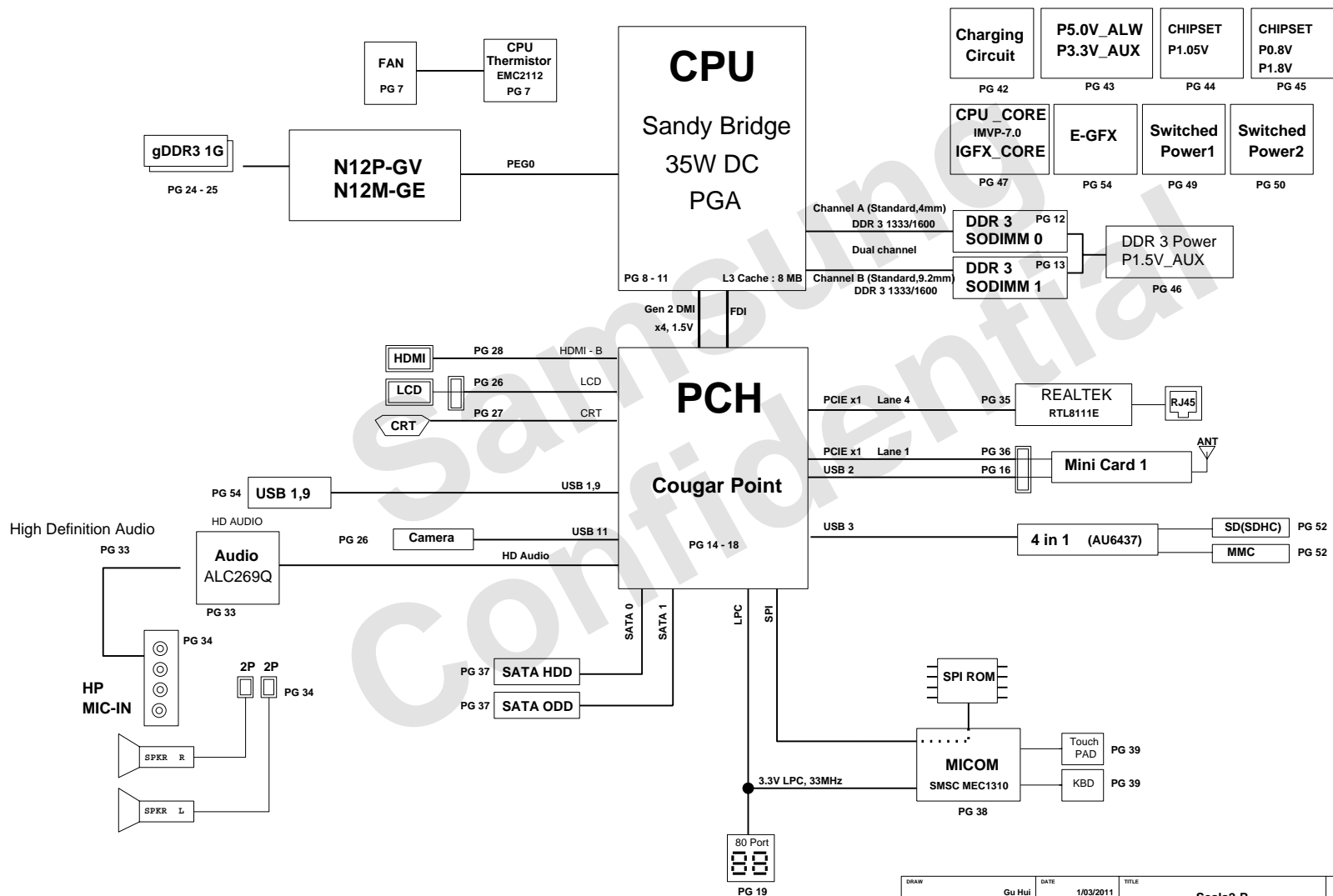
Signature : GUHUI

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DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG
CHECK	SJ Wu	DEV. STEP	ADV		MAIN	ELECTRONICS
APPROVAL	BC LEE	REV	REV. 0.1		COVER	PART NO.
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM			BA41-01XXXA
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BLOCK DIAGRAM



DRAW	Gu Hui	DATE	1/03/2011	Scala2-R MAIN BLOCK DIAGRAM	SAMSUNG ELECTRONICS		
CHECK	SJ Wu	DEV. STEP	ADV				
APPROVAL	BC LEE	REV	rev. 0.1			PART NO.	BA41-01XXXX
MODULE CODE	undefined	LAST EDIT				January 20, 2011 18:59:20 PM	PAGE 2 OF 48

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BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails

Active in

VDC	Primary DC system power supply (7 to 21V)	S4 - S5
P3.3V_MICOM	3.3V always power rail (for Micom)	
P5.0V_STB	5.0V always power rail	
P5.0V_ALW	5.0V always power rail	
P3.3V_ALW	3.3V always power rail	
P12.0V_ALW	12.0V always power rail	
P5.0V_AUX	5.0V switched on power rail (off in S4-S5)	S3
P3.3V_AUX	3.3V switched on power rail (off in S4-S5)	
P1.5V_AUX	1.5V power rail for DDR3 (off in S4-S5)	
P5.0V	5.0V switched power rail (off in S3-S5)	S0
P3.3V	3.3V switched power rail (off in S3-S5)	
P1.8V	1.8V switched power rail (off in S3-S5)	
P1.5V	1.5V switched power rail (off in S3-S5)	
P0.75V	0.75V power rail for DDR3 (off in S3-S5)	
P0.8V	0.8V switched power rail (off in S3-S5)	
VCC_CORE	Core Voltage for CPU	S0
EGFX_CORE	Core Voltage for GPU	
P1.05V (VCCP)	VCC for COUGARPOINT	
P3.3V_D	3.3V discrete power rail for N12X	
P1.5V_D	1.5V discrete power rail for N12X	
P1.05V_D	1.05V discrete power rail for N12X	

USB PORT Assign

PCI Express Assign

PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	NC	1	Mini Card 1 (WLAN)
1	SYSTEM PORT 0	2	NC
2	Mini PCI Express	3	NC
3	Multi Memory Card Controller	4	LAN CONTROLLER
4	NC	5	USB 3.0
5	NC	6	NC
6	NC (N/A WITH HM55)	7	NC
7	NC (N/A WITH HM55)	8	NC
8	Camera		
9	SYSTEM PORT 1		
10	NC		
11	Camera(LCD Cable)		
12	NC		
13	NC		

SATA PORT Assign

PORT #	ASSIGNED TO
0	HDD
1	ODD
2	(N/A WITH HM65)
3	(N/A WITH HM65)
4	
5	

Crystal / Oscillator

TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	HM65	Real Time Clock
Crystal	25MHz	LAN	Intel LAN
Crystal	24MHz	USB 3.0	
Crystal	25MHz	HM65	INTEL
Crystal	27MHz	N12P-LP	NVIDIA

LCD Pannel Detect (TBD)

Devices	Resolution	PANNEL_DETECT_0

I²C / SMB Address

Devices	Address	Hex	Bus
HM65	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	-
Thermal Sensor on board	1101 100x	98h	
Power thermal management TS	1101 011x	96h	

DRAW

Gu Hui

DATE

1/03/2011

TITLE

Scala2-R

CHECK

SJ Wu

DEV. STEP

ADV

APPROVAL

BC LEE

REV

rev. 0.1

MODULE CODE

undefined

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OF

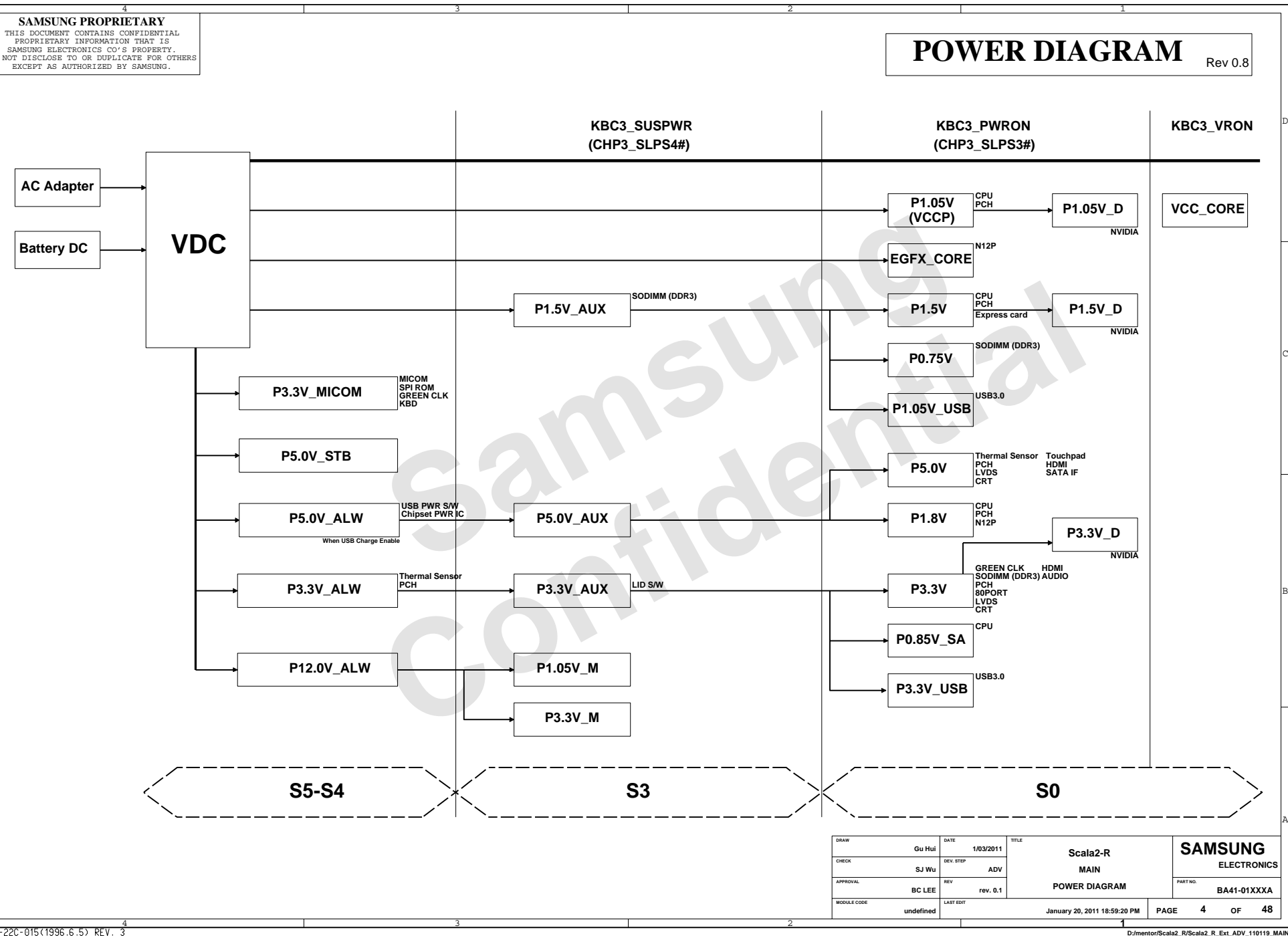
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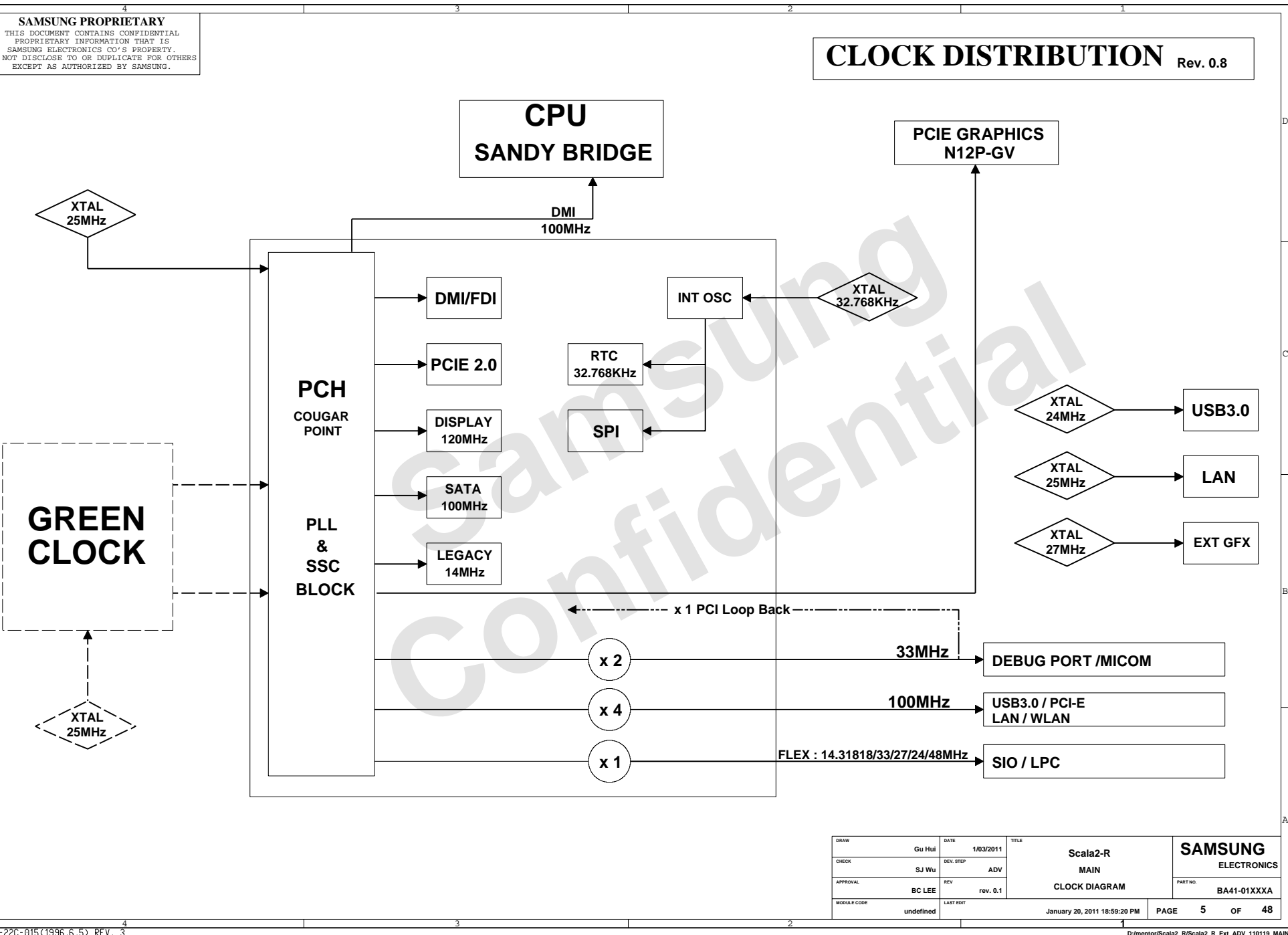
SAMSUNG

ELECTRONICS

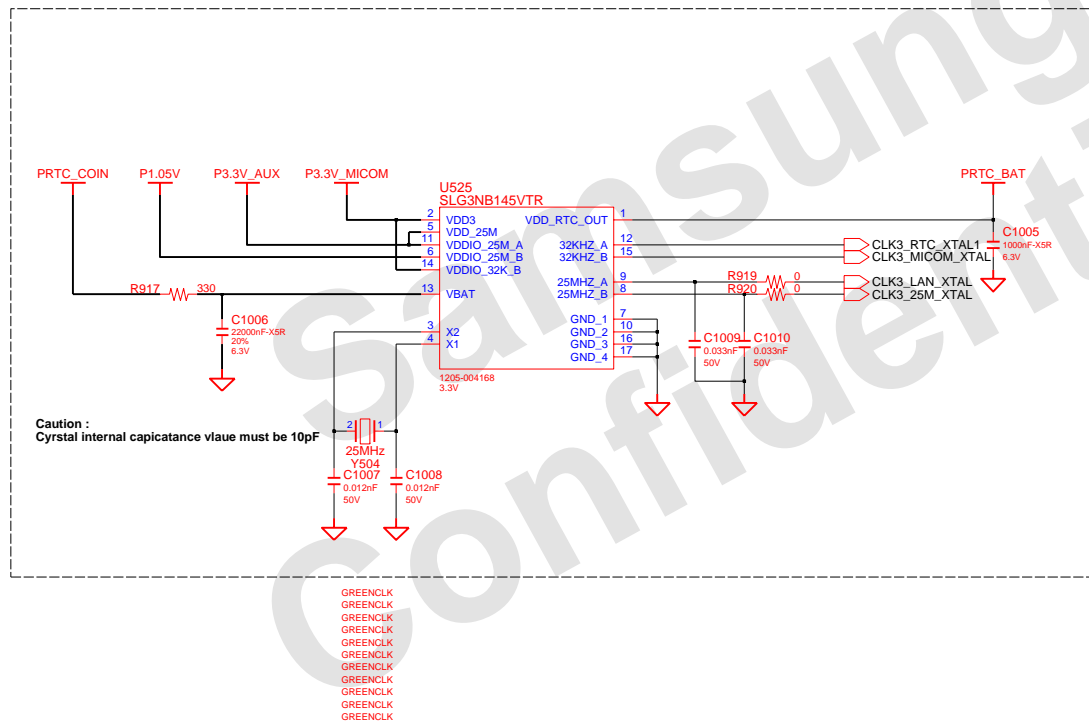
PART NO.

