

Jimmao-R

CPU : Sandy Bridge PGA
Chip Set : Intel Cougar Point
GFX : N12P-GV/N11M-GE (OPTIMUS)
Remarks : Huron River Platform

Model Name : Jimmao-R
PBA Name : MAIN
PCB Code : BA41-01579A (GCE)
BA41-01580A (NY)
BA41-01581A (GBM)
BA41-01582A (HST)
Dev. Step : PR
Revision : 1.0
T.R. Date : 2011.02.16

Design	CHECK	APPROVAL
MS YANG	MK KIM	BL LEE

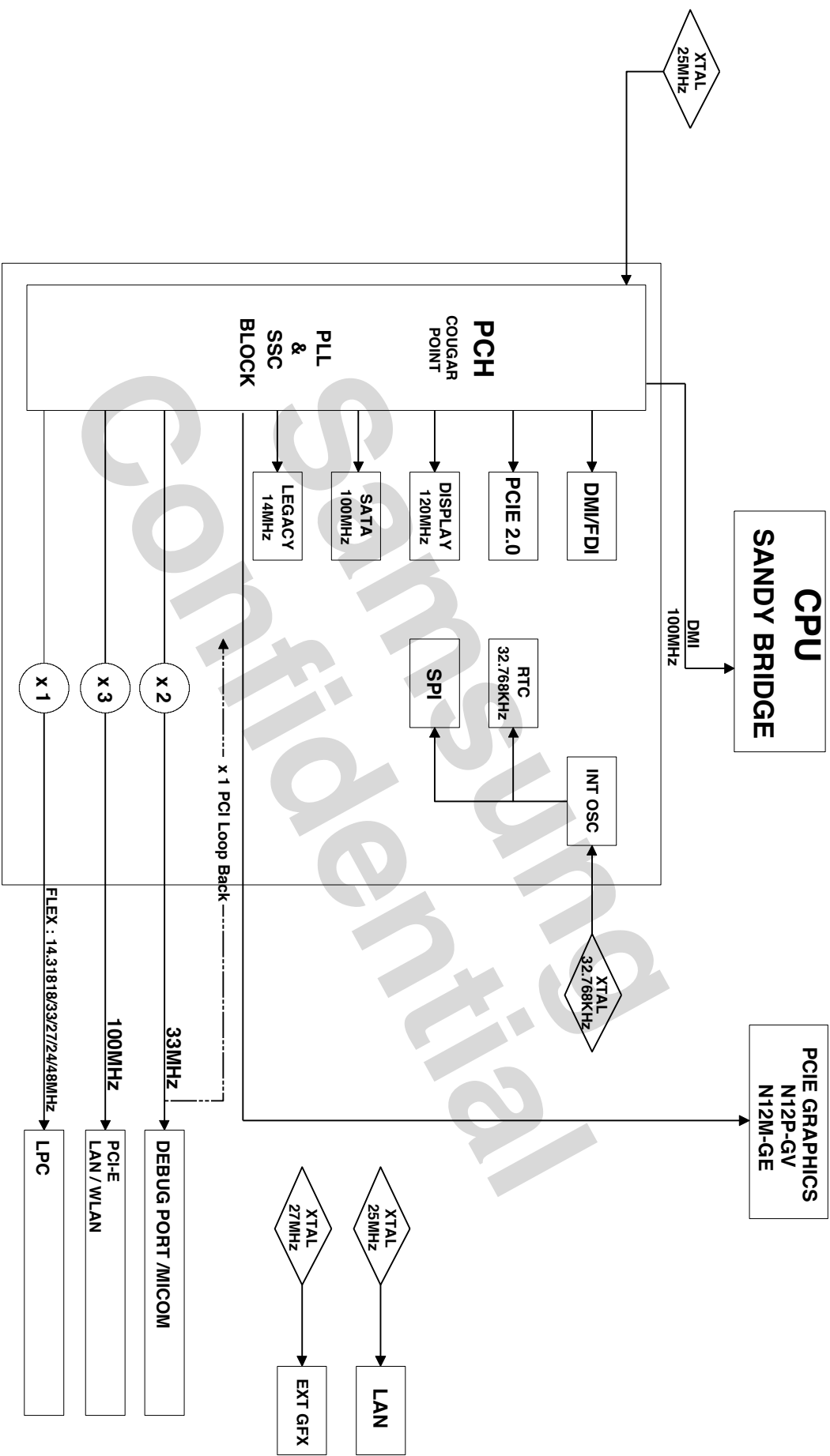
Owner : SEC IT Solution N/P LAB Signature : mansu

sheet01 : Cover
sheet02 : BLOCK DIAGRAM
sheet03 : BOARD INFORMATION
sheet04 : POWER DIAGRAM
sheet05 : CLOCK DISTRIBUTION
sheet06 : Green Clock
sheet07 : Thermal Sensor
sheet08 : CPU
sheet09 : CPU
sheet10 : CPU
sheet11 : CPU
sheet12 : DDR3 SODIMM #0
sheet13 : DDR3 SODIMM #1
sheet14 : PCH-CougarPoint
sheet15 : PCH-CougarPoint
sheet16 : PCH-CougarPoint
sheet17 : PCH-CougarPoint
sheet18 : PCH-CougarPoint
sheet19 : 80 port
sheet20 : N12P-GV
sheet21 : N12P-GV
sheet22 : N12P-GV
sheet23 : N12P-GV
sheet24 : GFX memory
sheet25 : GFX memory
sheet26 : LVDS/CAMERA
sheet27 : CRT
sheet28 : HDMI
sheet29 : Audio - AL C269
sheet30 : Audio - HP/MIC
sheet31 : LAN (Realtek RTL8111E)
sheet32 : WLAN
sheet33 : SATA interface
sheet34 : MICOM / BIOS
sheet35 : MICOM Glue Logic (KBD / TP)
sheet36 : USB connector
sheet37 : Power - charger
sheet38 : Power - P3.3V_AUX / P5.0V_AUX
sheet39 : Power - P1.05V (Chipset Power)
sheet40 : Power - P0.8V (Chipset Power)
sheet41 : Power - DDR3
sheet42 : Power - CPU VRM
sheet43 : Power - EGFX_CORE
sheet44 : Power - Switched Power 1
sheet45 : Power - Switched Power 2
sheet46 : Power - Power Discharge
sheet47 : 3-in-1 card (AU6437)
sheet48 : Touchpad & LED
sheet49 : Mount Hole

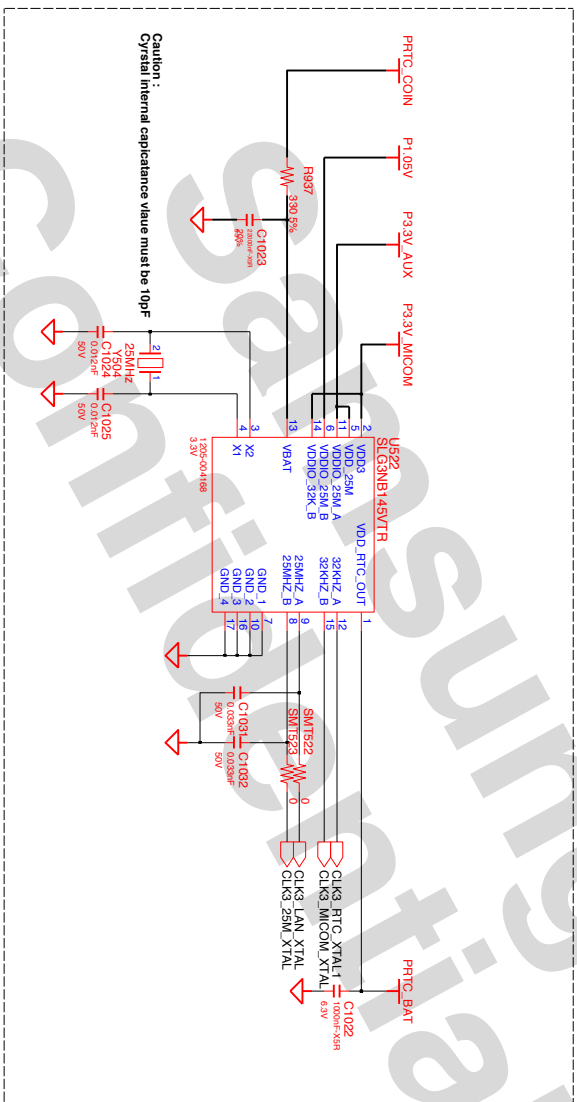
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CHECK	MK KIM	DEV STEP	PR		MAIN	ELECTRONICS
APPROVAL	BL LEE	REV	REV. 1.0		COVER	
MOBILE CODE		LAST EDIT	February 15, 2011 08:31:19 AM	PAGE	1	OF 49



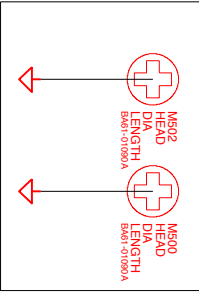




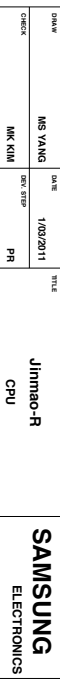
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DESIGNER	NS YANG	CHK	PR	BA41-01579A
APPROVAL	BL LEE	REV. 1.0	CLOCK DIAGRAM	
MOBILE CODE	undefined	LAST EDIT	February 15, 2011 09:31:19 AM	PAGE 5 OF 49

