

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

BONN-E/BONN-C

CPU : Intel Penryn
 Chip Set : PM45 & ICH9M
 Graphic : M96/M92/gDDR3 1g bit
 Remarks : Montevina Platform

Model Name : BONN-E/BONN-C
 PBA Name : MAIN
 PCB Code : GCE : BA41-01060A
 NAN : BA41-01061A
 HAN : BA41-01062A
 Dev. Step : MP
 Revision : 1.0
 T.R. Date : 2009.04.11

Design	CHECK	APPROVAL

Owner : SEC Mobile R & D Signature : X

Sheet 1. Cover
 Sheet 2-7. Diagram (Block/Power) & Annotations
 Sheet 8. Clock Generator -CK505
 Sheet 9 Thermal Sensor & FAN
 Sheet 10-12. Penryn-6M CPU
 Sheet 13-17. Cantiga-MCH
 Sheet 18. DDR2 SODIMM A
 Sheet 19. DDR2 SODIMM B
 Sheet 20-24. ICH9-M
 Sheet 25. SPI ROM & Debug Connector
 Sheet 26-31. GFX_External_M9X
 Sheet 32-35. Graphics_Memory_gDDR3 1g bit
 Sheet 36-38. Graphic Interface
 Sheet 39-43. High Definition Audio (ALC272 GR)
 Sheet 44. LAN_Marvell_88E8057
 Sheet 45. Express_Card
 Sheet 46. MultiCard_AU6336 (3 in 1)
 Sheet 47. PCIE_Minicard_Slot
 Sheet 48. SATA I/F CONN
 Sheet 49. MICOM_Renasas2110
 Sheet 50. Micom Glue Logic
 Sheet 51. LED_Switch
 Sheet 52. USB Port
 Sheet 53. USB I/F Devices
 Sheet 54. HDA_Modem
 Sheet 55. PWR_MV_Charger
 Sheet 56. PWR_MV_3V_5V
 Sheet 57. PWR_MV_Memory
 Sheet 58. PWR_MV_Cantiga
 Sheet 59. PWR_CPU_MV_ISL6266
 Sheet 60-61. PWR_GFX_MV_Ext
 Sheet 62. PWR_MV_Switched
 Sheet 63. PWR_MV_DisCharger
 Sheet 64. 2 USB Port & Power S/W SUB B'D
 Sheet 65. SATA ODD SUB B'D
 Sheet 66. EMC Capacitor & Mount
 Sheet 67. Test Point

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E MAIN COVER	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	PART NO.		
APPROVAL	BL Lee	REV	REV 1.0	BA41-01060A		
MODULE CODE		LAST EDIT	April 11, 2009 10:05:58 AM		PAGE	1 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Devices	IDSEL#	REQ/GNT#	Interrupts
Cardbus	AD25	3	A,B,C
USB	AD29(internal)	-	USB2.0 #0 (USB0) : A USB2.0 #1 (USB1) : D USB2.0 #2 (USB4) : C USB2.0 #3 (USB5) : E USB2.0 #4 (EHCI) : H
Hub to PCI	AD30(internal)	-	-
LPC bridge/IDE/AC97/SMBUS	AD31(internal)	-	B
Internal MAC	AD24(internal)	-	E
AC Link	-	-	B
GLAN	-	-	F

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	ICH8-M	Real Time Clock
Crystal	10MHz	MICOM	HD64F2169/2160
Crystal	14.318MHz	CLOCK-Generator	CK-505
Crystal	25MHz	LAN	Intel LAN

LCD Panel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

Voltage Rails	
VDC	Primary DC system power supply (7 to 21V)
VCC_CORE	Core Voltage for CPU
GFX_CORE	Core Voltage for GPU
P1.05V (VCCP)	VTT for CPU, Crestline & ICH8-M
P3.3V_MICOM	3.3V always power rail (for Micom)
P1.5V	1.5V switched power rail (off in S3-S5)
P1.8V	1.8V switched power rail (off in S3-S5)
P1.8V_AUX	1.8V power rail for DDR (off in S4-S5)
P0.9V	0.9V power rail for DDR (off in S3-S5)
P3.3V	3.3V switched power rail (off in S3-S5)
P3.3V_AUX	3.3V switched on power rail (off in S4-S5)
P5.0V	5.0V switched power rail (off in S3-S5)
P5.0V_AUX	5.0V switched on power rail (off in S4-S5)
P5.0V_ALW	5.0V always power rail

I ² C / SMB Address			
Devices	Address	Hex	Bus
ICH8-m	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	-
CK-505M (Clock Generator)	1101 001x	D2h	Clock, Unused Clock Output Disable

USB PORT Assign		PCI Express Assign	
PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	SYSTEM PORT 0	0	NC
1	SYSTEM PORT 1	1	Mini Card 1 (WLAN)
2	SYSTEM PORT 2	2	NC
3	NC	3	LOM
4	NC	4	Mini Card 2 (ROBSON or DVB-T)
5	Bluetooth	5	NC
6	Mini PCI Express 2		
7	Camera		
8	NC		
9	NC		

REVISION HISTORY

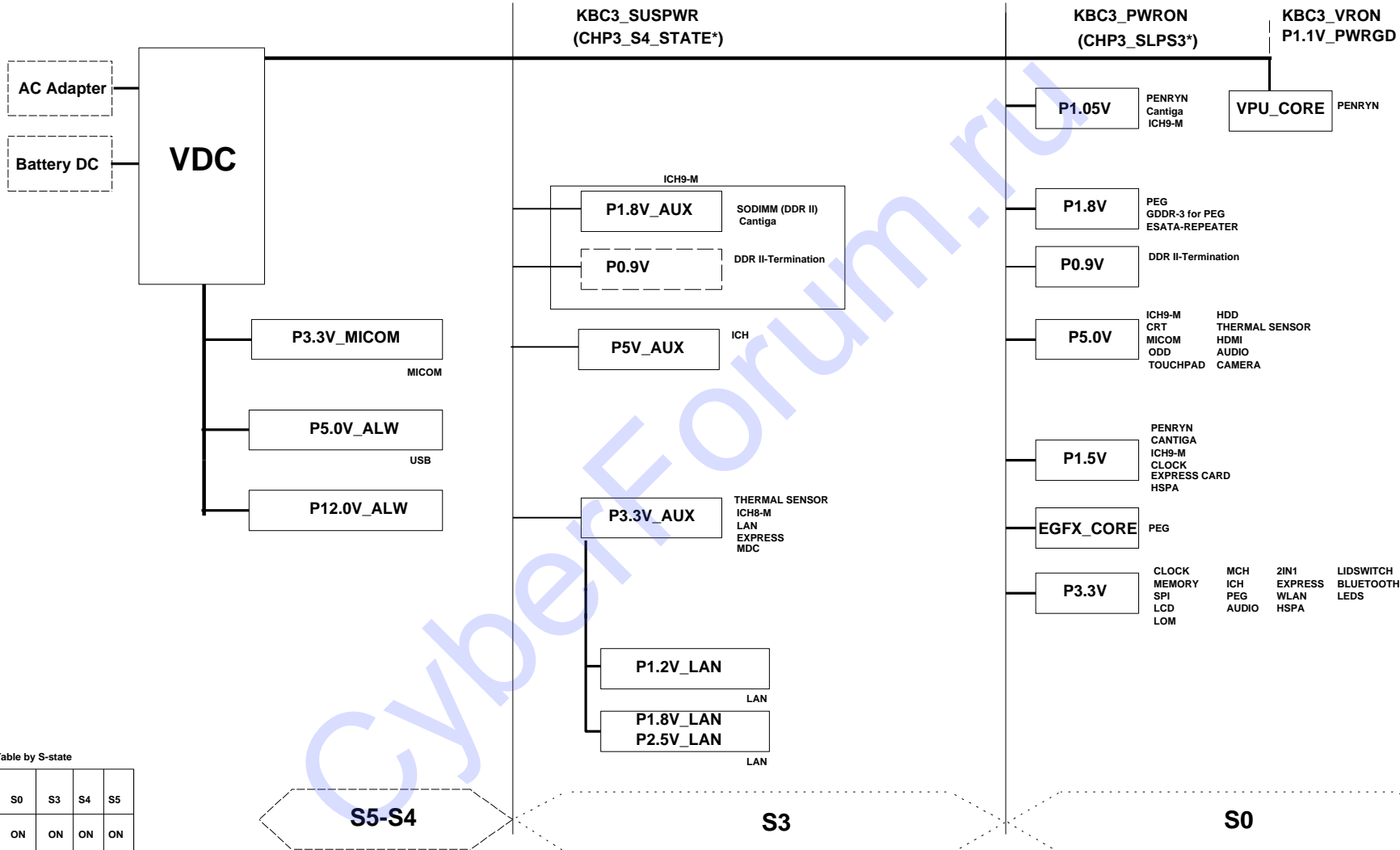
See rev notes for more information.

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E MAIN BOARD INFO	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP			
APPROVAL	BL Lee	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT	April 11, 2009 10:05:58 AM	PAGE	3	OF 67
				PART NO.	BA41-01060A	

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

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	—	—
+1.8V_AUX +0.9V	ON	ON	—	—
+V*AUX	ON	ON	—	—
+V	ON	—	—	—
+V* (CORE)	ON	—	—	—

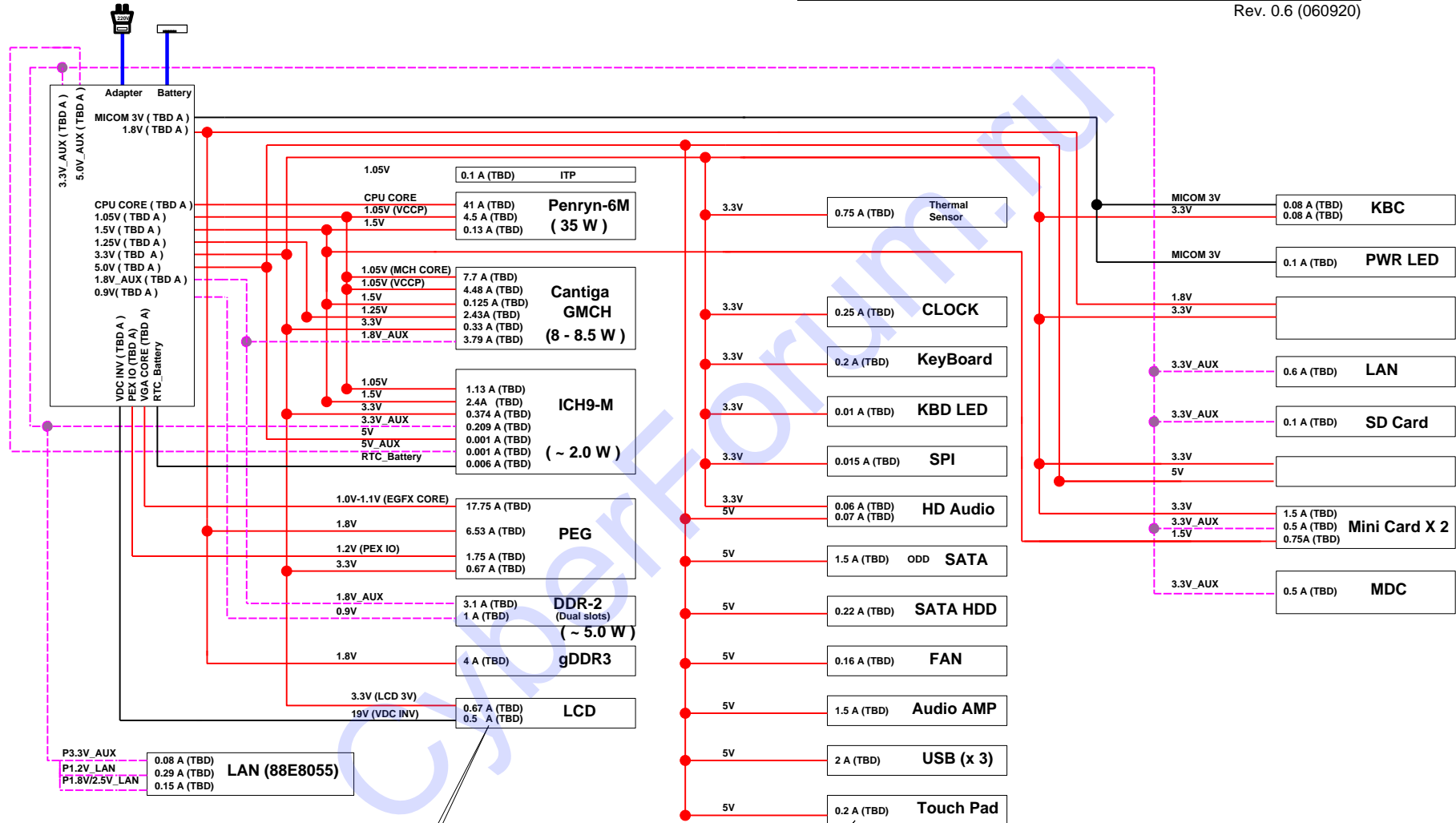
DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E MAIN	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	POWER DIAGRAM	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0		BA41-01060A	
MODULE CODE	undefined	LAST EDIT	April 11, 2009 10:05:58 AM	PAGE	4	OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

POWER RAILS ANALYSIS

Rev. 0.6 (060920)



Value by Datasheet/Application notes (Value by measurement)

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E MAIN POWER RAILS	SAMSUNG ELECTRONICS PART NO. BA41-01060A
CHECK	MK Kim	DEV. STEP	MP			
APPROVAL	BL Lee	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT				
				April 11, 2009 10:05:58 AM	PAGE	5 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

Host Boot / ME Off

(SLPS4* = S4_STATE*) > (SLPM* = SLPS3*)

M-1) KBC3_DDR_PWRON (TBD) = 8) KBC3_SUSPWR

M-2) KBC3_ME_PWRON = 15) KBC3_PWRON

Host / ME Boot

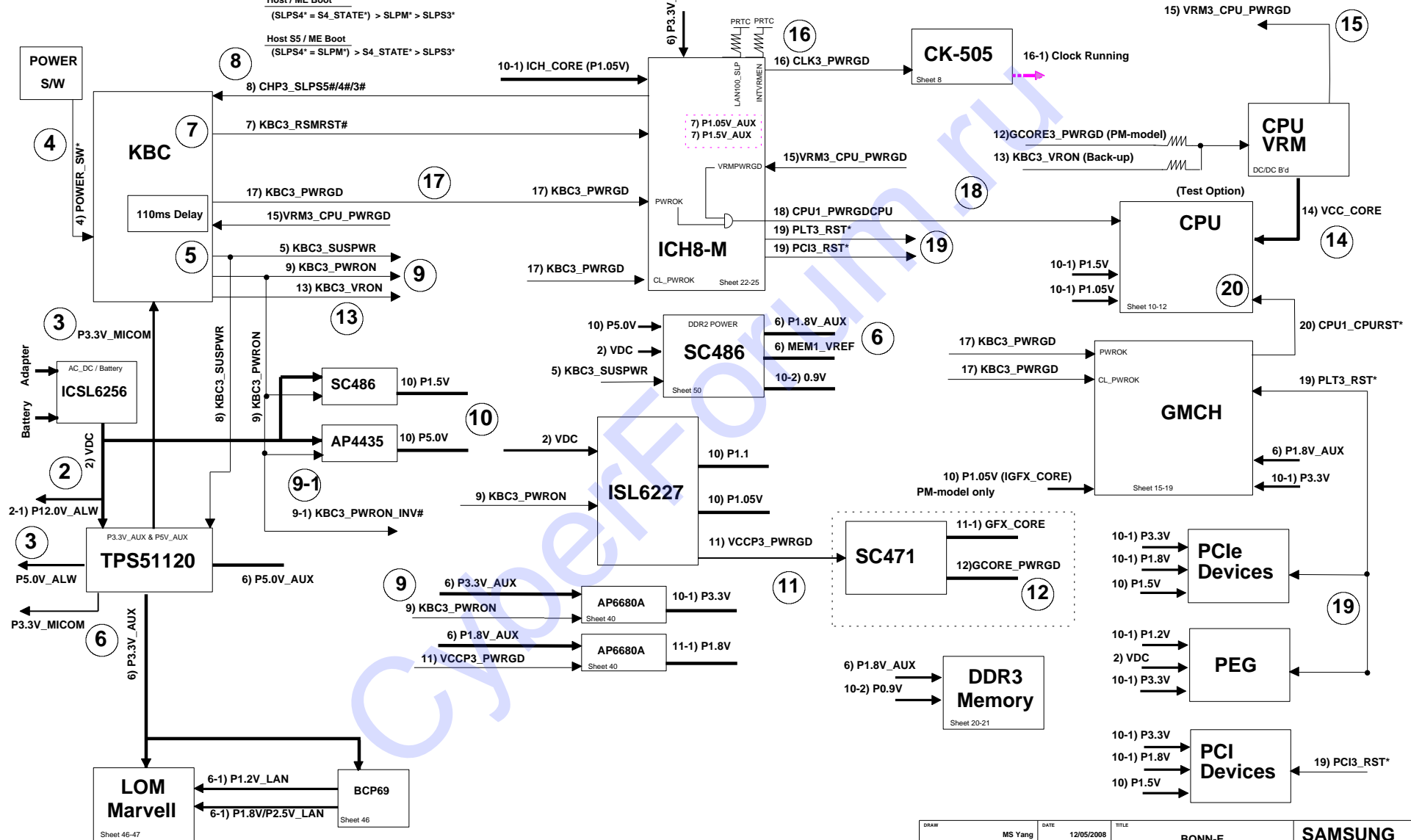
(SLPS4* = S4_STATE*) > SLPM* > SLPS3*

Host S5 / ME Boot

(SLPS4* = SLPM*) > S4_STATE* > SLPS3*

POWER SEQUENCE

Rev. 0.7

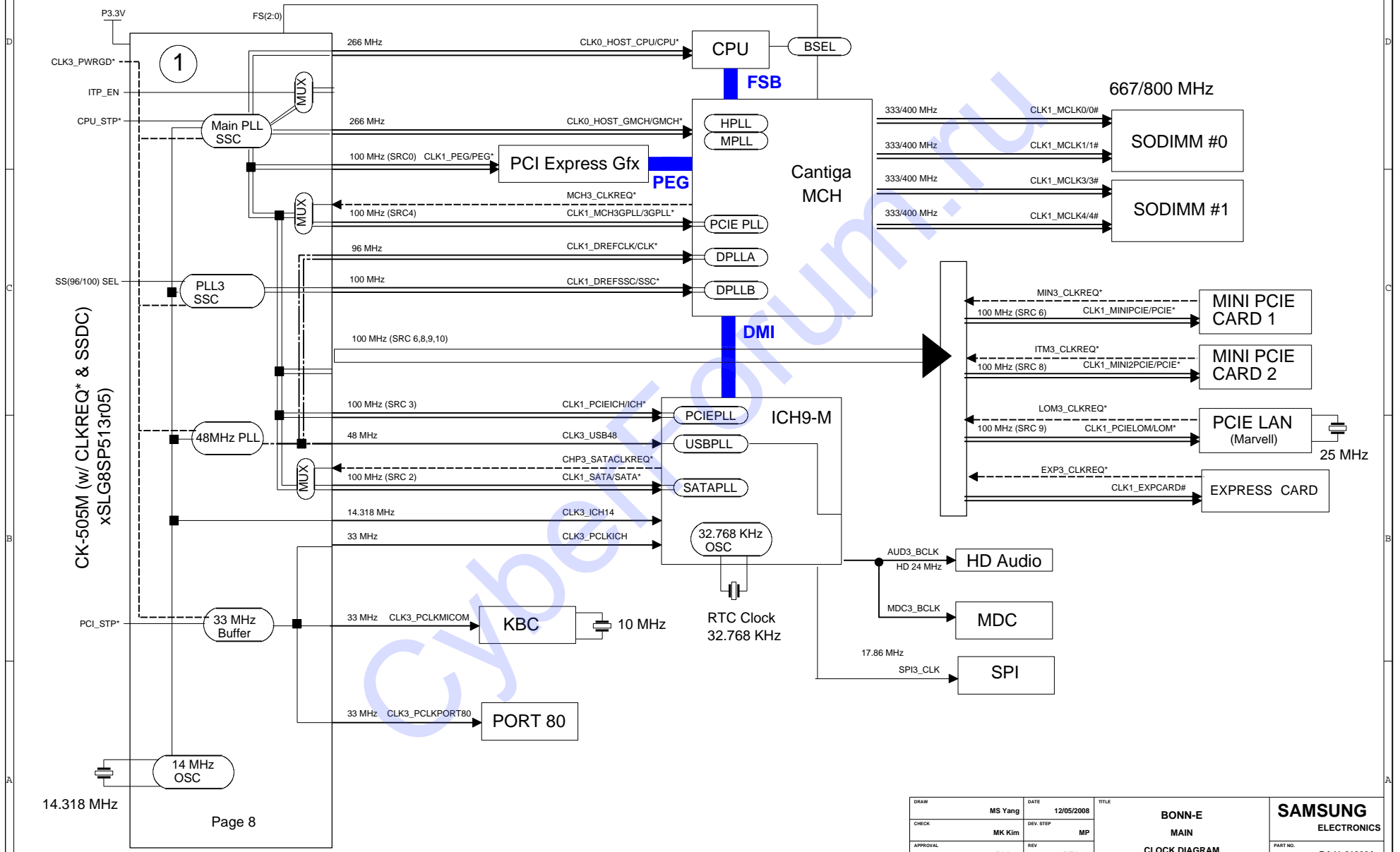


DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E MAIN	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	POWER SEQUENCE		
APPROVAL	BL Lee	REV	REV 1.0	PART NO.		BA41-01060A
MODULE CODE	undefined	LAST EDIT	April 11, 2009 10:05:58 AM	PAGE	6	OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

CLOCK DISTRIBUTION Rev. 0.1



14.318 MHz

Page 8

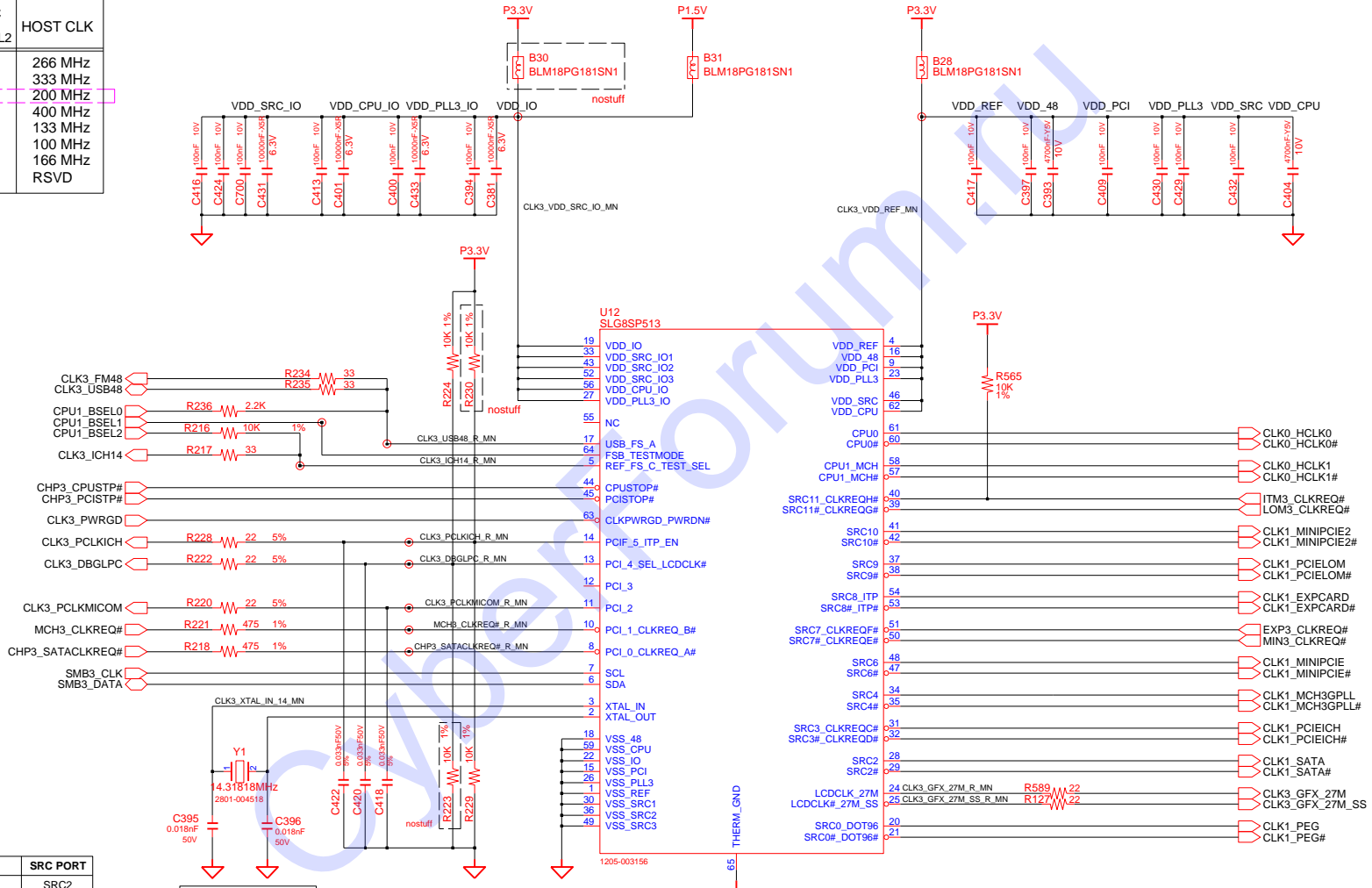
DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E MAIN	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP			PART NO. BA41-01060A
APPROVAL	BL Lee	REV	REV 1.0		CLOCK DIAGRAM	
MODULE CODE	undefined	LAST EDIT		April 11, 2009 10:05:58 AM	PAGE 7 OF 67	

CK505M

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

FSA	FSB	FSC	HOST CLK
BSEL0	BSEL1	BSEL2	
0	0	0	266 MHz
0	0	1	333 MHz
0	1	0	200 MHz
0	1	1	400 MHz
1	0	0	133 MHz
1	0	1	100 MHz
1	1	0	166 MHz
1	1	1	RSVD



Place 14.31818MHz within 500mils of CK-505

This part is 64pin QFN package.