BA41-01XXXA





CLOCK DISTIBUTOR

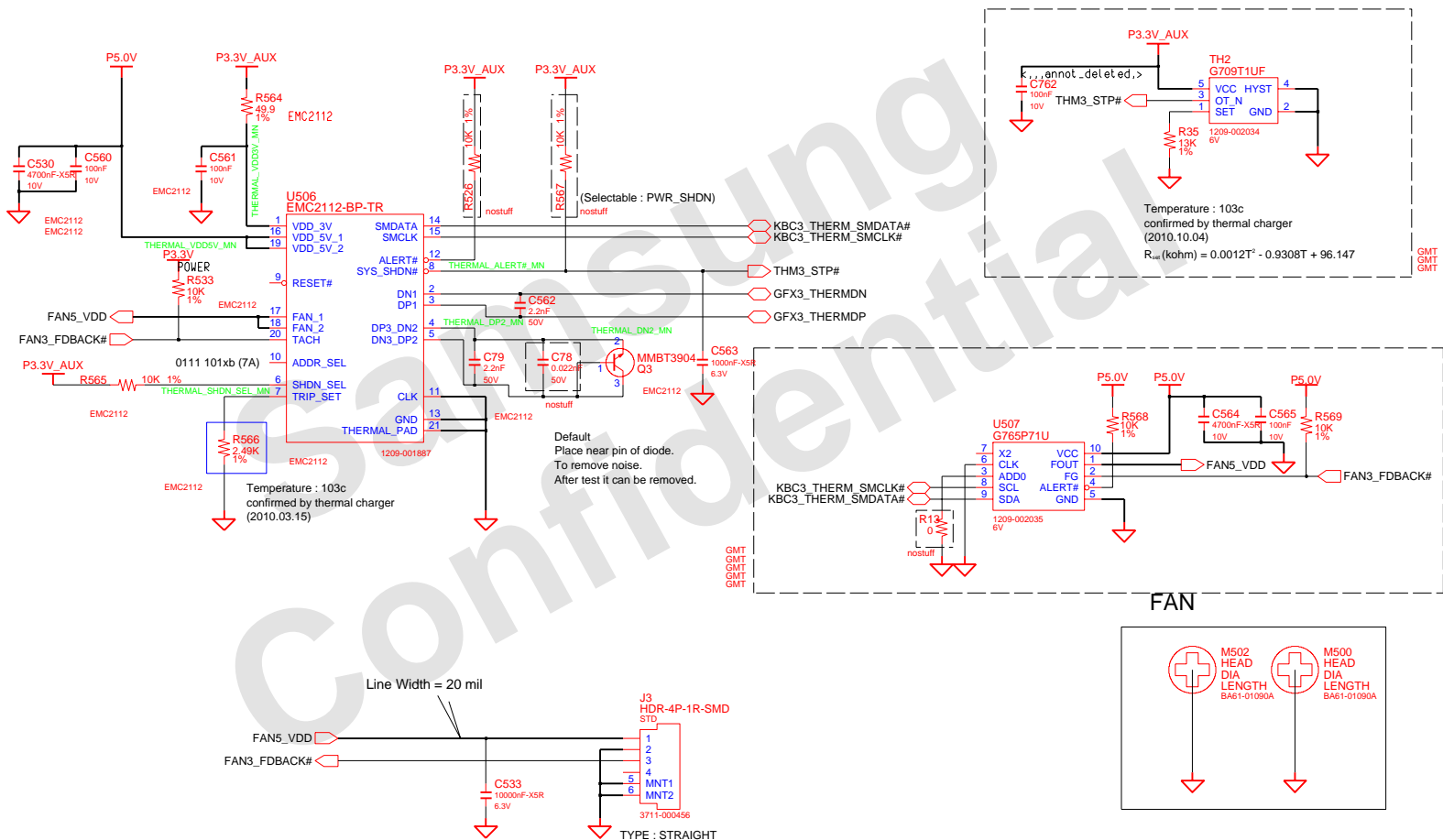


ENGINEER	DATE	TITLE	SAMSUNG ELECTRONICS PART NO. BA41-XXXXXX
DESIGNED BY	short_date	SCALAZ-R_PV_MAIN	
CHANGED BY	DEV. STEP	Module Name	
FIG. CHK	REV	1.0	
LAST EDIT		last_edit	PAGE 6 OF XX

THERMAL SENSOR & FAN CONTROL

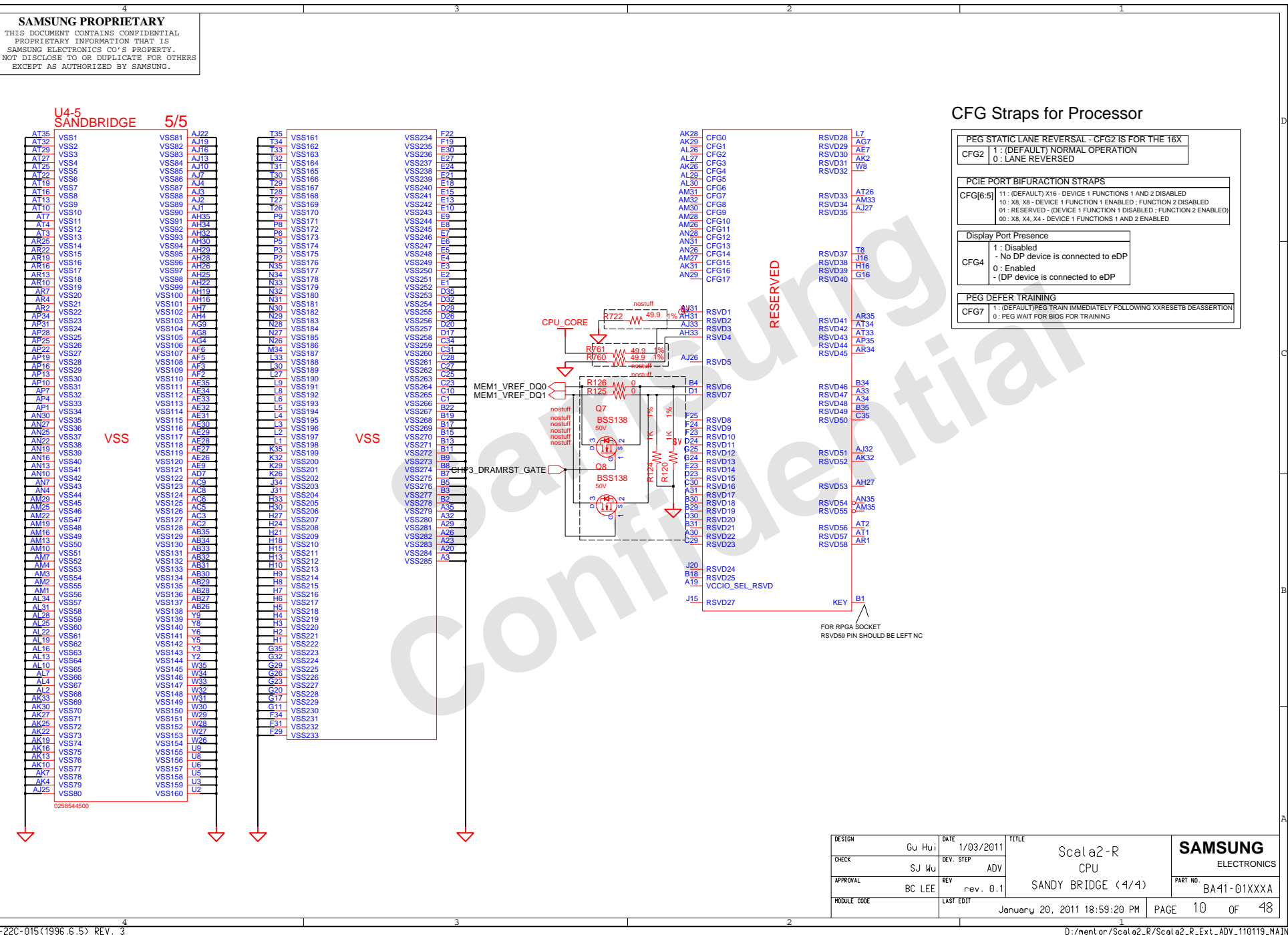
ADDRESSSEL MODE	
0 HIGH Z	0101 111xb 0111 101xb (7A) 0101 110xb

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



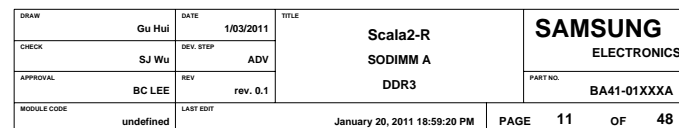
www.laptopfix.vn

D:/mentor/Scala2 R/Scala2 R Ext ADV 110119 MAIN

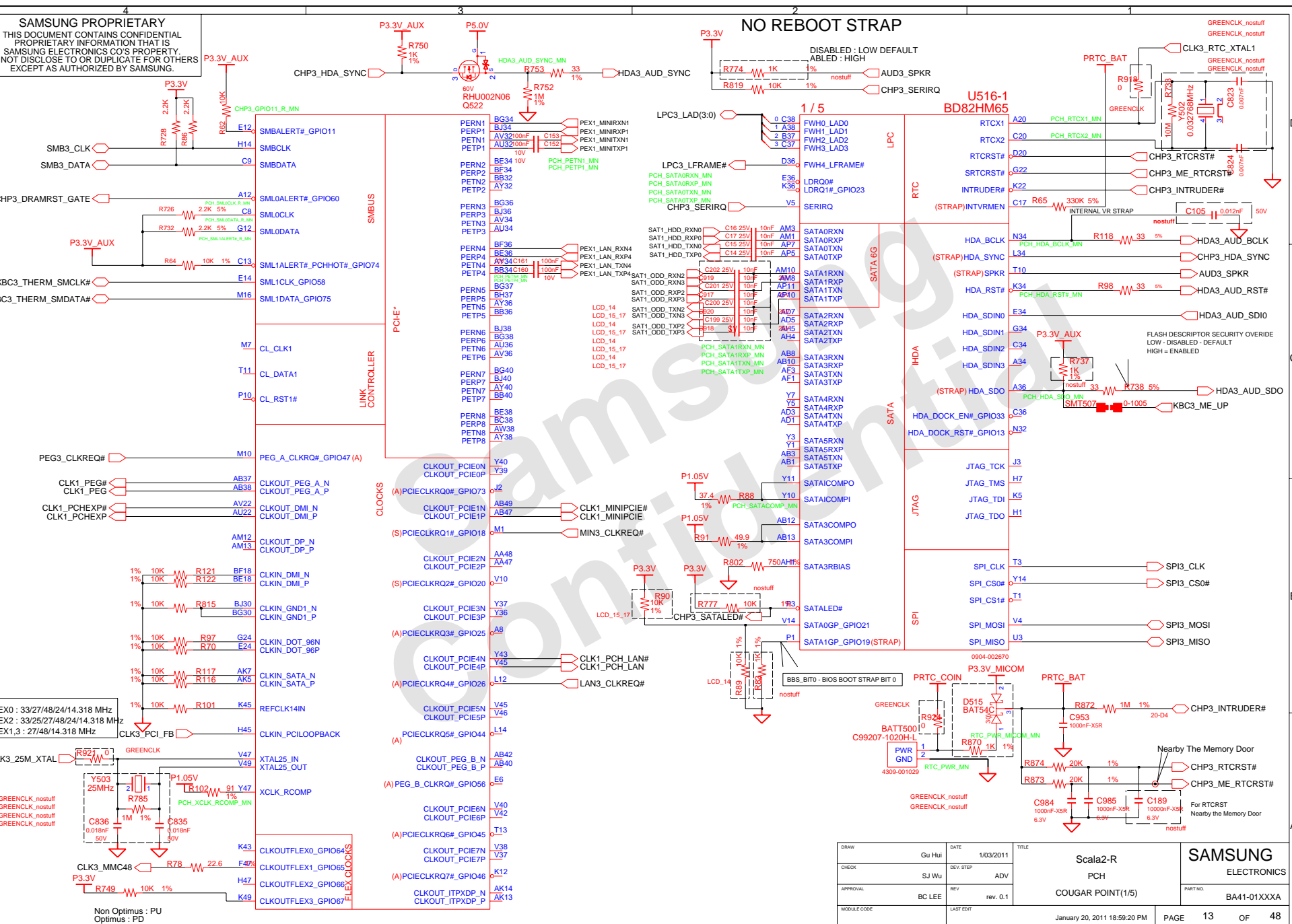


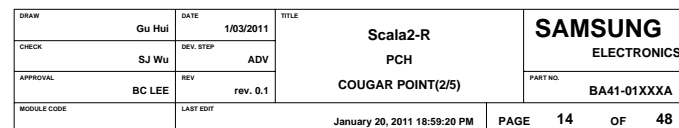
DDR SO-DIMM #0

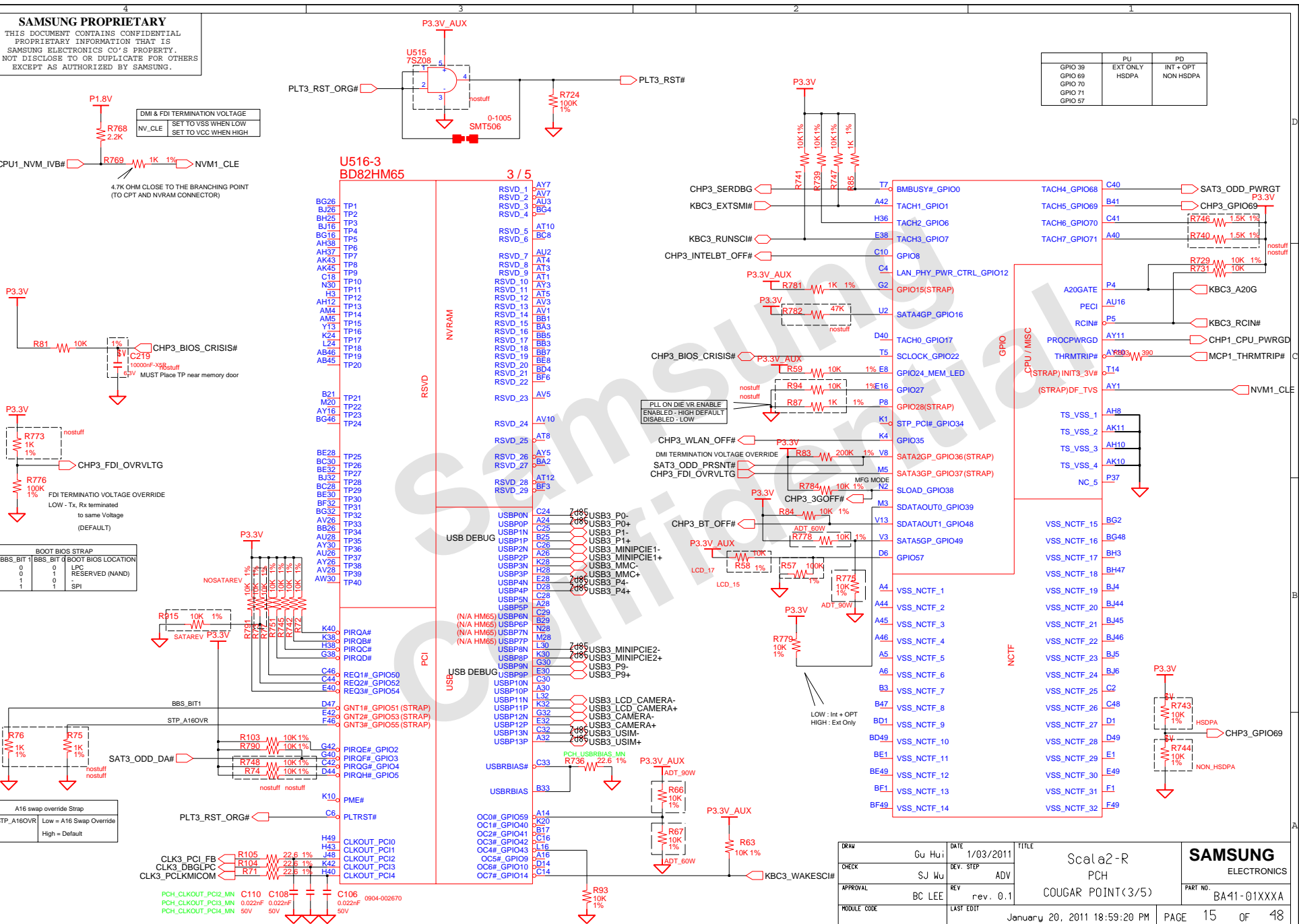
P/N : 3709-001656 (Foxconn)