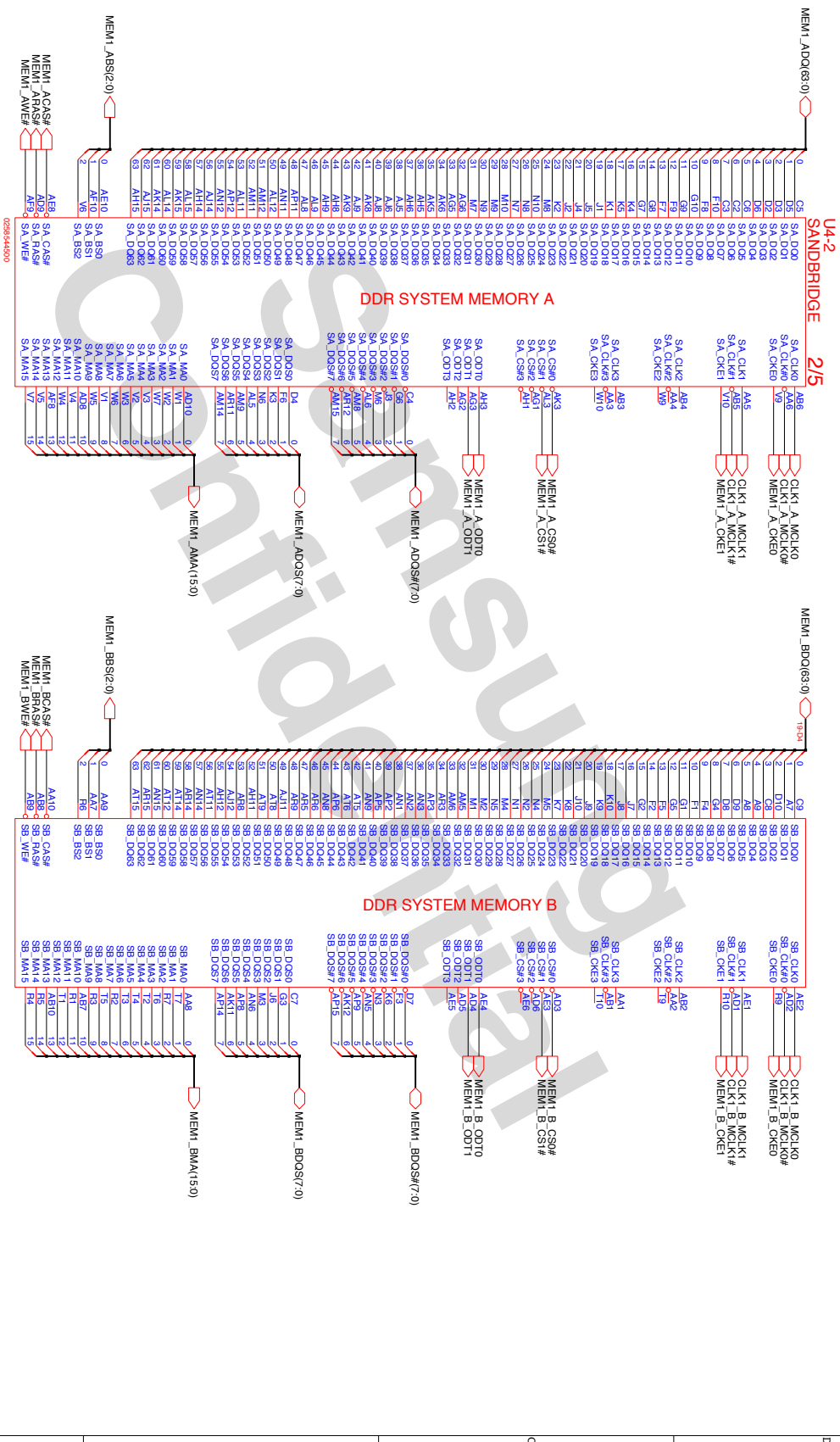



DESIGN	MS YANG	DATE	1/03/2011	SAMSUNG	
CHECK		ENV. STEP	PR	ELECTRONICS	
APPROVAL	MM KIM	REV.	REV. 1.0	PART NO. BA41-01579A	
MODEL CODE	BL LEE	CLOCK DISTRIBUTION		PAGE	6 OF 49
	LAST EDIT	February 15, 2011 09:31:19 AM			



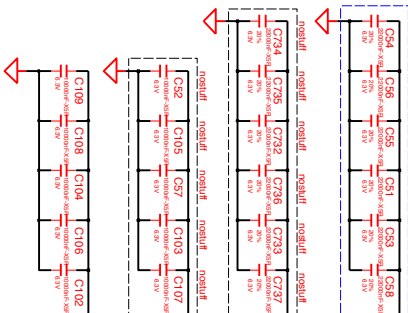
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CHECKER	MIK KIM	REV. DESCRIPTION	PR	
APPROVAL	BL LEE	REV.	REV. 1.0	
MODEL CODE				
LAST EDIT				
Jinmao-R THERMAL SENSOR THERMAL SENSOR EMC01212				
PART NO. BA41-01579A				
February 15, 2011 09:31:18 AM				PAGE 7 OF 49





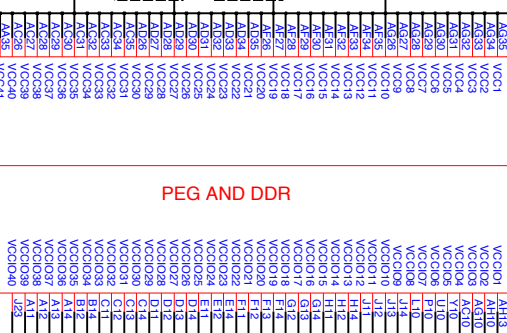
NAME	MS YANO	DATE	1/03/2011	
CHECK	MIK KIM	REV. STEP	PR	
APPROVAL	BL LEE	REV.	REV. 1.0	
MODEL CODE	unfilled	SANDY BRIDGE (2/4)		
LAST DATE		February 15, 2011 08:31:19 AM		
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Quadcore : Shift



CPU CORE
U4-3
SANDBRIDGE

3/5
P1.05V

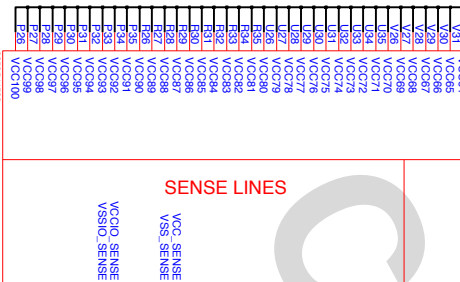


PEG AND DDR

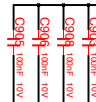
CORE SUPPLY

SVID

SENSE LINES



P1.5V
P1.5V AUX



U4-4
SANDBRIDGE

4/5

GRAPHICS

VREF

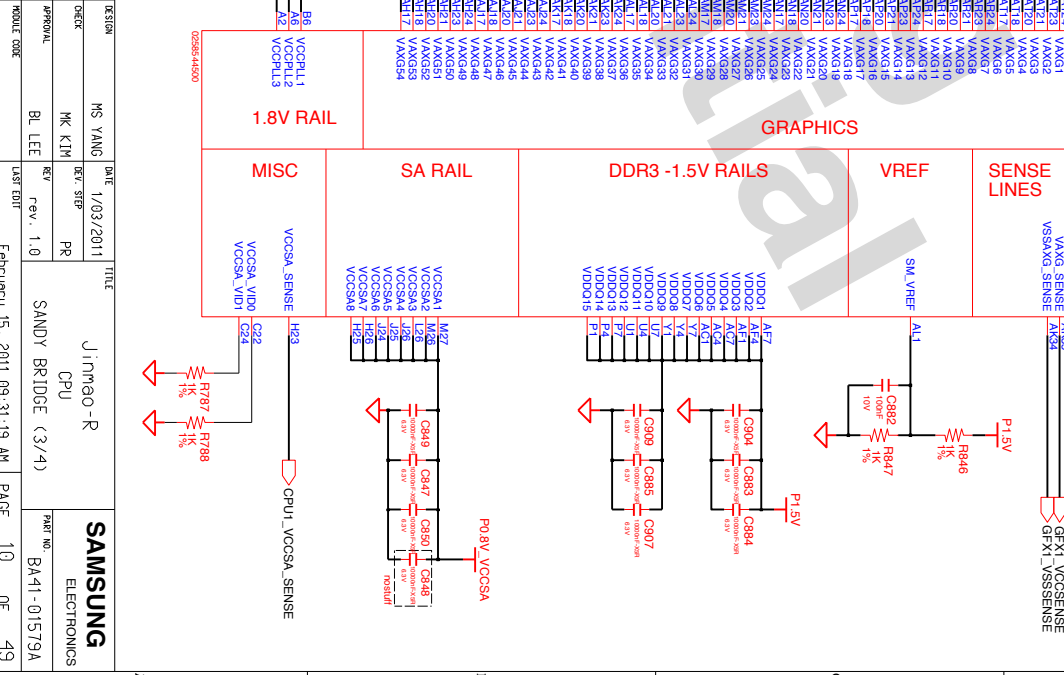
SENSE LINES

DDR3 -1.5V RAILS

SA RAIL

MISC

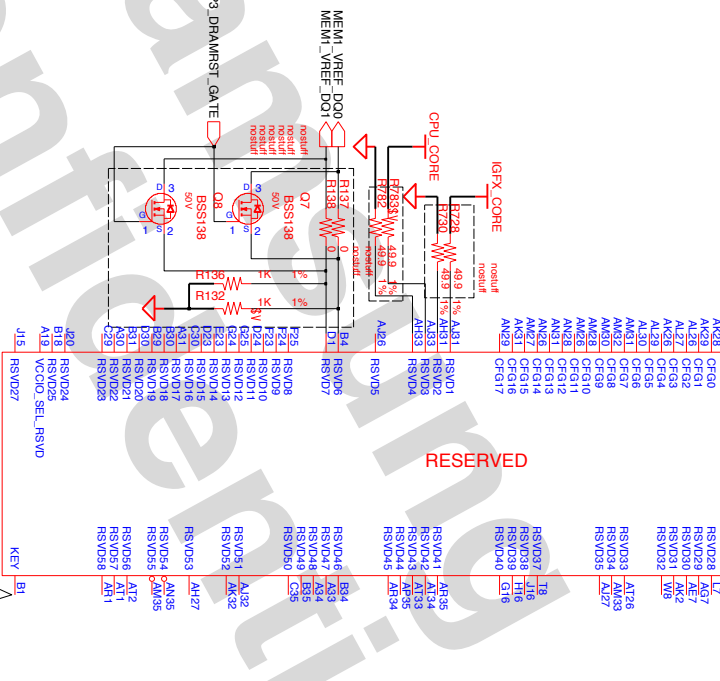
1.8V RAIL



DESIGN	MS YANG	DATE	1/03/2011	TITLE	
CHECK	HK KIM	REV. STEP	PR	J'imao-R	
APPROVAL	BL LEE	REV. 1.0		CPU	
ROUTE CODE		February 15, 2011 09:31:19 AM		SANDY BRIDGE (3/4)	
				PART NO.	BA41-01579A
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U4-5
SANDBRIDGE 5/5

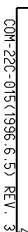
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CFG Straps for Processor

PEG	PEG STATIC LANE REVERSAL - CFG2 IS FOR THE 16X
CFG2	1: IDEAL T1 NORMAL OPERATION 0: LANE REVERSED
PCIE PORT BIT DIRECTION STRAPS	
CFG6[5]	1: IDEAL T1 RX - DEVICE 1 FUNCTIONS 1 AND 2 DISABLED 0: RX,8B - DEVICE 1 FUNCTION 1 ENABLED, FUNCTION 2 DISABLED 0: RX,8B - DEVICE 1 FUNCTION 1 DISABLED, FUNCTION 2 ENABLED 00: RX,8B - DEVICE 1 FUNCTIONS 1 AND 2 ENABLED
Display Port Presense	1: Disabled 0: No DP device is connected to aDP
CFG4	0: Enabled - iDP device is connected to aDP
PEG DEDICATED TRAINING	
CFG7	1: IDEAL T1 PEG TRAIN IMMEDIATELY FOLLOWING XRES#2 DEASSERTION 0: PEG WAIT FOR BIOS TO TRAIN

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P3.3V AUX
P3.3V AUX
P3.3V AUX

CHP3_HDA_SYNC

HDA3_AUD_SYNC

HDA3_AUD_SYNC

NO REBOOT STRAP

DISABLED : LOW DEFAULT
ABLED : HIGH

AUD3_SPKR

CHP3_SERIRQ

U513-1

BD82HM65

RTIC1

RTIC2

RTIC3

RTIC4

RTIC5

RTIC6

RTIC7

RTIC8

RTIC9

RTIC10

RTIC11

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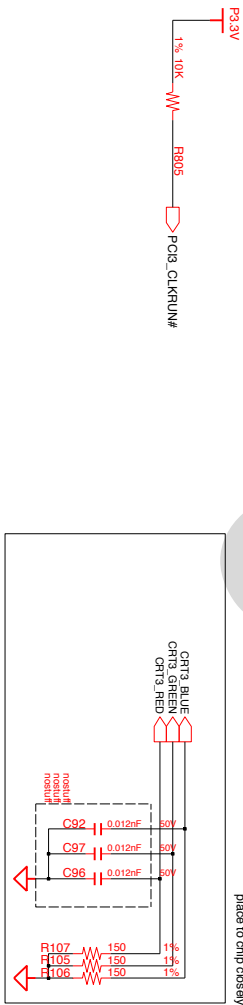
RTIC297

RTIC298

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RTIC300

RTIC301



Jimmao-R PCH COUGAR POINT(25)	SAMSUNG ELECTRONICS	
	PART NO. BA41-01579A	15 OF 49

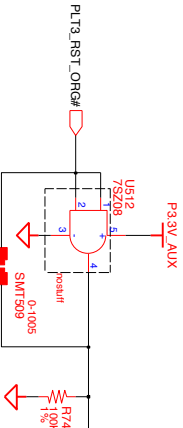
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DM1 & PD1 TERMINATION VOLTAGE
INV. CLE
SET TO VSS WHEN LOW
SET TO VDD WHEN HIGH