IDT : 1205-003159
SL : 1205-003533

CLK REQ	DEVICE	SRC PORT
CLK REQ A	SATA	SRC2
CLK REQ B	GMCH	SRC4
CLK REQ E	MINI CARD	SRC6
CLK REQ F	EXP3_CLKREQ#	SRC8

SEL_LCDCLK*	Pin 20/21	Pin 24/25
LOW	DOT_96/DOT_96#	PEG_CLK/PEG_CLK#
HIGH	SRC_0/SRC_0#	27M & 27M_SS

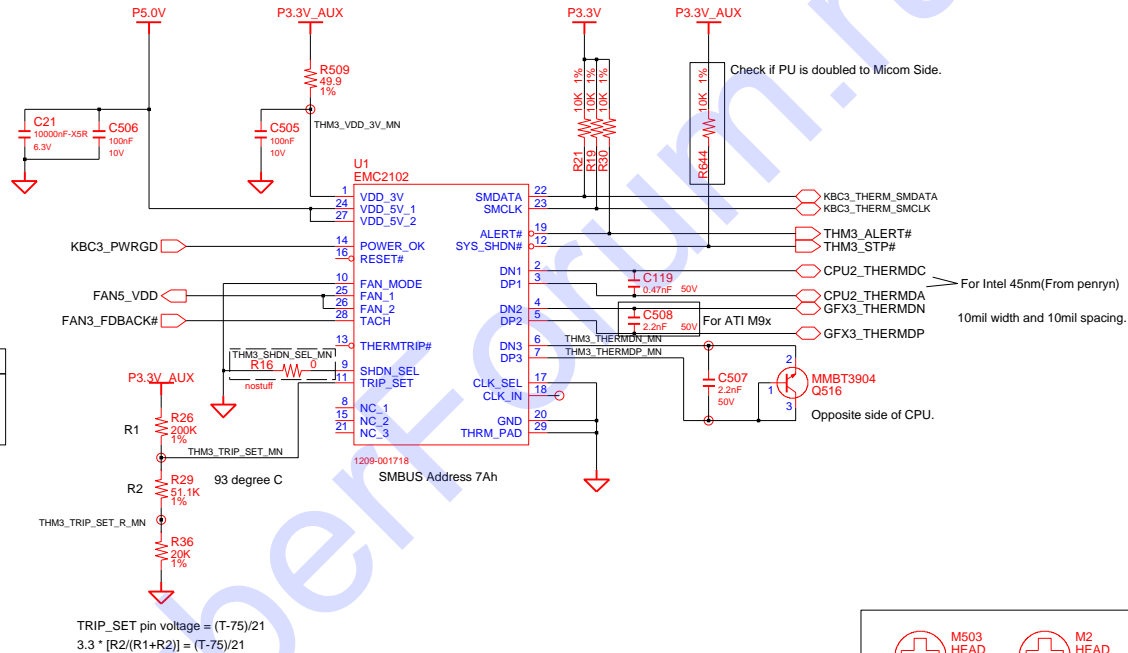
DRAW	MS Yang	DATE	12/05/2008	TITLE	SAMSUNG ELECTRONICS	
CHECK	MK Kim <td>DEV. STEP</td> <td>MP <td colspan="2">BONN-E MAIN_CLOCK_CIRCUIT</td> <td>PART NO. BA41-01060A</td> </td>	DEV. STEP	MP <td colspan="2">BONN-E MAIN_CLOCK_CIRCUIT</td> <td>PART NO. BA41-01060A</td>	BONN-E MAIN_CLOCK_CIRCUIT		PART NO. BA41-01060A
APPROVAL	BL Lee <td>REV</td> <td>REV 1.0</td> <td colspan="2">CK_Clock_505M</td> <td></td>	REV	REV 1.0	CK_Clock_505M		
MODULE CODE	undefined	LAST EDIT		April 11, 2009 10:05:58 AM	PAGE 8	OF 67

SAMSUNG PROPRIETARY

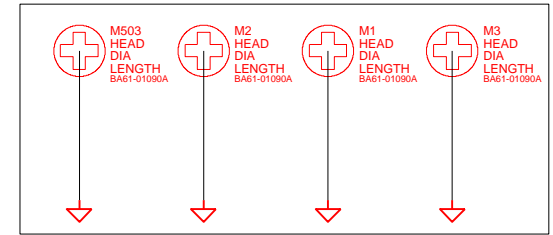
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

THERMAL SENSOR & FAN CONTROL

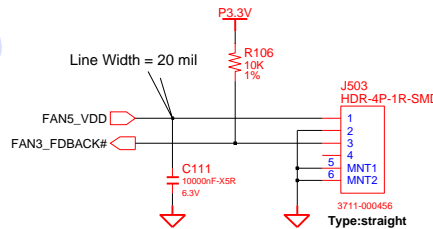
SHDN_SEL MODE	
0	CH1 (INTEL MODE)
HIGH Z	CH3 (DIODE MODE)
1	N/A (SHDN# NOT USED)



TRIP_SET pin voltage = $(T-75)/21$
 $3.3 * [R2/(R1+R2)] = (T-75)/21$



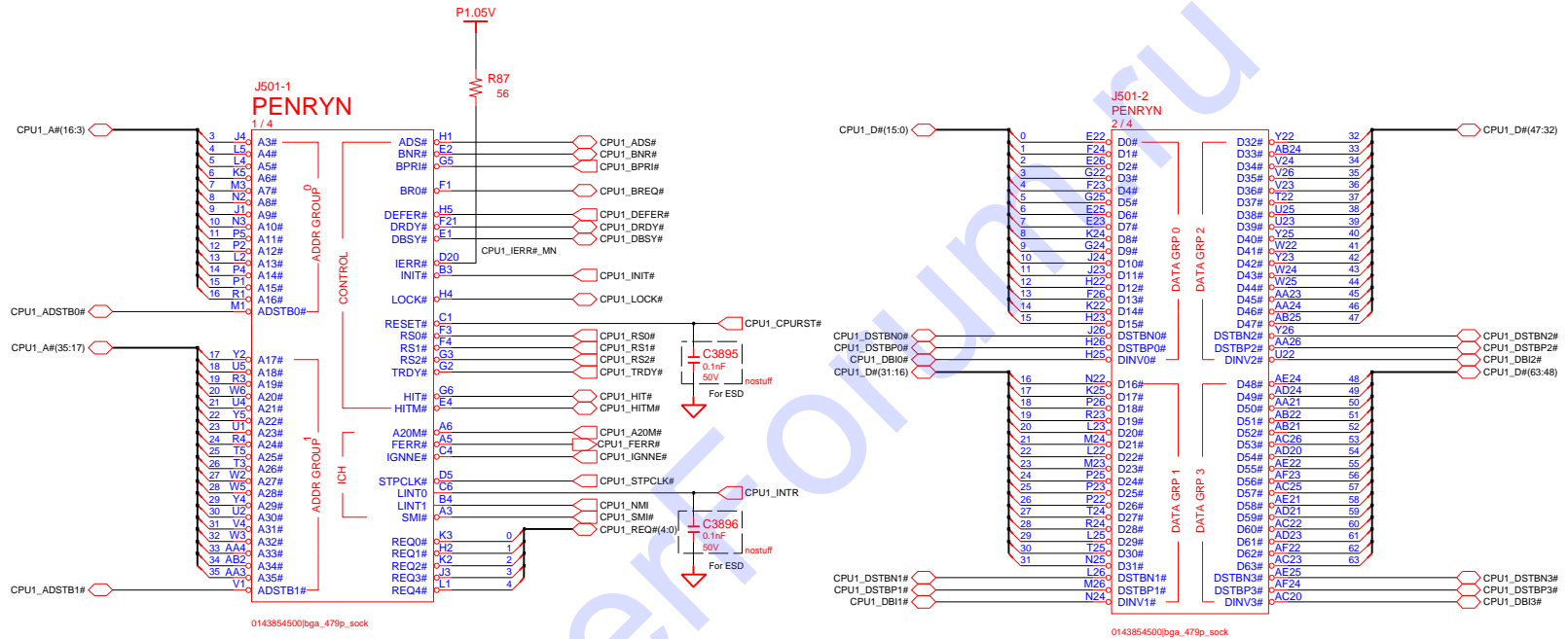
To support heatsink



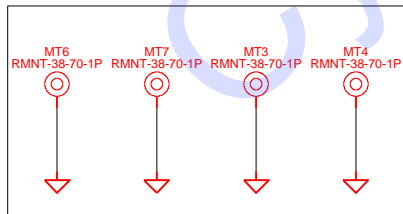
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	THERMAL SENSOR		
APPROVAL	BL Lee	REV	REV 1.0	THERMAL SENSOR EMC2102		PART NO. BA41-01060A
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM		PAGE 9 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



CPU Socket : 3704-001153

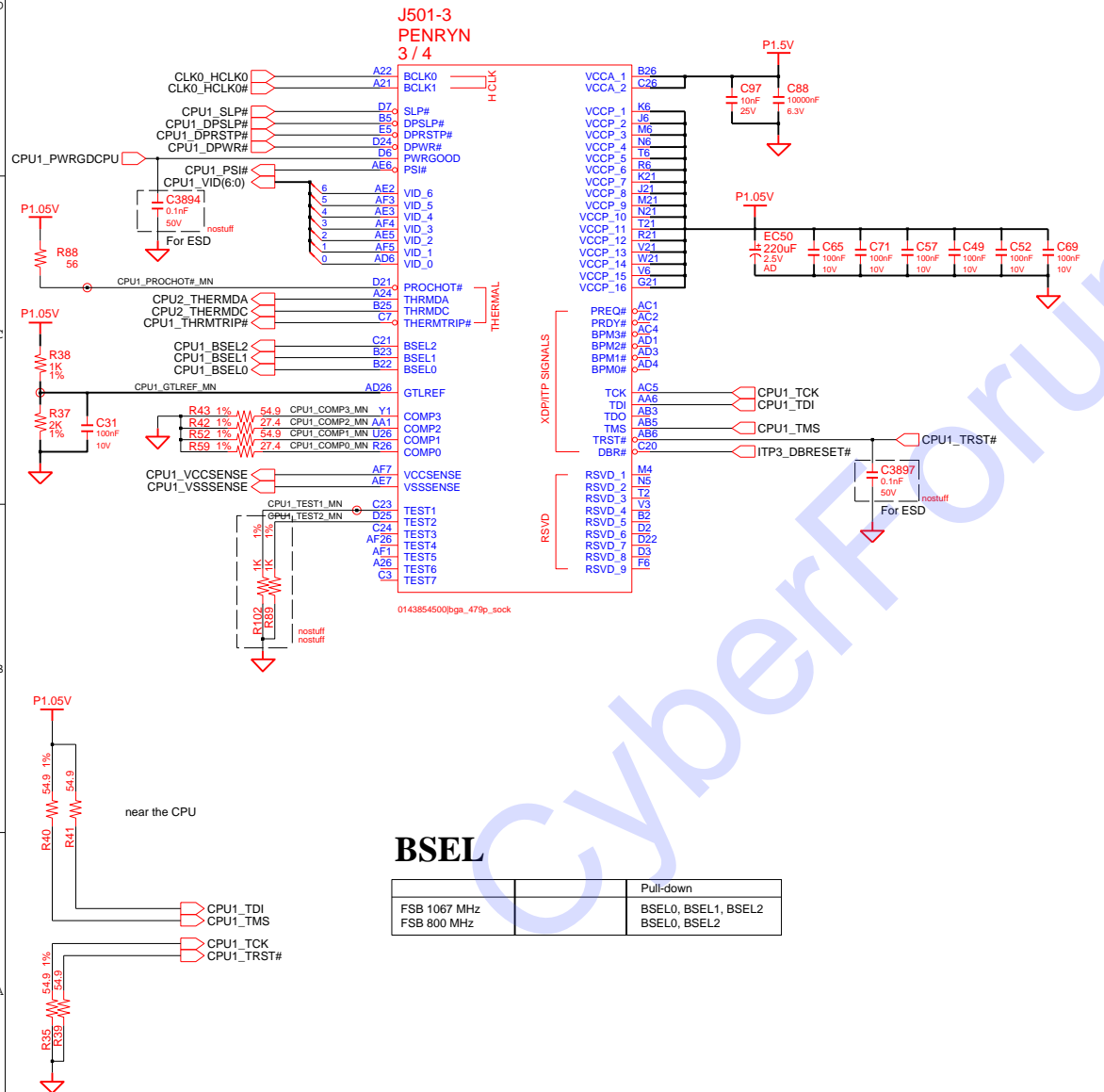


CPU mount

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E CPU	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP		PENRYN (1/3)	
APPROVAL	BL Lee	REV	REV 1.0			PART NO. BA41-01060A
MODULE CODE	undefined	LAST EDIT			April 11, 2009 10:05:58 AM	PAGE 10 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



CPU Core Voltage Table IMVP-6

Active Mode		Active/Deeper Sleep Dual Mode Region		Deeper Sleep/Extended Deeper Sleep Dual Mode Region	
VID(6:0)	Voltage	VID(6:0)	Voltage	VID(6:0)	Voltage
0 0 0 0 0 0 0	1.5000 V	0 1 0 1 0 0 0	1.0000 V	1 0 1 0 0 0 1	0.4875 V
0 0 0 0 0 0 1	1.4875 V	0 1 0 1 0 0 1	0.9875 V	1 0 1 0 0 1 0	0.4750 V
0 0 0 0 0 1 0	1.4750 V	0 1 0 1 0 1 0	0.9750 V	1 0 1 0 0 1 1	0.4625 V
0 0 0 0 0 1 1	1.4625 V	0 1 0 1 1 0 0	0.9625 V	1 0 1 0 1 0 0	0.4500 V
0 0 0 0 1 0 0	1.4500 V	0 1 0 1 1 0 1	0.9500 V	1 0 1 0 1 0 1	0.4375 V
0 0 0 0 1 0 1	1.4375 V	0 1 0 1 1 1 0	0.9375 V	1 0 1 0 1 1 0	0.4250 V
0 0 0 0 1 1 0	1.4250 V	0 1 0 1 1 1 1	0.9250 V	1 0 1 1 0 0 0	0.4125 V
0 0 0 0 1 1 1	1.4125 V	0 1 1 0 0 0 0	0.9125 V	1 0 1 1 0 0 1	0.4000 V
0 0 0 1 0 0 0	1.4000 V	0 1 1 0 0 0 1	0.9000 V	1 0 1 1 0 1 0	0.3875 V
0 0 0 1 0 0 1	1.3875 V	0 1 1 0 0 1 0	0.8875 V	1 0 1 1 0 1 1	0.3750 V
0 0 0 1 0 1 0	1.3750 V	0 1 1 0 1 0 0	0.8750 V	1 0 1 1 1 0 0	0.3625 V
0 0 0 1 0 1 1	1.3625 V	0 1 1 0 1 0 1	0.8625 V	1 0 1 1 1 0 1	0.3500 V
0 0 0 1 1 0 0	1.3500 V	0 1 1 0 1 1 0	0.8500 V	1 0 1 1 1 1 0	0.3375 V
0 0 0 1 1 0 1	1.3375 V	0 1 1 1 0 0 0	0.8375 V	1 0 1 1 1 1 1	0.3250 V
0 0 0 1 1 1 0	1.3250 V	0 1 1 1 0 0 1	0.8250 V	1 0 1 1 1 1 1	0.3125 V
0 0 0 1 1 1 1	1.3125 V	0 1 1 1 0 1 0	0.8125 V	1 1 0 0 0 0 0	0.3000 V
0 0 1 0 0 0 0	1.3000 V	0 1 1 1 0 1 1	0.8000 V	1 1 0 0 0 0 1	0.2875 V
0 0 1 0 0 0 1	1.2875 V	0 1 1 1 1 0 0	0.7875 V	1 1 0 0 0 1 0	0.2750 V
0 0 1 0 0 1 0	1.2750 V	0 1 1 1 1 0 1	0.7750 V	1 1 0 0 0 1 1	0.2625 V
0 0 1 0 0 1 1	1.2625 V	0 1 1 1 1 1 0	0.7625 V	1 1 0 0 1 0 0	0.2500 V
0 0 1 0 1 0 0	1.2500 V	0 1 1 1 1 1 1	0.7500 V	1 1 0 0 1 0 1	0.2375 V
0 0 1 0 1 0 1	1.2375 V	0 1 1 1 1 1 1	0.7375 V	1 1 0 0 1 1 0	0.2250 V
0 0 1 0 1 1 0	1.2250 V	0 1 1 1 1 1 1	0.7250 V	1 1 0 0 1 1 1	0.2125 V
0 0 1 0 1 1 1	1.2125 V	0 1 1 1 1 1 1	0.7125 V	1 1 0 1 0 0 0	0.2000 V
0 0 1 1 0 0 0	1.2000 V	1 0 0 0 0 0 0	0.7000 V	1 1 0 1 0 0 1	0.1875 V
0 0 1 1 0 0 1	1.1875 V	1 0 0 0 0 0 1	0.6875 V	1 1 0 1 0 1 0	0.1750 V
0 0 1 1 0 1 0	1.1750 V	1 0 0 0 0 1 0	0.6750 V	1 1 0 1 0 1 1	0.1625 V
0 0 1 1 0 1 1	1.1625 V	1 0 0 0 1 0 0	0.6625 V	1 1 0 1 1 0 0	0.1500 V
0 0 1 1 1 0 0	1.1500 V	1 0 0 0 1 0 1	0.6500 V	1 1 0 1 1 0 1	0.1375 V
0 0 1 1 1 0 1	1.1375 V	1 0 0 0 1 1 0	0.6375 V	1 1 0 1 1 1 0	0.1250 V
0 0 1 1 1 1 0	1.1250 V	1 0 0 0 1 1 1	0.6250 V	1 1 1 0 0 0 0	0.1125 V
0 0 1 1 1 1 1	1.1125 V	1 0 0 0 1 1 1	0.6125 V	1 1 1 0 0 0 1	0.1000 V
0 1 0 0 0 0 0	1.1000 V	1 0 0 1 0 0 0	0.6000 V	1 1 1 0 0 0 1	0.0875 V
0 1 0 0 0 0 1	1.0875 V	1 0 0 1 0 0 1	0.5875 V	1 1 1 0 0 1 0	0.0750 V
0 1 0 0 0 1 0	1.0750 V	1 0 0 1 0 1 0	0.5750 V	1 1 1 0 0 1 1	0.0625 V
0 1 0 0 0 1 1	1.0625 V	1 0 0 1 1 0 0	0.5625 V	1 1 1 0 1 0 0	0.0500 V
0 1 0 0 1 0 0	1.0500 V	1 0 0 1 1 0 1	0.5500 V	1 1 1 0 1 0 1	0.0375 V
0 1 0 0 1 0 1	1.0375 V	1 0 0 1 1 1 0	0.5375 V	1 1 1 0 1 1 0	0.0250 V
0 1 0 0 1 1 0	1.0250 V	1 0 0 1 1 1 1	0.5250 V	1 1 1 0 1 1 1	0.0125 V
0 1 0 0 1 1 1	1.0125 V	1 0 0 1 1 1 1	0.5125 V	1 1 1 1 0 0 0	0.0000 V
		1 0 1 0 0 0 0	0.5000 V	1 1 1 1 0 0 1	0.0000 V
				1 1 1 1 1 0 0	0.0000 V
				1 1 1 1 1 0 1	0.0000 V
				1 1 1 1 1 1 0	0.0000 V
				1 1 1 1 1 1 1	0.0000 V
				1 1 1 1 1 1 1	0.0000 V

Active: DPRSLPVR 0, DPRSTP* 1, PS12* 0 or 1
 Deeper Sleep: DPRSLPVR 1, DPRSTP* 0, PS12* 0 or 1

*Yonah Processor (2.33 GHz / 800 MHz : TBD)

GTLREF : Keep the Voltage divider within 0.5" of the first GTLREF0 pin with Zo=55ohm trace. Minimize coupling of any switching signals to this net.

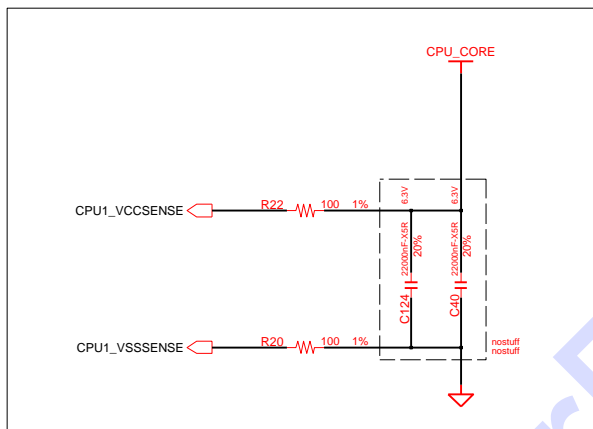
COMP0,2(COMP1,3) should be connected with Zo=27.4ohm(55ohm) trace shorter than 1/2" to their respective Banias socket pins.

GND test points within 100mil of the VCC/VSSense at the end of the line. Route the VCC/VSSense as a Zo=55ohm traces with equal length. Observe 3:1 spacing b/w VCC/VSSense lines and 25mil away (preferred 50mil) from any other signal. And GND via 100mil away from each of the VCC/VSS test point vias.

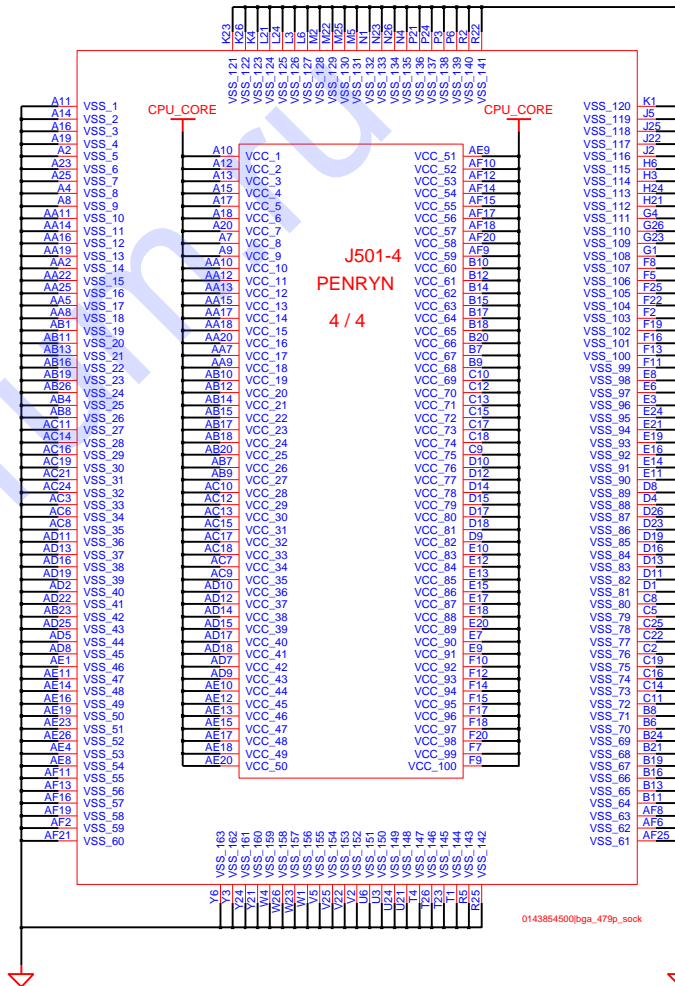
DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E CPU	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP		PENRYN (2/3)	
APPROVAL	BL Lee	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT		April 11, 2009 10:05:58 AM	PAGE 11 OF 67	

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



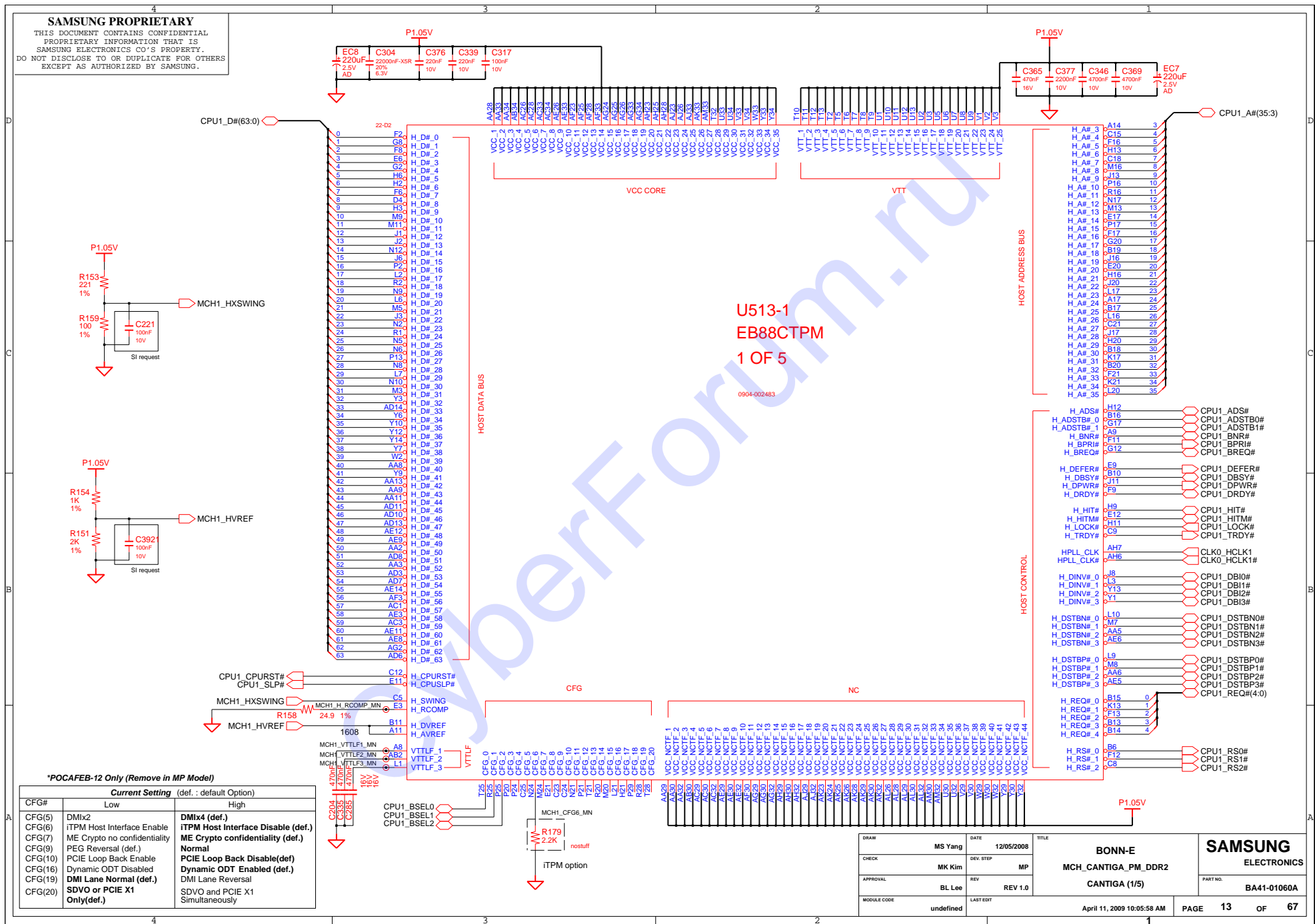
Prodlizer used



DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	CPU	PENRYN (3/3)	
APPROVAL	BL Lee	REV	REV 1.0			PART NO. BA41-01060A
MODULE CODE	undefined	LAST EDIT			April 11, 2009 10:05:58 AM	PAGE 12 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