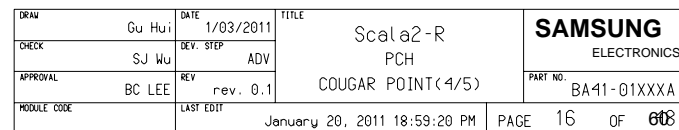
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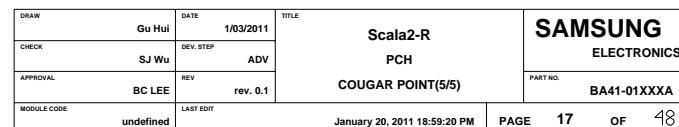






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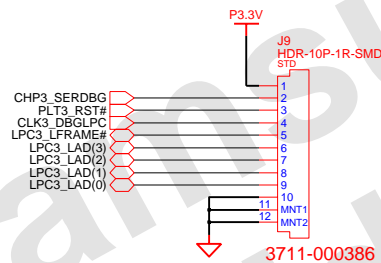


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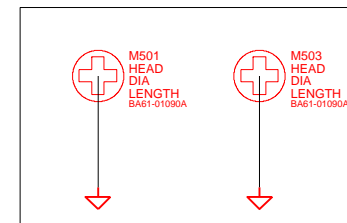
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80H PORT DEBUG



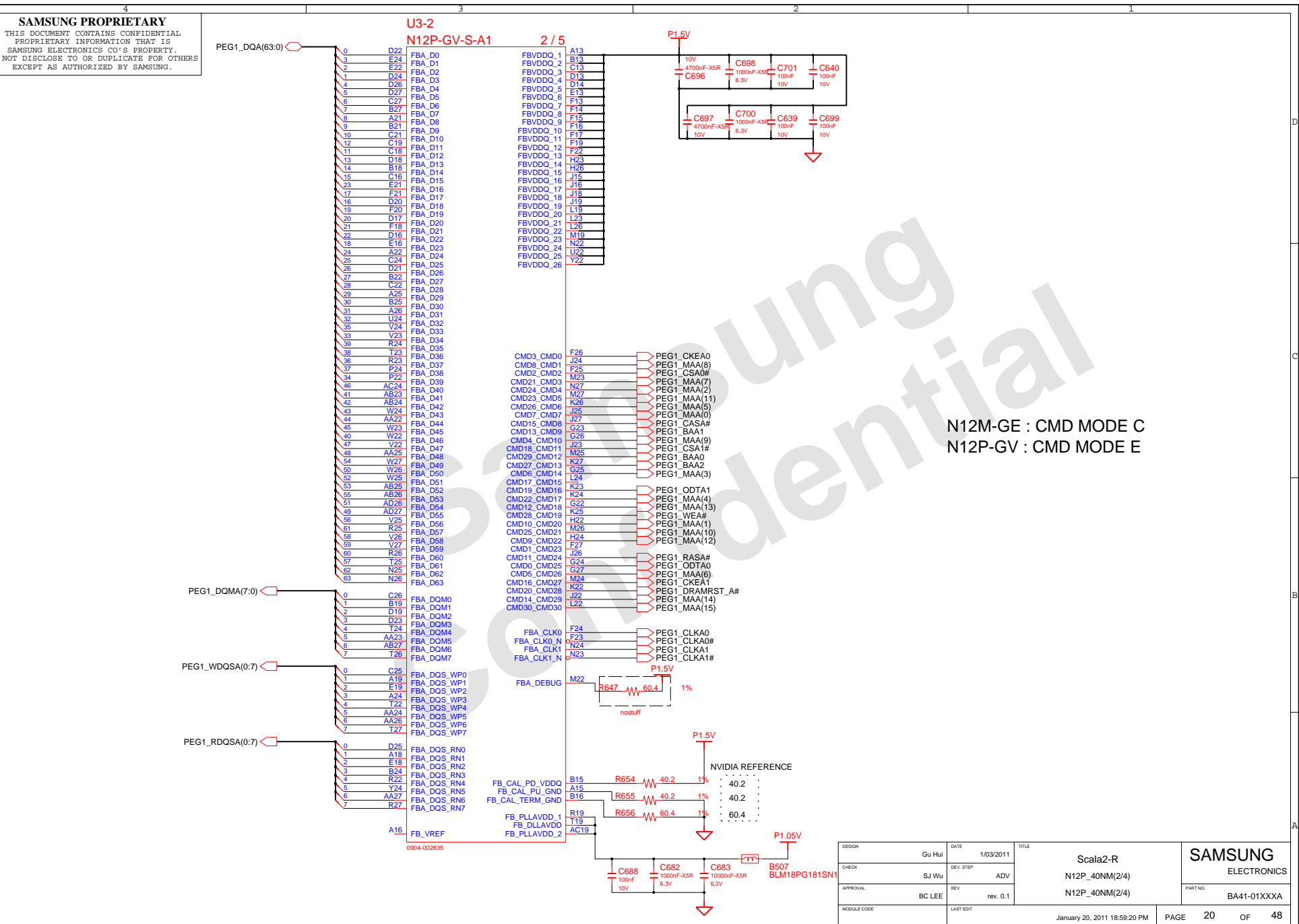
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CHECK	SJ Wu	DEV. STEP	ADV			PART NO. BA41-01XXXXA
APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	18	OF 48

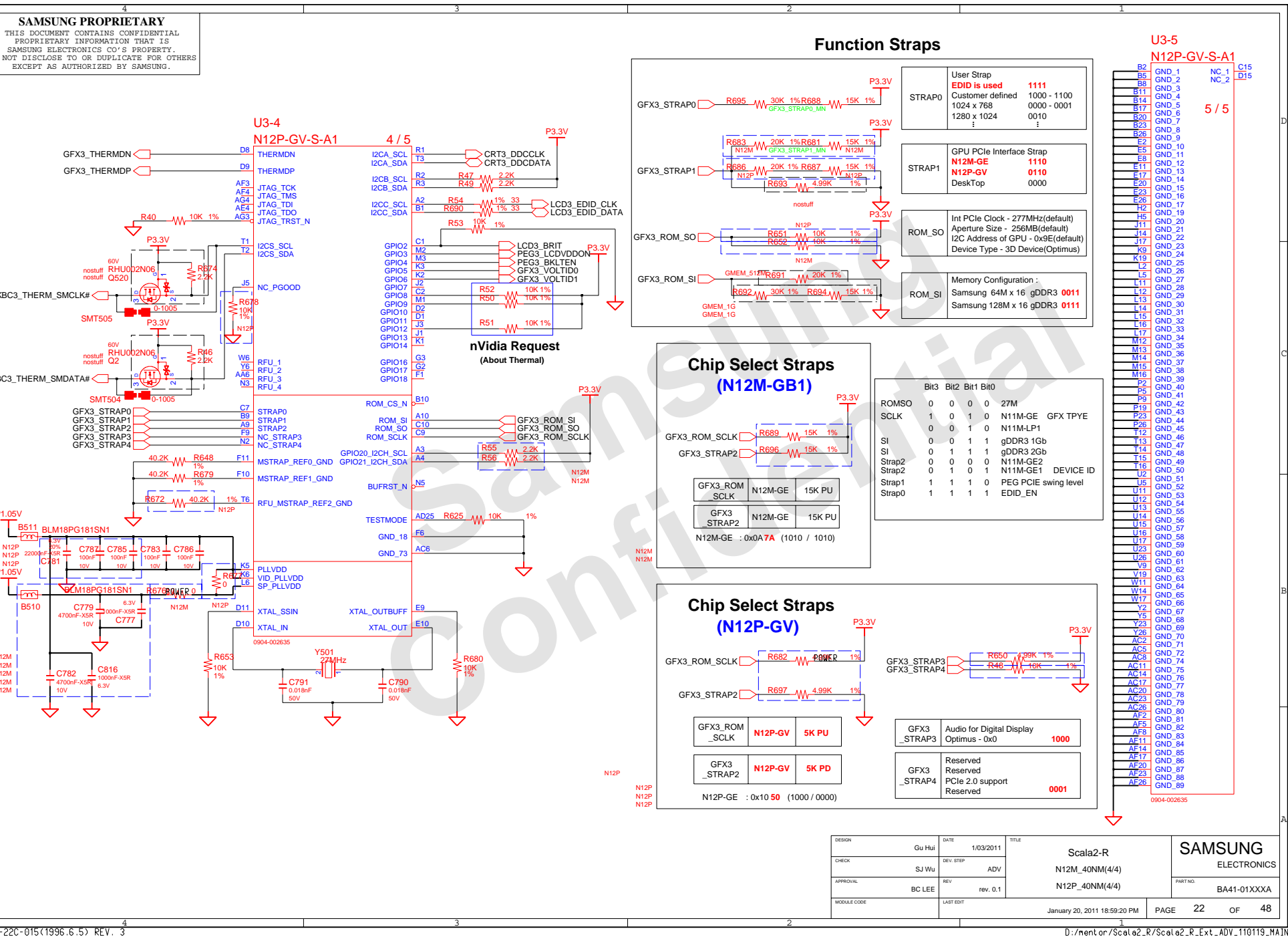
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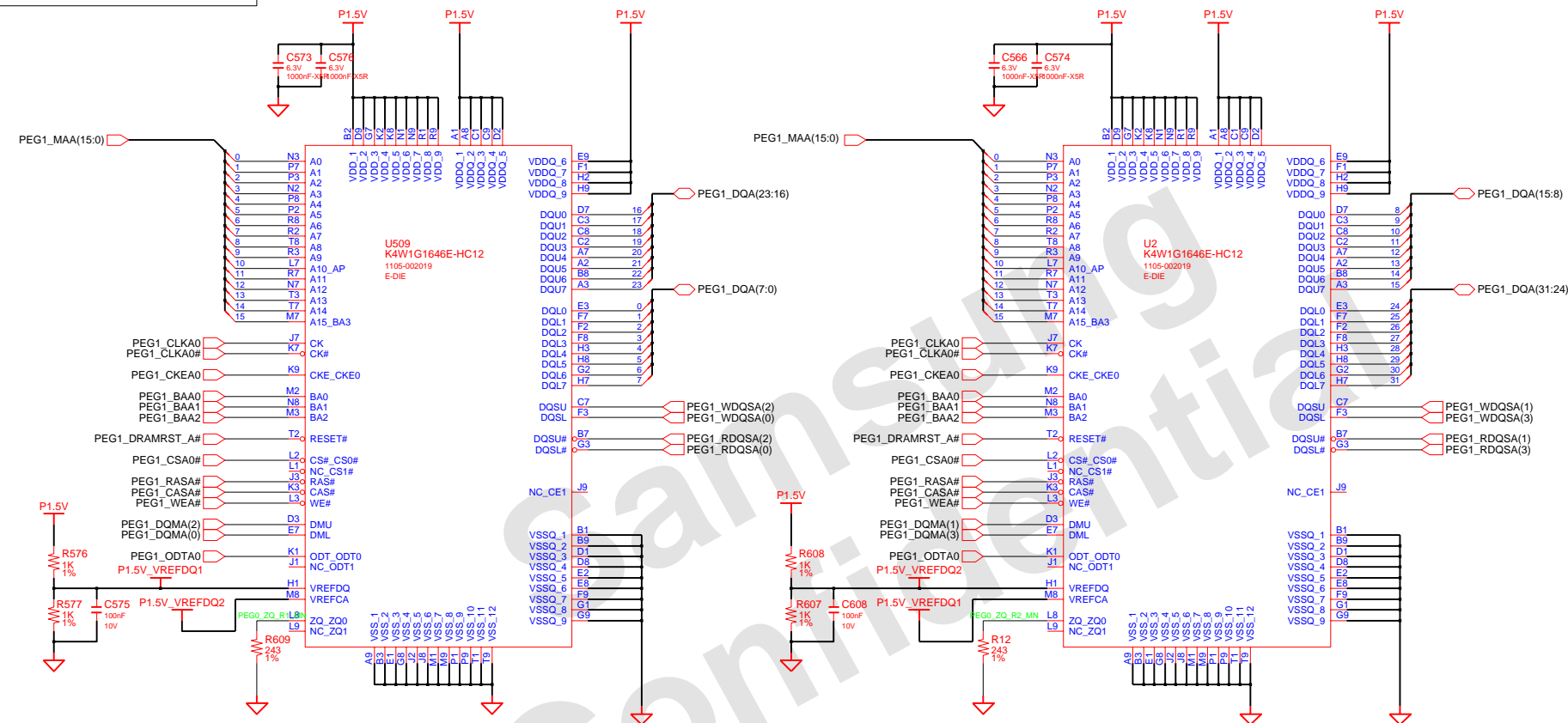
Graphic PEM

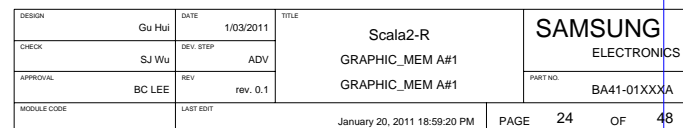
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APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE	LAST EDIT					





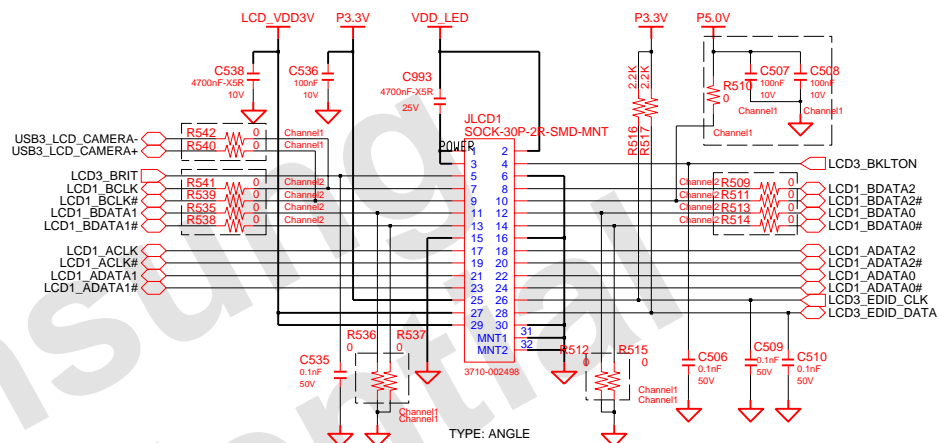
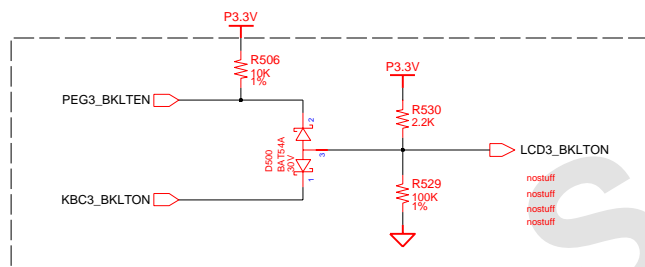
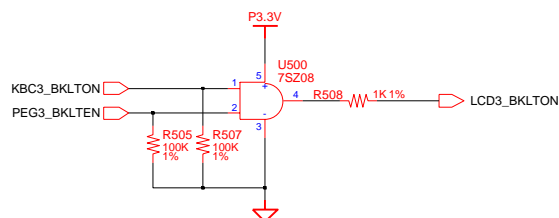
A-Channel #0