CPU_NVM_INVB# F790 1K 1% NVM1_CLE

4.0 OHM GSGE TO THE BRANCHING POINT (TO CPU AND NVRAM CONNECTION)



U513-3
BD821HM65

3/5

P3.3V R82 10K 1% CHP3 BIOS CHRIS#

1% 1000K 1% 5V MUST Pullup TP near memory door

P3.3V F795 1K 1% CHP3 PD1_OVRFLT#

P3.3V F798 100K 1% PD1_TERMINATION VOLTAGE OVERRIDE

LOW - 1% R terminated to same Voltage (DEFAULT)

BOOT BIOS STRAP	
BBS_BAT	BBS_0
BBS_1	BBS_1
BBS_2	BBS_2
BBS_3	BBS_3
BBS_4	BBS_4
BBS_5	BBS_5
BBS_6	BBS_6
BBS_7	BBS_7
BBS_8	BBS_8
BBS_9	BBS_9
BBS_10	BBS_10
BBS_11	BBS_11
BBS_12	BBS_12
BBS_13	BBS_13
BBS_14	BBS_14
BBS_15	BBS_15
BBS_16	BBS_16
BBS_17	BBS_17
BBS_18	BBS_18
BBS_19	BBS_19
BBS_20	BBS_20
BBS_21	BBS_21
BBS_22	BBS_22
BBS_23	BBS_23
BBS_24	BBS_24
BBS_25	BBS_25
BBS_26	BBS_26
BBS_27	BBS_27
BBS_28	BBS_28
BBS_29	BBS_29
BBS_30	BBS_30
BBS_31	BBS_31
BBS_32	BBS_32
BBS_33	BBS_33
BBS_34	BBS_34
BBS_35	BBS_35
BBS_36	BBS_36
BBS_37	BBS_37
BBS_38	BBS_38
BBS_39	BBS_39
BBS_40	BBS_40

CHP3_HOLD_RST#

CHP3_PEO_PWREN#

SAT3_ODD_DW#

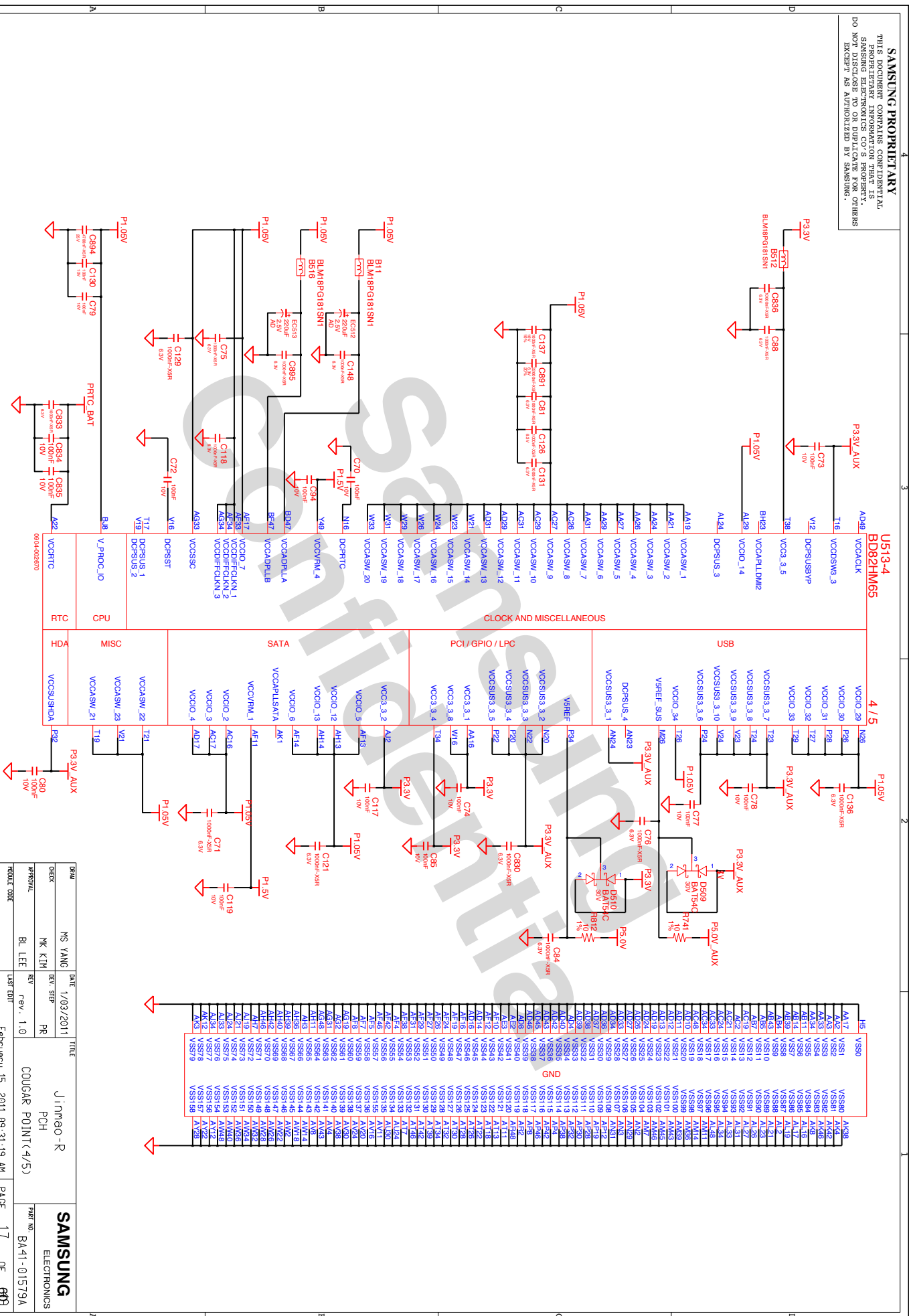
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SAT3_ODD_DW#

SAT3_ODD_DW#

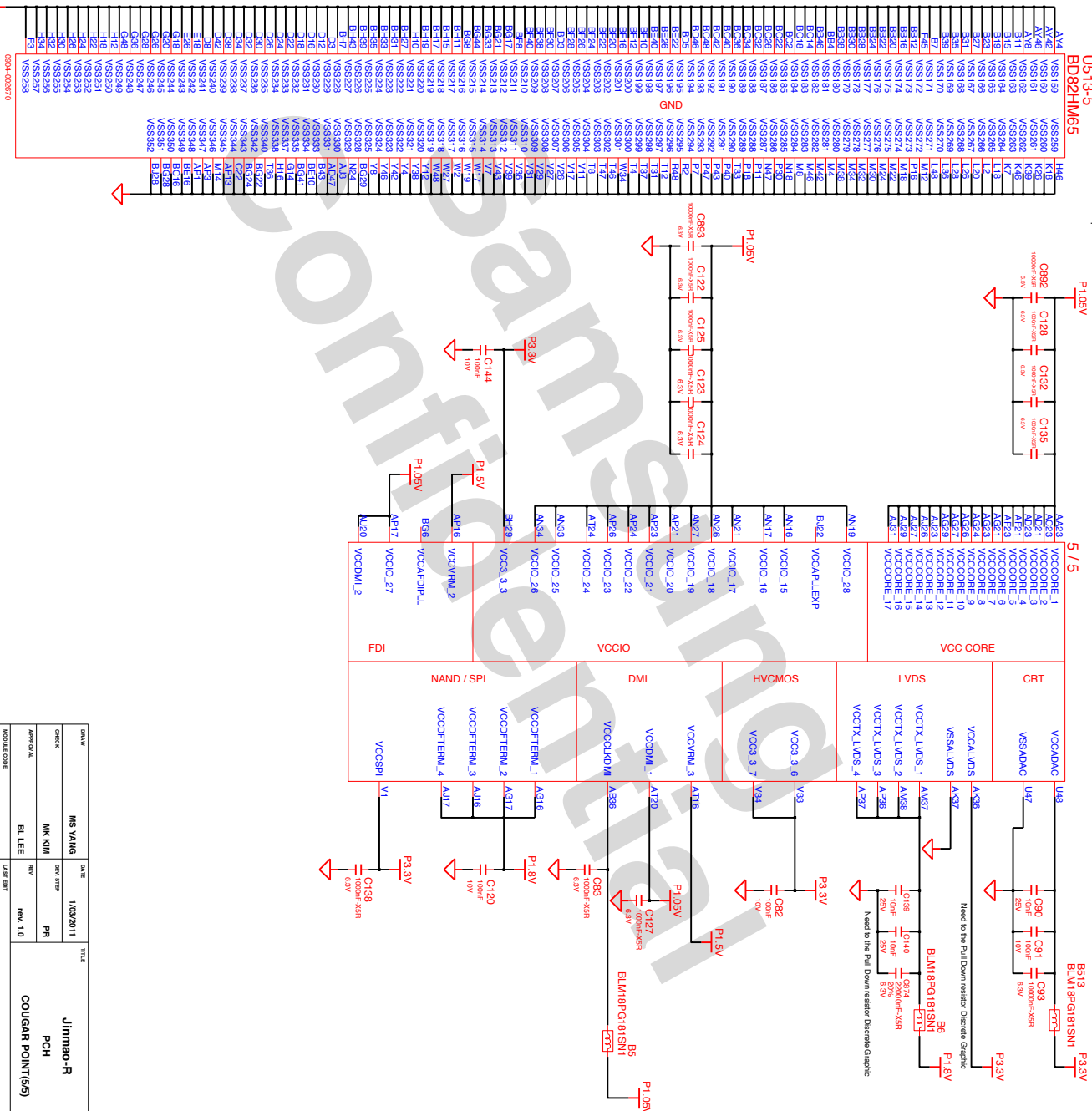
SAT3_ODD_DW#

	PU	PD
GPIO 39	EXT ONLY	INT + OPT
GPIO 69	HSPA	NON HSPA
GPIO 70	LCD_14"	
GPIO 71	LCD_15"	
GPIO 57	LCD_17"	

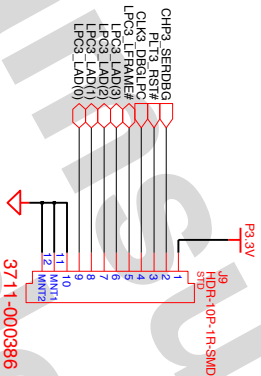


REV	DATE	TITLE	REV	DATE	TITLE
001	1/03/2011	U513-4	001	1/03/2011	U513-4
002	01/03/2011	PCH	002	01/03/2011	PCH
003	01/03/2011	COUGAR POINT(4/5)	003	01/03/2011	COUGAR POINT(4/5)
004	01/03/2011	BA41-01579A	004	01/03/2011	BA41-01579A