0904-02483

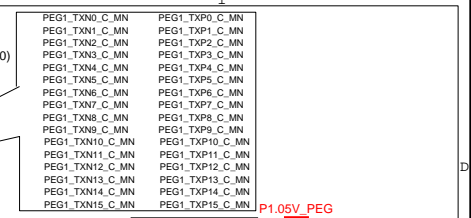
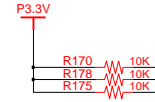
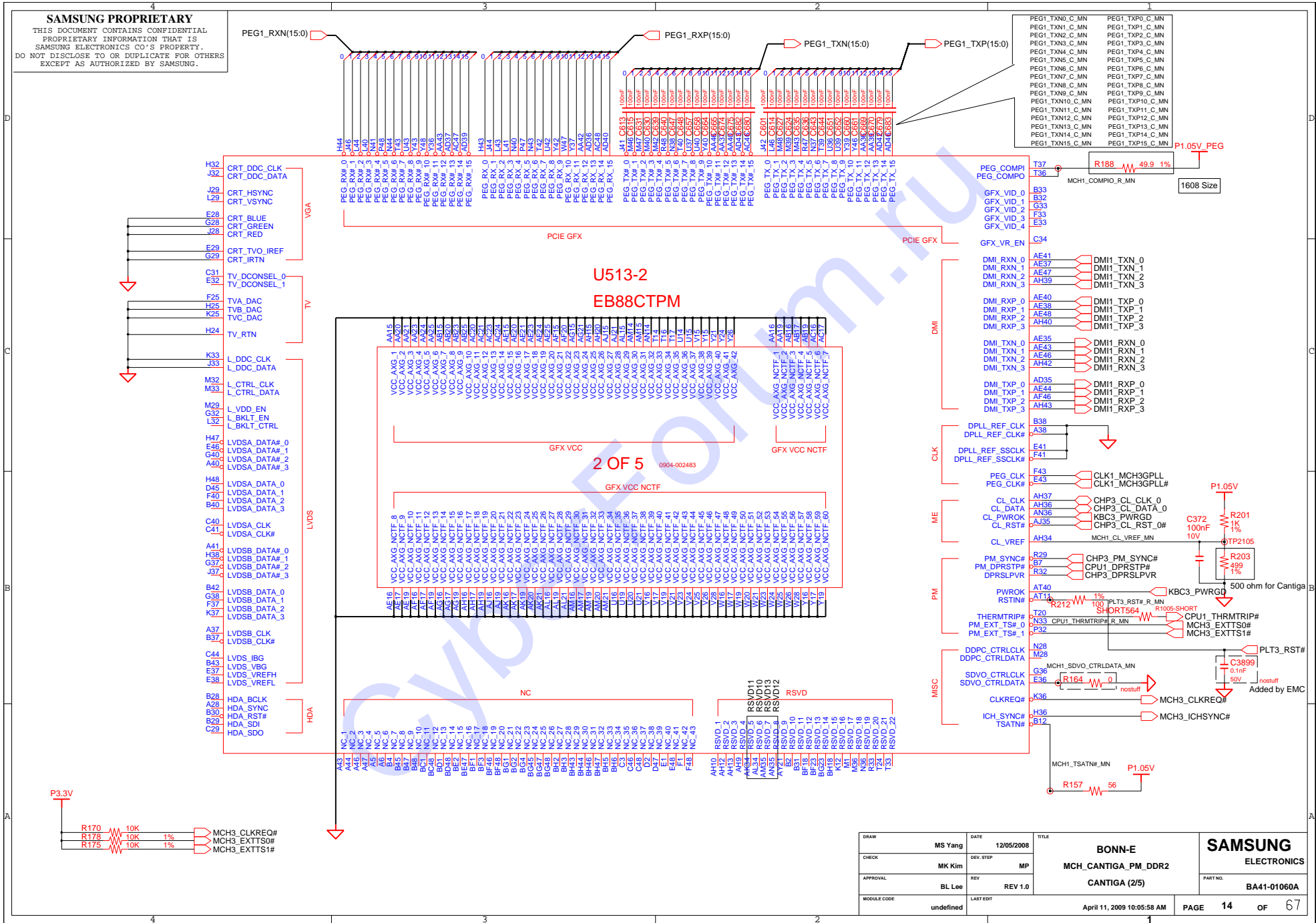
***POCAFEB-12 Only (Remove in MP Model)**

CFG#	Current Setting (def.: default Option)	Low	High
CFG(5)	DMIx2		DMIx4 (def.)
CFG(6)	ITPM Host Interface Enable		ITPM Host Interface Disable (def.)
CFG(7)	ME Crypto no confidentiality		ME Crypto confidentiality (def.)
CFG(9)	PEG Reversal (def.)		Normal
CFG(10)	PCIe Loop Back Enable		PCIe Loop Back Disable (def.)
CFG(16)	Dynamic ODT Disabled		Dynamic ODT Enabled (def.)
CFG(19)	DMI Lane Normal (def.)		DMI Lane Reversal
CFG(20)	SDVO or PCIe X1 Only (def.)		SDVO and PCIe X1 Simultaneously

DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK		REV. STEP	MP	MCH_CANTIGA_PM_DDR2		
APPROVAL	MK Kim	REV	REV 1.0	CANTIGA (1/5)	PART NO.	BA41-01060A
MODULE CODE	undefined	LAST EDIT		April 11, 2009 10:05:58 AM	PAGE	13 OF 67

SAMSUNG PROPRIETARY

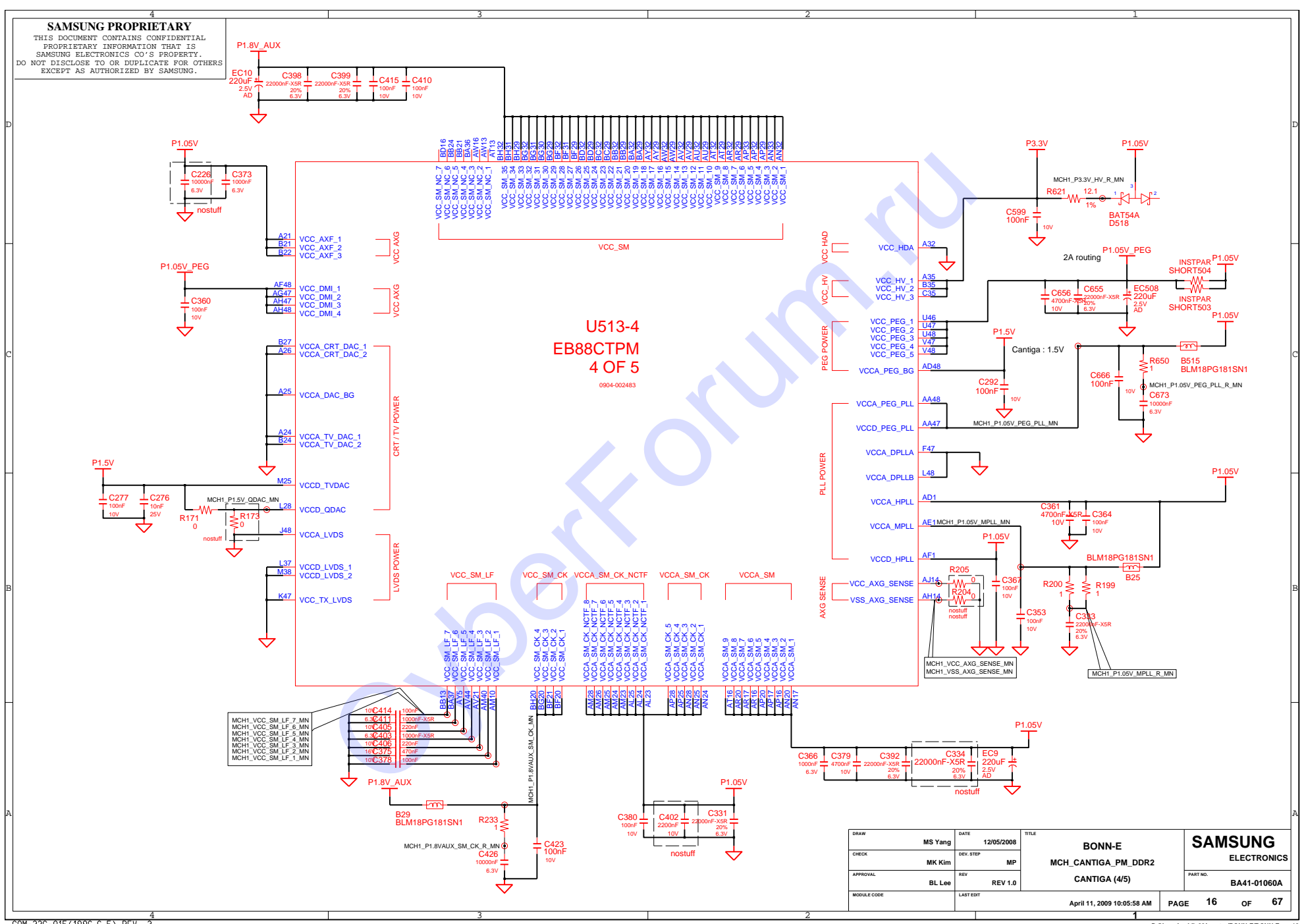
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	
CHECK	MK Kim	REV. STEP	MP	MCH_CANTIGA_PM_DDR2		SAMSUNG ELECTRONICS
APPROVAL	BL Lee	REV	REV 1.0	CANTIGA (2/5)		PART NO. BA41-01060A
MODULE CODE	undefined	LAST EDIT		April 11, 2009 10:05:58 AM		PAGE 14 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

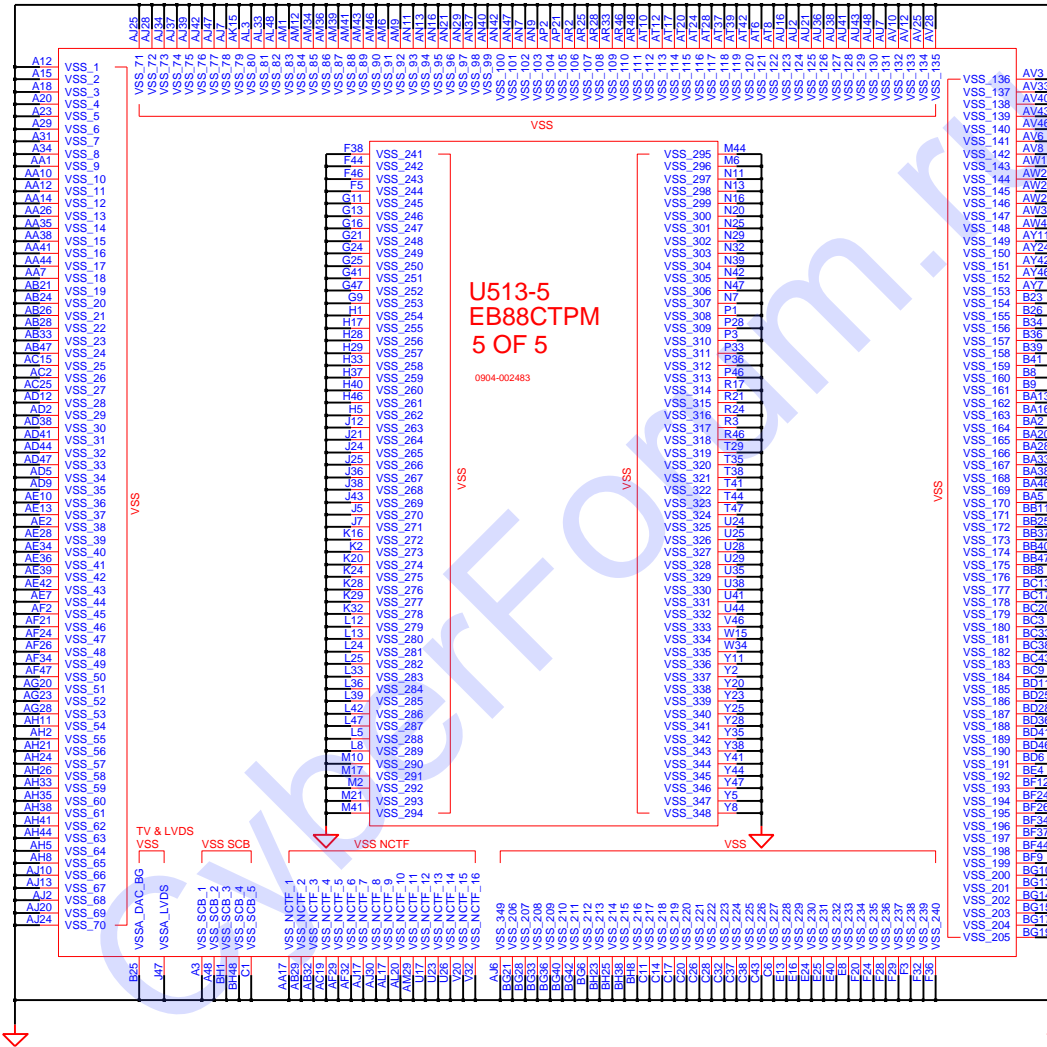


U513-4
EB88CTPM
4 OF 5
0904-002483

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG
CHECK	MK Kim	REV. STEP	MP		MCH_CANTIGA_PM_DDR2	ELECTRONICS
APPROVAL	BL Lee	REV	REV 1.0		CANTIGA (4/5)	PART NO. BA41-01060A
MODULE CODE		LAST EDIT				
				April 11, 2009 10:05:58 AM	PAGE	16 OF 67

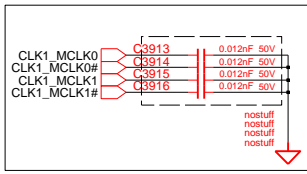
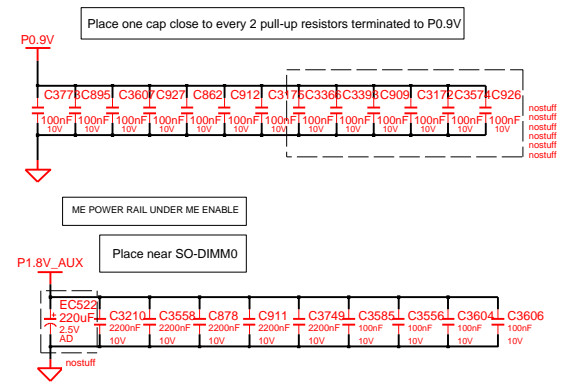
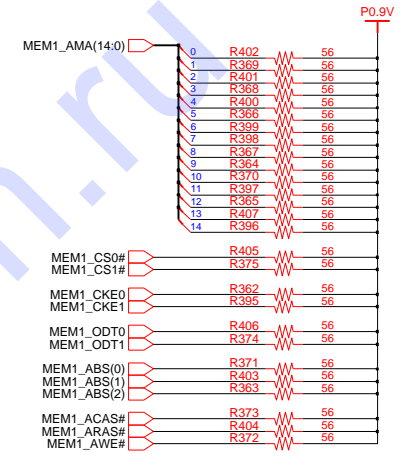
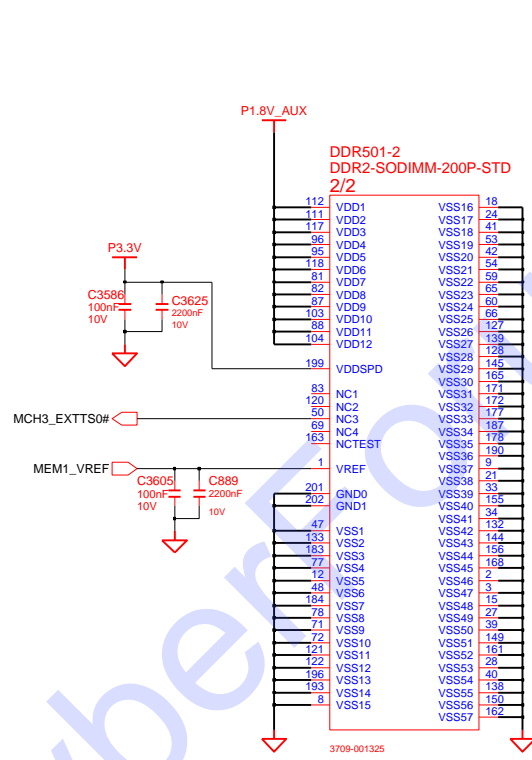
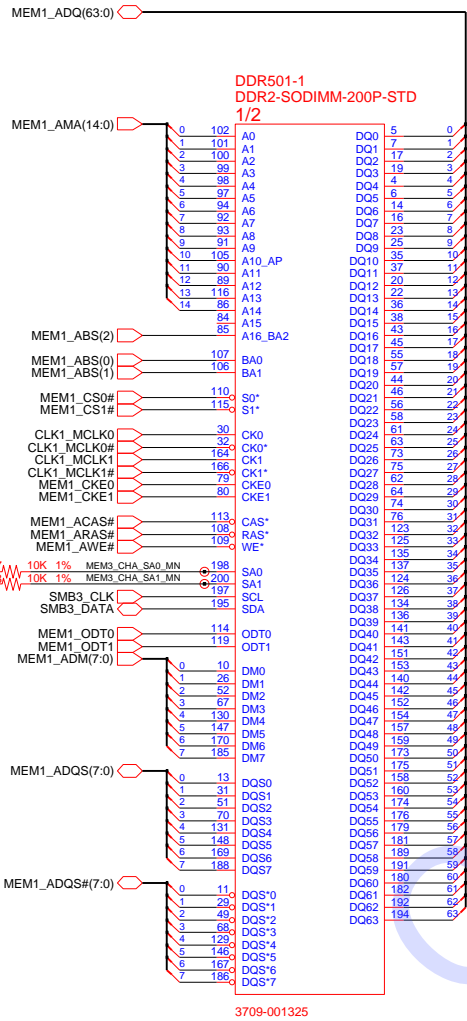
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E		SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	MCH_CANTIGA_PM_DDR2		PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	CANTIGA (5/5)		BA41-01060A	
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM		PAGE	17 OF 67

DDR SO-DIMM #0

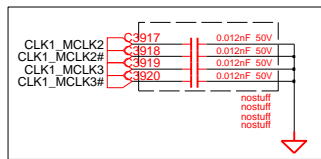
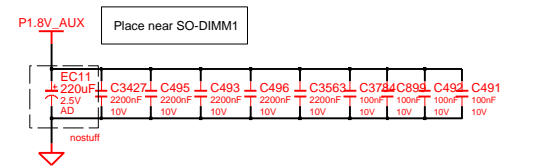
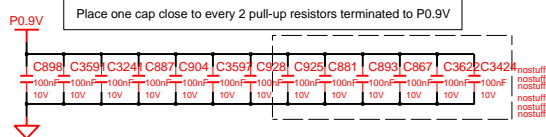
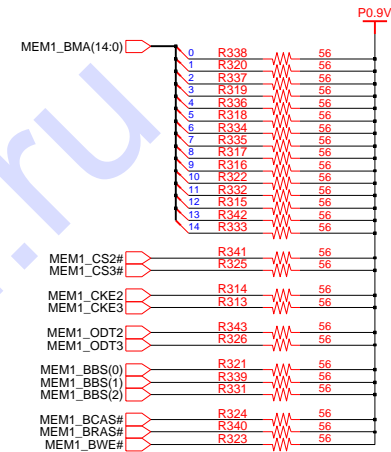
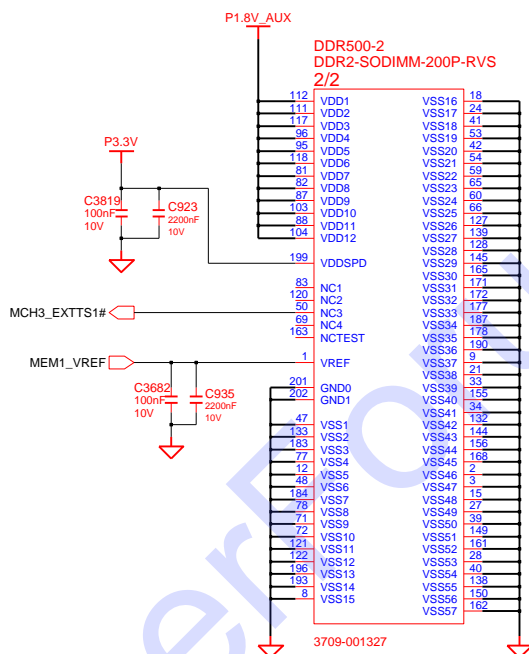
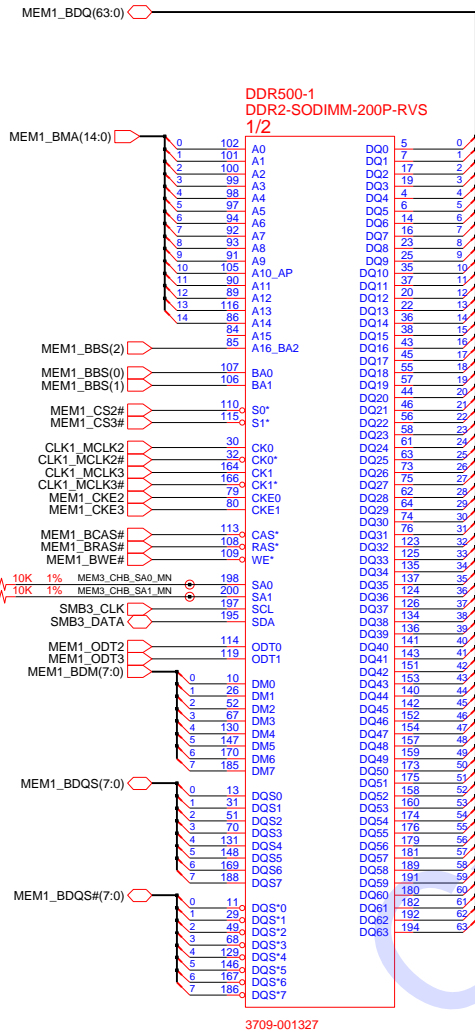


DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E SODIMM_DDR2		SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	SODIMM_DDR2 #1		PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	LAST EDIT		BA41-01060A	
MODULE CODE	April 11, 2009 10:05:58 AM		PAGE	18	OF	67	

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

DDR SO-DIMM #1

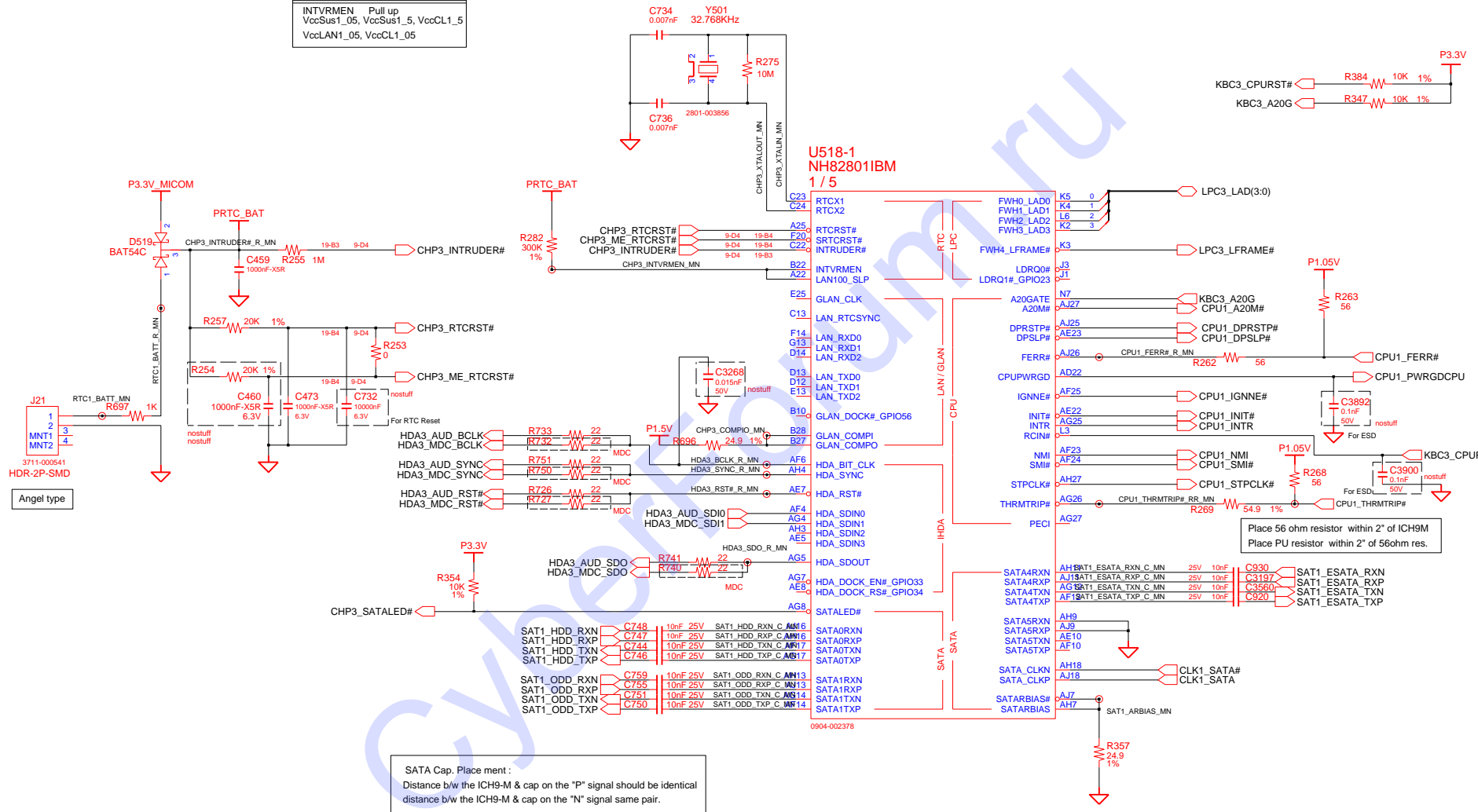


DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E SODIMM_DDR2		SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	SODIMM_DDR2 #2		PART NO.	
APPROVAL	BL Lee	REV	REV 1.0			BA41-01060A	
MODULE CODE		LAST EDIT					
April 11, 2009 10:05:58 AM							PAGE 19 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

Internal VR Strap	
INTVRMEN	Pull up
VccSus1_05, VccSus1_5, VccCL1_5	
VccLAN1_05, VccCL1_05	



SATA Cap. Place ment :
Distance b/w the ICH9-M & cap on the "P" signal should be identical
distance b/w the ICH9-M & cap on the "N" signal same pair.