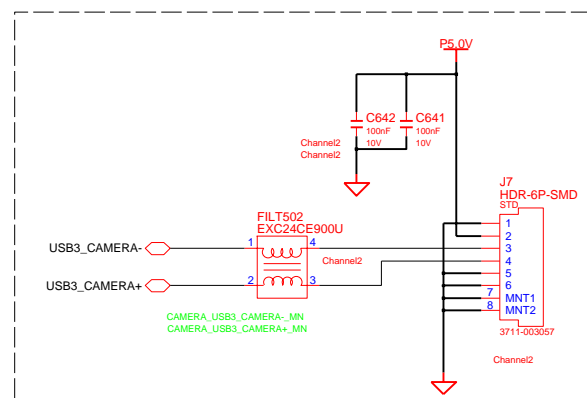
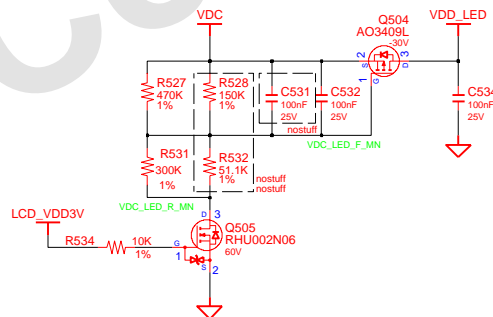
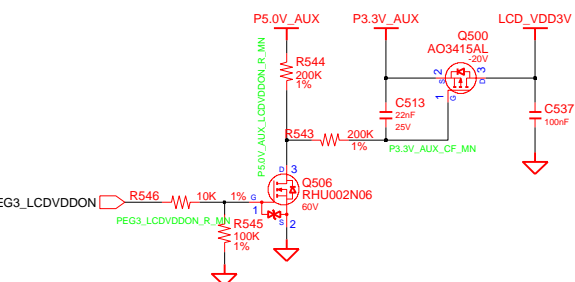
1Ch. LCD Connector + CAMERA


NOTE : Place R20 close to connector to minimize stub



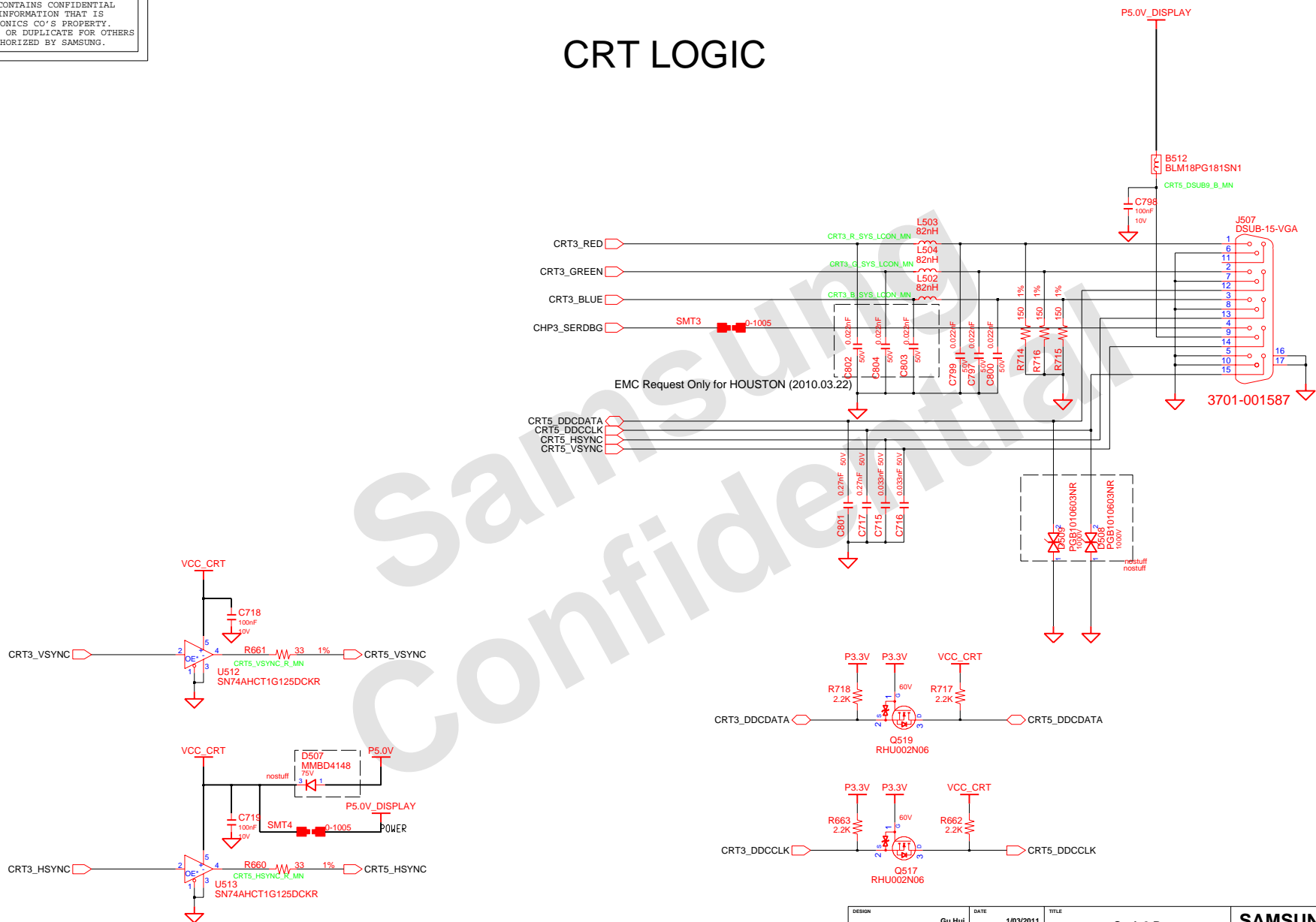
CAMERA CONN FOR 2ch LVDS

LED Power



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APPROVAL	BC LEE	REV	rev. 0.1		
MODULE CODE	LAST EDIT		January 20, 2011 18:59:20 PM		

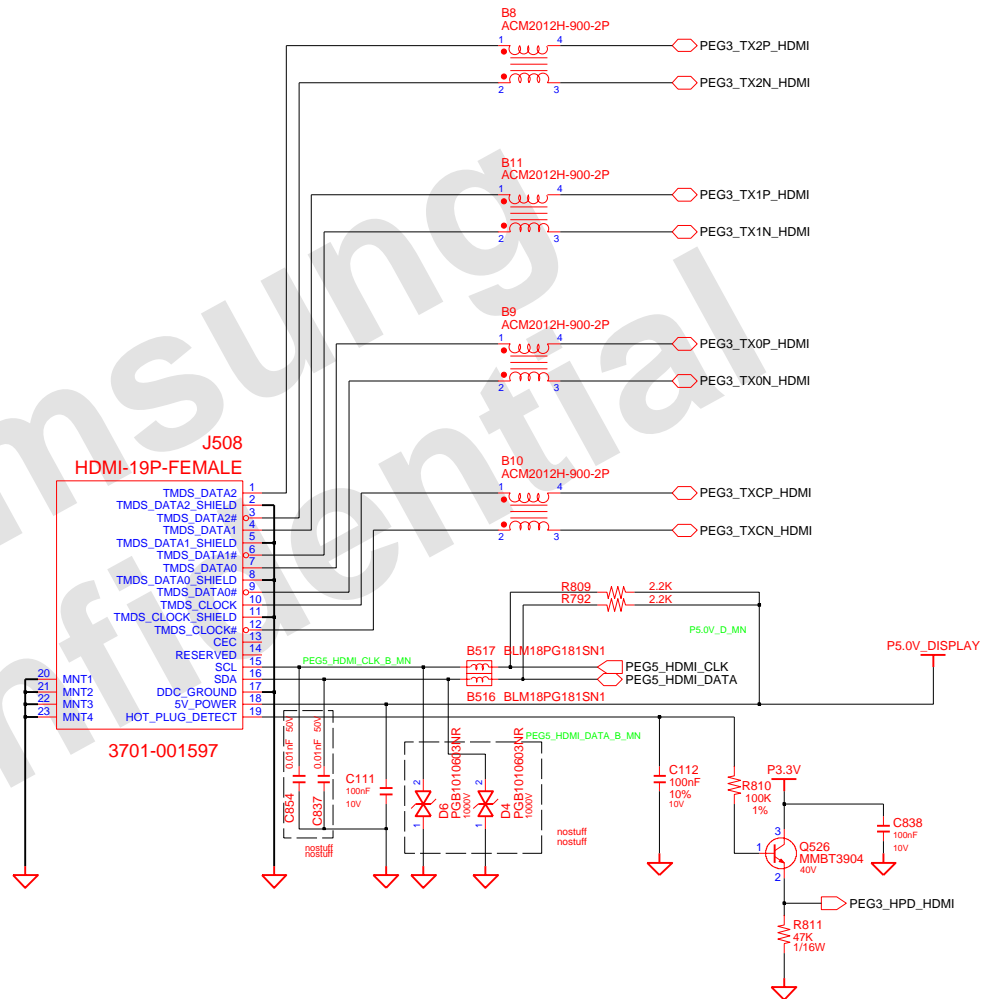
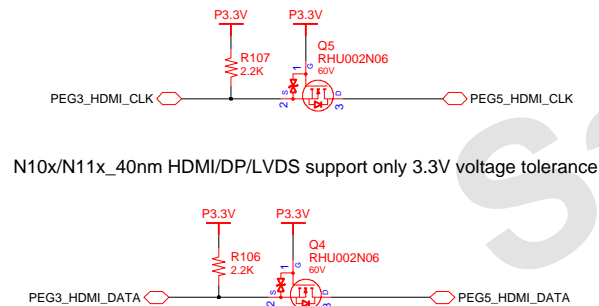
CRT LOGIC



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MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE 26 OF 48	