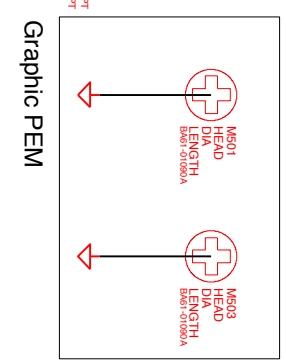
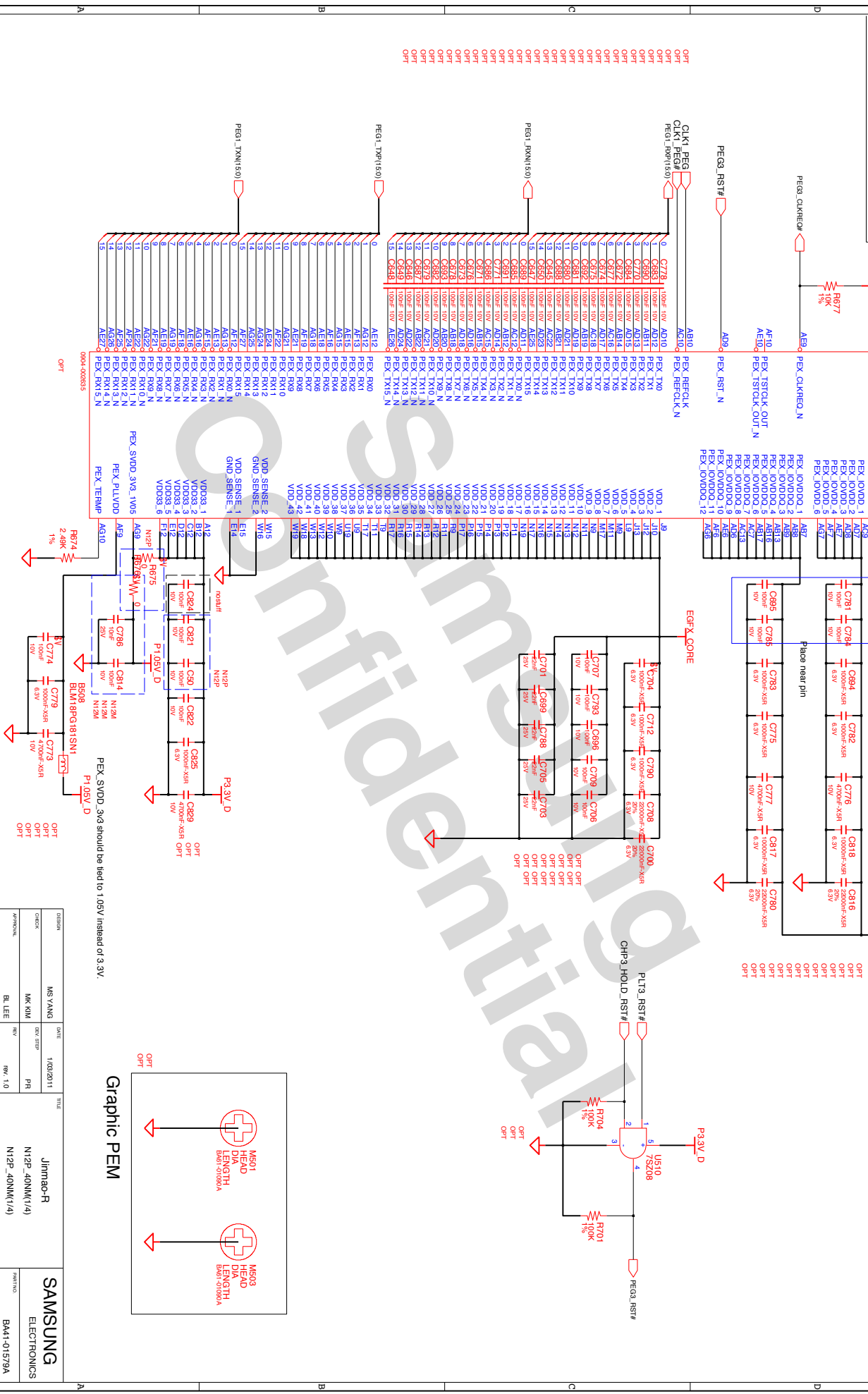
This power share with thermal sensor



80H PORT DEBUG



DESIGN	MS YANG	DATE	1/03/2011	TITLE	SAMSUNG
DECK	HK KIM	REV. STEP	PR	J'imao-R DEBUG PORT	ELECTRONICS
APPROVAL	BL LEE	REV	rev. 1.0	80H DECODER	PART NO. BA41-01579A
ROUTE CODE		LAST EDIT	February 15, 2011 09:31:19 AM	PAGE	19 OF 49



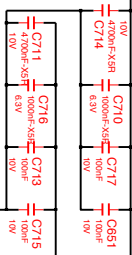
Graphic PEM

DESIGN	MS YANG	DATE	1/10/2011	TITLE	Jimmao-R	SAMSUNG
CHECK	MM KIM	REV	01	PR	N12P-40NM(1/4)	ELECTRONICS
APPROVAL	BL LEE	REV	1.0		N12P-40NM(1/4)	BA41-01579A
MOBILE CODE		LAST EDIT	February 15, 2011 09:31:19 AM	PAGE	20	OF 49



2 / 5

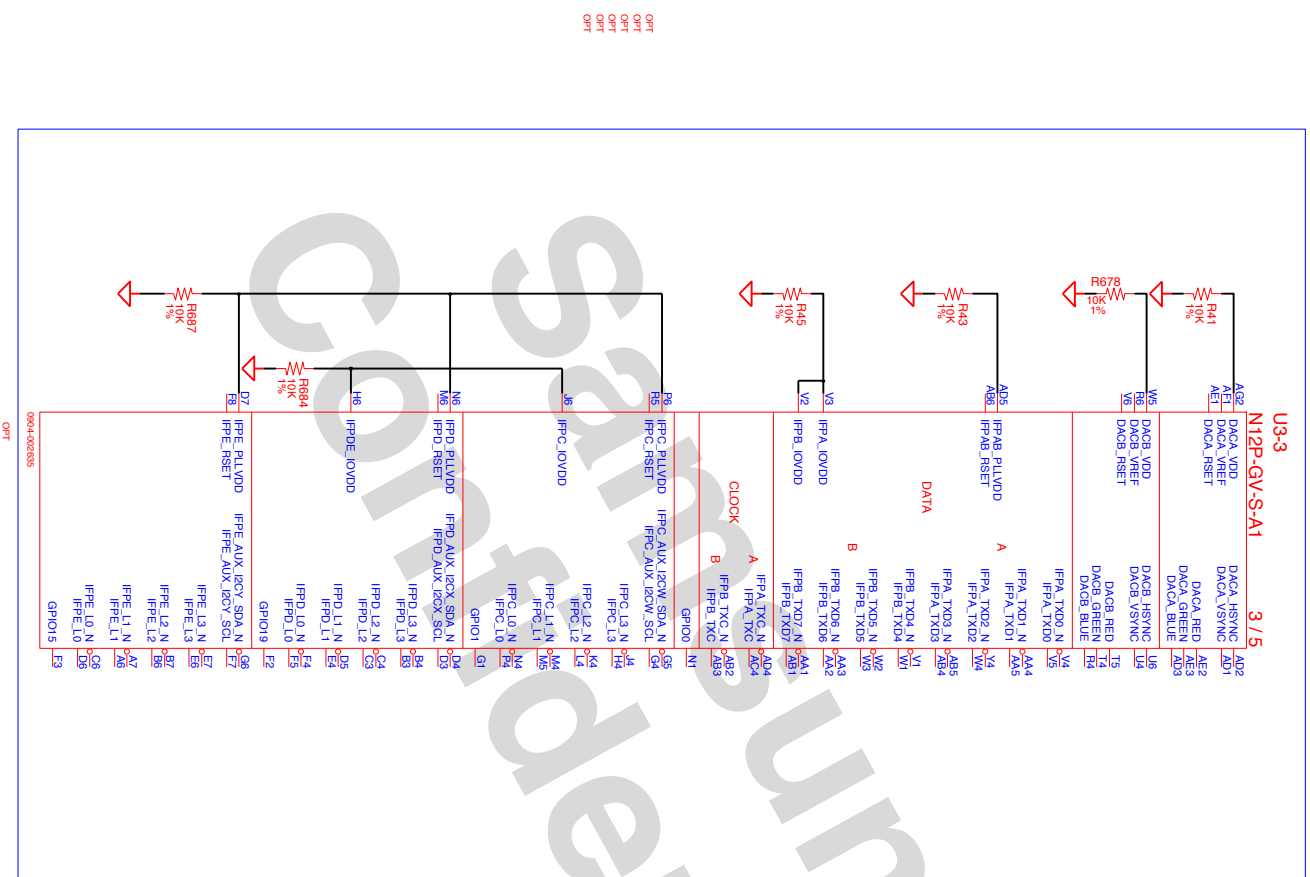
P1.5V D



० ० ० ० ० ० ० ० ०

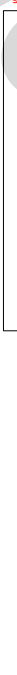
N12M-GE : CMD MODE C
N12P-GV : CMD MODE E

[illegible]

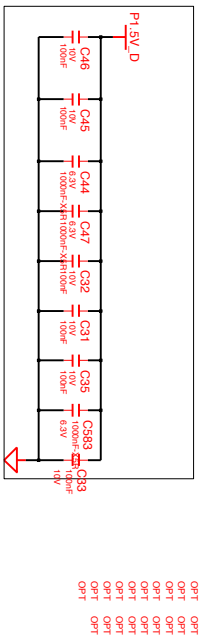


004-002635
OPT

DESIGN	MS YANG	DATE	1/20/2011	TITLE	Jimiao-R	SAMSUNG
CHECK	MR KIM	REV	PR		N12P-40NM(3/4)	ELECTRONICS
APPROVAL	BL LEE	REV	REV. 1.0		N12P-40NM(3/4)	BA41-01579A
MOBILE CODE		LAST EDIT	February 15, 2011 09:31:19 AM	PAGE	22	OF 49