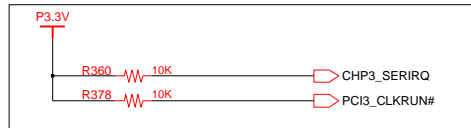
Place 56 ohm resistor within 2" of ICH9M
Place PU resistor within 2" of 56ohm res.

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG
CHECK	MK Kim	REV. STEP	MP		ICH_9M_B	ELECTRONICS
APPROVAL	BL Lee	REV	REV 1.0		ICH9-M (1/5)	PART NO. BA41-01060A
MODULE CODE		LAST EDIT				
					April 11, 2009 10:05:58 AM	PAGE 20 OF 67

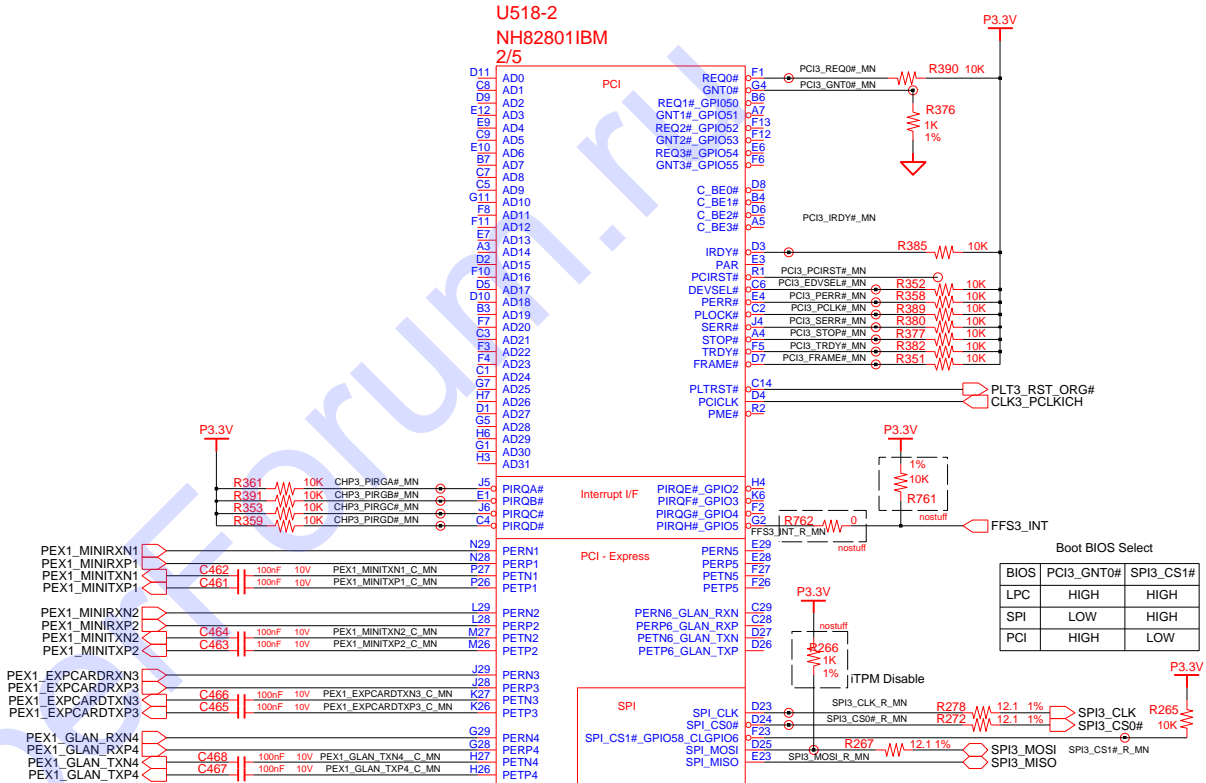
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

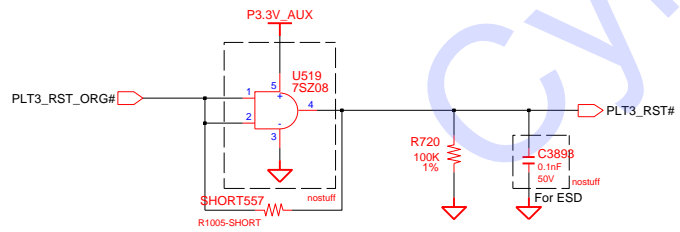
**U518-2
NH82801IBM
2/5**



LPC option ; These are used with LPC



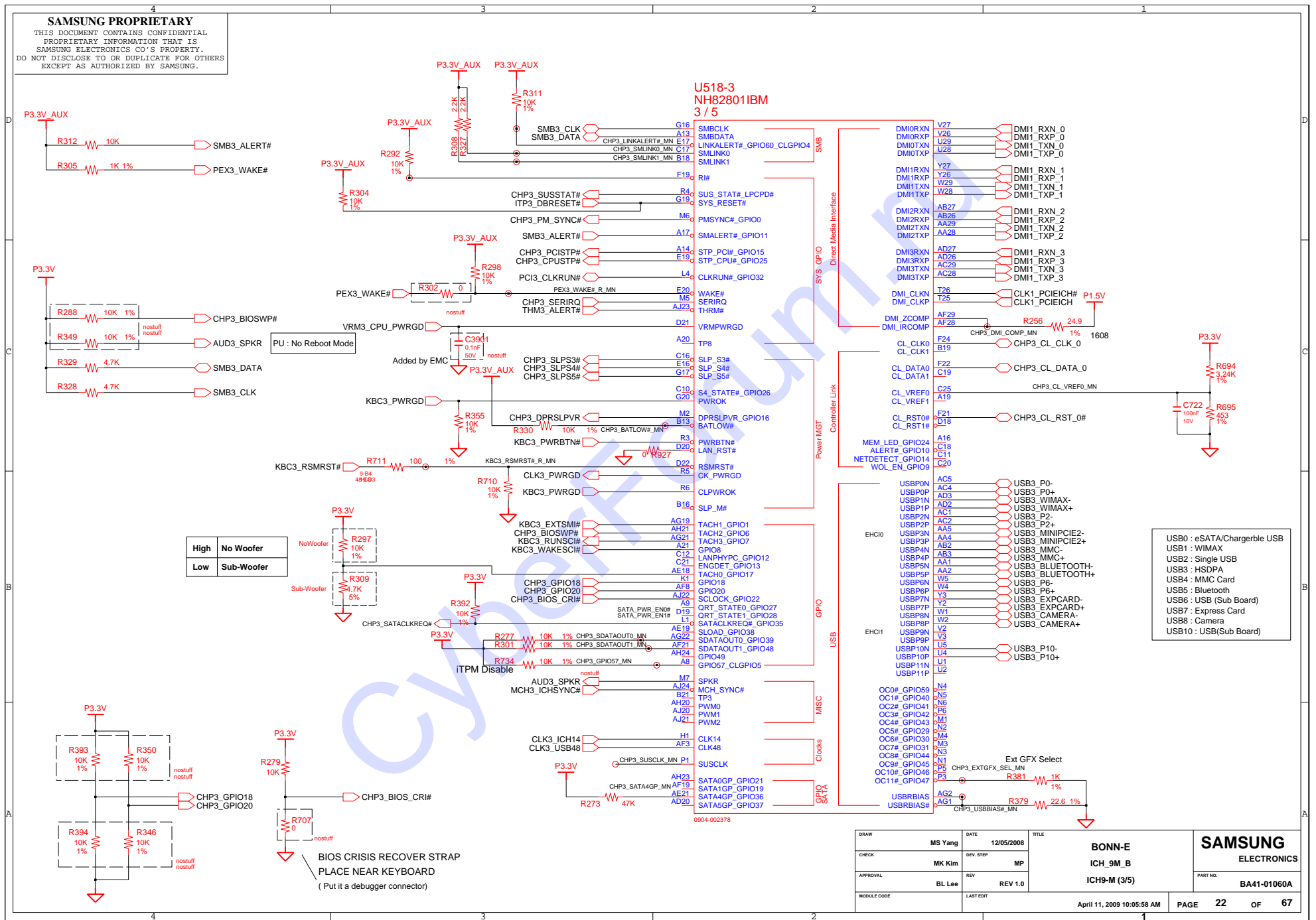
AC caps : PCIe need to be within 250mils of the driver
Resistor for Test : Place Stuffed Option to minimize stubs



DRAWN	MS Yang	DATE	12/05/2008	TITLE	SAMSUNG ELECTRONICS	
CHECK	MK Kim	REV. STEP	MP	BONN-E	PART NO. BA41-01060A	
APPROVAL	BL Lee	REV	REV 1.0	ICH_9M_B	REV. 1.0	
MODULE CODE	undefined	LAST EDIT		ICH9-M (Z/5)	PAGE 21 OF 67	
				April 11, 2009 10:05:58 AM		

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



**U518-3
NH828011BM
3 / 5**

USB0 : eSATA/Chargerble USB
 USB3 : Po+
 USB3 : WIMAX-
 USB3 : WIMAX+
 USB2 : Single USB
 USB3 : HSDPA
 USB4 : MMC Card
 USB5 : Bluetooth
 USB6 : USB (Sub Board)
 USB7 : Express Card
 USB8 : Camera
 USB10 : USB(Sub Board)

High	No Woofer
Low	Sub-Woofer

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	ICH_9M_B	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	ICH9-M (3/5)	BA41-01060A	
MODULE CODE		LAST EDIT				
				April 11, 2009 10:05:58 AM	PAGE	22 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL
 PROPRIETARY INFORMATION THAT IS
 SAMSUNG ELECTRONICS CO.'S PROPERTY.
 DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
 EXCEPT AS AUTHORIZED BY SAMSUNG.

AA26	VSS_001	VSS_106	L49	VSS_133	N14
AA27	VSS_002	VSS_107	L48	VSS_134	N15
AA	VSS_003	VSS_108	L47	VSS_135	N16
AA6	VSS_004	VSS_109	L46	VSS_136	N17
AB1	VSS_005	VSS_110	L45	VSS_137	N18
AA23	VSS_006	VSS_111	L44	VSS_138	N26
AB28	VSS_007	VSS_112	L43	VSS_139	N27
AB29	VSS_008	VSS_113	L42	VSS_140	P12
AB4	VSS_009	VSS_114	L41	VSS_141	P13
AB5	VSS_010	VSS_115	L40	VSS_142	P14
AC17	VSS_011	VSS_116	L39	VSS_143	P15
AC26	VSS_012	VSS_117	L38	VSS_144	P16
AC27	VSS_013	VSS_118	L37	VSS_145	P17
AC3	VSS_014	VSS_119	L36	VSS_146	P2
AD1	VSS_015	VSS_120	L35	VSS_147	P23
AD10	VSS_016	VSS_121	L34	VSS_148	P28
AD12	VSS_017	VSS_122	L33	VSS_149	P29
AD13	VSS_018	VSS_123	L32	VSS_150	P4
AD14	VSS_019	VSS_124	L31	VSS_151	P7
AD17	VSS_020	VSS_125	L30	VSS_152	R11
AD18	VSS_021	VSS_126	L29	VSS_153	R12
AD21	VSS_022	VSS_127	L28	VSS_154	R13
AD28	VSS_023	VSS_128	L27	VSS_155	R14
AD29	VSS_024	VSS_129	L26	VSS_156	R15
AD4	VSS_025	VSS_130	L25	VSS_157	R16
AD5	VSS_026	VSS_131	L24	VSS_158	R17
AD6	VSS_027	VSS_132	L23	VSS_159	R28
AD7	VSS_028	VSS_133	L22	VSS_160	T12
AD9	VSS_029	VSS_134	L21	VSS_161	T13
AE12	VSS_030	VSS_135	L20	VSS_162	T14
AE13	VSS_031	VSS_136	L19	VSS_163	T15
AE14	VSS_032	VSS_137	L18	VSS_164	T16
AE16	VSS_033	VSS_138	L17	VSS_165	T17
AE17	VSS_034	VSS_139	L16	VSS_166	T23
AE2	VSS_035	VSS_140	L15	VSS_167	T26
AE3	VSS_036	VSS_141	L14	VSS_168	U12
AE21	VSS_037	VSS_142	L13	VSS_169	U13
AE3	VSS_038	VSS_143	L12	VSS_170	U14
AE4	VSS_039	VSS_144	L11	VSS_171	U15
AE6	VSS_040	VSS_145	L10	VSS_172	U16
AE9	VSS_041	VSS_146	L9	VSS_173	U17
AF13	VSS_042	VSS_147	L8	VSS_174	AD23
AF16	VSS_043	VSS_148	L7	VSS_175	U26
AF18	VSS_044	VSS_149	L6	VSS_176	U27
AF22	VSS_045	VSS_150	L5	VSS_177	U3
AH26	VSS_046	VSS_151	L4	VSS_178	V1
AF26	VSS_047	VSS_152	L3	VSS_179	V13
AF27	VSS_048	VSS_153	L2	VSS_180	V15
AF5	VSS_049	VSS_154	L1	VSS_181	V23
AF7	VSS_050	VSS_155	L0	VSS_182	V28
AF9	VSS_051	VSS_156	L0	VSS_183	V29
AG13	VSS_052	VSS_157	L0	VSS_184	V4
AG16	VSS_053	VSS_158	L0	VSS_185	V5
AG18	VSS_054	VSS_159	L0	VSS_186	W26
AG20	VSS_055	VSS_160	L0	VSS_187	W27
AG21	VSS_056	VSS_161	L0	VSS_188	W3
AG3	VSS_057	VSS_162	L0	VSS_189	Y1
AG6	VSS_058	VSS_163	L0	VSS_190	Y28
AG9	VSS_059	VSS_164	L0	VSS_191	Y28
AH12	VSS_060	VSS_165	L0	VSS_192	Y29
AH14	VSS_061	VSS_166	L0	VSS_193	Y4
AH17	VSS_062	VSS_167	L0	VSS_194	Y5
AH19	VSS_063	VSS_168	L0	VSS_195	AG28
AH2	VSS_064	VSS_169	L0	VSS_196	AH6
AH22	VSS_065	VSS_170	L0	VSS_197	AF2
AH26	VSS_066	VSS_171	L0	VSS_198	B25
AH28	VSS_067	VSS_172	L0	VSS_199	
AH5	VSS_068	VSS_173	L0	VSS_NCTF_01	A1
AH8	VSS_069	VSS_174	L0	VSS_NCTF_02	A2
AJ12	VSS_070	VSS_175	L0	VSS_NCTF_03	A28
AJ14	VSS_071	VSS_176	L0	VSS_NCTF_04	A29
AJ17	VSS_072	VSS_177	L0	VSS_NCTF_05	AH1
AJ8	VSS_073	VSS_178	L0	VSS_NCTF_06	AH20
B11	VSS_074	VSS_179	L0	VSS_NCTF_07	AJ1
B14	VSS_075	VSS_180	L0	VSS_NCTF_08	AJ2
B17	VSS_076	VSS_181	L0	VSS_NCTF_09	AJ28
B2	VSS_077	VSS_182	L0	VSS_NCTF_10	AJ29
B20	VSS_078	VSS_183	L0	VSS_NCTF_11	B1
		VSS_184	L0	VSS_NCTF_12	B29
B23	VSS_079	VSS_185	L0		
B5	VSS_080	VSS_186	L0		
C26	VSS_081	VSS_187	L0		
C27	VSS_082	VSS_188	L0		
E11	VSS_083	VSS_189	L0		
E13	VSS_084	VSS_190	L0		
E18	VSS_085	VSS_191	L0		
E2	VSS_086	VSS_192	L0		
E21	VSS_087	VSS_193	L0		
E24	VSS_088	VSS_194	L0		
E27	VSS_089	VSS_195	L0		
E8	VSS_090	VSS_196	L0		
F16	VSS_091	VSS_197	L0		
F28	VSS_092	VSS_198	L0		
G12	VSS_093	VSS_199	L0		
G14	VSS_094	VSS_200	L0		
G18	VSS_095	VSS_201	L0		
G21	VSS_096	VSS_202	L0		
G24	VSS_097	VSS_203	L0		
G26	VSS_098	VSS_204	L0		
G27	VSS_099	VSS_205	L0		
G8	VSS_100	VSS_206	L0		
H8	VSS_101	VSS_207	L0		
I23	VSS_102	VSS_208	L0		
I28	VSS_103	VSS_209	L0		
I28	VSS_104	VSS_210	L0		
I28	VSS_105	VSS_211	L0		

GND

U518-5
 NH82801BM
 5/5

0904-002378



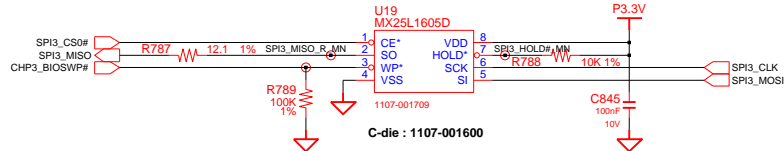
DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	ICH_9M_B	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	ICH9-M (5/5)	BA41-01060A	
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM	PAGE 24 OF 67	

SAMSUNG PROPRIETARY

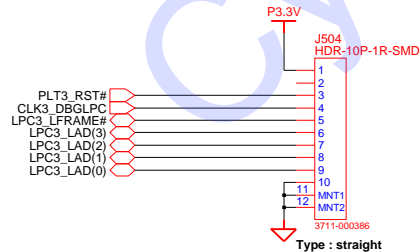
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

SPI_BIOS_ROM

16MBit



80H DECODER CONNECTOR



02	VERIFY REAL MODE	66	CONFIGURE ADVANCE CACHE REG.
03	DISABLE NMI	6A	DISPLAY EXTERNAL CACHE SIZE
04	GET CPU TYPE	6C	DISPLAY SHADOW MESSAGE
06	INIT. SYSTEM H/W	6E	DISPLAY NON-DISPOSABLE SEGMENT
08	INIT. CHIPSET REG.	70	DISPLAY ERROR MESSAGE
09	SET IN POST LAG	72	CHECK FOR CONFIGURATION ERROR
0A	INIT CPU REG	74	TEST REAL-TIME CLOCK
0B	CPU CACHE ON	76	CHECK FOR KEYBOARD ERROR
0C	INIT CACHE ON POST	7C	SETUP HARDWARE INTERRUPT VECTOR
0E	INIT I/O VALUE	7E	TEST COPROCESSOR IF PRESENT
0F	ENABLE THE L-BUS IDE	80	DISABLE ON-BOARD I/O PORT
10	INIT. POWER MANAGER	82	DETECT AND INSTALL EXT RS232C
11	LOAD ALTERNATE REG.	84	DETECT AND INSTALL EXT PARALLEL
13	PCI BUS MASTER RESET	86	RE-INIT. ON-BOARD I/O PORT
		88	INIT. BIOS DATA ROM
	WITH INITIAL POST VALUE	8A	INIT. EXTENDED BIOS DATA AREA
14	INIT. KEYBOARD CONTROLLER	8C	INIT. FDD CONTROLLER
16	CHECK CHECKSUM	9A	SHADOW OPTION ROMS
18	8254 TIMER INIT.	9C	SETUP POWER MANAGEMENT
1A	8237 DMA CONTROLLER INIT.	9E	ENABLE HW INTERRUPT
1C	RESET INTERRUPT CONTROLLER	A0	SET TIME OF DAY
20	TEST DRAM REFRESH	A4	INIT. TYPOMATIC RATE
22	TEST 8742 KEYBOARD CONTROLLER	A8	ERASE F2 PROMPT
24	SET ES SEGMENT REG. TO 4GB	AA	SCAN FOR F2 KEY STROKE
26	ENABLE A20	AC	ENTER SETUP
28	AUTO SIZING DRAM	AE	CLEAR IN POST FLAG
32	COMPUTE THE CPU SPEED	B0	CHECK FOR ERRORS
34	TESET CMOS RAM	B2	POST DONE-PREPARE TO BOOT O/S
38	SHADOW SYSTEM BIOS ROM	B4	ONE BEEP
3A	AUTO SIZING CACHE	B6	ENABLE PASSWORD (OPTION)
3C	CONFIGURE ADVANCED CHIPSET REG.	B7	ACPI INIT
3D	LOAD ALTER REG. WITH CMOS VALUE	BA	DMI INIT
42	INIT. INTERRUPT VECTOR	BE	CLEAR SCREEN
44	INIT. BIOS INTERRUPT	C0	TRY BOOT WITH INT19
46	CHECK ROM COPYRIGHT NOTICE	D0	INTERRUPT HANDLER ERROR
47	INIT. I20 SUPPORT IF INSTALLED	D2	UNKNOWN INTERRUPT ERROR
48	CHECK VIDEO CONFIGURE AGAINST CMOS	D4	PENDING INTERRUPT ERROR
49	INIT. PCI BUS AND DEVICE	D6	SHUTDOWN ERROR
4A	INIT. ALL VIDEO BIOS ROM	D8	SHUTDOWN ERROR
4C	SHADOW VIDEO BIOS ROM	DA	EXTENDED BLOCK MOVE
50	DISPLAY CPU TYPE AND SPEED	DC	SHUTDOWN 10
52	TEST KEYBOARD	89	ENABLE NMI
54	SET KEYCLICK IF ENABLED	90	INIT. HDD CONTROLLER
56	ENABLE KEYBOARD	91	INIT. LOCAL BUS HDD CONTROLLER
58	TEST FOR UNEXPECTED INTERRUPTS	92	JUMP TO USER PATCH 2
5A	DISPLAY *PRESS SETUP*	94	DISABLE A20 ADDRESS LINE
5C	TEST RAM BETWEEN 512K AND 640K	96	CLEAR HUGE ES SEGMENT REG.
60	TEST EXTENDED MEMORY	98	SEARCH FOR OPTION ROMS
62	TEST EXTENDED MEMORY ADDRESS LINE		
64	JUMP TO USER PATCH 1		

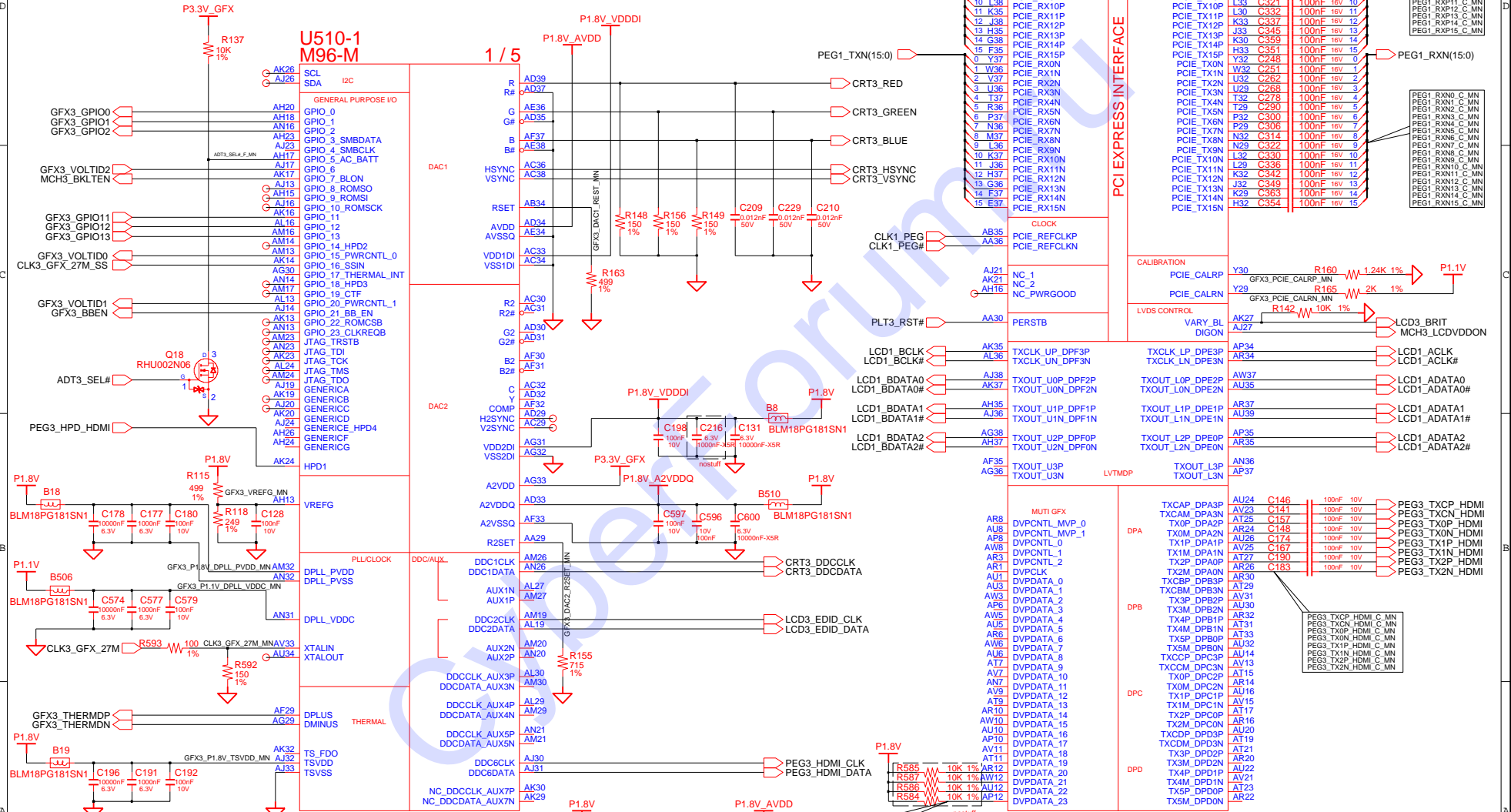
DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	SPI_BIOS_ROM		
APPROVAL	BL Lee	REV	REV 1.0	SPI_BIOS_ROM	PART NO.	BA41-01060A
MODULE CODE		LAST EDIT			April 11, 2009 10:05:58 AM	PAGE 25 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