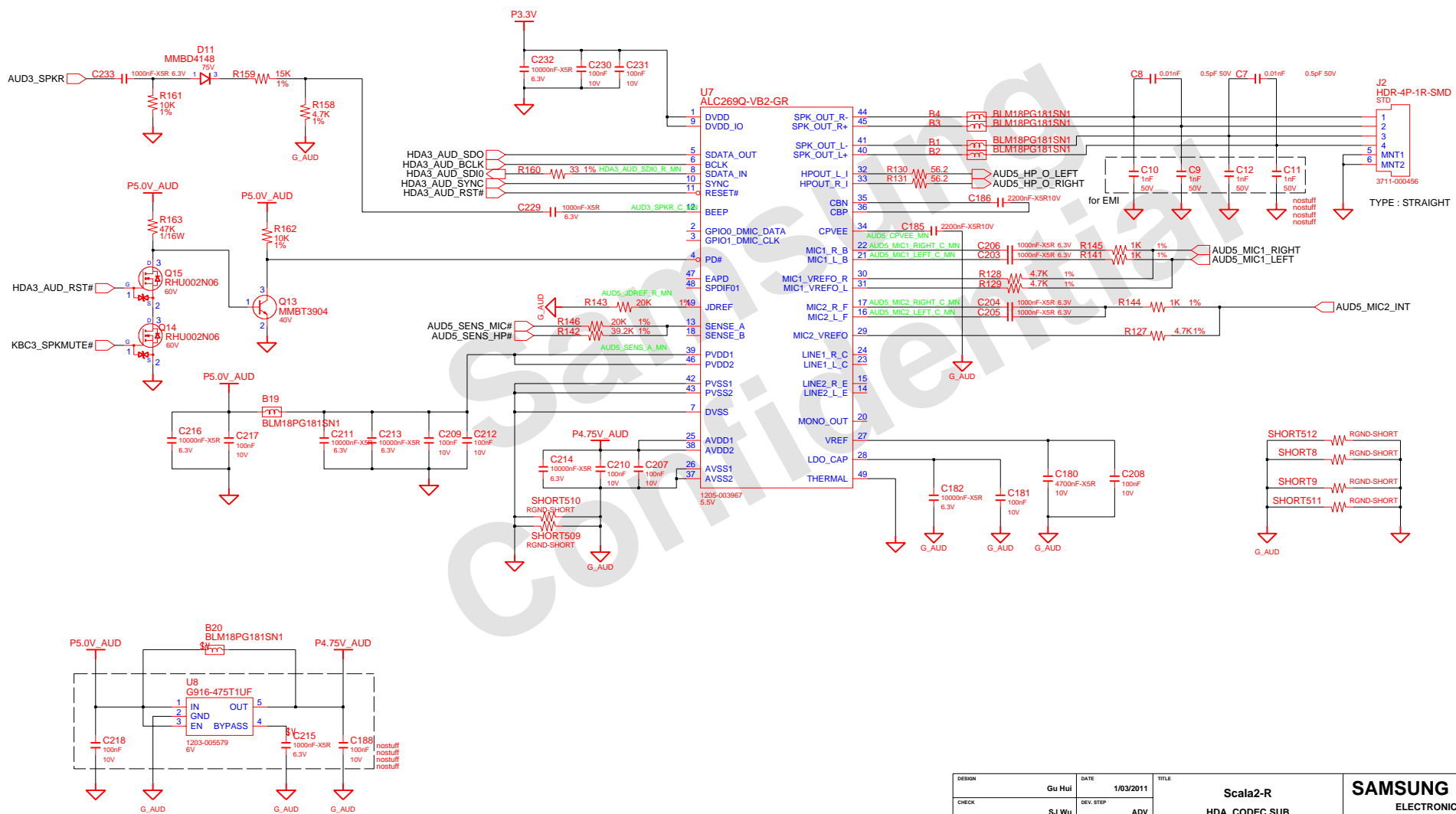
HDMI Graphic

FOR HDMI VERIFICATION TEST

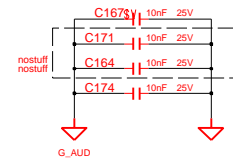
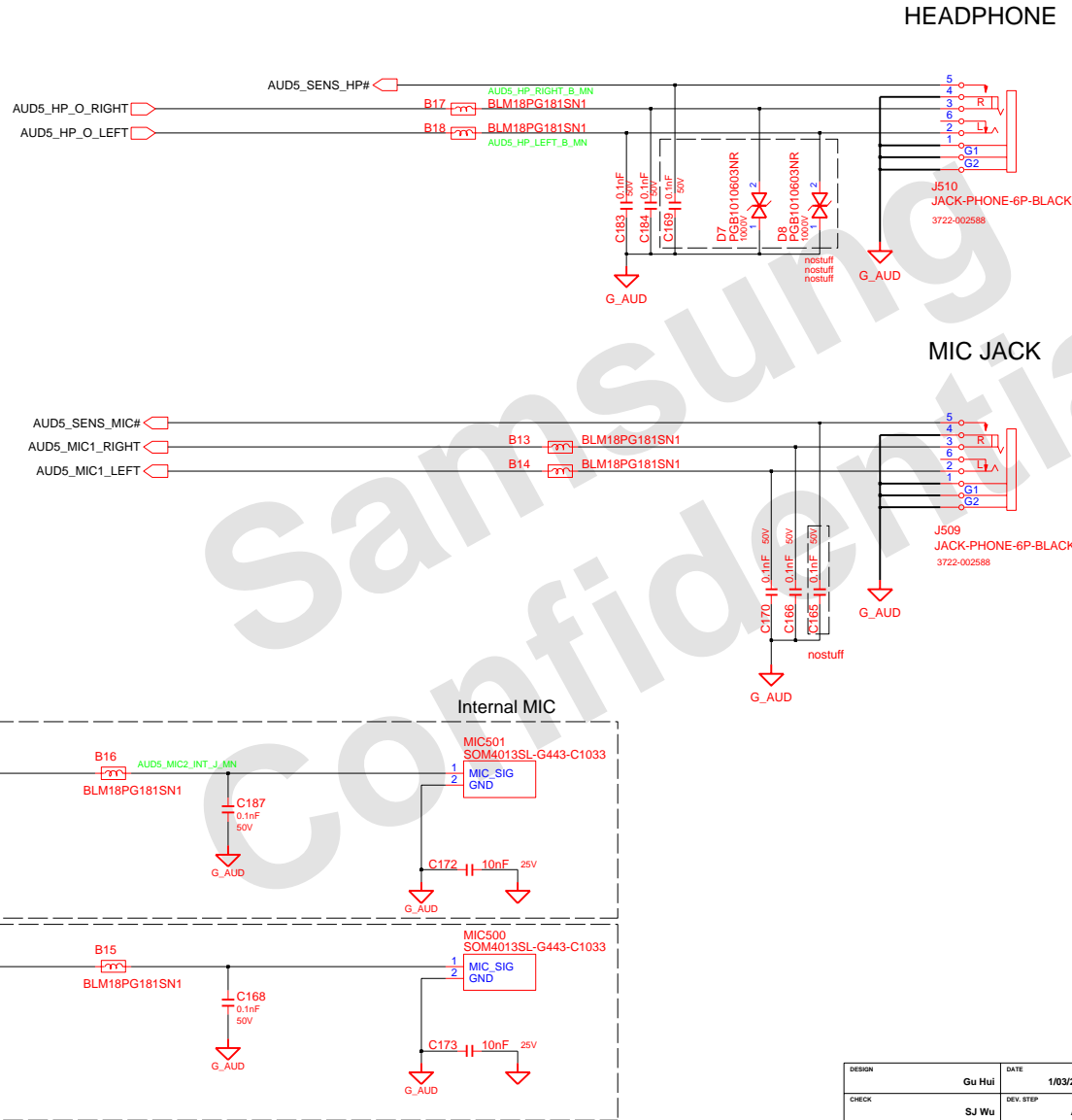


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APPROVAL	BC LEE	REV	rev. 0.1	HDMI		
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM			
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HD AUDIO

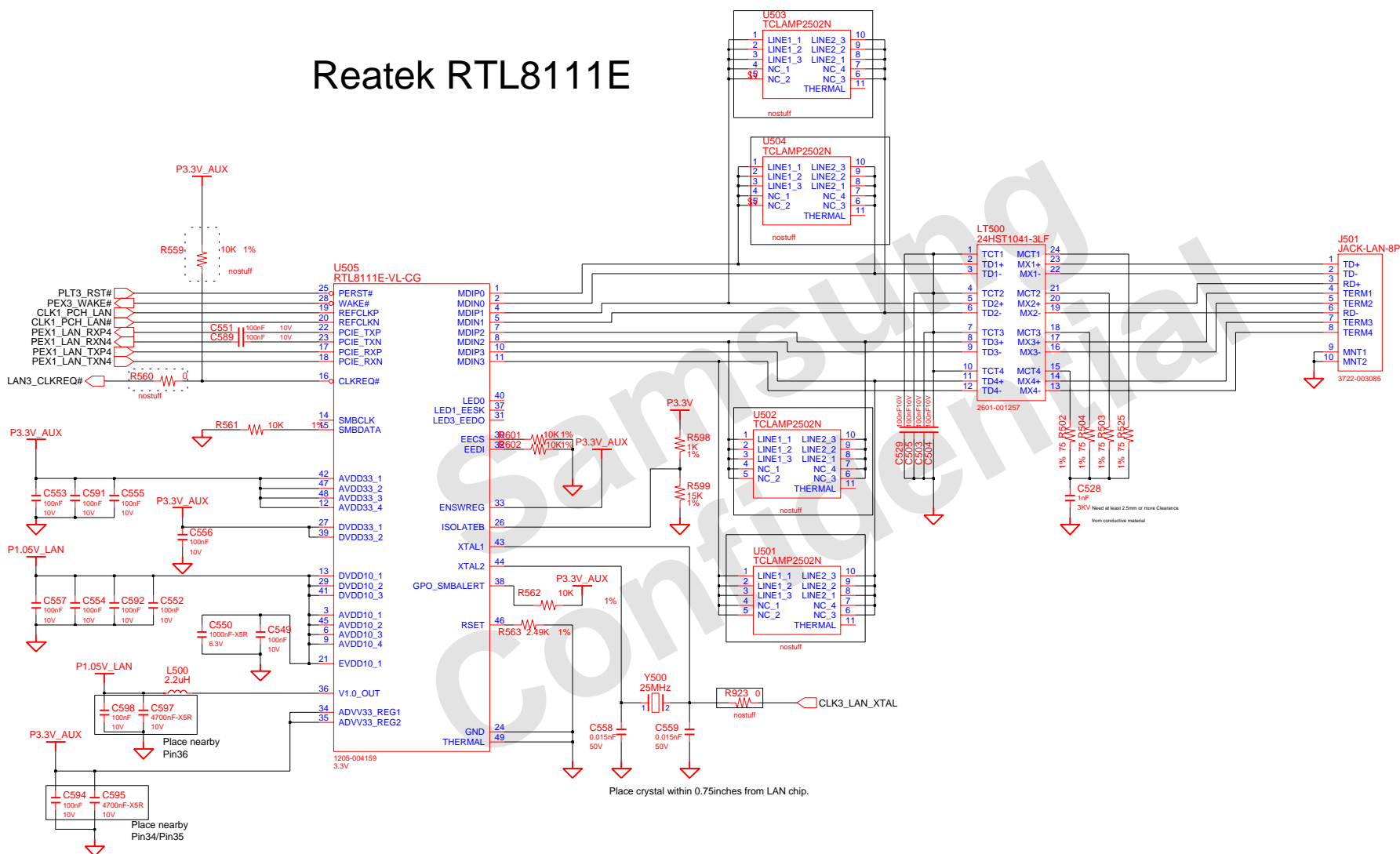



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CHECK	SJ Wu	DEV. STEP	ADV		HDA_CODEC SUB	
APPROVAL	BC LEE	REV	rev. 0.1		AUDIO CODEC ALC269 SUB	
MODULE CODE		LAST EDIT				
					January 20, 2011 18:59:20 PM	PAGE 28 OF 48



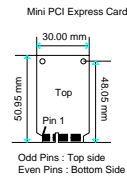
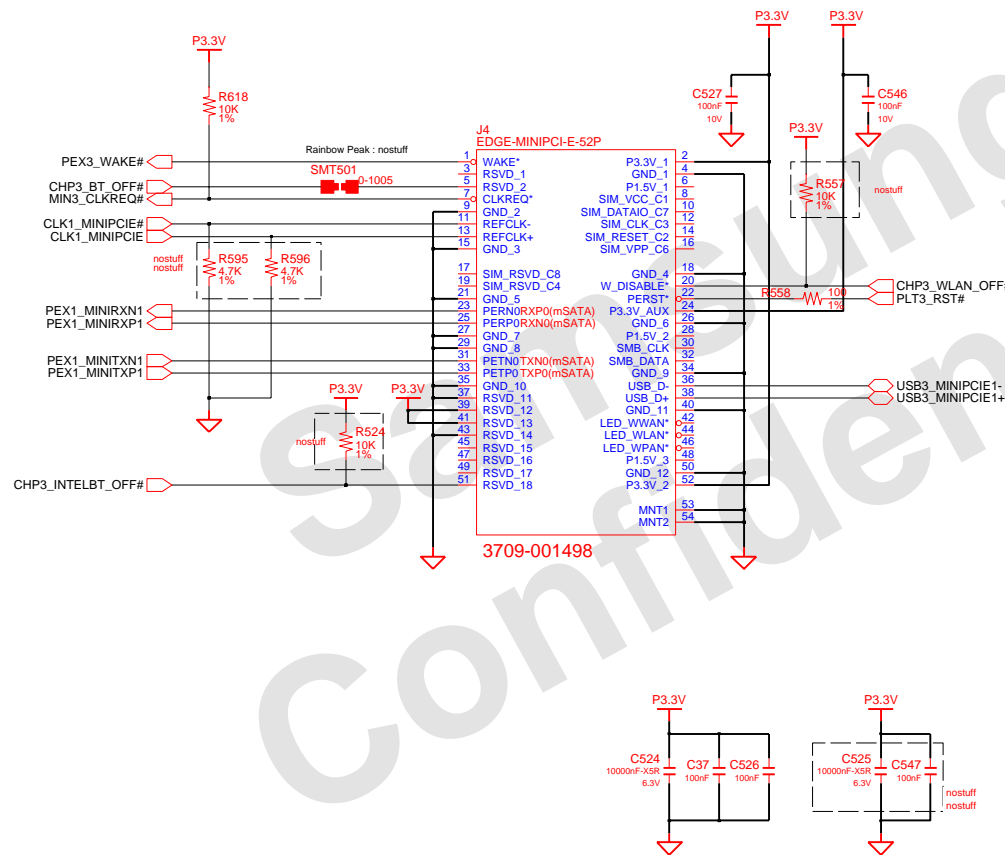
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CHECK	SJ Wu	DEV. STEP	ADV	HDA_CODEC & LED SUB		
APPROVAL	BC LEE	REV	rev. 0.1	AUDIO JACK & LED SUB	PART NO.	
MODULE CODE		LAST EDIT			BA41-01XXXA	
				January 20, 2011 18:59:20 PM	PAGE 29 OF 48	

Reatek RTL8111E



DESIGN	Gu Hui	DATE	1/03/2011	Scala2-R LAN LAN_Realtek_RTL8111	
CHECK	SJ Wu	DEV. STEP	ADV		
APPROVAL	BC LEE	REV	rev. 0.1		
MODULE CODE	LAST EDIT				
				January 20, 2011 18:59:20 PM	PAGE 30 OF 48

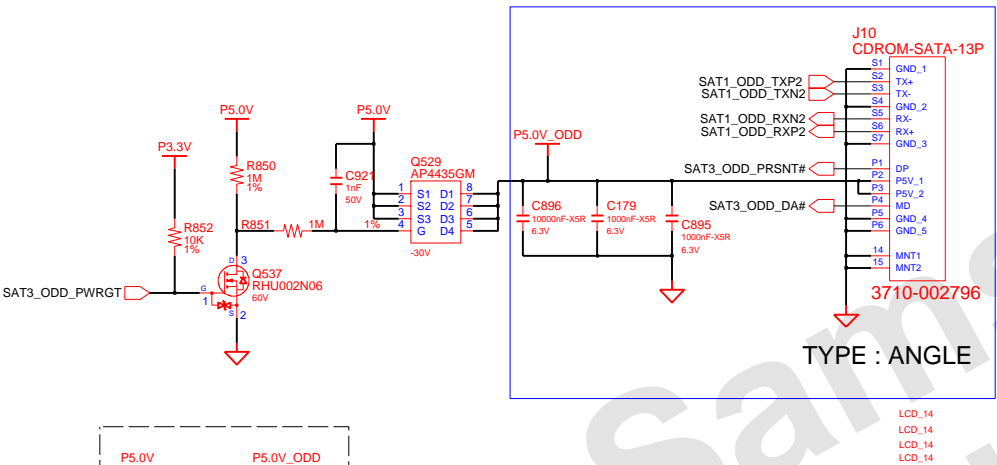
WLAN, 4mm



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
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APPROVAL	BC LEE	REV	rev. 0.1		WLAN	
MODULE CODE		LAST EDIT				PART NO. BA41-01XXXXA
				January 20, 2011 18:59:20 PM	PAGE 31 OF 48	

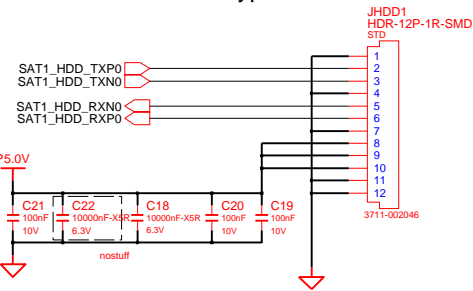
SATA I/F CONN

SATA ODD CONN

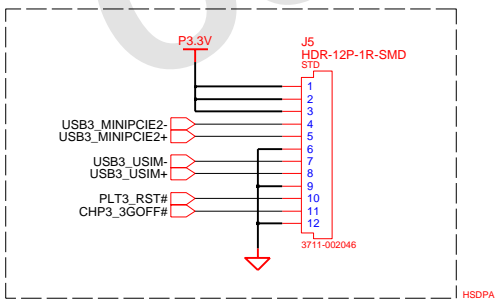


SATA HDD CONN

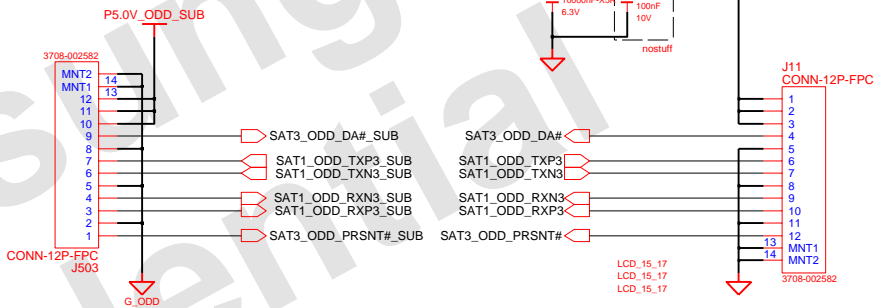
Cable Connector Type



MAIN to HSDPA SUB

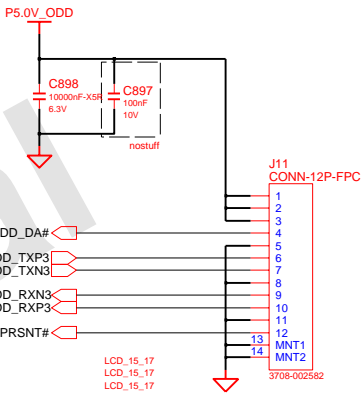


SUB TO MAIN : SATA ODD CONN

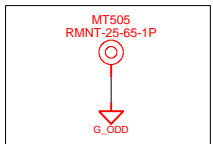
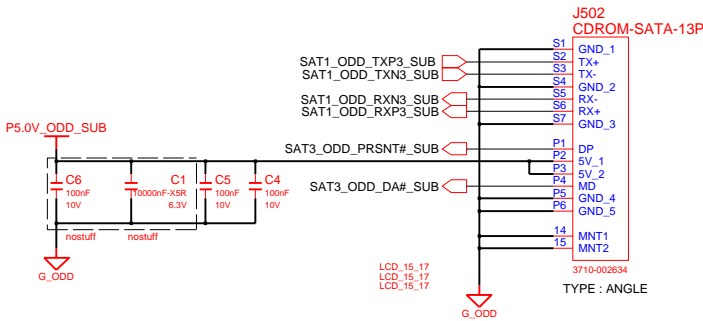


15.6" / 17.3"