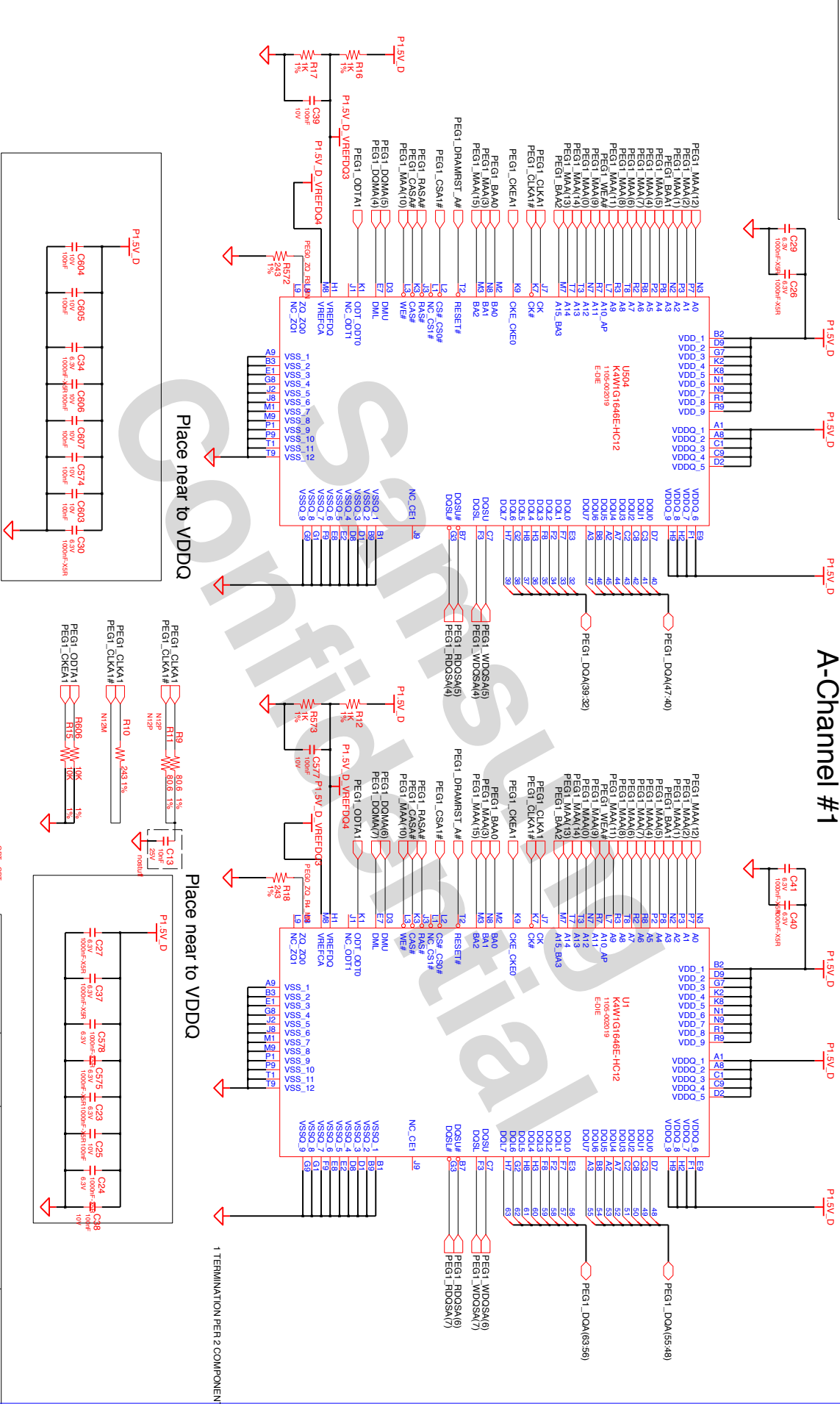
U3-5
M40D CV 6 A4

Q1

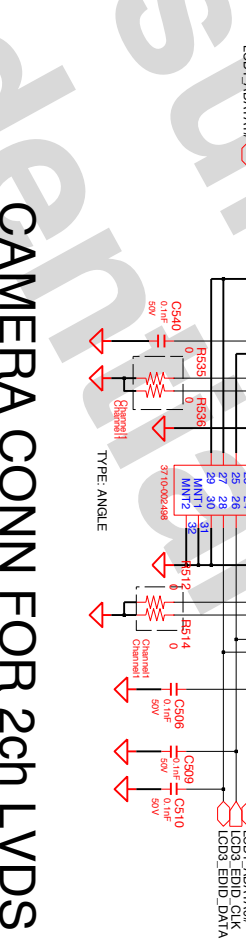
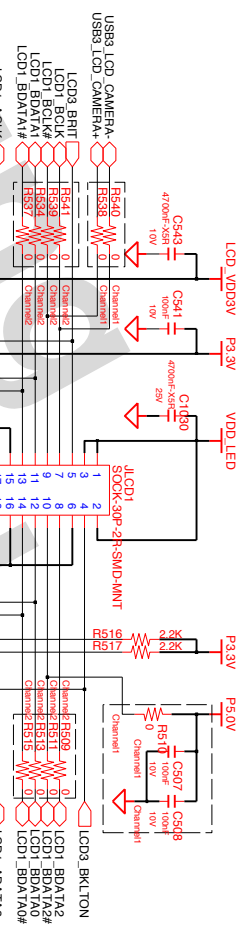


DESIGN	DATE	TITLE	SAMSUNG ELECTRONICS	
MS YANG	1/02/2011	Jlimao-R		
CHECK	REV. STEP		PART NO.	
MM KIM	PR		B441-01579A	
APPROVAL	REV.			
BL LEE	REV. 1.0			
MODEL CODE	LAST EDIT		PAGE	OF
	FEBRUARY 15, 2011 09:31:19 AM		24	49

A-Channel #1

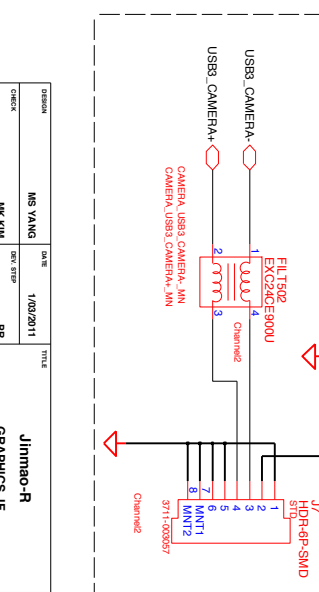
[illegible]

NOTE : Place R20 close to connector to minimize stub

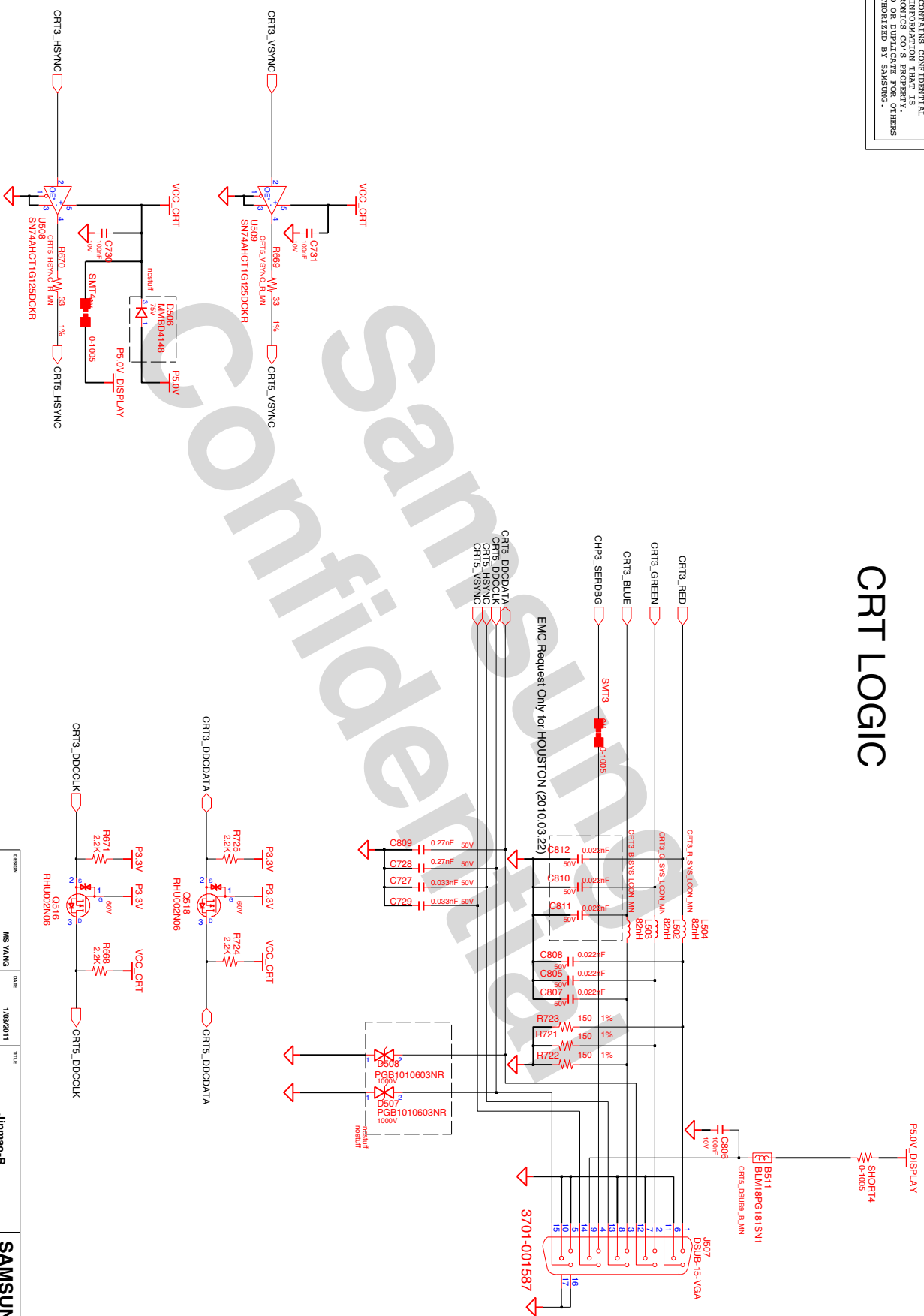


vi

LED Power

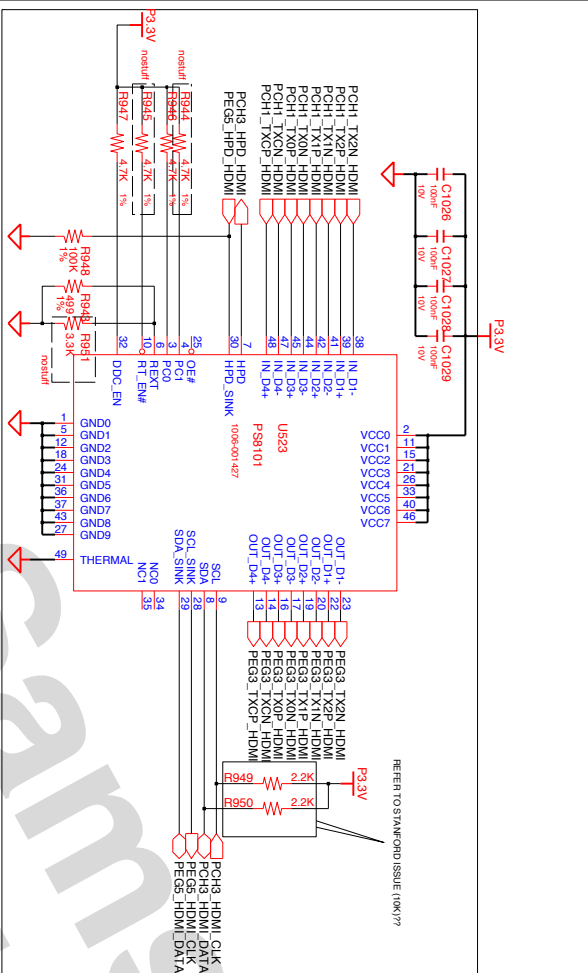


CRT LOGIC



DESIGNER	NS YANG	DATE	1/10/2011	TITLE	Jimmao-R	SAMSUNG
CHECKER	MK KIM	REV. STEP	PR	GRAPHICS_I/F	ELECTRONICS	
APPROVAL	BL LEE	REV. 1.0		CRT	BA41-01579A	
MOBILE CODE		LATE EST				
		February 15, 2011 08:31:19 AM	PAGE	27	OF	49