GF3X_SCL_MN	GF3X_JTAG_TRSTB_MN
GF3X_SDA_MN	GF3X_JTAG_TDI_MN
GF3X_GPI08_MN	GF3X_JTAG_TCK_MN
GF3X_GPI09_MN	GF3X_JTAG_TMS_MN
GF3X_GPI010_MN	GF3X_JTAG_TDO_MN
GF3X_GPI014_MN	GF3X_GENERICB_MN
GF3X_GPI018_MN	GF3X_GENERICC_MN
GF3X_GPI019_MN	GF3X_XTALOUT_MN
GF3X_GPI022_MN	GF3X_H2SYNC_MN
GF3X_GPI023_MN	GF3X_V2SYNC_MN
	GF3X_NC_PWRGOOD_MN

M9X_TP NET NAME



M92-LP : 0904-002461

DRAW	MS Yang	DATE	12/05/2008	TITLE	
CHECK	MS Yang	DEV. STEP	MP		
APPROVAL	BL Lee	REV	REV 1.0		
MODULE CODE		LAST EDIT			

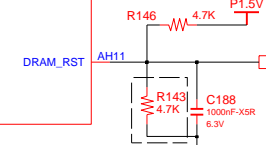
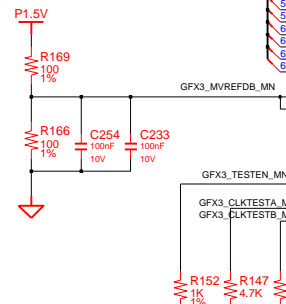
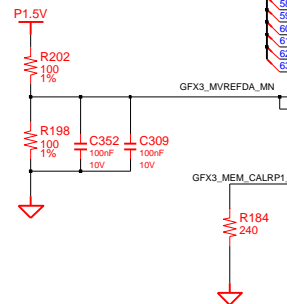
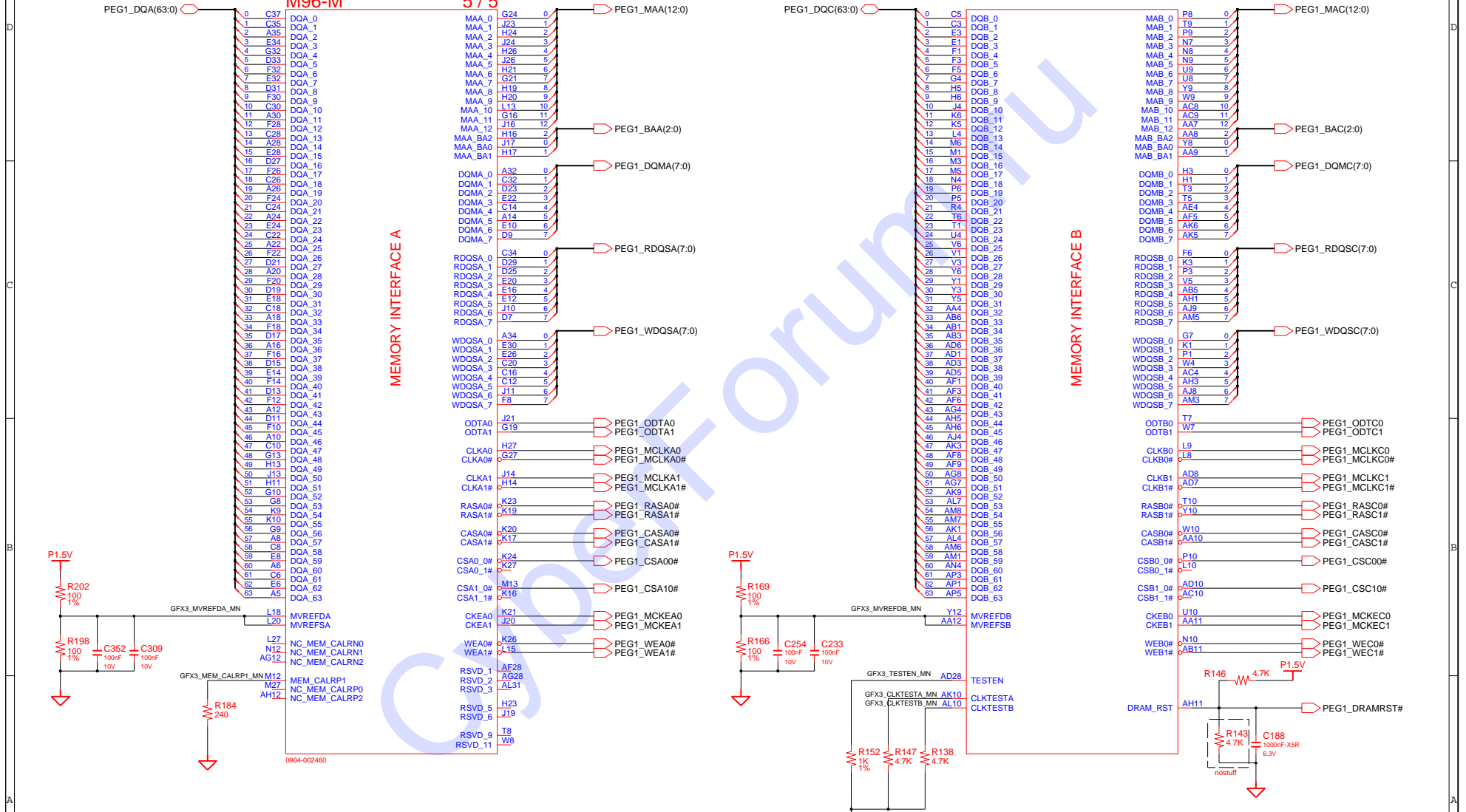
COMPANY	BONN-E	PARTNO.	BA41-01060A
EXT.	EXT_GFX		
REV.	M9X (1/5)		

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

U510-5 M96-M

5 / 5



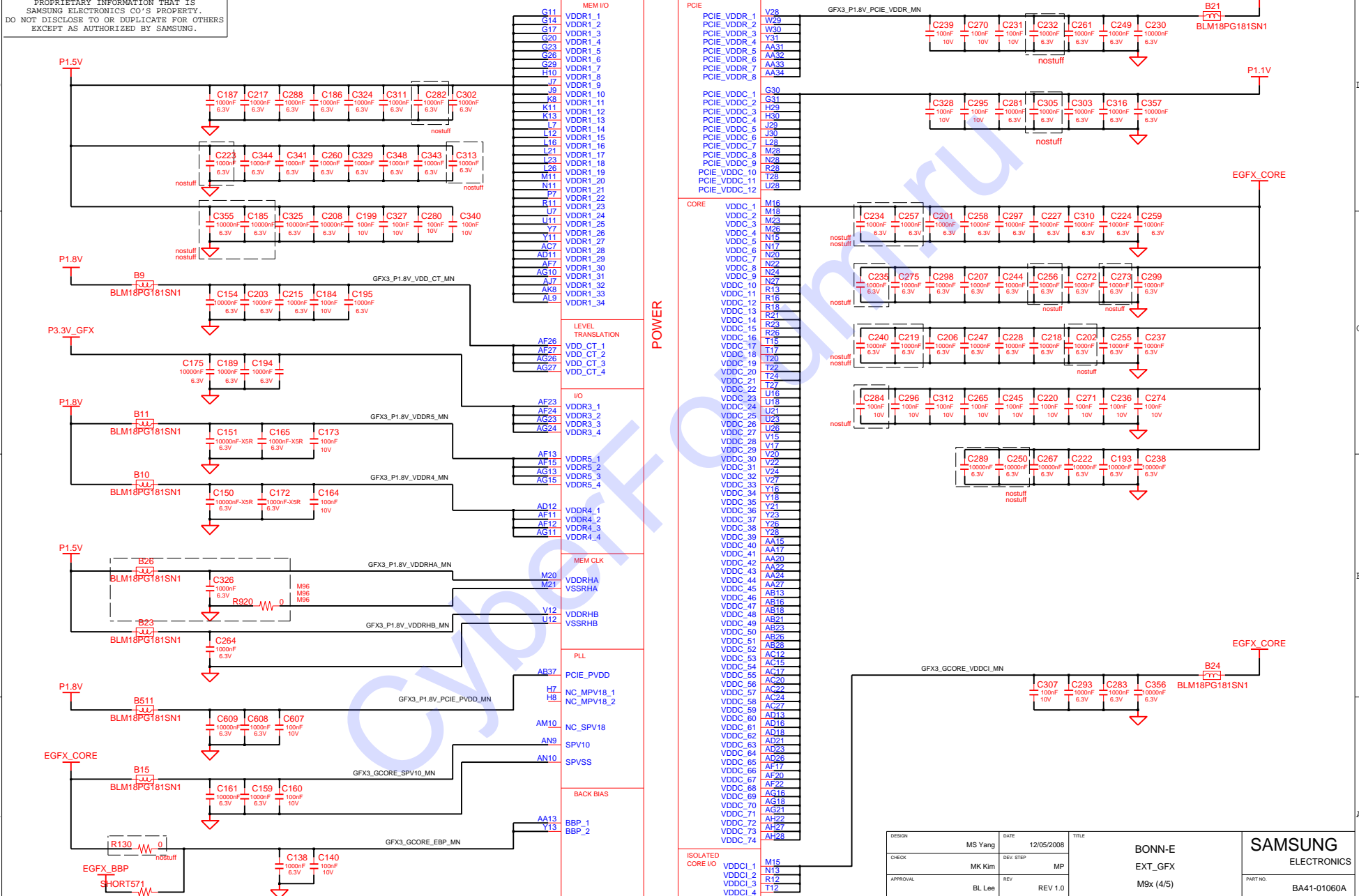
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	EXT_GFX	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	M9x (2/5)	BA41-01060A	
MODULE CODE		LAST EDIT				

April 11, 2009 10:05:58 AM PAGE 27 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

M96-M U510-3 3/5



Back Bias Voltage

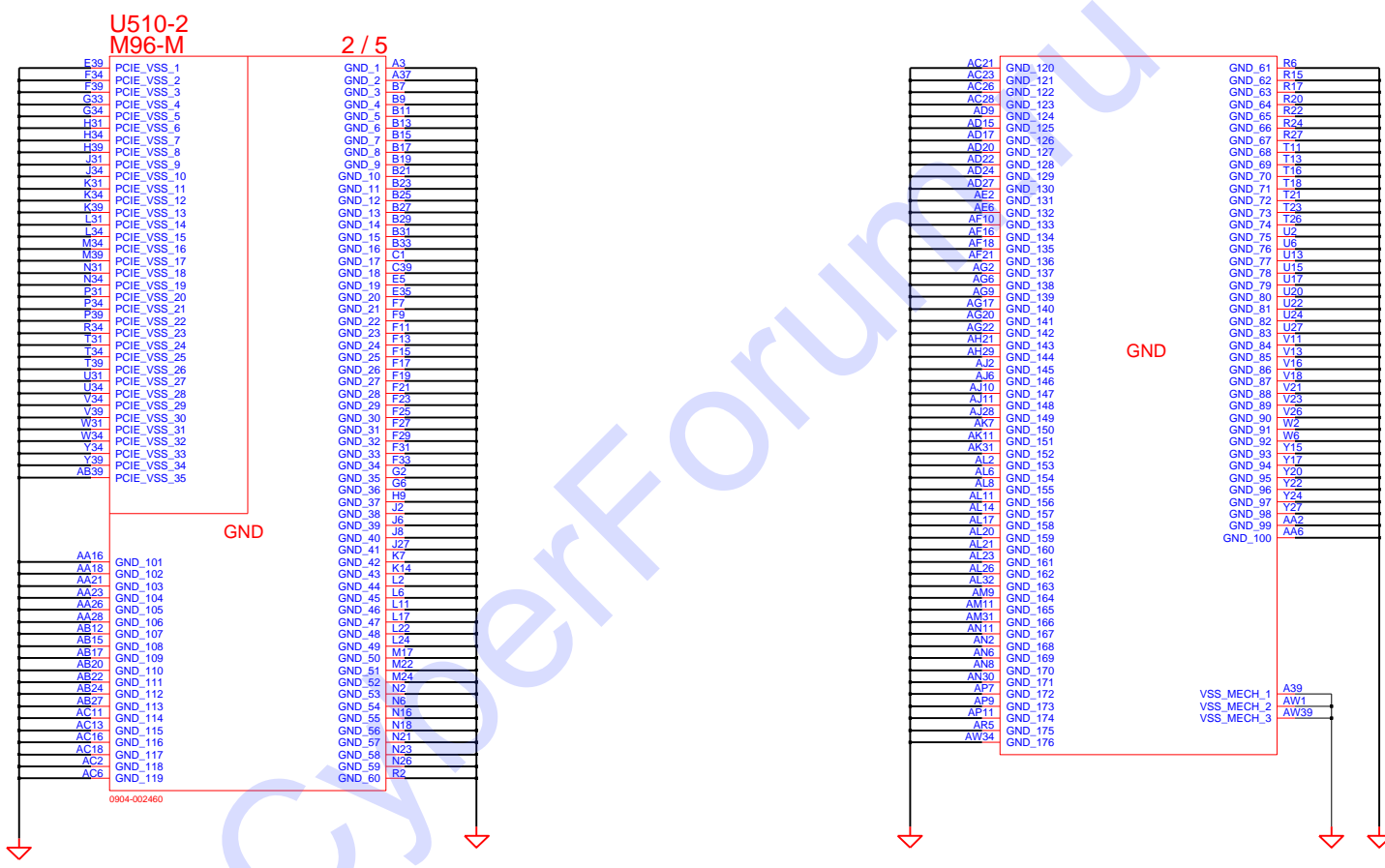
0904-002460

DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E EXT_GFX	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP		PART NO.	
APPROVAL	BL Lee	REV	REV 1.0		M9x (4/5)	
MODULE CODE		LAST EDIT				

Apr 11, 2009 10:05:58 AM PAGE 29 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



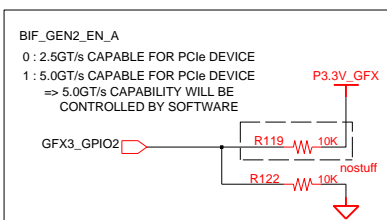
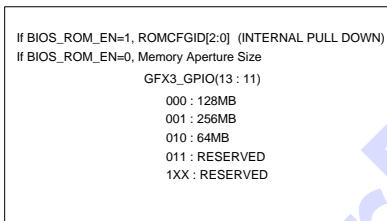
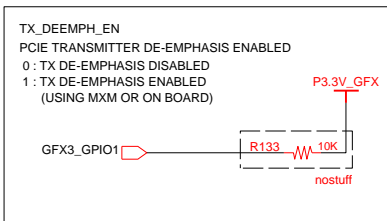
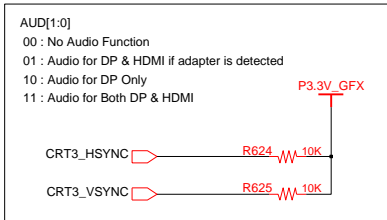
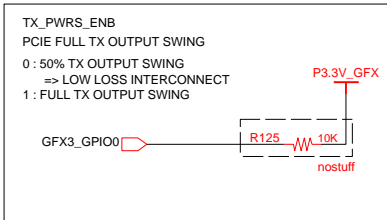
0904-002460

DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS	
CHECK	MK Kim	DEV. STEP	MP		EXT_GFX		
APPROVAL	BL Lee	REV	REV 1.0		M9x (5/5)	PART NO. BA41-01060A	
MODULE CODE		LAST EDIT				April 11, 2009 10:05:58 AM	
						PAGE	30
						OF	67

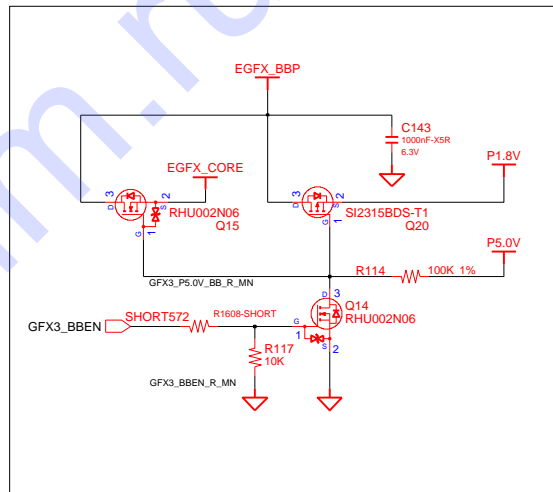
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

M9X STRAPS



BACK BIAS LOGIC

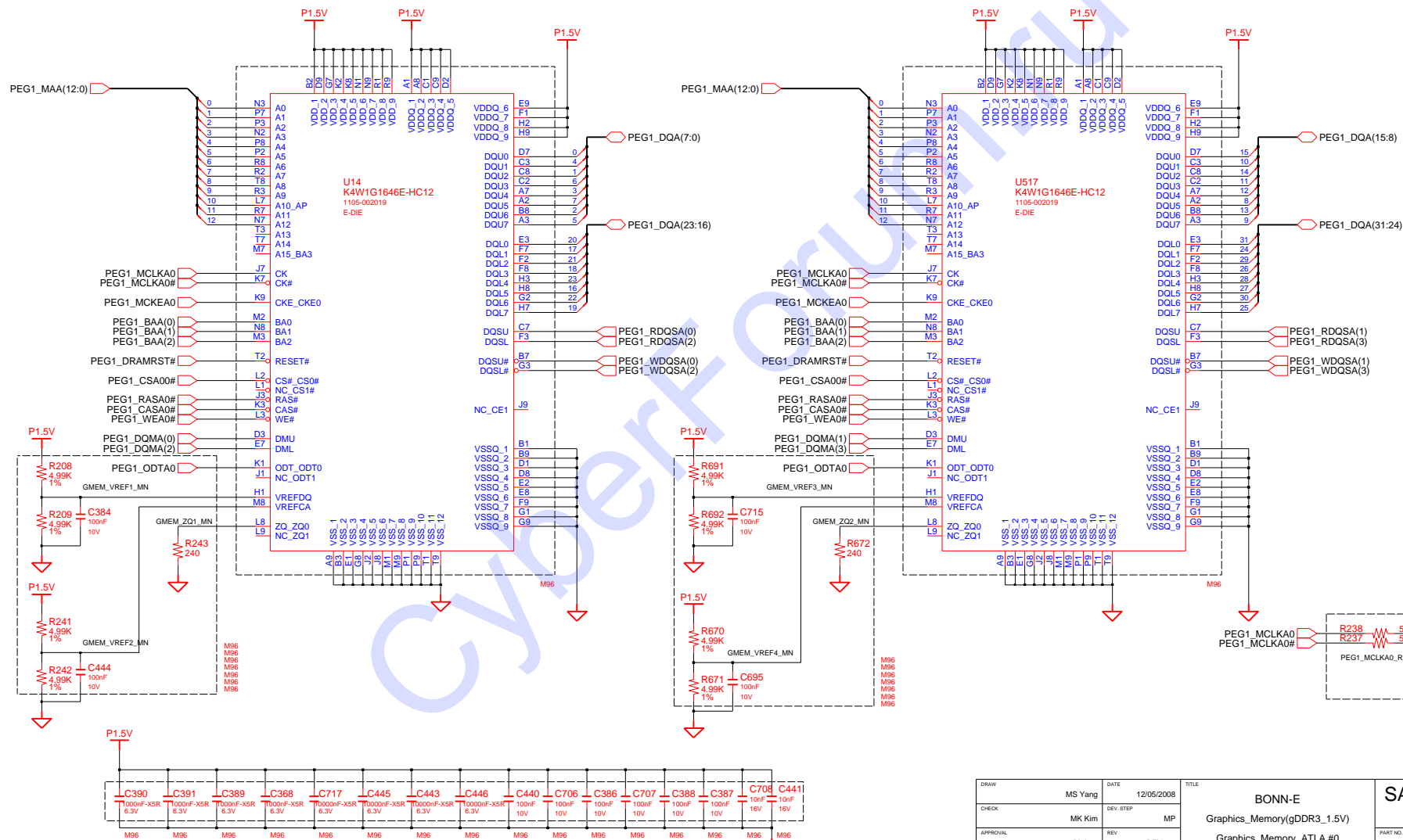


DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	EXT_GFX	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	M9x Straps & PU	BA41-01060A	
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM	PAGE 31 OF 67	

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

A-Channel #0

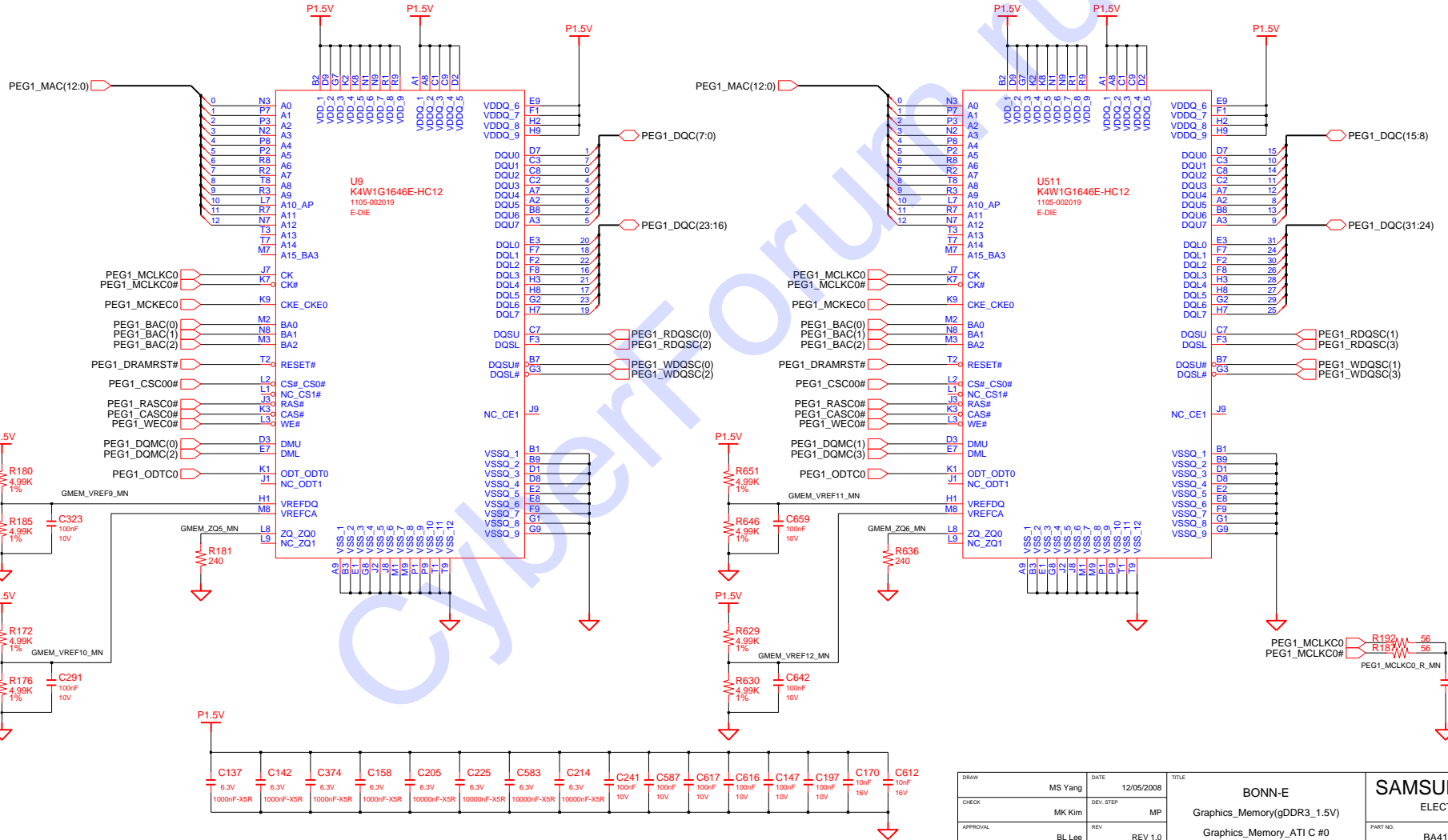


DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	Graphics_Memory(gDDR3_1.5V)		
APPROVAL	BL Lee	REV	REV 1.0	Graphics_Memory_ATI A #0		PART NO. BA41-01060A
MODULE CODE		LAST EDIT				DATE April 11, 2009 10:05:58 AM
						PAGE 32 OF 67

B-Channel #0

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

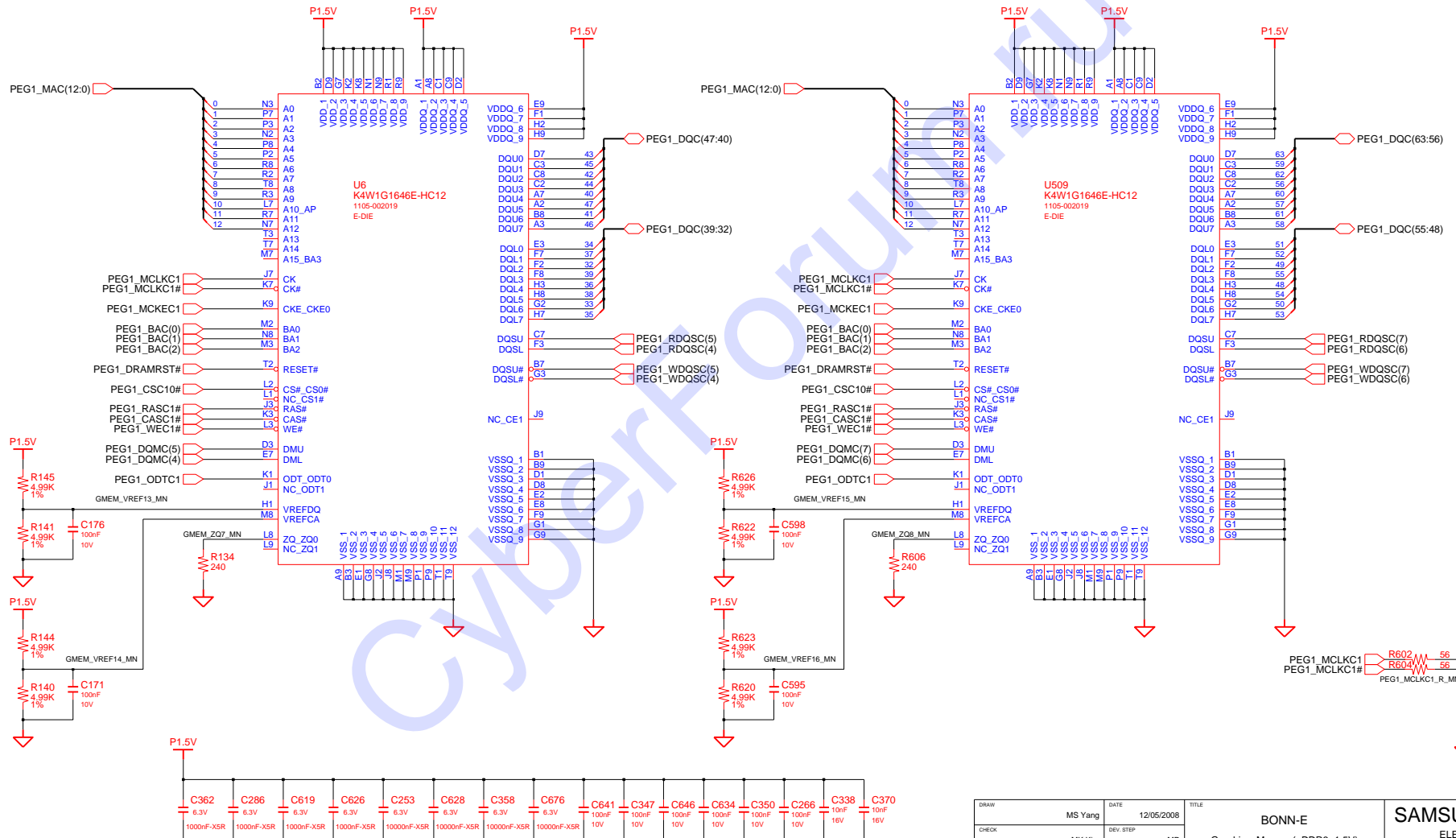


DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	Graphics_Memory(gDDR3_1.5V)		
APPROVAL	BL Lee	REV	REV 1.0	Graphics_Memory_ATI C #0		PART NO.
MODULE CODE		LAST EDIT				BA41-01060A
				April 11, 2009 10:05:58 AM		PAGE 34 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