MAIN TO SUB : SATA ODD CONN



SATA ODD CONN



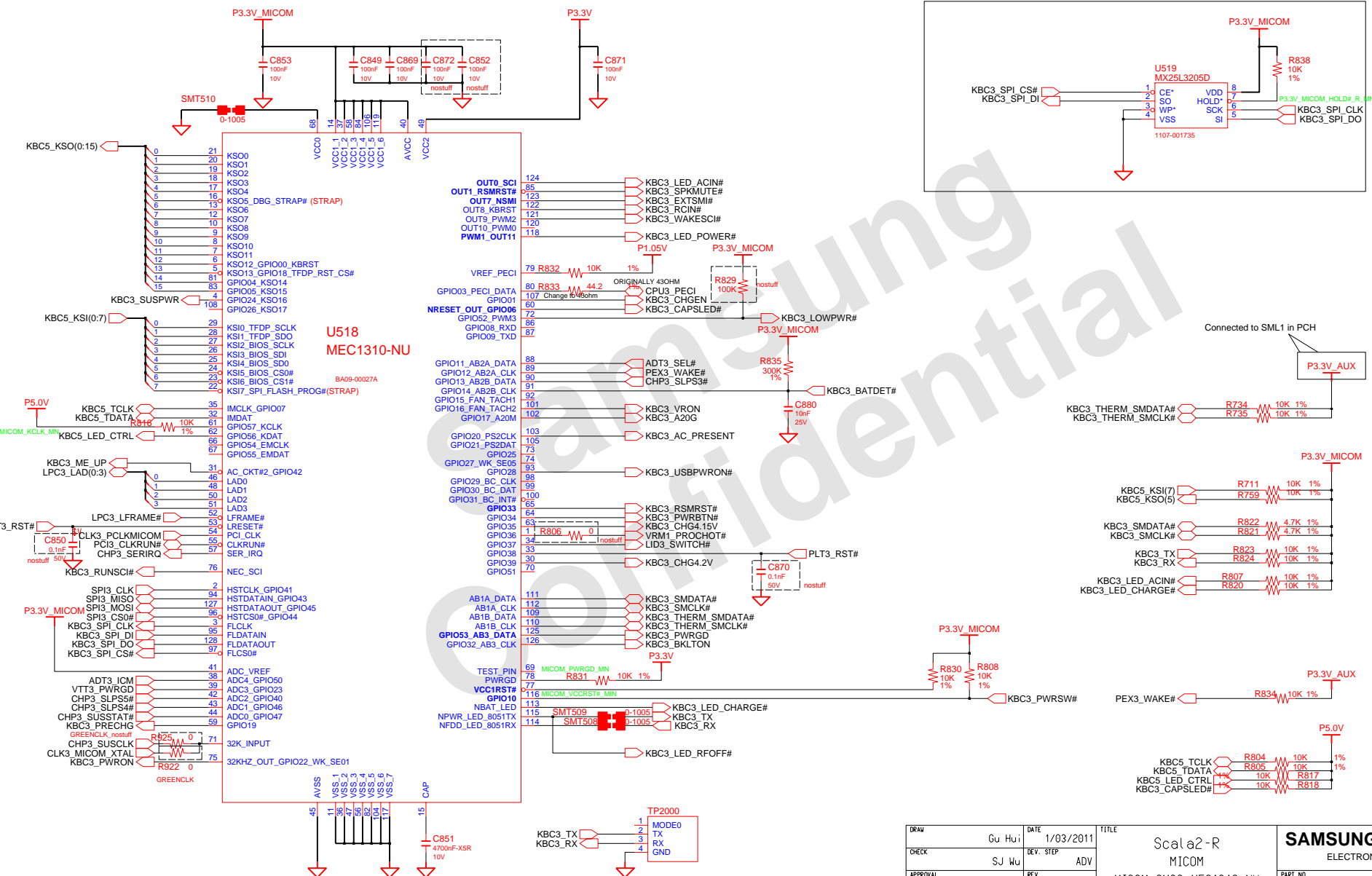
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APPROVAL	BC LEE	REV	rev. 0.1	SATA I/F Conn		PART NO.
MODULE CODE		LAST EDIT				BA41-01XXA
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MAIN BOARD (MICOM)

BE CAUTION SPI ROM SIZE!!

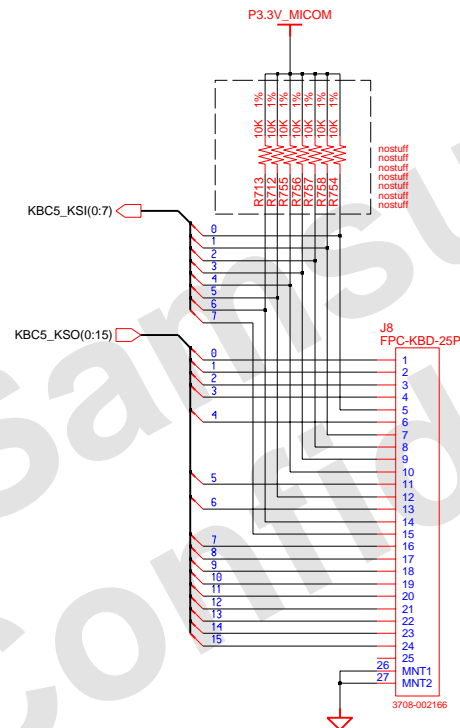
SPI ROM SOCKET



DRAW	Gu Hui	DATE	1/03/2011	TITLE Scala2-R MICON		SAMSUNG ELECTRONICS	
CHECK	SJ Wu	DEV. STEP	ADV				
APPROVAL	BC LEE	REV	rev. 0.1	MICON_SMSC_MEC1310-NU		PART NO. BA41-01XXXX	
MODULE CODE		LAST EDIT					
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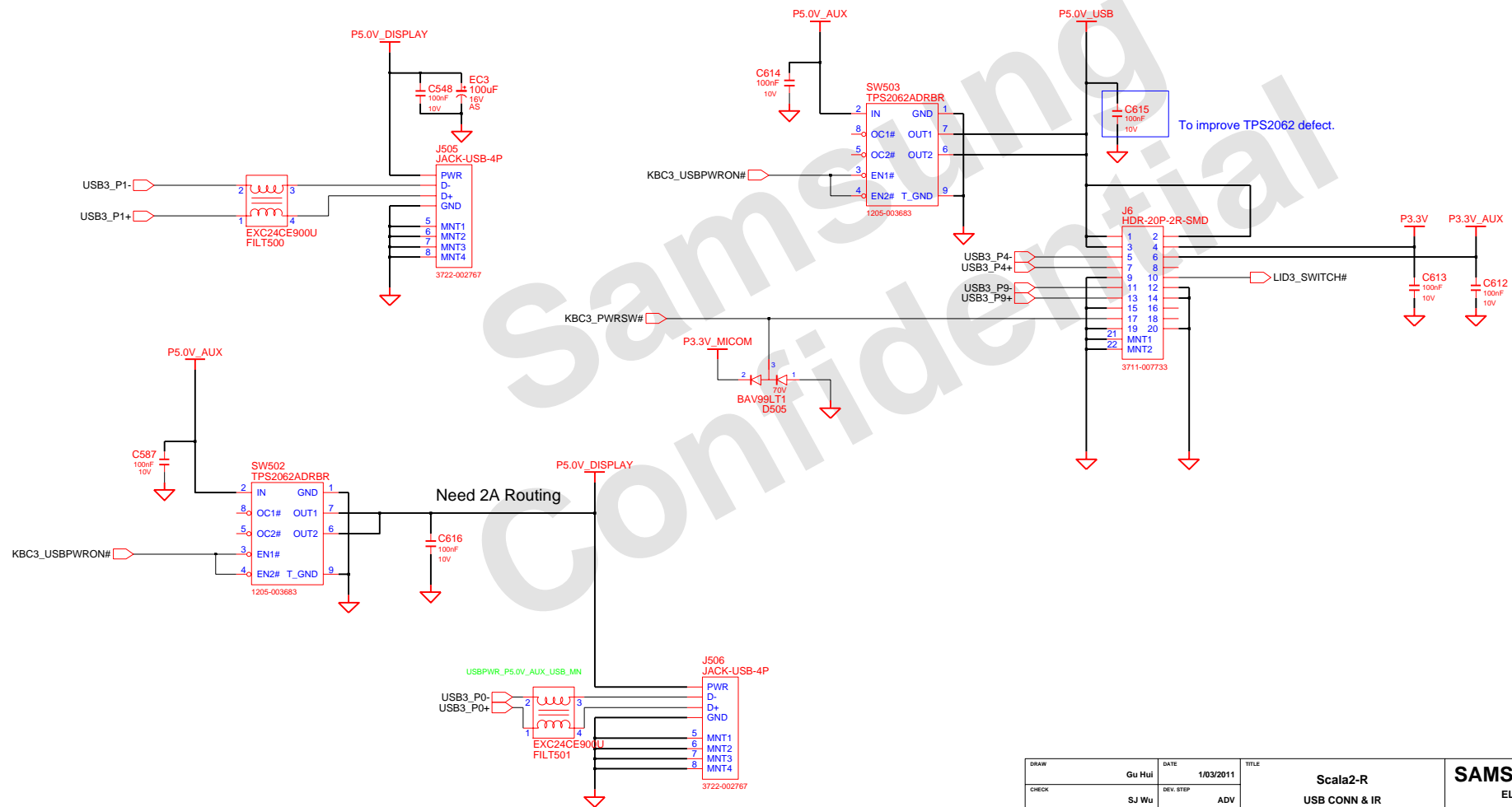
Micom Glue Logic

KEYBOARD



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG
CHECK	SJ Wu	DEV. STEP	ADV	MICOM GLUE LOGIC	MICOM GLUE LOGIC	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 0.1			PART NO. BA41-01XXXA
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM	PAGE	34	OF 48

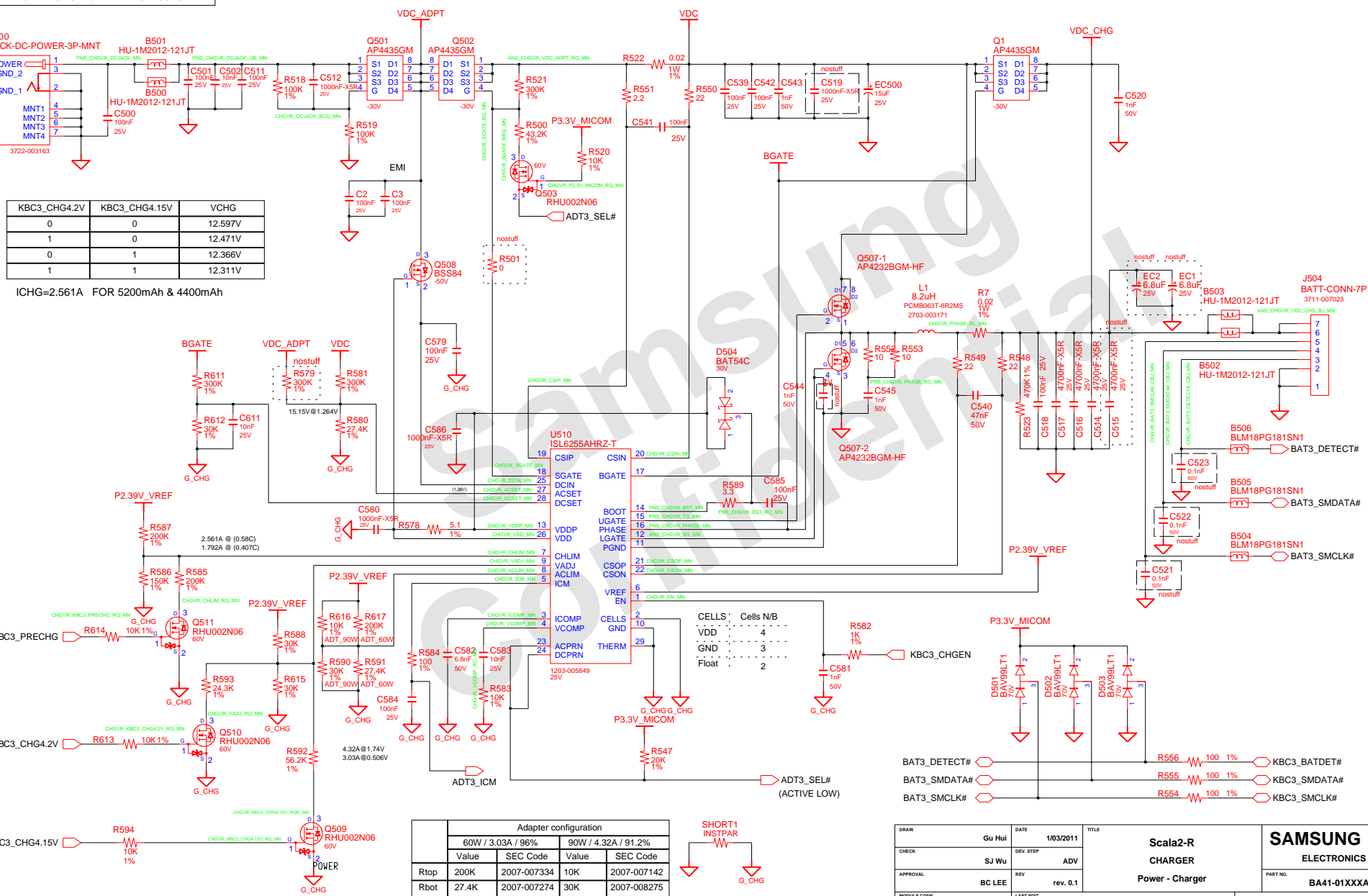
POWER S/W SUB B'D CONNECTOR MAIN to SUB



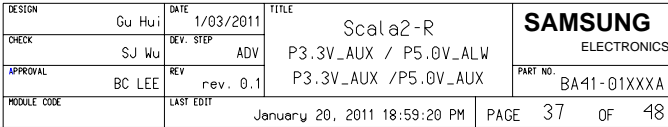
DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R USB CONN & IR USB & IR	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV			PART NO. BA41-01XXXA
APPROVAL	BC LEE	REV	rev. 0.1			
MODULE CODE		LAST EDIT		January 20, 2011 18:59:20 PM	PAGE 35 OF 48	

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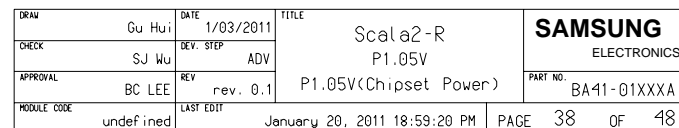
CHARGER & POWER MANAGEMENT