HDMI Graphic



FOR PS8101

FOR ASM1442

PC1	PC0
00	8dB
01	4dB
10	12dB
11	0dB

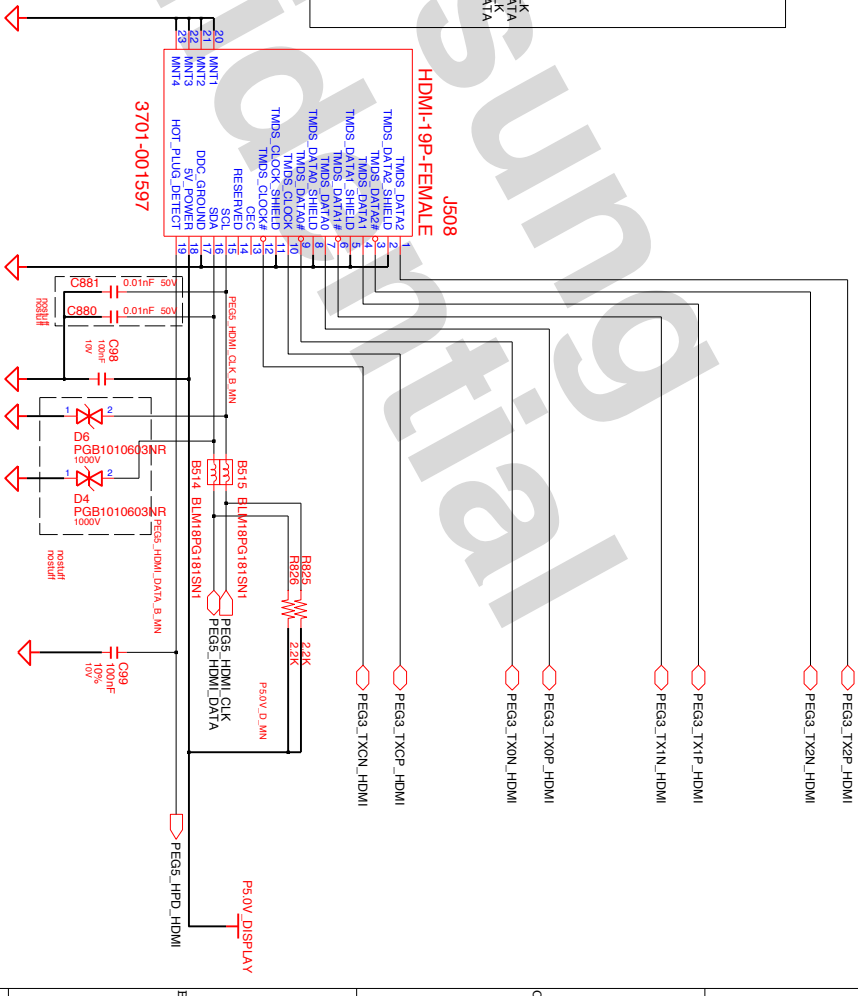
COL. 2	COL. 1	COL. 0	Swing	Pre-amp	Swi rate
0	0	1	450mV	0dB	0dB
0	0	1	450mV	0dB	-3dB
0	1	0	450mV	0dB	-3dB
0	1	1	450mV	0dB	-4dB
1	0	0	340mV	0dB	0dB
1	0	1	450mV	2dB	0dB
1	1	0	450mV	2dB	0dB
1	1	1	450mV	0dB	0dB

FOR ASM1442

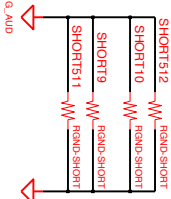
EQ. 1	EQ. 0	Equalization
0	0	12dB
0	1	9dB
1	0	6dB
1	1	3dB

Internal Default Value

HDMI Level Shift	RECT(Pin6)	PC1_C0G(Pin3)	PC1_C0G(Pin4)	RT_EN#_C0G2(Pin10)	NC_E0_0(Pin34)	NC_E0_1(Pin35)	NC	4.6 CODE
PS8101	489.2m	noisult	noisult	noisult	NC	NC	noisult	1000-001427
ASM1442	3.4K(2.4-3.3K)	noisult	noisult	noisult	NC	NC	noisult	1000-001471



DESIGN	DATE	FILE	DESIGNER	DATE	FILE
NS YANG	1/03/2011		NS YANG	1/03/2011	
CHK	1/03/2011		CHK	1/03/2011	
APPROVAL	1/03/2011		APPROVAL	1/03/2011	
BL LEE	1/03/2011		BL LEE	1/03/2011	
MOBILE CODE	1/03/2011		MOBILE CODE	1/03/2011	
February 15, 2011 08:31:19 AM			February 15, 2011 08:31:19 AM		
PAGE 28			PAGE 28		
OF 49			OF 49		



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DATE		TIME	
01/08/2011	10:02:11		
CHECK	DEV STEP		
MM MM	PR		
APPROVAL	REV		
BL LEE	REV: 1.0		
MODEL CODE	LAST EDIT		
February 15, 2011 09:31:10 AM			
PAGE		30	OF 49

Realtek RTL8111E

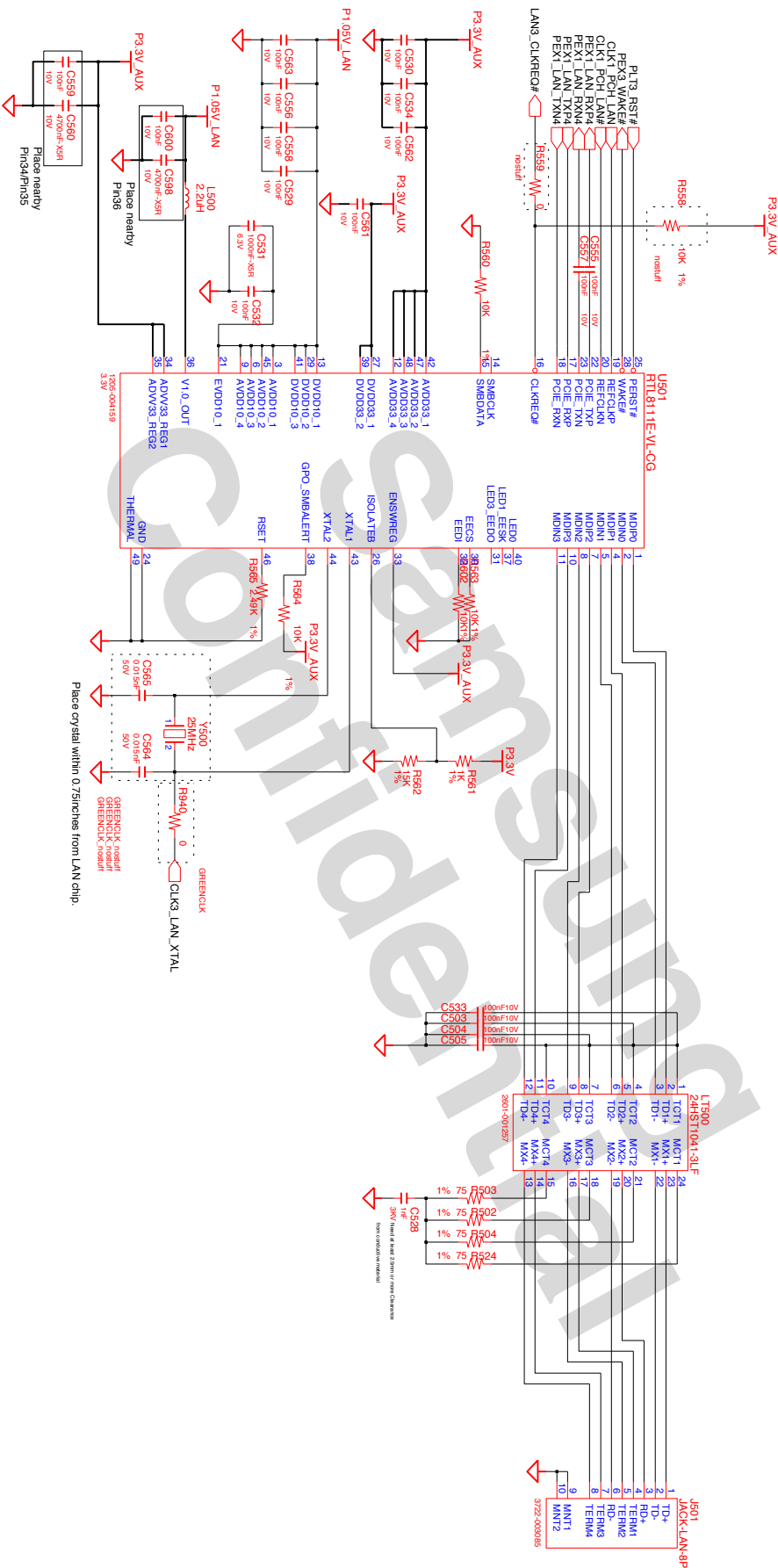
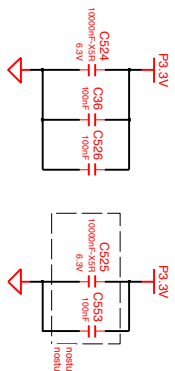


Diagram of the Mini PCI Express Card showing dimensions and pin locations:

- Overall width: 50.95 mm
- Overall height: 30.00 mm
- Distance from top edge to the start of the pin header: 48.05 mm
- Pin 1 is indicated on the left side of the pin header.
- Labels: "Top" and "Bottom" indicate the orientation of the card.

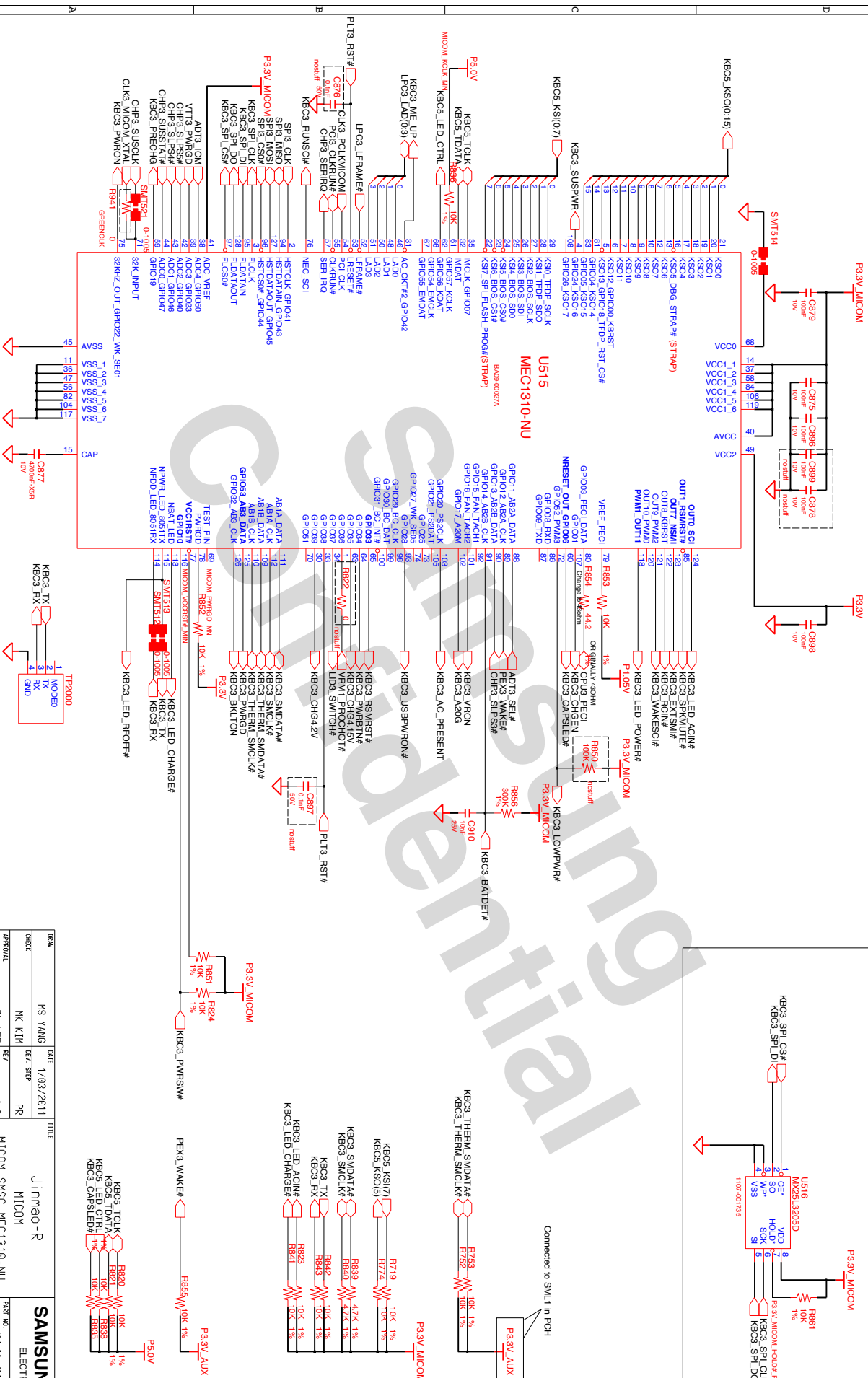
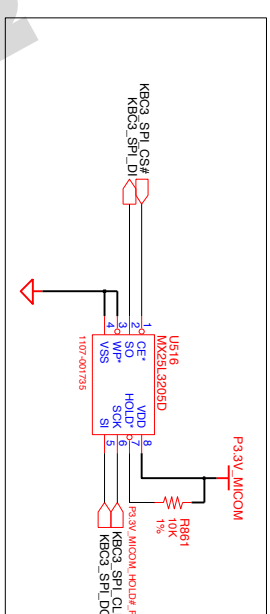