B-Channel #1



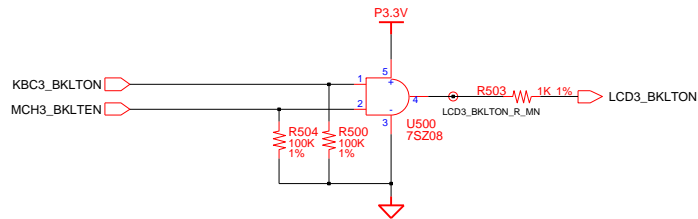
DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	Graphics_Memory(gDDR3_1.5V)		
APPROVAL	BL Lee	REV	REV 1.0	Graphics_Memory_ATI C #1		PART NO. BA41-01060A
MODULE CODE		LAST EDIT				April 11, 2009 10:05:58 AM
						PAGE 35 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

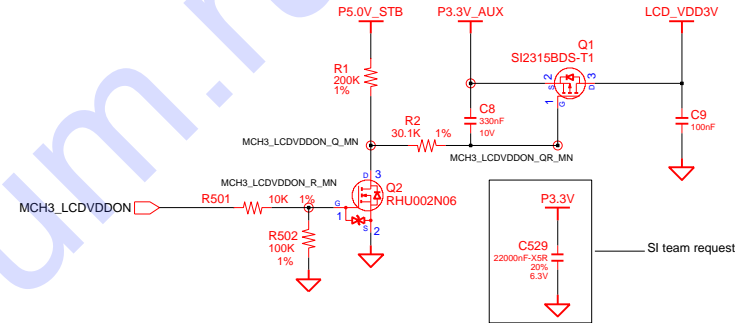
LVDS

Backlight On

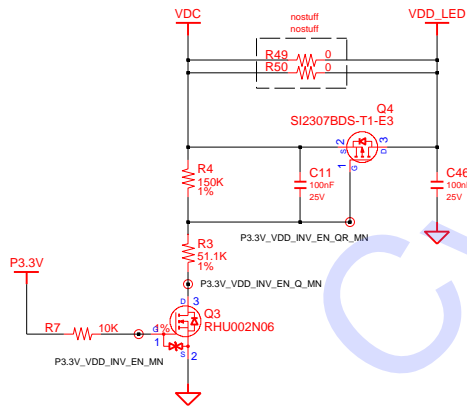


LCD Power

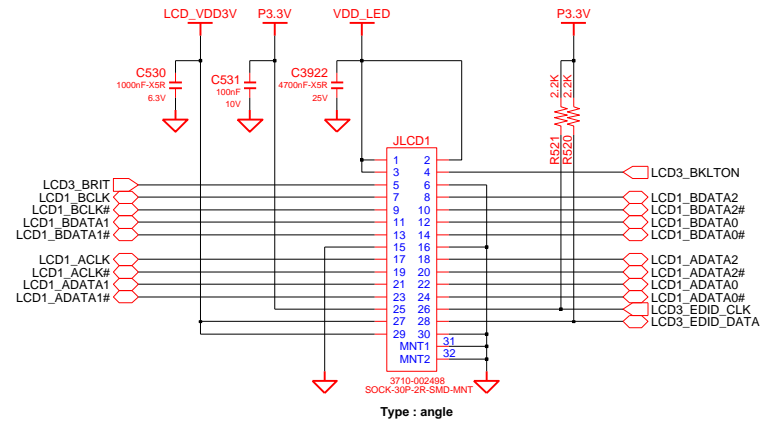
EBL Purpose



LED Power



2Ch. LCD Connector



DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	GRAPHICS_IF	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	LVDS	BA41-01060A	
MODULE CODE		LAST EDIT				

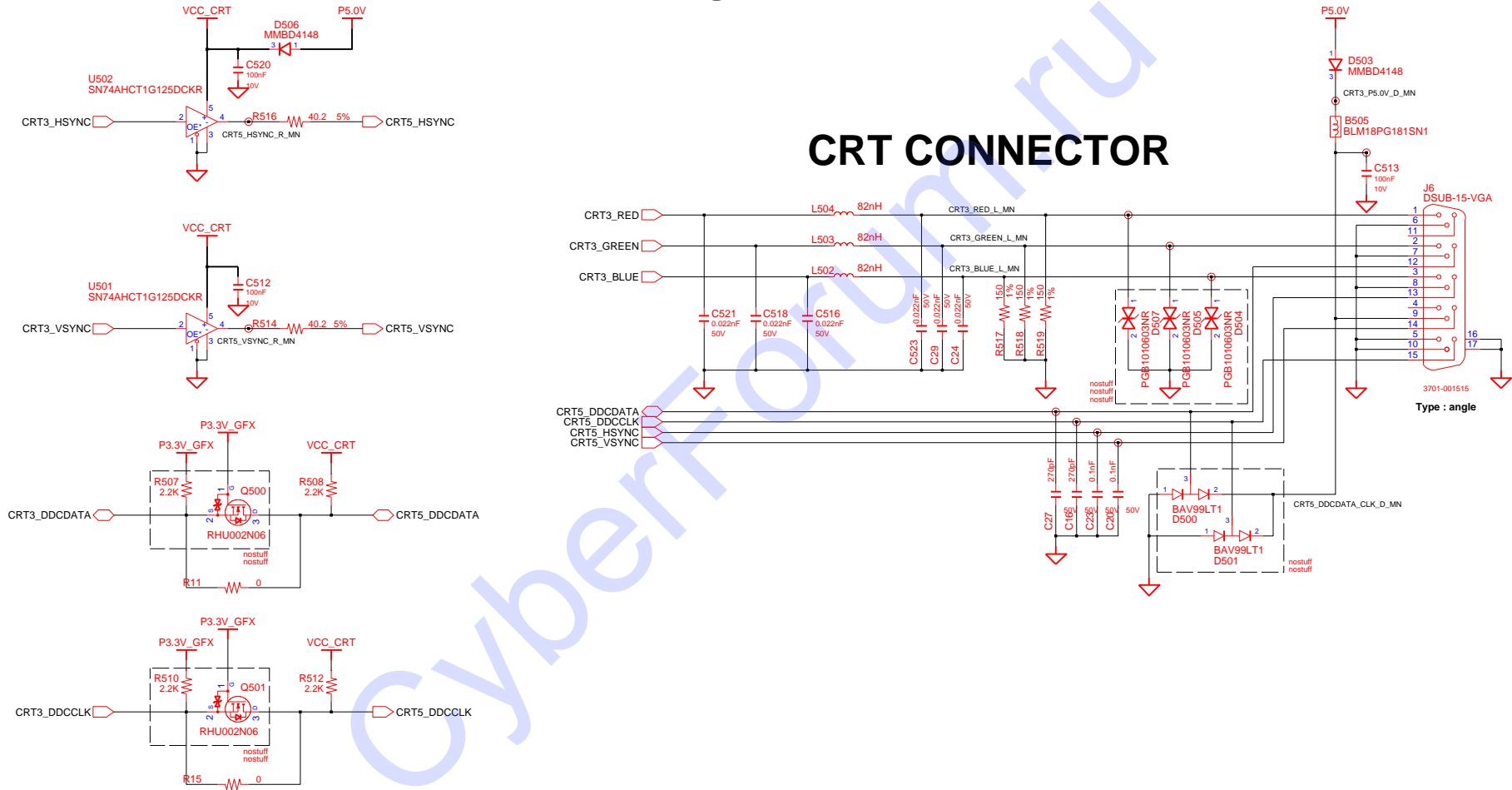
April 11, 2009 10:05:58 AM PAGE 36 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

CRT

CRT CONNECTOR



Type : angle

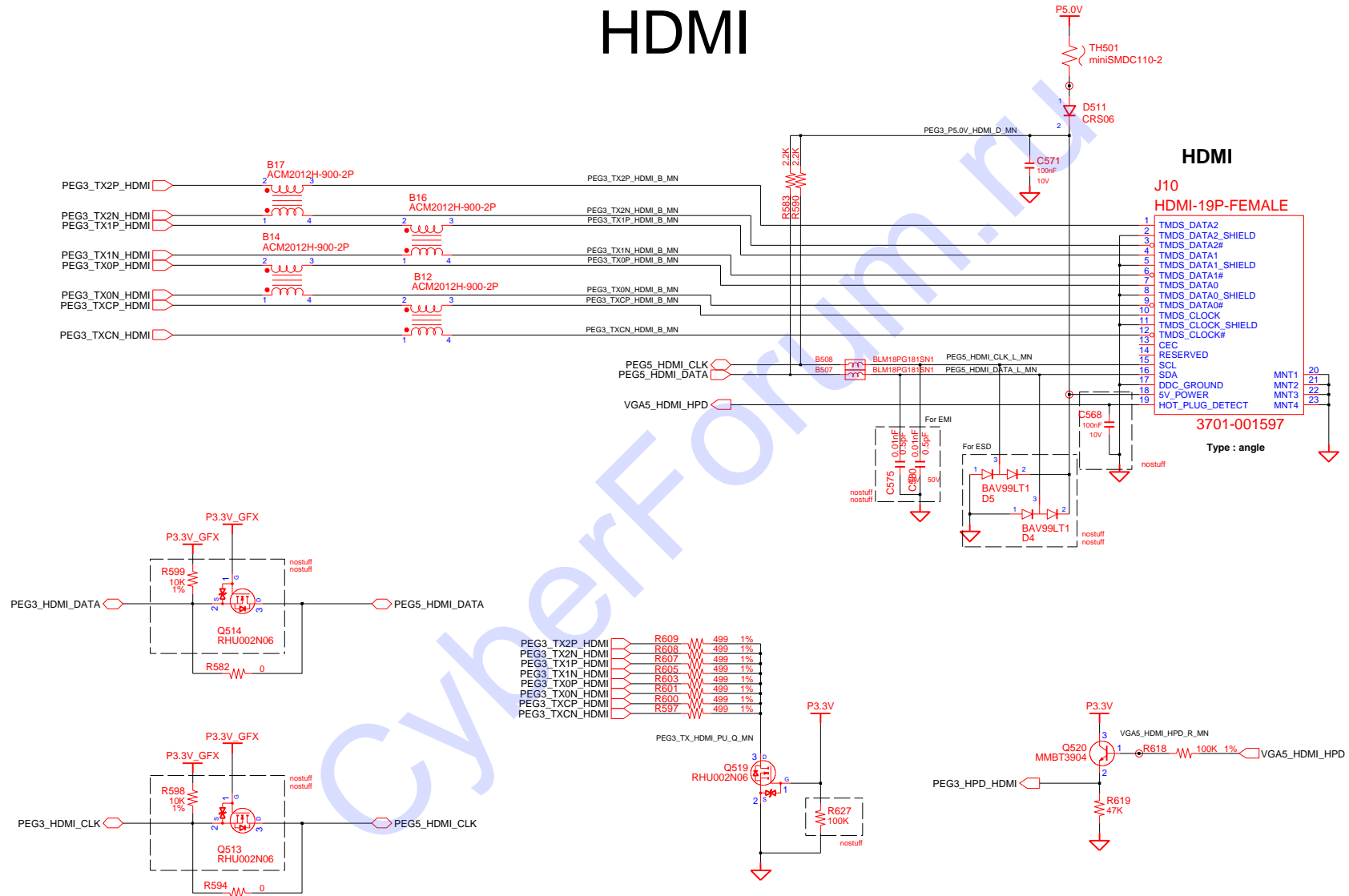
Check "CRT3_DDCCLK/DATA" Voltage Level
2N06 Can be replaced with SM6K2

DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E GRAPHICS_IF	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP			
APPROVAL	BL Lee	REV	REV 1.0		CRT	PART NO. BA41-01060A
MODULE CODE		LAST EDIT				
						April 11, 2009 10:05:58 AM
						PAGE 37 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

HDMI



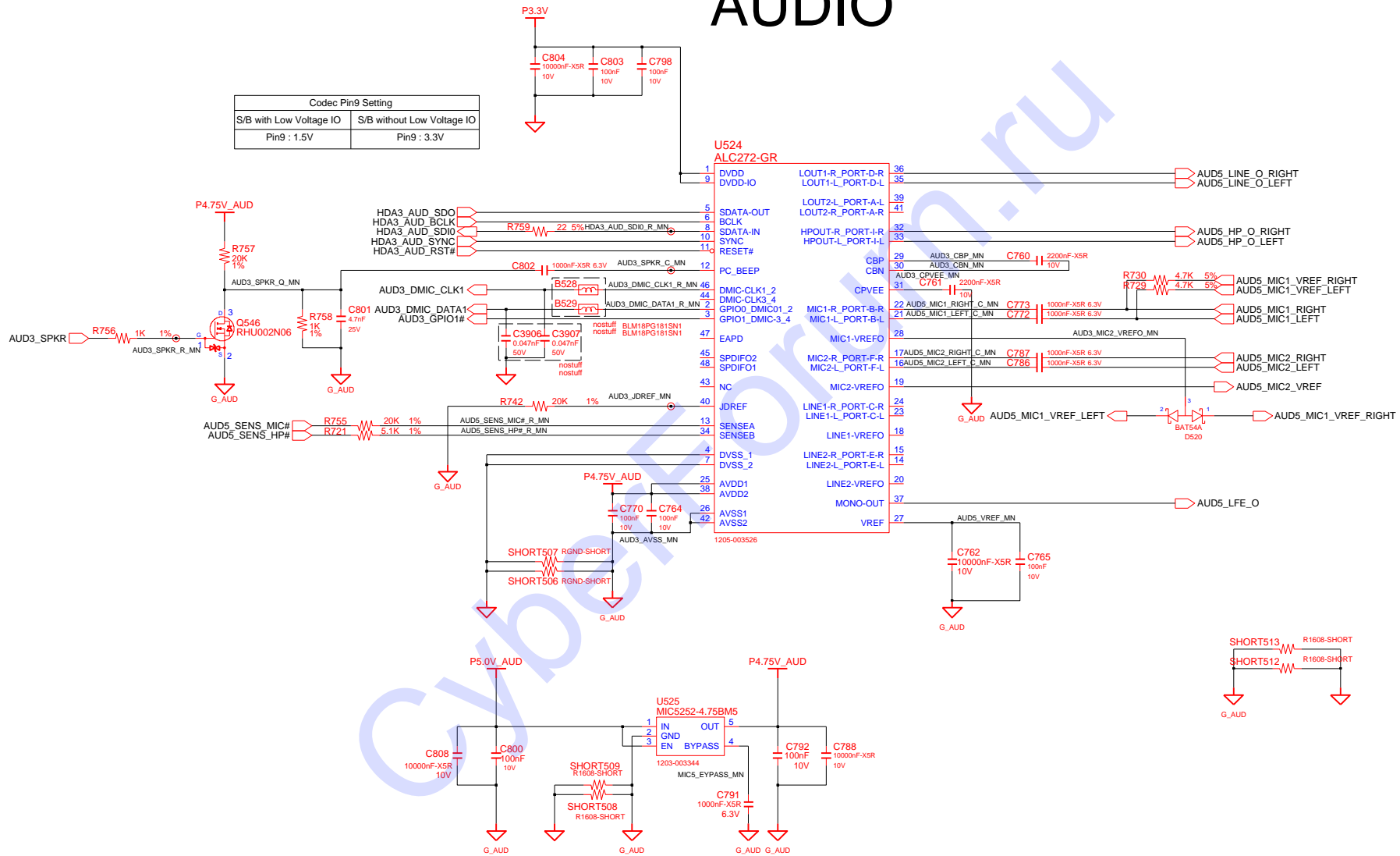
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	GRAPHICS_IF		
APPROVAL	BL Lee	REV	REV 1.0	HDMI	PART NO.	BA41-01060A
MODULE CODE		LAST EDIT			April 11, 2009 10:05:58 AM	PAGE 38 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

AUDIO

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

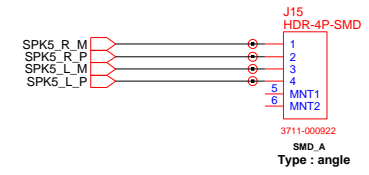
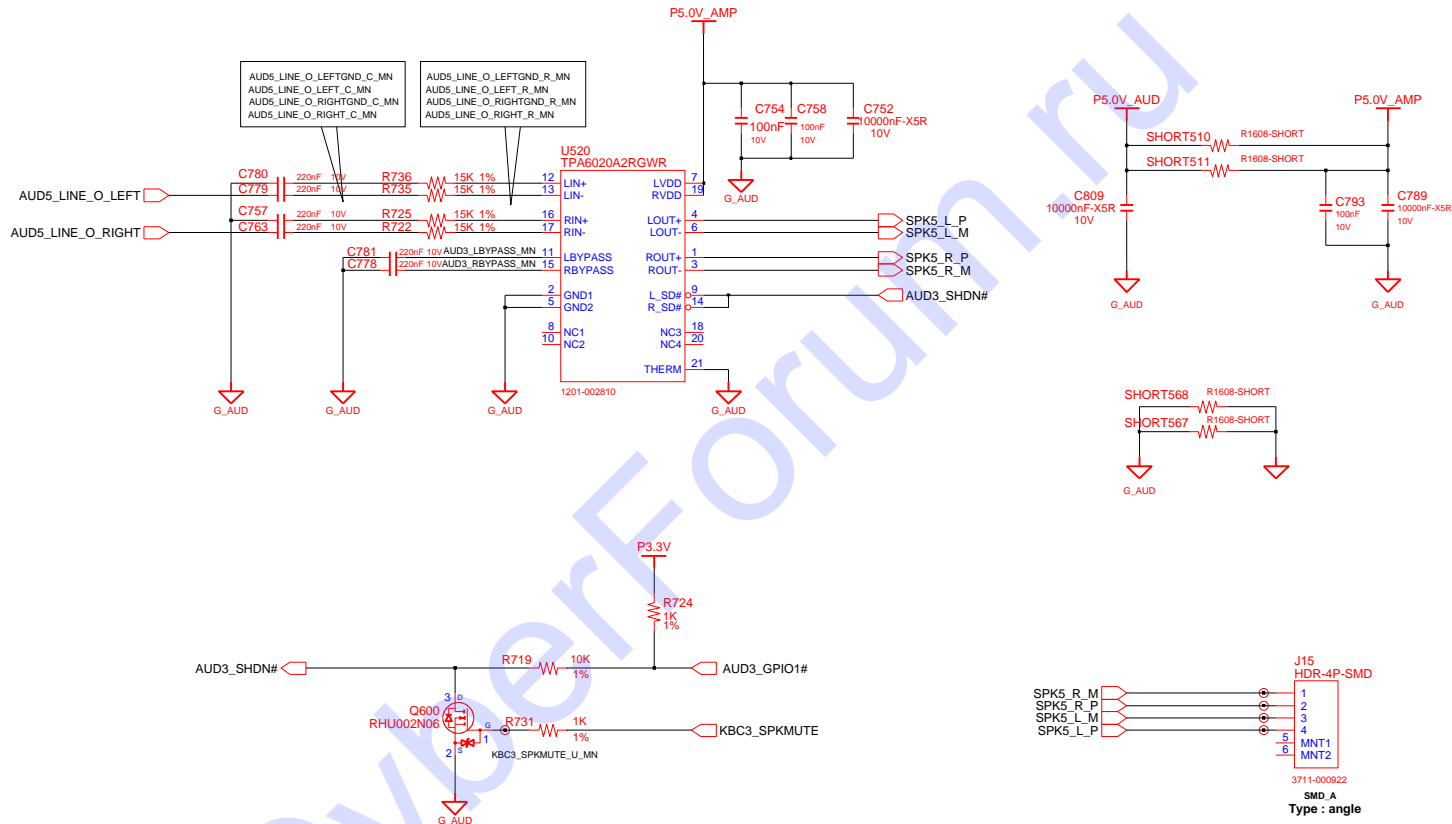


GMT : 1203-005579

DESIGN	MS Yang	DATE	12/05/2008	TITLE	SAMSUNG ELECTRONICS	
CHECK	MK Kim	DEV. STEP	MP	BONN-E HDA_CODEC		PART NO. BA41-01060A
APPROVAL	BL Lee	REV	REV 1.0	AUDIO CODEC ALC272		
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM		PAGE 39 OF 67

SAMSUNG PROPRIETARY

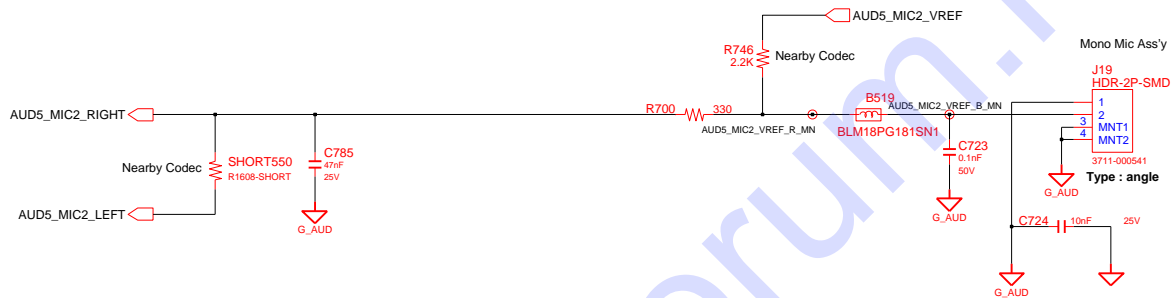
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



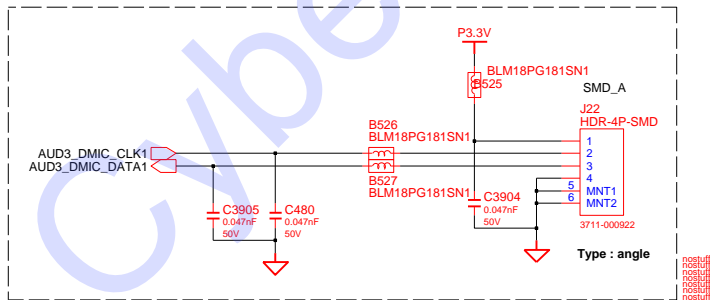
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E HDA_CODEC SPK AMP TPA6017	SAMSUNG ELECTRONICS PART NO. BA41-01060A
CHECK	MK Kim	DEV. STEP	MP			
APPROVAL	BL Lee	REV	REV 1.0			
MODULE CODE		LAST EDIT				
				April 11, 2009 10:05:58 AM	PAGE	40 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.