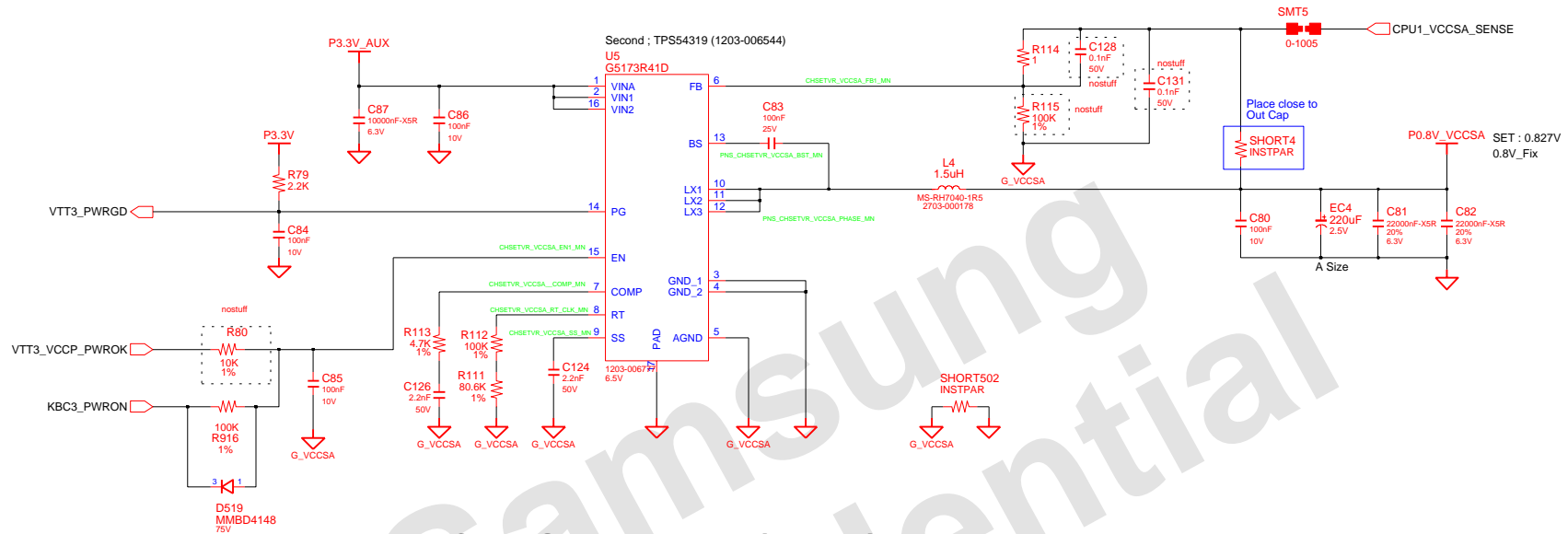
www.laptopfix.vn



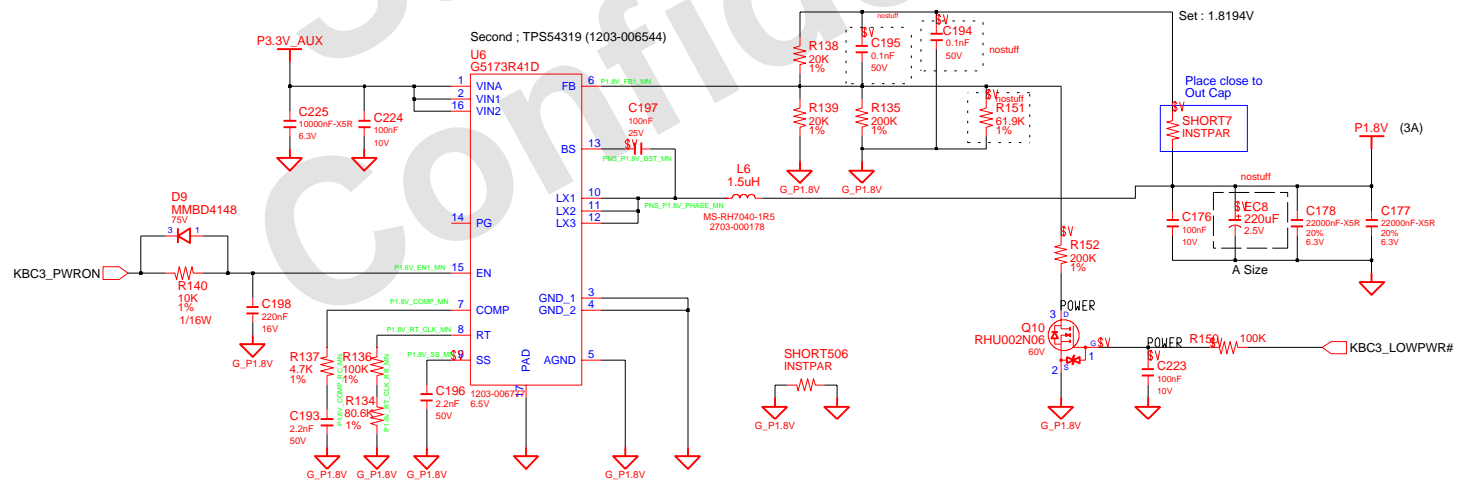
www.laptopfix.vn



CHIPSET POWER(VCCSA)

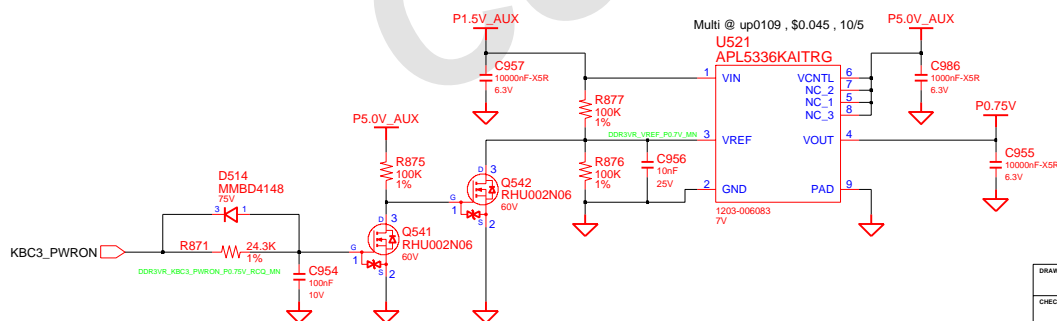
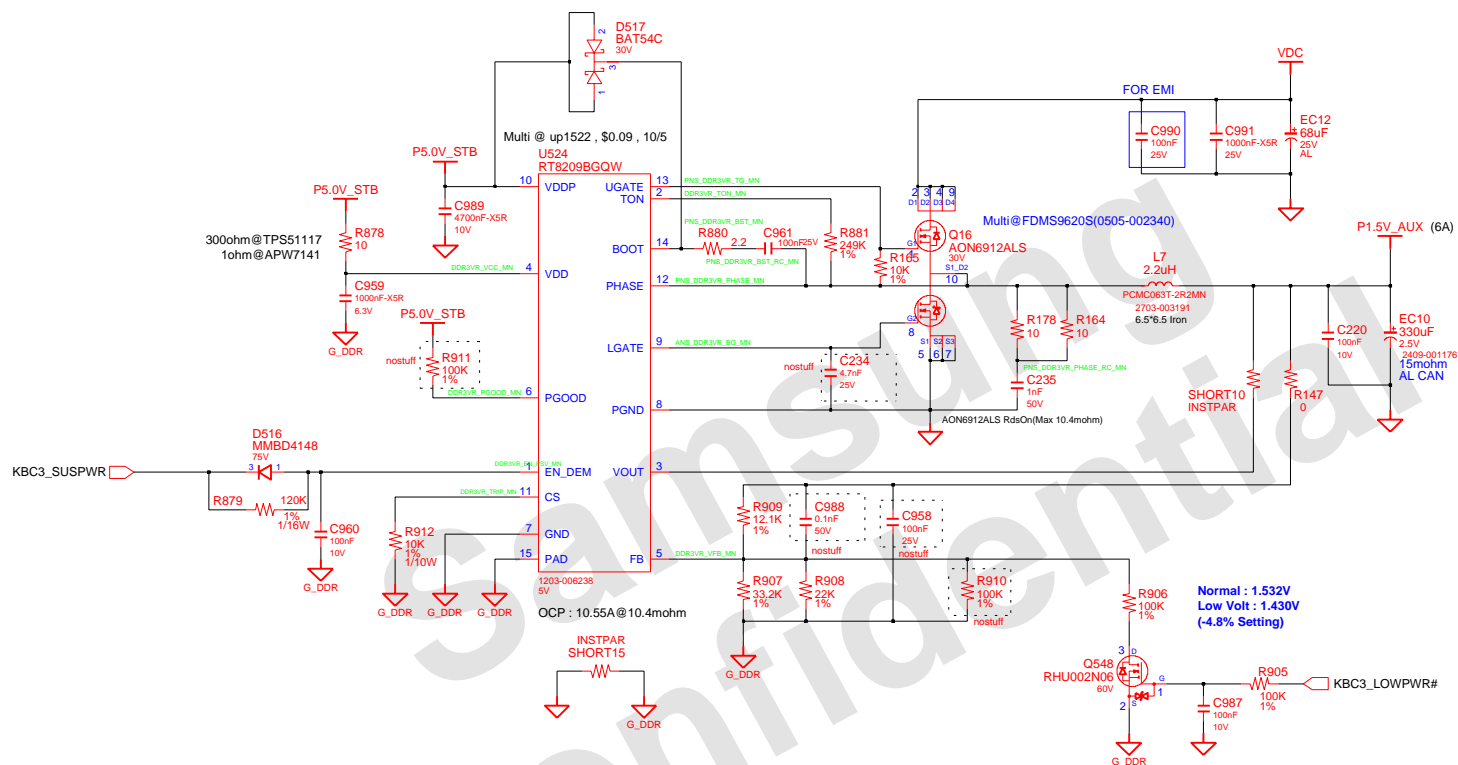


CHIPSET POWER(P1.8V)



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV		P1.1V_VTT	
APPROVAL	BC LEE	REV	rev. 0.1		P0.8V(Chipset Power)	
MODULE CODE		LAST EDIT	January 20, 2011 18:59:20 PM			
PAGE 39 OF 48						PART NO. BA41-01XXXXA

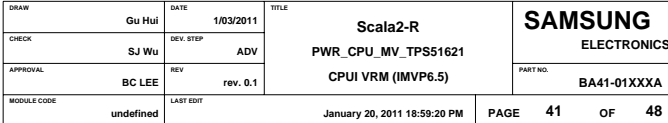
DDR3 VTT(0.75V)



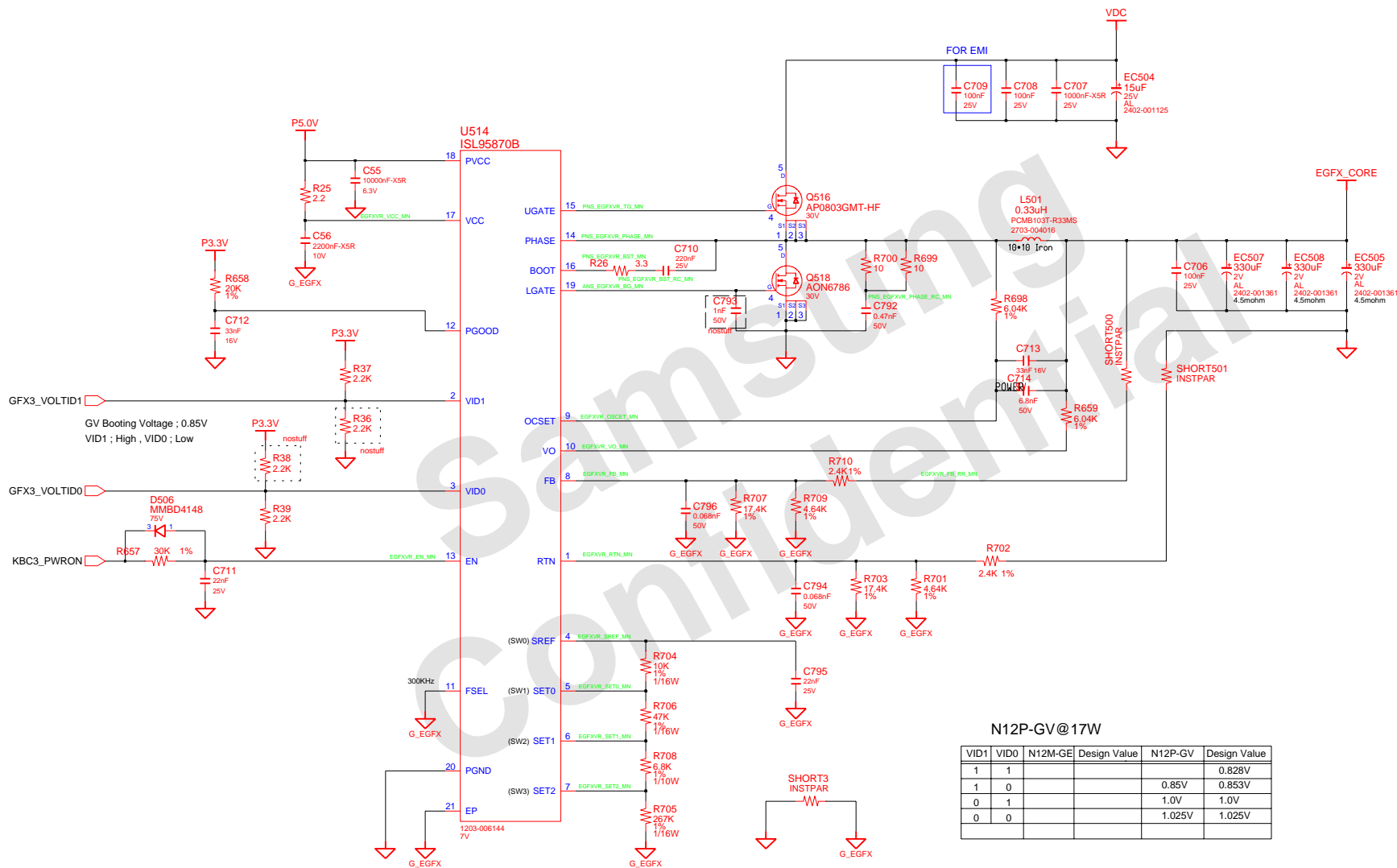
DRAW	Gu Hui	DATE	1/03/2011	Scala2-R PWR_MEMORY DDR3 POWER	SAMSUNG ELECTRONICS		
CHECK	SJ Wu	DEV. STEP	ADV				
APPROVAL	BC LEE	REV	rev. 0.1				
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM				
				PAGE	40	OF	48

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8,57K@283KHz



External GFX Core Power



N12P-GV@17W

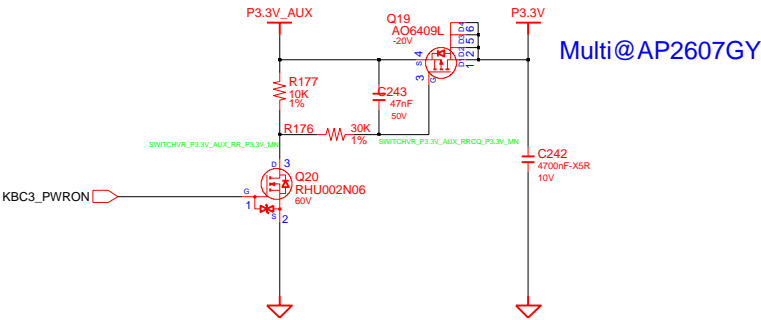
VID1	VID0	N12M-GE	Design Value	N12P-GV	Design Value
1	1				0.828V
1	0			0.85V	0.853V
0	1			1.0V	1.0V
0	0			1.025V	1.025V

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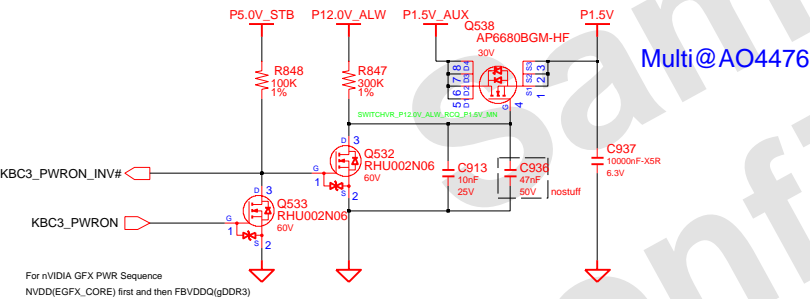
Switched Power

P5.0V -> P3.3V -> EGFX_CORE -> P1.8V ->P1.5V -> P0.75V -> P1.05V -> P0.8V_VCCSA -> CPU_CORE

Switched Power On (P3.3V)

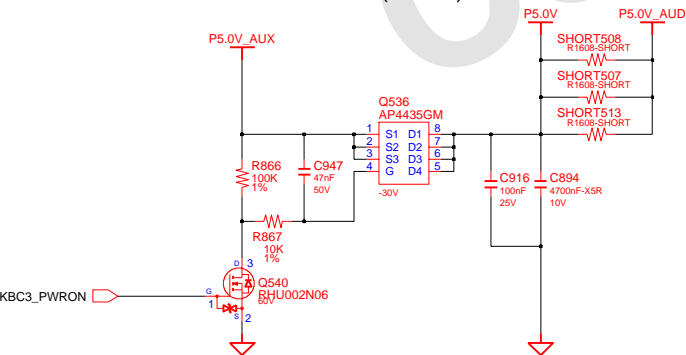


Switched Power On (P1.5V)



For nVIDIA GFX PWR Sequence
NVDD(EGFX_CORE) first and then FBVDDQ(gDDR3)