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MAIN BOARD (MCOM)

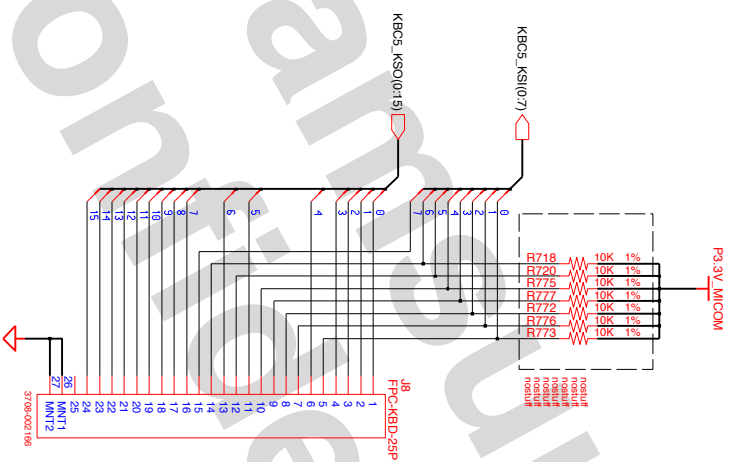
BE CAUTION SPI ROM SIZE!!

SPI_ROM_SOCKET



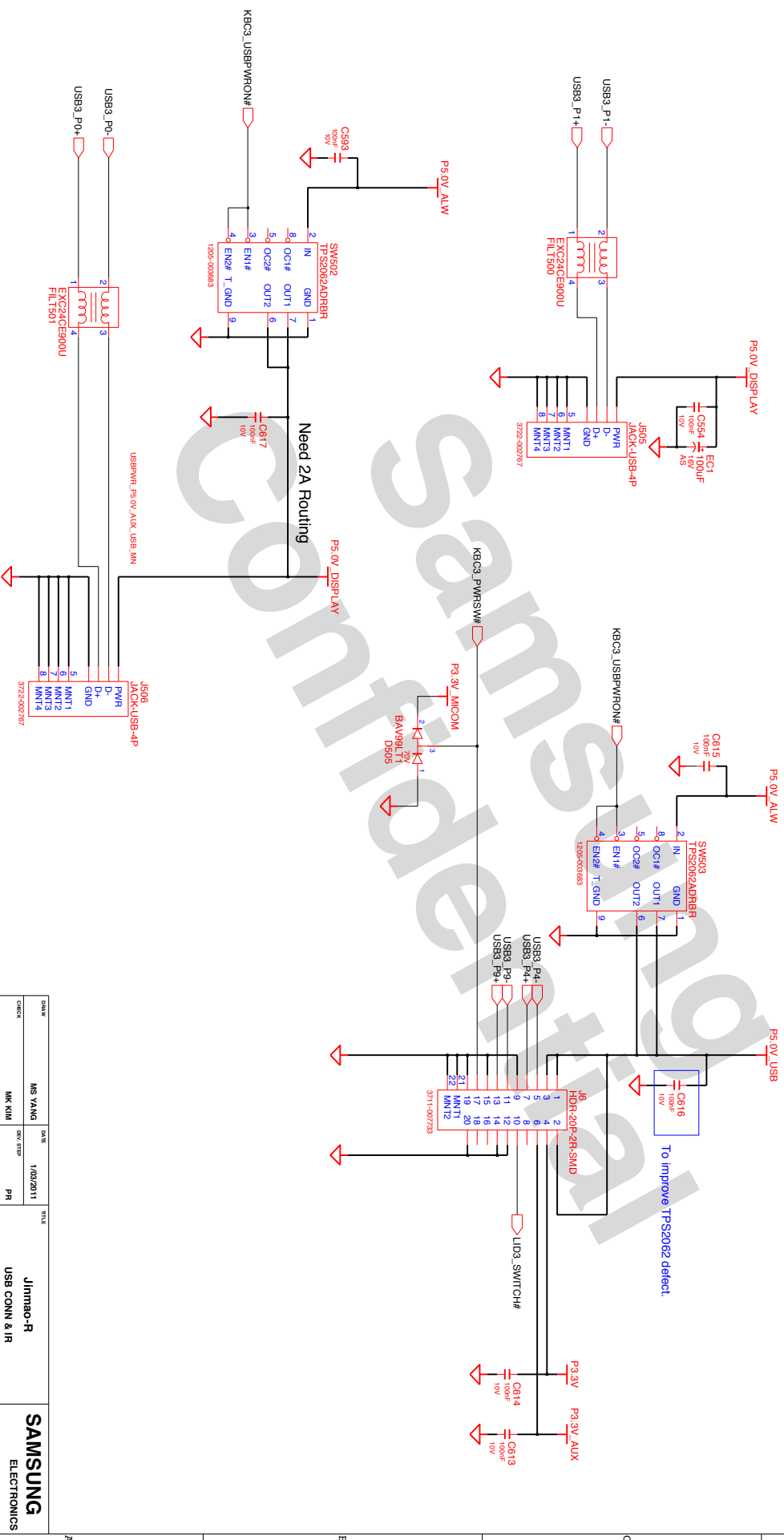
REV	DATE	TITLE	DESIGNER	CHECKER	APPROVAL	ROUTE CODE
MS YANG	1/03/2011	Jimmoo-R	MS YANG	HK KIM	PR	MS YANG
REV. 1.0	Feb 2011	MICOM-SMSC-MEC1310-NU	REV. 1.0	REV. 1.0	REV. 1.0	REV. 1.0
BA41-01579A						

KEYBOARD

COM-22C-015(1996.6.5) REV. 3 4

POWER SW SUB B'D CONNECTOR

MAIN to SUB



DESIGN	NS YANG	DATE	1/10/2011	TITLE	Jimmao-R	SAMSUNG
CHECK	MK KIM	ENG STEP	PR		USB CONN & IR	ELECTRONICS
APPROVAL	BL LEE	REV.	REV. 1.0		USB & IR	BA41-01579A
MOBILE CODE		LAYER ENT		February 15, 2011 09:31:19 AM	PAGE	36 OF 49

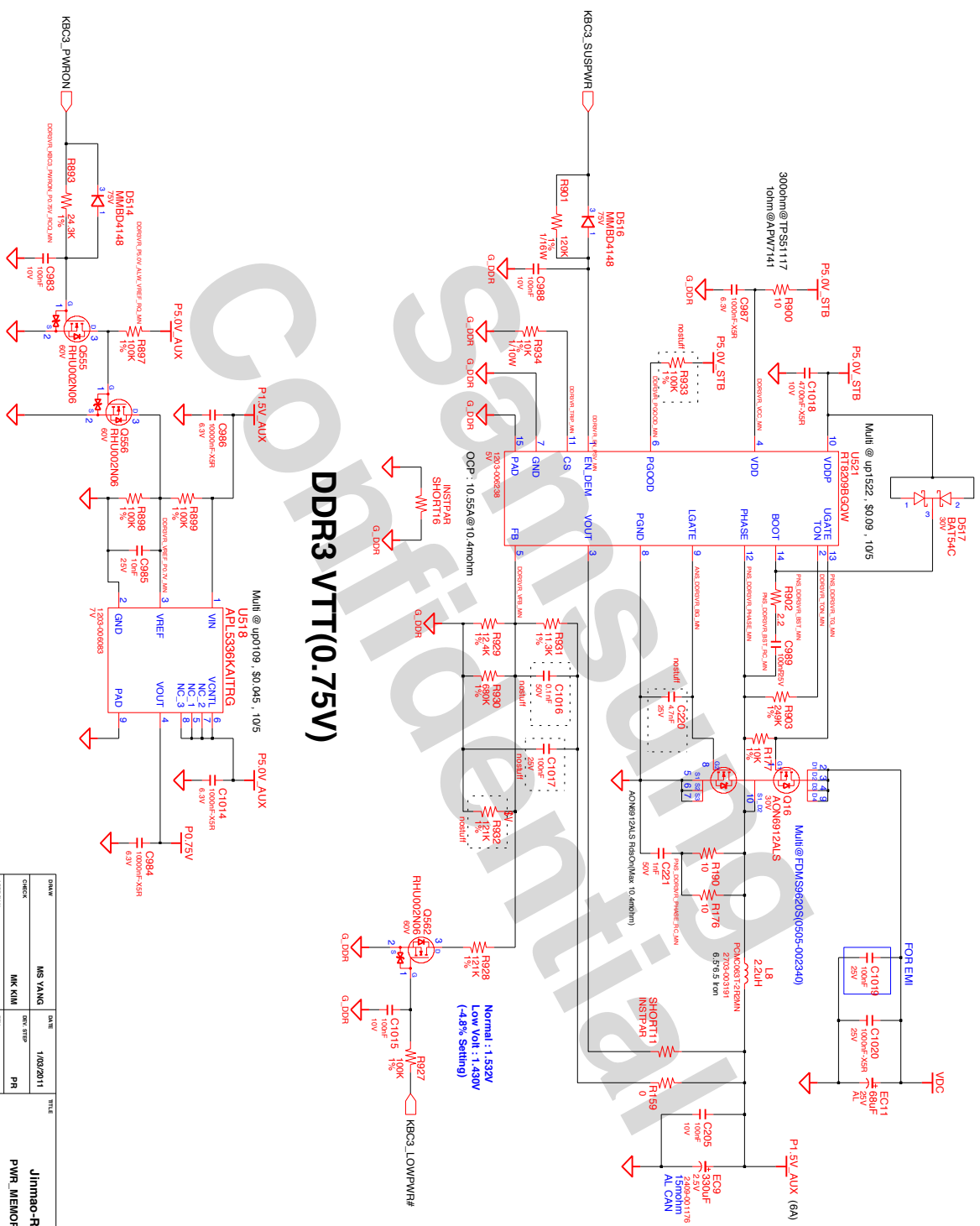


DATE	1/03/2011	TITLE	SAMSUNG ELECTRONICS		
DRAWN	MS YANG		Jinmao -R		
CHECKED	IK KIM	REV. STEP	P1.05V		
APPROVAL	BL LEE	PR	P1.05V(Chipset Power)		
MODIFY CODE		REV. 1.0	PART NO.	BA-11-01579A	
	underlined	LAST EDIT	February 15, 2011 09:31:19 AM	PAGE	39 OF 49



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DDR3 Power

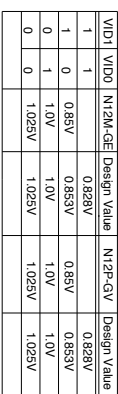


DDR3 VTT(0.75V)

Normal : 1.532V
Low Volt : 1.430V
(-4.8% Setting)

DESIGN	NS YANG	DATE	1/03/2011	TITLE	Jimmo-R	SAMSUNG
CHECK	MK KIM	ENG. STEP	PR	PWR. MEMORY	ELECTRONICS	
APPROVAL	BL LEE	REV.	REV. 1.0	DDR3 POWER	BA41-01579A	
MOBILE CODE	undefined	LAYER EDIT	February 15, 2011 08:31:19 AM	PAGE	41	OF 49