Digital MIC CONNECTOR

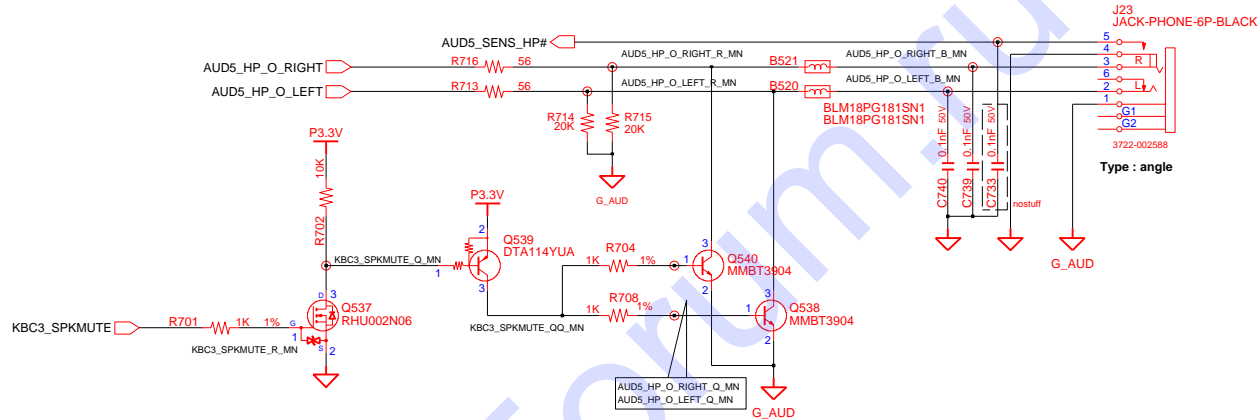


DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	HDA_CODEC		
APPROVAL	BL Lee	REV	REV 1.0	MIC AMP LMV358	PART NO.	BA41-01060A
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM	PAGE	41 OF 67

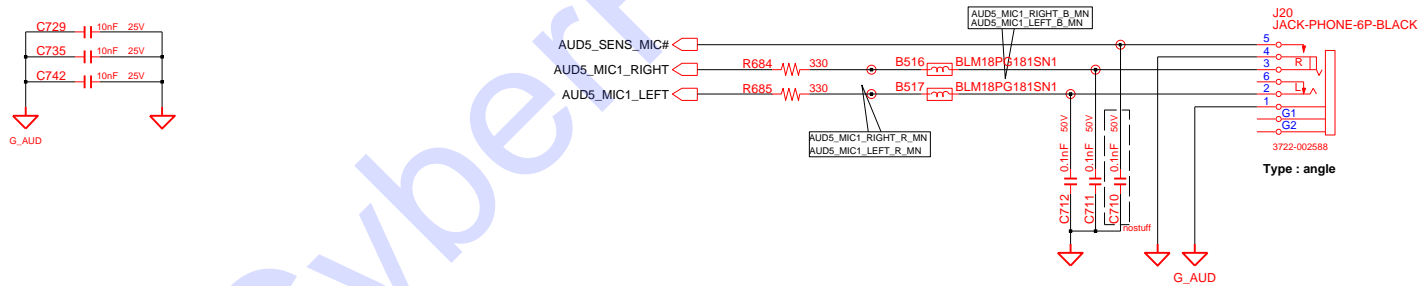
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

HEADPHONE(BLACK)



MIC JACK(BLACK)

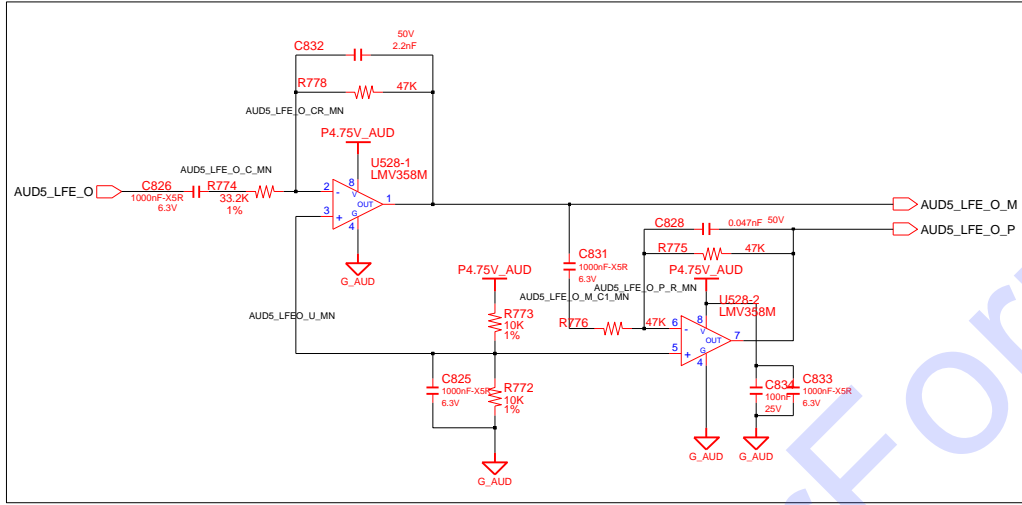


DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS	
CHECK	MK Kim	DEV. STEP	MP		HDA_CODEC		
APPROVAL	BL Lee	REV	REV 1.0		H/P JACK AND MIC JACK	PART NO.	
MODULE CODE		LAST EDIT				BA41-01060A	
						April 11, 2009 10:05:58 AM	PAGE 42 OF 67

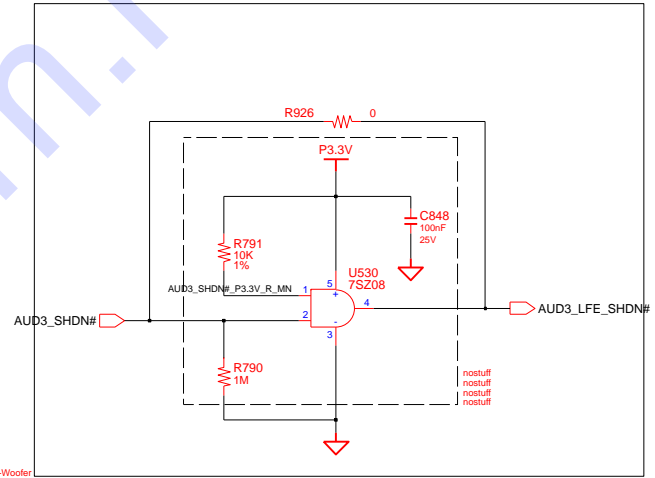
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

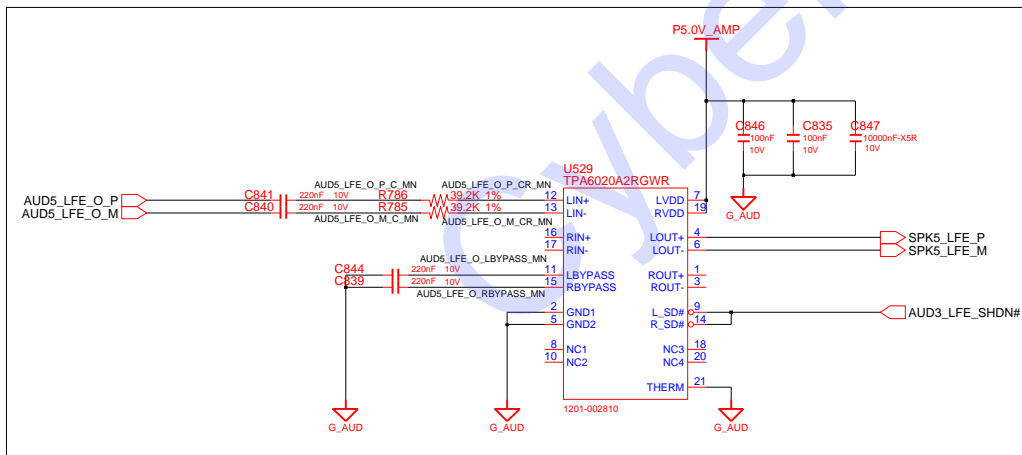
SUB-WOOFER



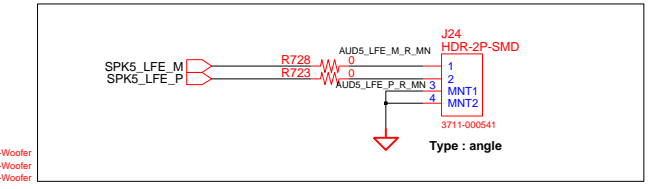
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers



Sub-Woofers



Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers
Sub-Woofers



Sub-Woofers
Sub-Woofers
Sub-Woofers

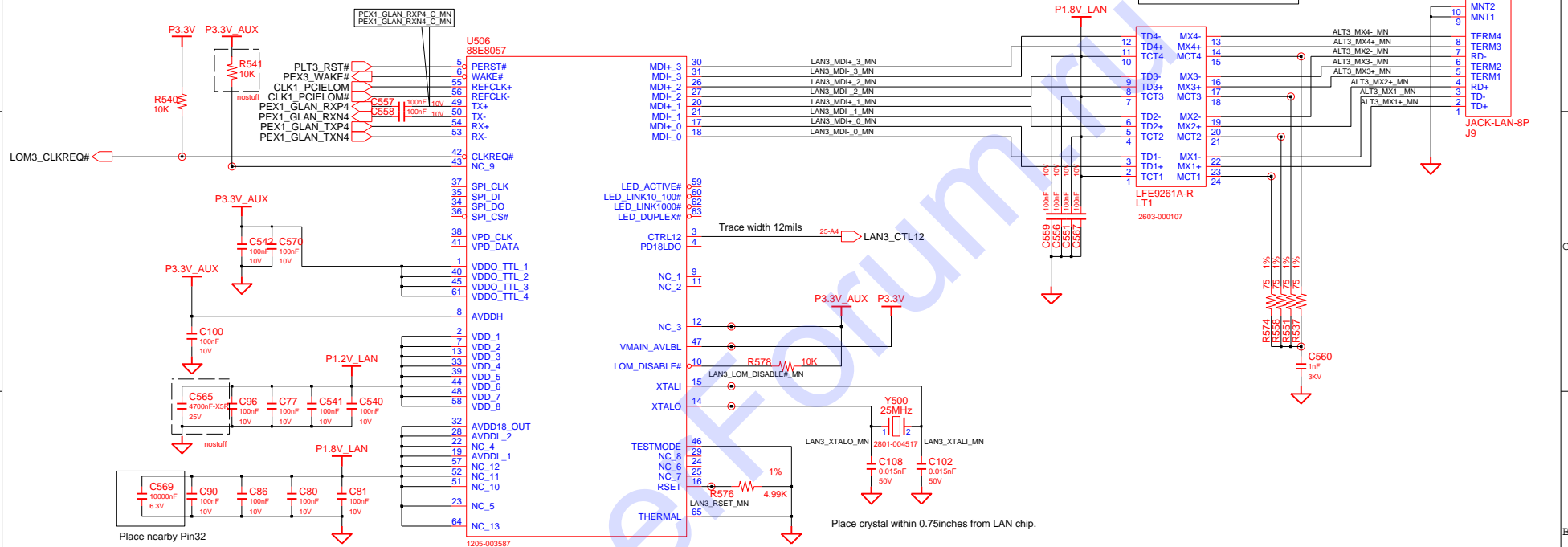
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E HDA_CODEC SUB-WOOFER	SAMSUNG ELECTRONICS PART NO. BA41-01060A	
CHECK	MK Kim	REV. STEP	MP				
APPROVAL	BL Lee	REV	REV 1.0				
MODULE CODE		LAST EDIT					
April 11, 2009 10:05:58 AM						PAGE	43 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

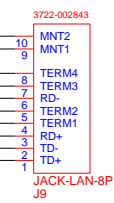
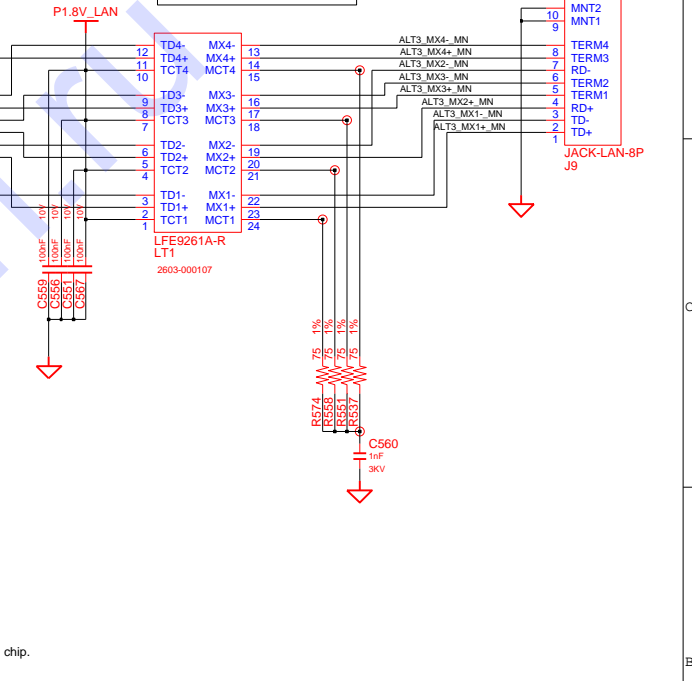
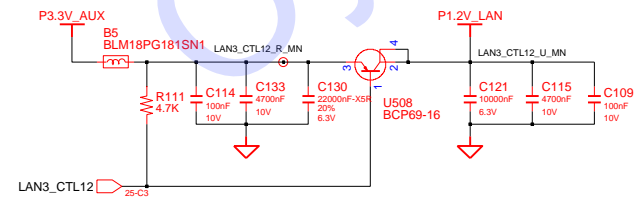
ALT BOM

LFE9261A-R LAN3214-50
2603-000107 2603-000110



Place nearby Pin32

Place crystal within 0.75inches from LAN chip.



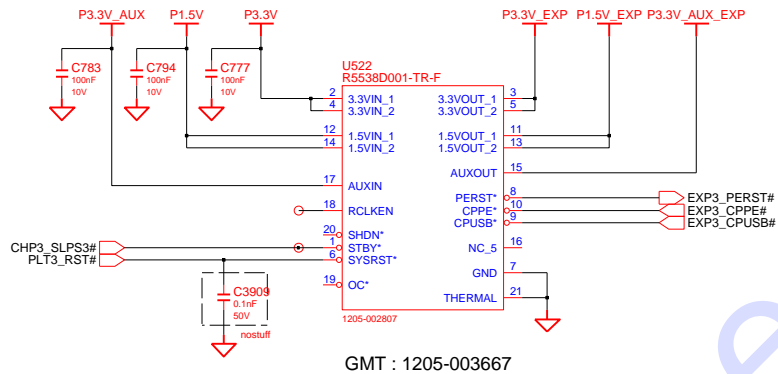
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E LAN	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP			
APPROVAL	BL Lee	REV	REV 1.0		LAN_MARVELL_8057	PART NO. BA41-01060A
MODULE CODE		LAST EDIT				

SAMSUNG PROPRIETARY

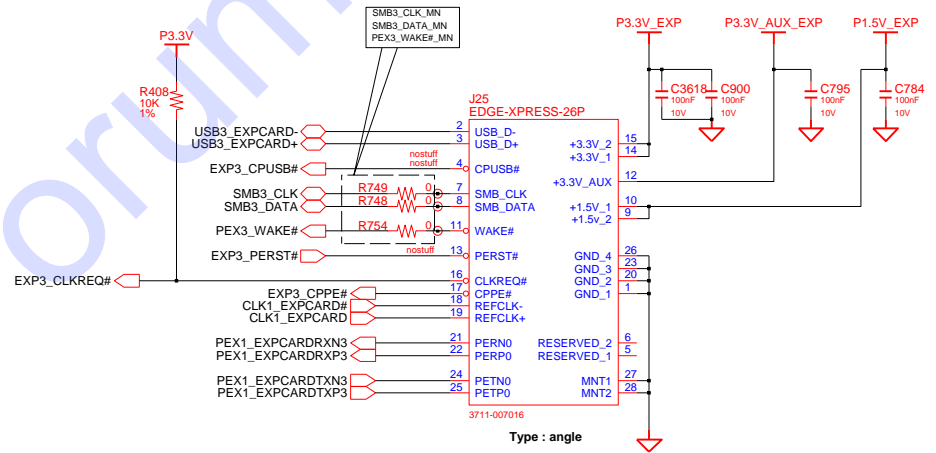
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

Express Card

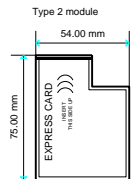
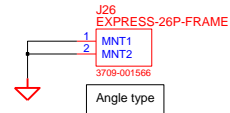
Express Card Power Switch



GMT : 1205-003667



TYPE - II



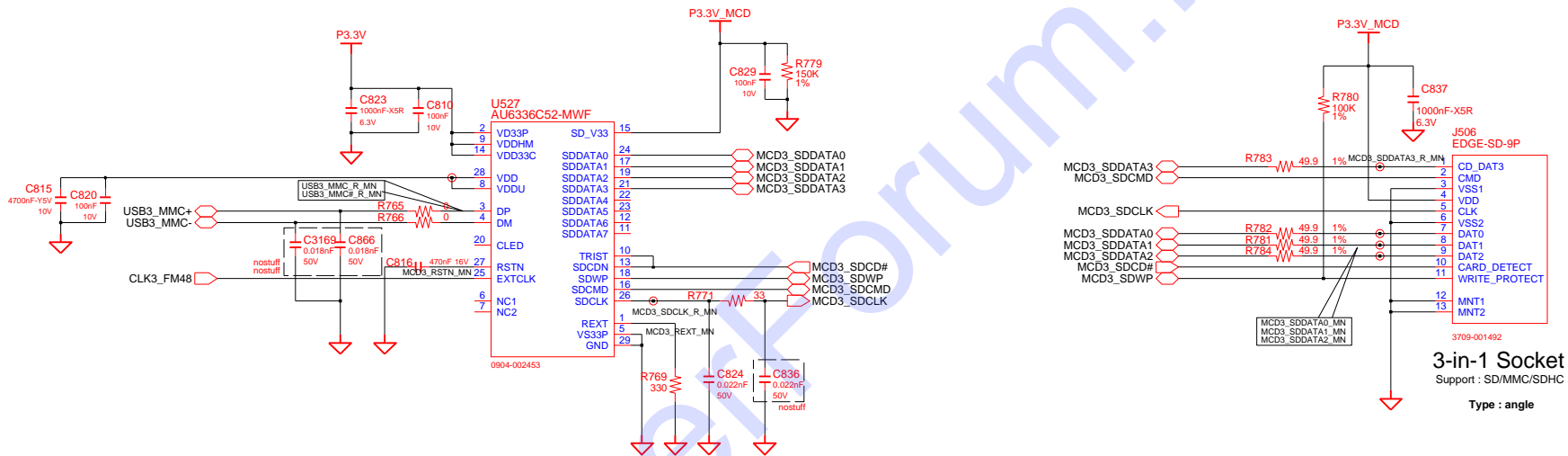
54.00 mm W
X
75.00 mm L
X
5.00 mm H

DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	EXPRESS CARD	EXPRESS CARD	
APPROVAL	BL Lee	REV	REV 1.0			PART NO. BA41-01060A
MODULE CODE		LAST EDIT			April 11, 2009 10:05:58 AM	PAGE 45 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

3 IN 1 CARD (AU6336)



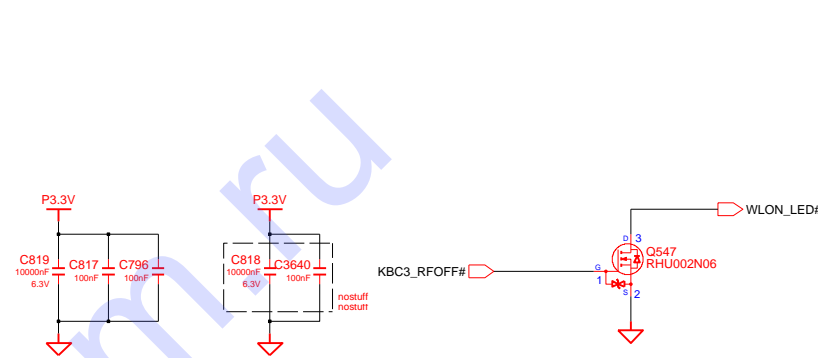
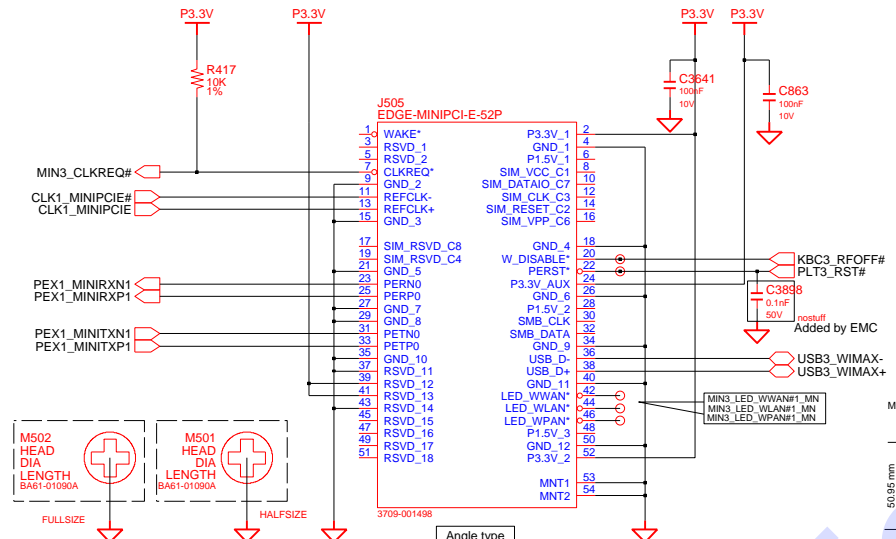
3-in-1 Socket
Support : SD/MMC/SDHC
Type : angle

DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E MULTICARD 2 IN 1 CARD	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	PART NO.		
APPROVAL	BL Lee	REV	REV 1.0	LAST EDIT	April 11, 2009 10:05:58 AM	PAGE 46 OF 67
MODULE CODE						

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

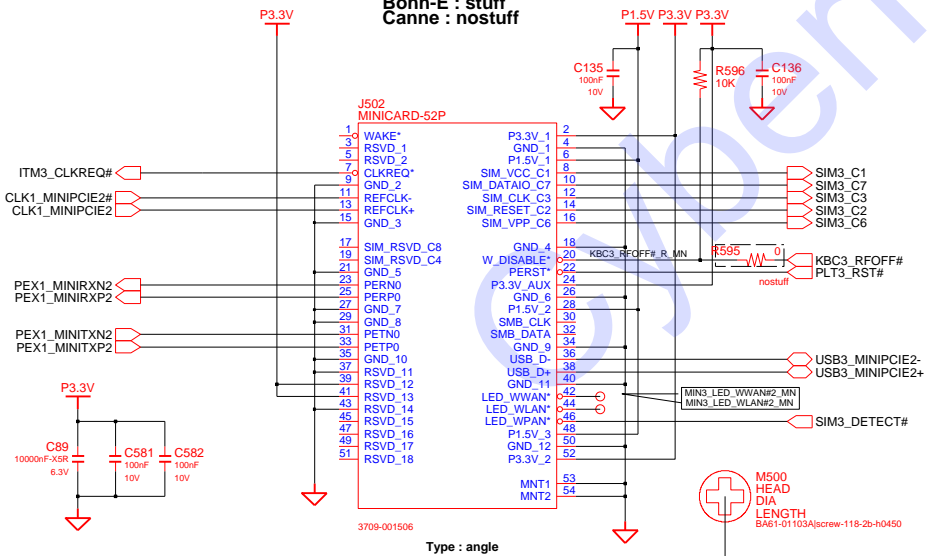
WLAN, 4mm



PEM : WLAN minicard + Half minicard

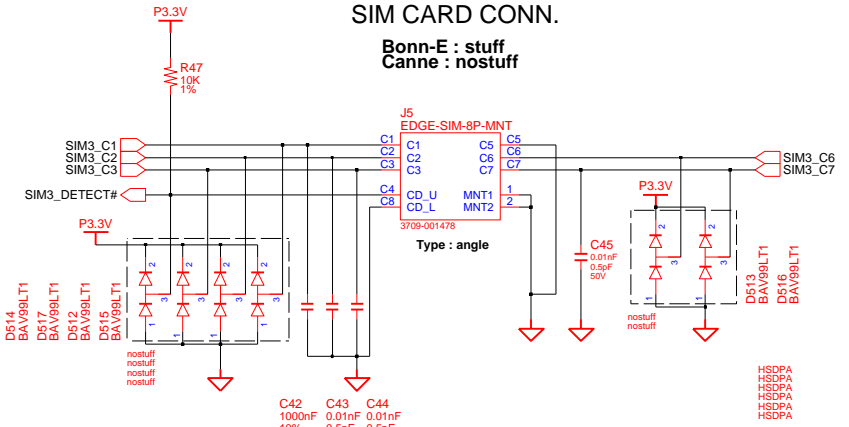
HSDPA, 7mm

Bonn-E : stuff
Canne : nostuff



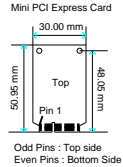
SIM CARD CONN.

Bonn-E : stuff
Canne : nostuff



HSDPA HSDPA HSDPA HSDPA HSDPA HSDPA HSDPA

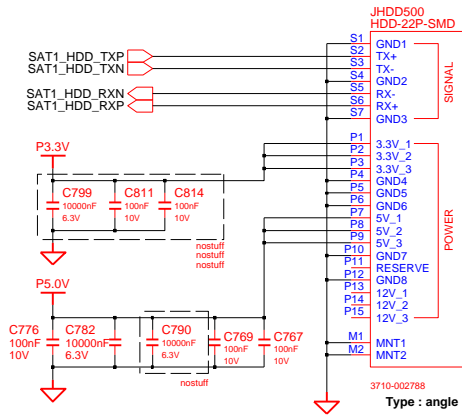
HSDPA HSDPA HSDPA HSDPA HSDPA



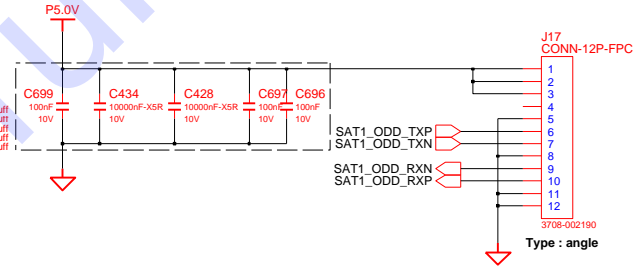
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E MINI_PCIE_CONN	SAMSUNG ELECTRONICS PART NO. BA41-01060A
CHECK	MK Kim	REV. STEP	MP	WLAN & HSDPA & SIM CARD		
APPROVAL	BL Lee	REV	REV 1.0	MODULE CODE		
LAST EDIT			PAGE 47 OF 67			

SATA I/F CONN

SATA HDD CONN



MAIN TO SUB SATA ODD CONN

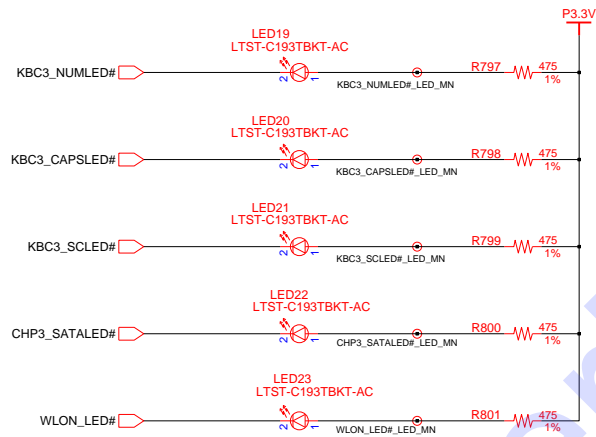


DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E SATA_DEVICES	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	HDD & ODD SUB CONNECTOR		
APPROVAL	BL Lee	REV	REV 1.0		PART NO.	BA41-01060A
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM	PAGE	48 OF 67

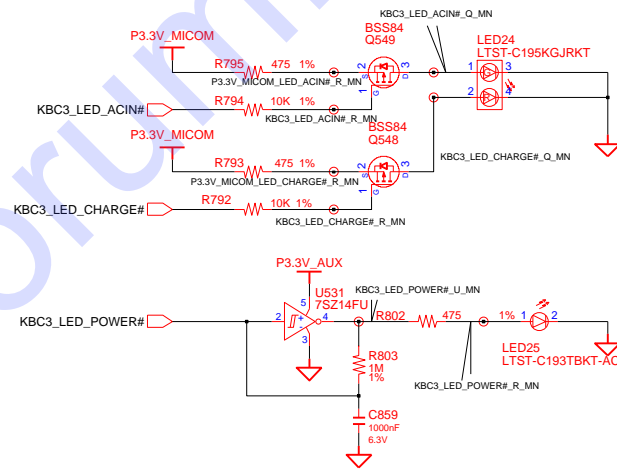
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