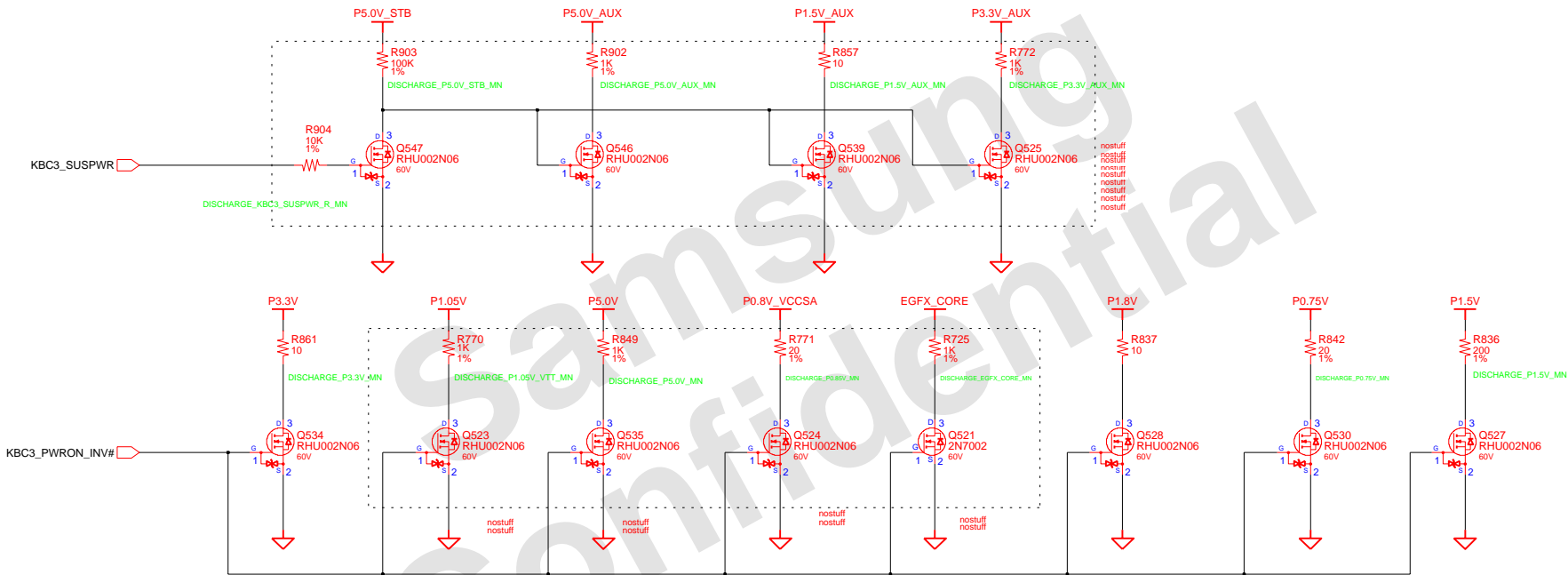
Switched Power On (P5.0V)



DRAW	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG
CHECK	SJ Wu	DEV. STEP	ADV	PWR_MV_DISCHARGER		ELECTRONICS
APPROVAL	BC LEE	REV	rev. 0.1	SWITCHED POWER		PART NO.
MODULE CODE	undefined	LAST EDIT	January 20, 2011 18:59:20 PM			BA41-01XXXXA
				PAGE	43	OF 48

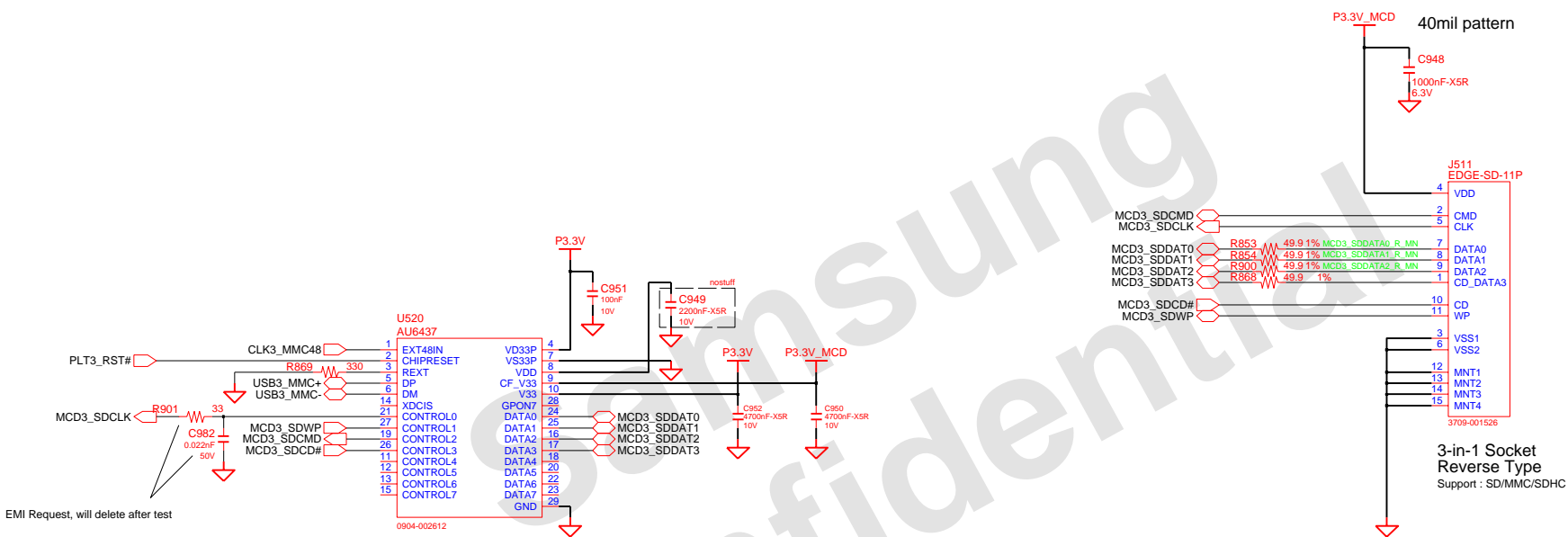
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POWER DISCHARGER



DESIGN	Gu Hui	DATE	1/03/2011	TITLE	Scala2-R	SAMSUNG ELECTRONICS
CHECK	SJ Wu	DEV. STEP	ADV	SUB BOARD1	PART NO.	
APPROVAL	BC LEE	REV	rev. 0.1	Power Discharger	BA41-01XXXA	
MODULE CODE	LAST EDIT				January 20, 2011 18:59:20 PM	PAGE 45 OF 48

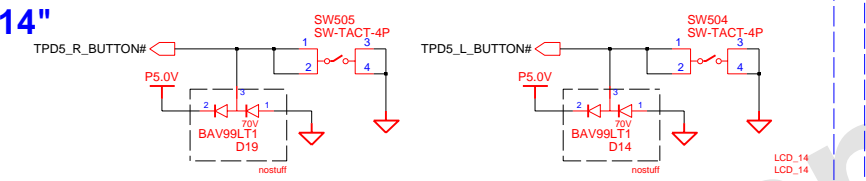
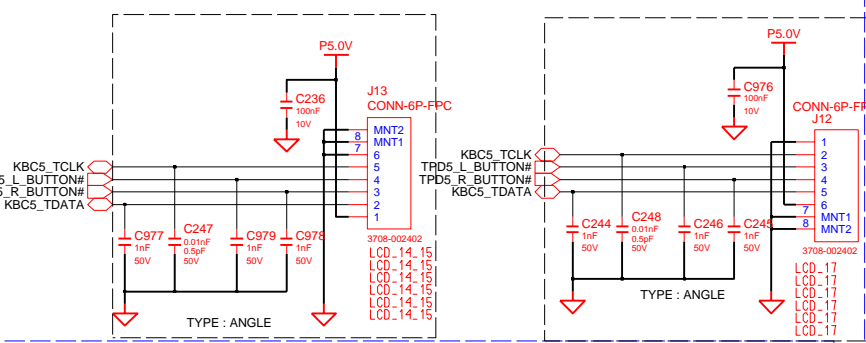
AU6437 (4-in-1)



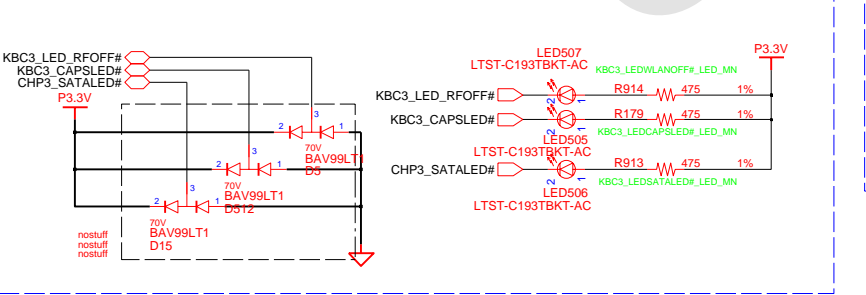
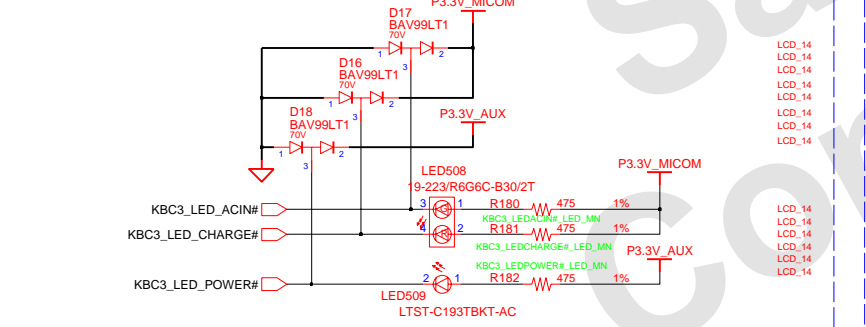
DESIGN	MS YANG	DATE	1/03/2011	TITLE	Jinmao-R	SAMSUNG
CHECK	MK KIM	DEV. STEP	ADV	AU 6437	AU 6437	ELECTRONICS
APPROVAL	BL LEE	REV	rev. 0.3			PART NO.
MODULE CODE		LAST EDIT	January 18, 2011 08:10:20 AM			BA41-01XXXA
				PAGE	46	OF 48

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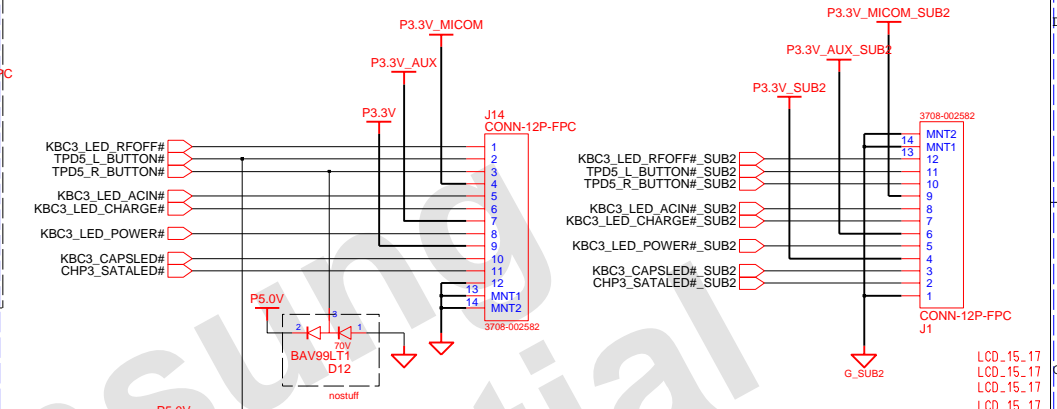
TOUCHPAD



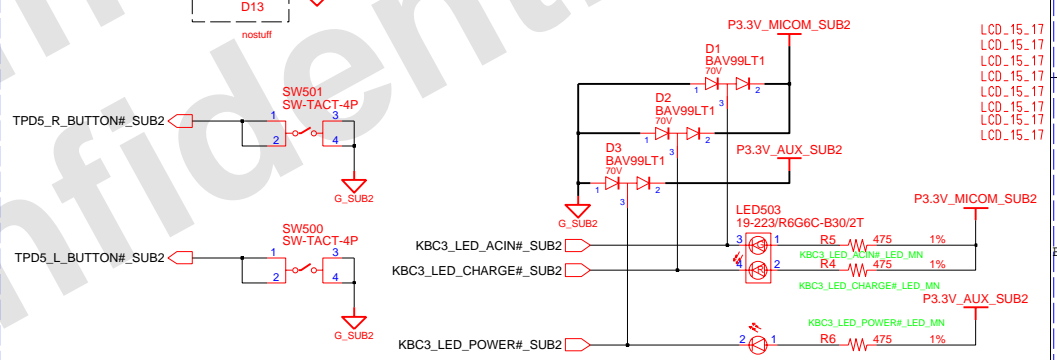
ADAPTERIN/CHARGING LED



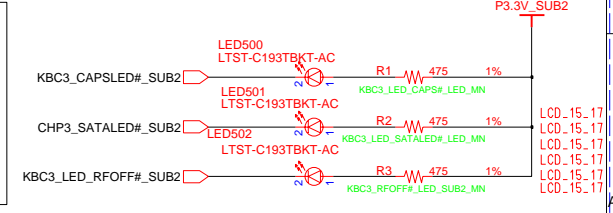
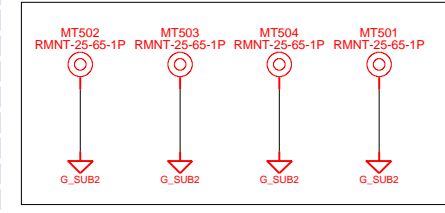
15.6" & 17.3" TOUCHPAD MAIN TO SUB TOUCHPAD SUB TO MAIN



ADAPTERIN/CHARGING LED

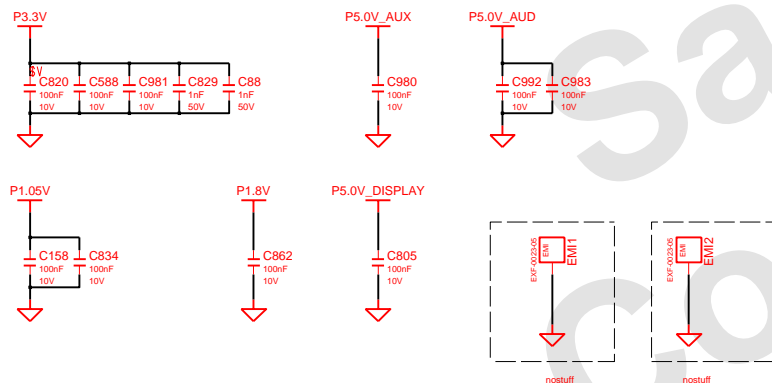
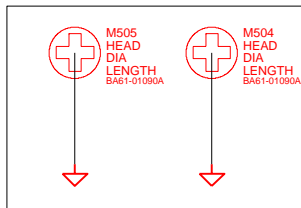
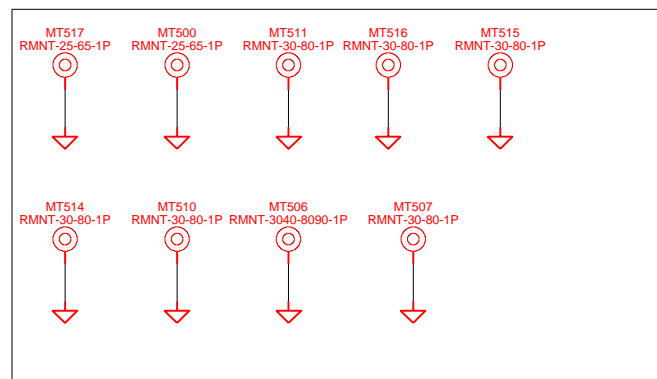


Touchpad Mount Hole



DRAW	MS YANG	DATE	1/03/2011	TITLE	Jinmao-R	SAMSUNG ELECTRONICS
CHECK	MK KIM	DEV. STEP	ADV		Touchpad	
APPROVAL	BL LEE	REV	rev. 0.3		Touchpad	PART NO.
MODULE CODE		LAST EDIT				BA41-01XXXXA
					January 18, 2011 08:10:20 AM	PAGE 47 OF 48

PCH Thermal



DESIGN	MS YANG	DATE	1/03/2011	<div style="text-align: center;"> Jinmao-R MNT hole MNT hole </div>	<div style="text-align: center;"> SAMSUNG ELECTRONICS </div>	
CHECK	MK KIM	DEV. STEP	ADV			
APPROVAL	BL LEE	REV	rev. 0.3		PART NO.	BA41-01XXXX
MODULE CODE	LAST EDIT				<div style="text-align: center;"> January 18, 2011 08:10:20 AM </div>	<div style="text-align: center;"> PAGE 48 OF 48 </div>