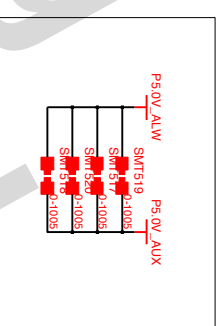
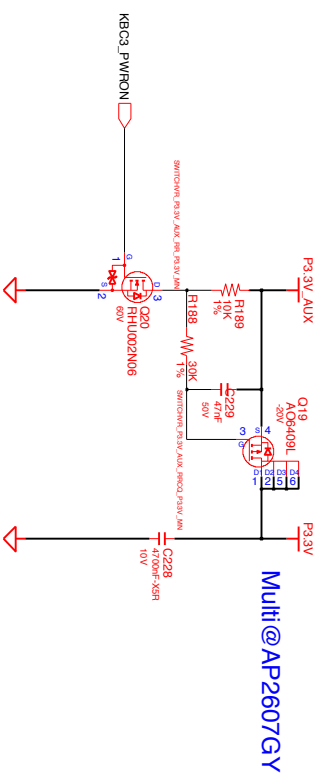


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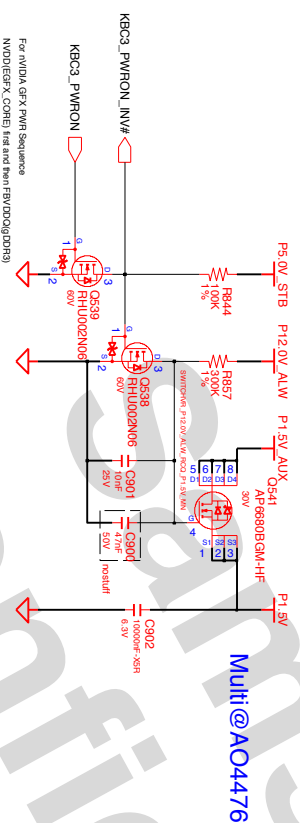
Switched Power

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

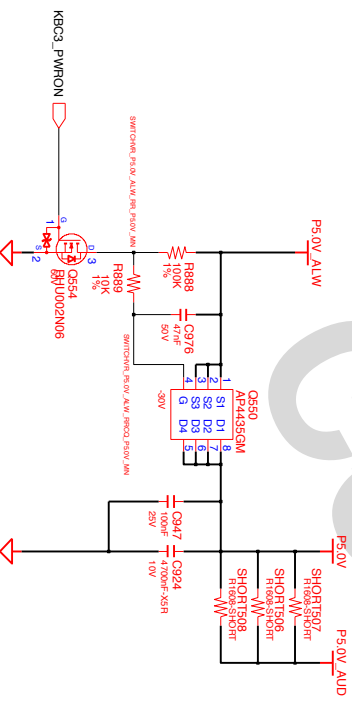
Switched Power On (P3.3V)



Switched Power On (P1.5V)



Switched Power On (P5.0V)



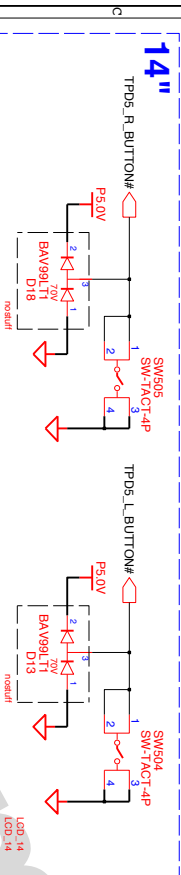
DATE	DATE	TIME	SAMSUNG ELECTRONICS
CHARGE	MS VANG	1/03/2011	
AMMUNITION	NK KIM	REV. STEP PR	
MODEL CODE	BL LEE	REV. 1.0	
undefined	LAST REV	February 15, 2011 06:31:18 AM	
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Multi@AP2607GY

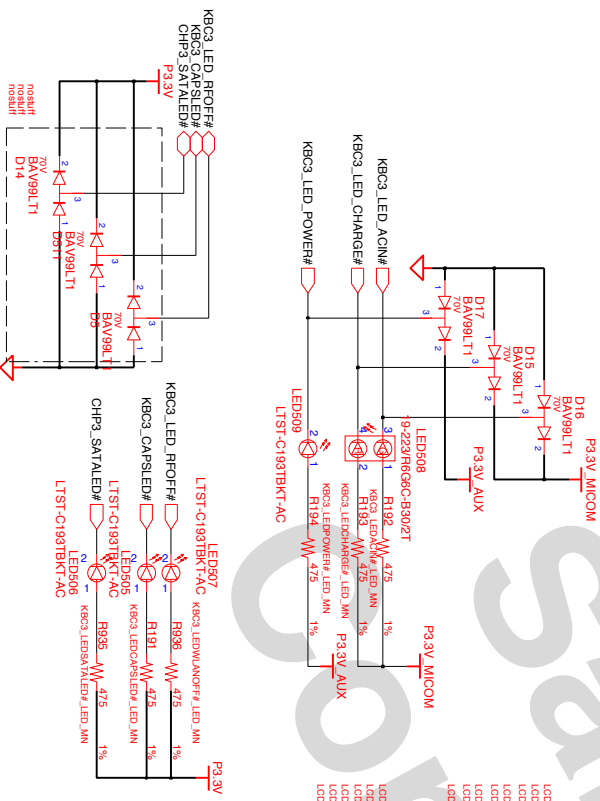
COM-22C-015(1996.6.5) REV. 3



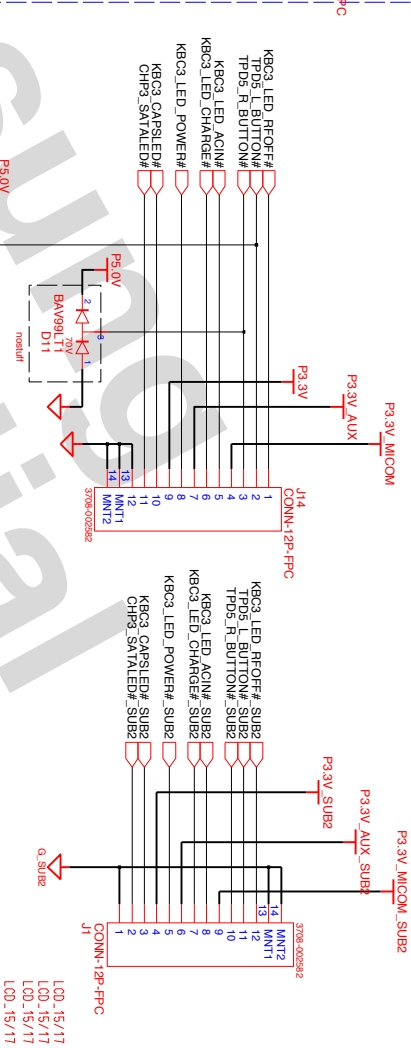
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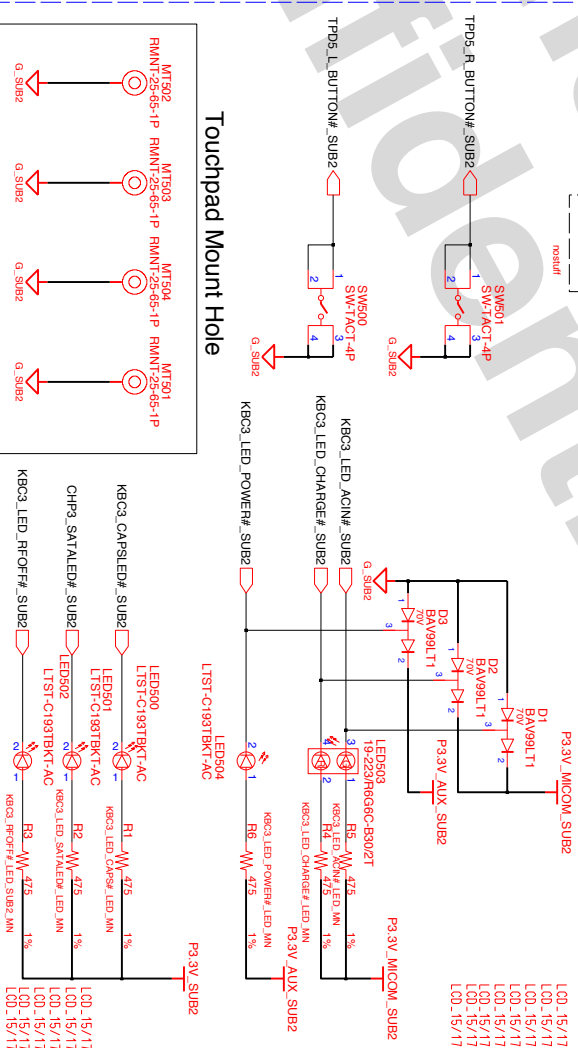
ADAPTERIN/CHARGING LED




TOUCHPAD MAIN TO SUB TOUCHPAD SUB TO MAIN



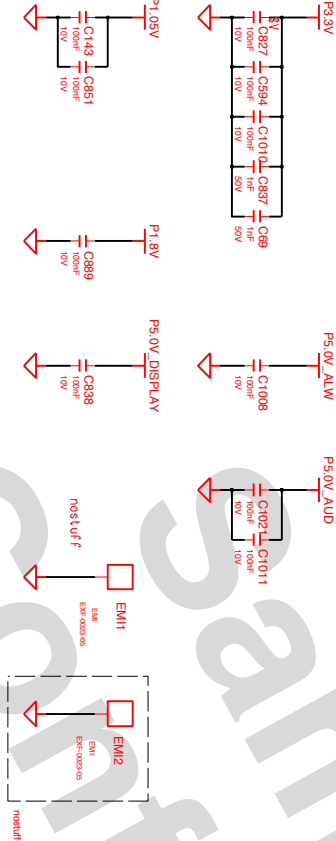
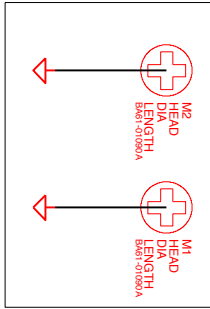
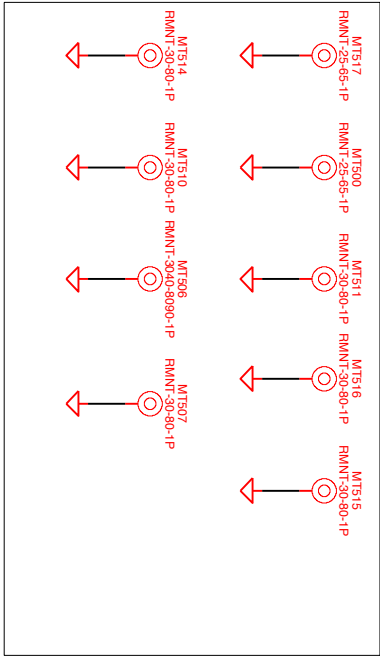
ADAPTERIN/CHARGING LED



NAME	TITLE		
MS VANG	DATE	1/02/2011	
CHECK	DOY SITP	PR	
AMINOM	REV	REV. 1.0	
MODEL CODE	BL LEE	LAST EDIT	
February 15, 2011 09:31:10 AM			
<div> <div>48</div> <div>OF</div> <div>49</div> </div>			

Mainboard Mount ((25-65)X2EA, (30-80)X7EA)

PCH Thermal



DESIGNER	NS YANG	DATE	1/03/2011	TITLE	Jimmao-R	SAMSUNG
CHECKER	MK KIM	ENG. STEP	PR		MNT hole	ELECTRONICS
APPROVAL	BL LEE	REV.	REV. 1.0		MNT hole	BA41-01579A
MOBILE CODE		LAYER EDIT		February 15, 2011 09:31:19 AM	PAGE	49 OF 49