FUNCTION KEY LED



ADAPTERIN/CHARGING LED

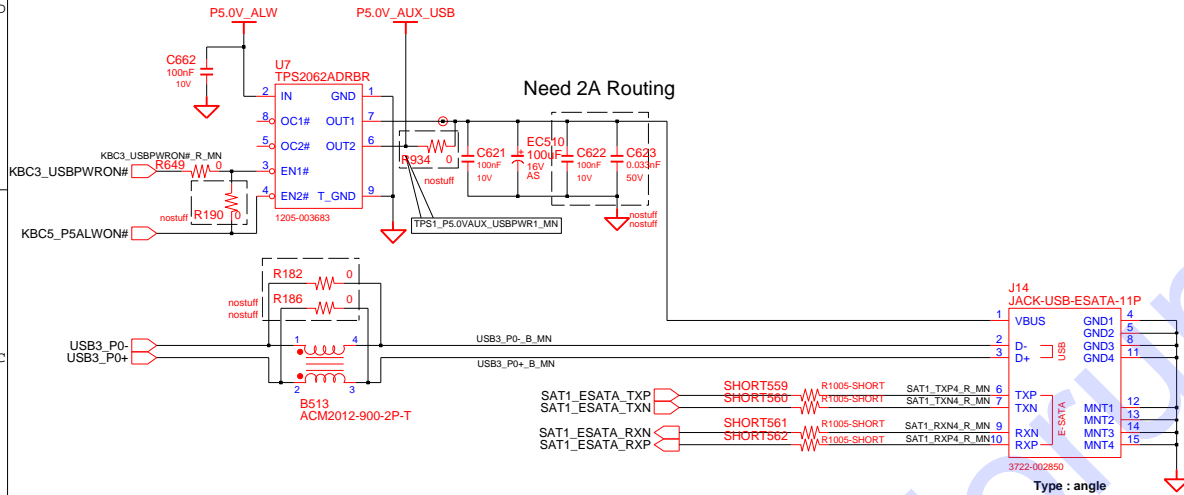


DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS			
CHECK	MK Kim	DEV. STEP	MP	LED_SWITCH					
APPROVAL	BL Lee	REV	REV 1.0	LED_SWITCH		PART NO.			
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM		BA41-01060A			
						PAGE	51	OF	67

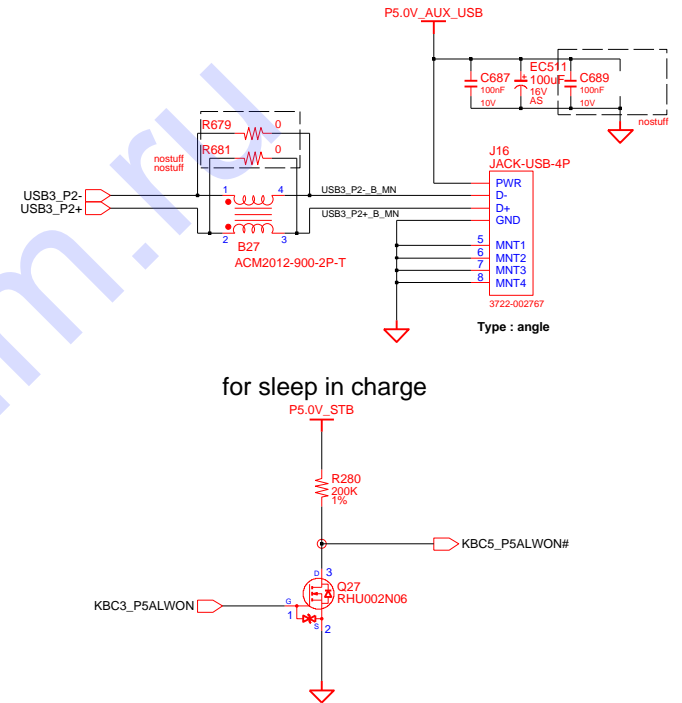
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

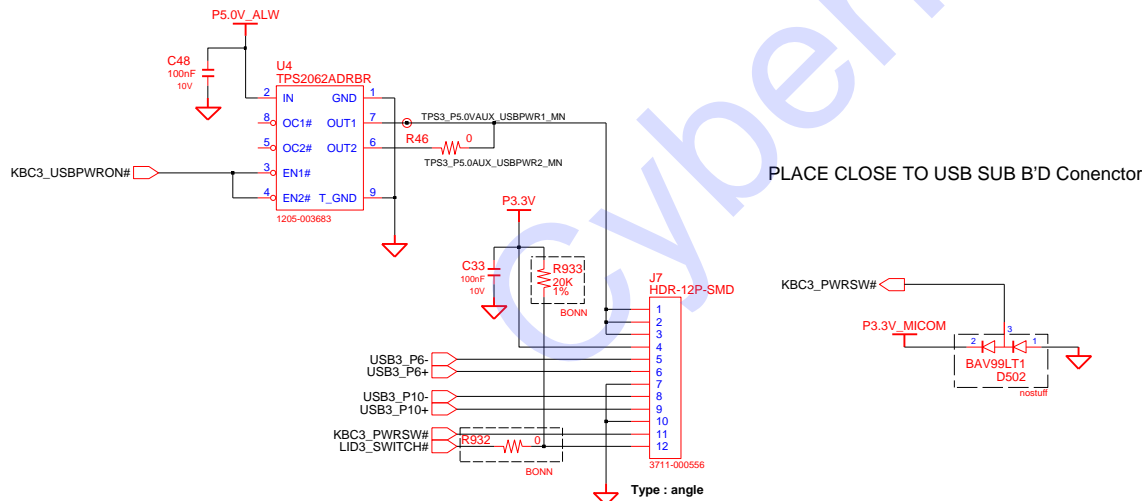
USB + eSATA CONNECTOR



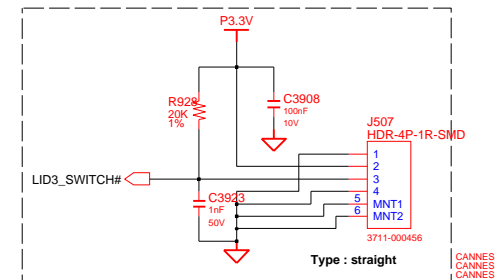
USB Single connector



USB SUB B'D CONNECTOR



LID SWITCH for Canne



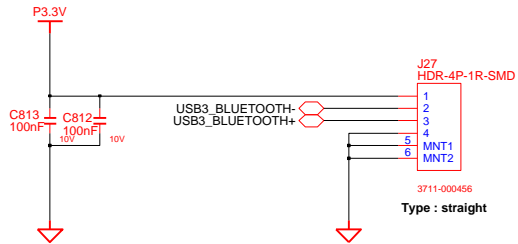
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	USB_CONN	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0	USB & eSATA	BA41-01060A	
MODULE CODE		LAST EDIT				
				April 11, 2009 10:05:58 AM	PAGE	52 OF 67

SAMSUNG PROPRIETARY

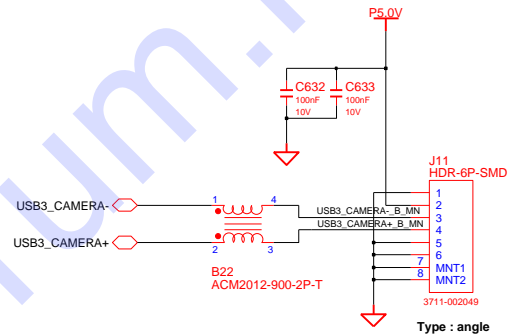
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

USB I/F Devices

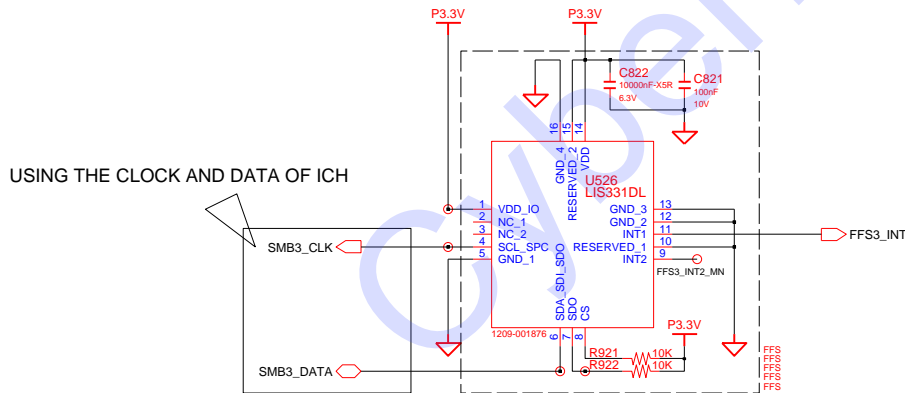
Bluetooth Interface



CAMERA



Free Fall Sensor

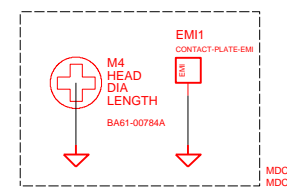
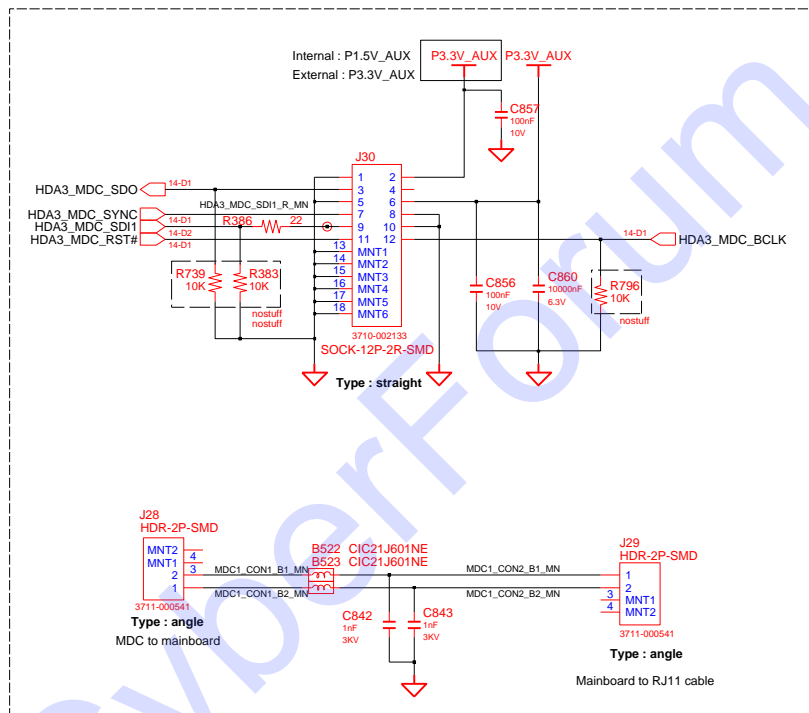


DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E USB_DEVICES BLUETOOTH & CAMERA	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	PART NO.		
APPROVAL	BL Lee	REV	REV 1.0	BA41-01060A		
MODULE CODE		LAST EDIT				
				April 11, 2009 10:05:58 AM	PAGE	53 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

MDC connector



MDC
MDC
MDC
MDC
MDC
MDC
MDC
MDC
MDC
MDC

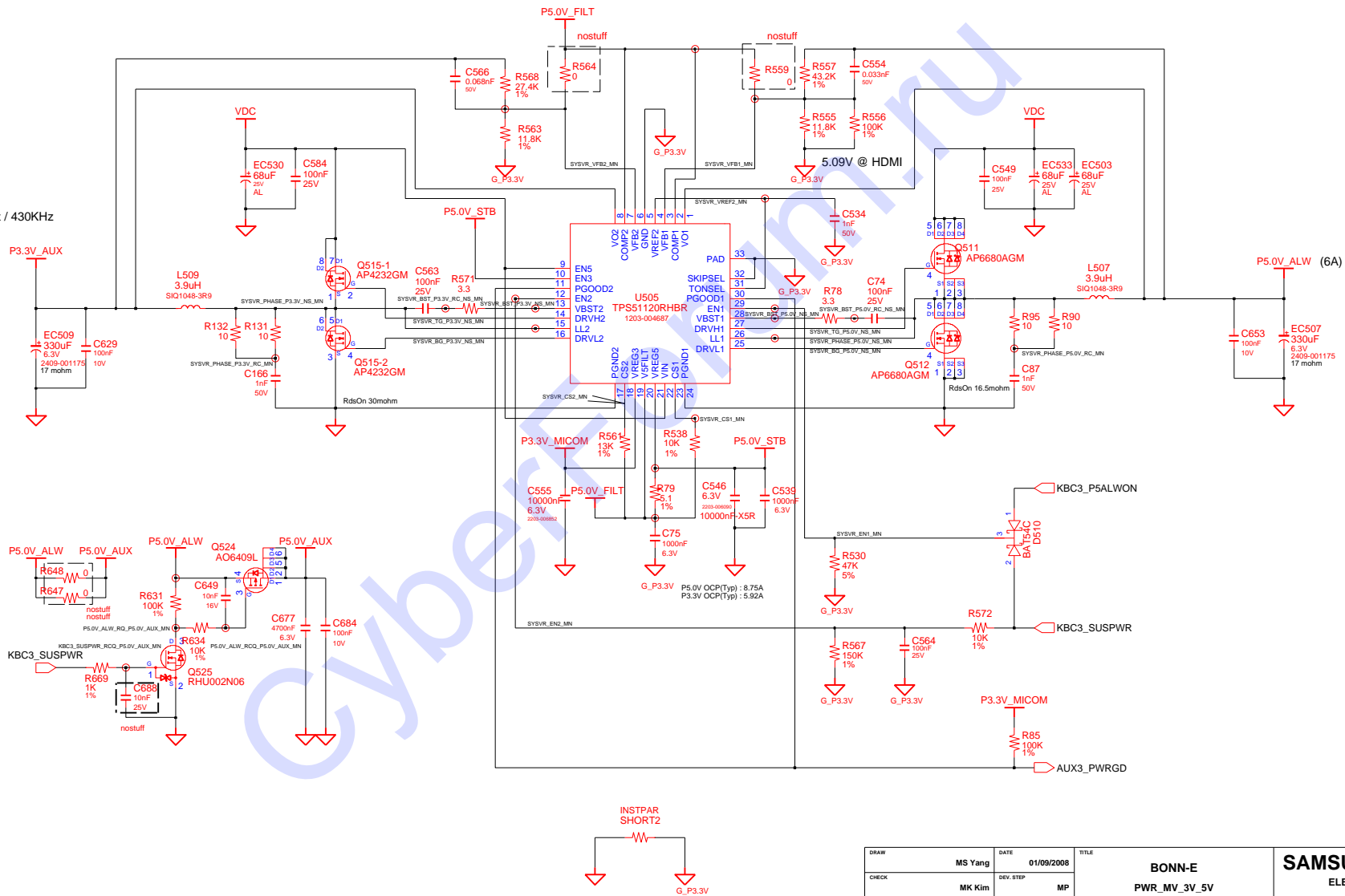
DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	MDC CONNECTOR	MDC CONNECTOR	
APPROVAL	BL Lee	REV	REV 1.0			PART NO. BA41-01060A
MODULE CODE	undefined	LAST EDIT	April 11, 2009 10:05:58 AM	PAGE	54	OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

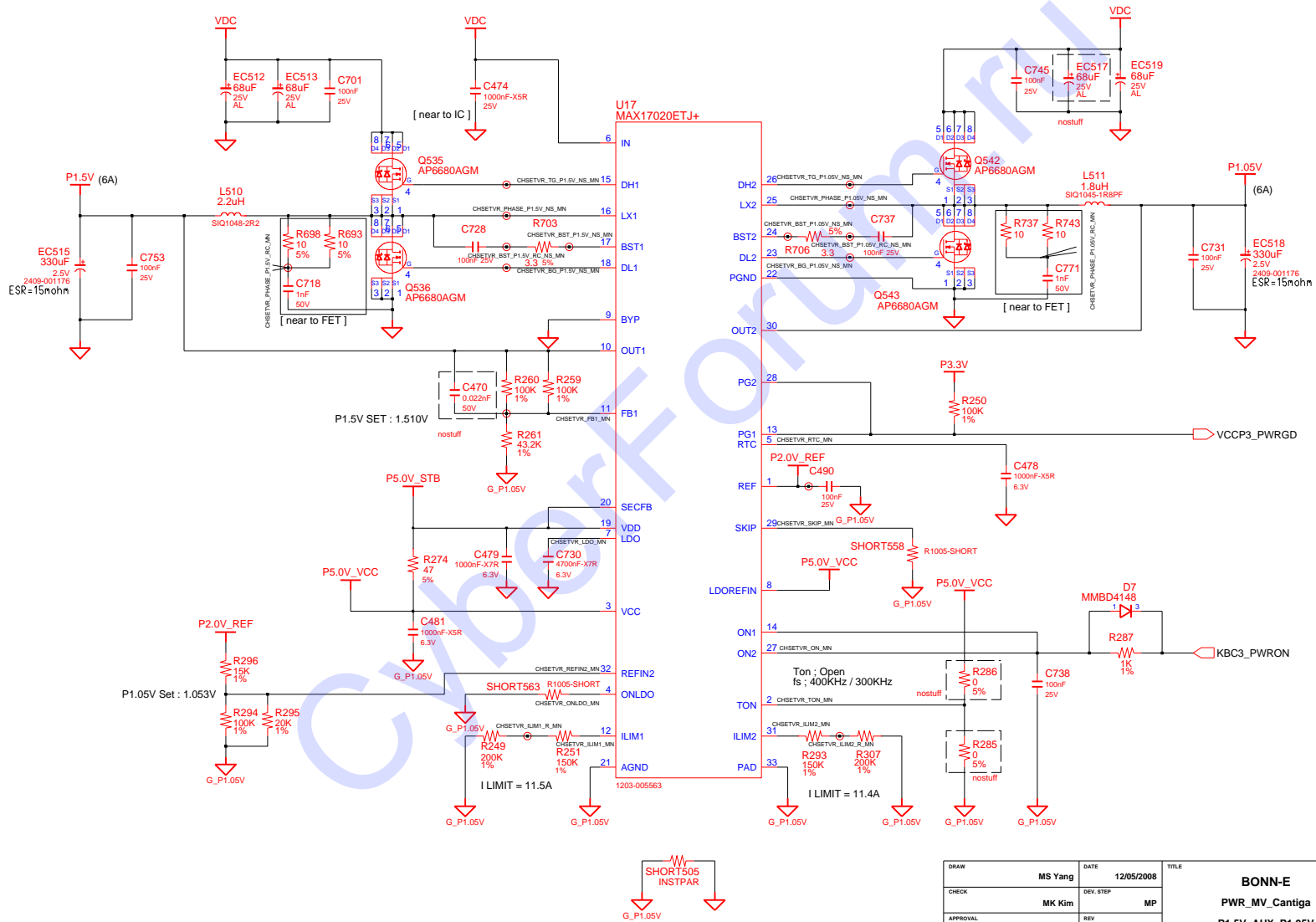
P3.3V_AUX & P5.0V_AUX

TONSEL VREF2
5V / 3.3V : 280KHz / 430KHz
(4A)



DRAW	MS Yang	DATE	01/09/2008	TITLE	BONN-E PWR_MV_3V_SV P3.3V_AUX / P5.0V_AUX	SAMSUNG ELECTRONICS PART NO. BA41-01060A
CHECK	MK Kim	DEV. STEP	MP			
APPROVAL	BL Lee	REV	REV 1.0			
MODULE CODE	undefined	LAST EDIT				
			April 11, 2009 10:05:58 AM	PAGE	56 OF 67	

CHIPSET POWER(P1.5V & P1.05V)

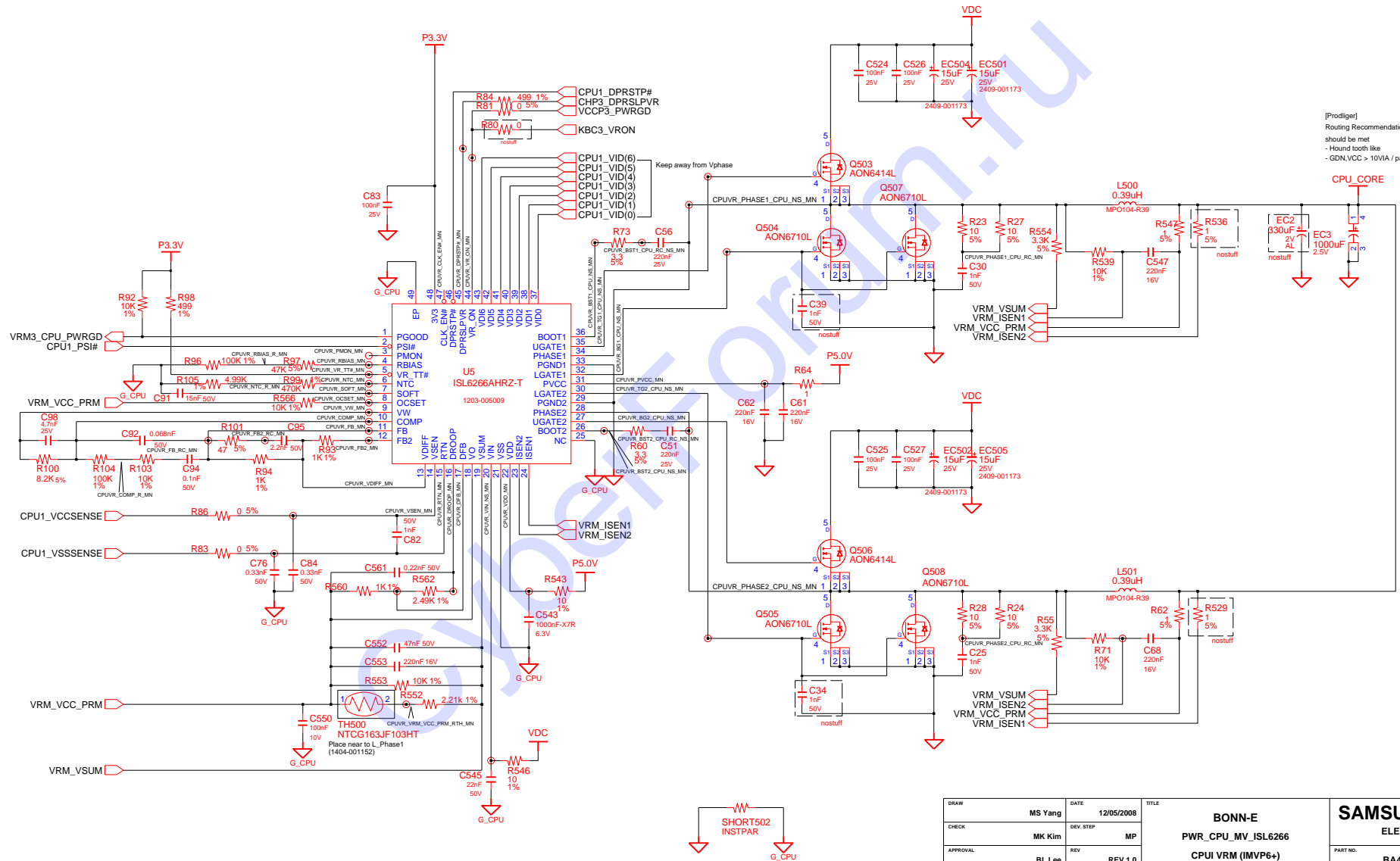


DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	REV. STEP	MP	PWR_MV_Cantiga		
APPROVAL	BL Lee	REV	REV 1.0	P1.5V_AUX, P1.05V		PART NO. BA41-01060A
MODULE CODE	undefined	LAST EXT		April 11, 2009 10:05:58 AM		PAGE 58 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

CPU VRM [INTERSIL]



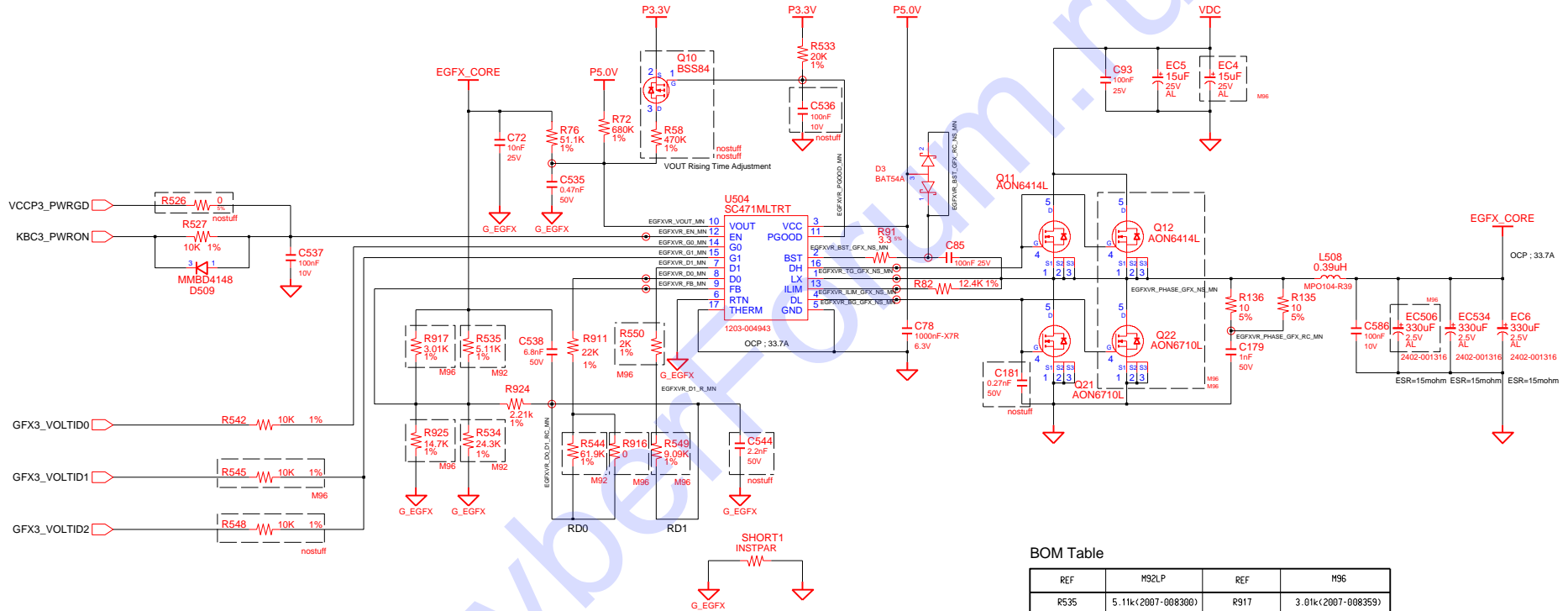
[Protinger]
Routing Recommendation
should be met
- Hound tooth like
- GDN.VCC > 10VA / pad

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG
CHECK	MK Kim	REV. STEP	MP	PWR_CPU_MV_ISL6266		ELECTRONICS
APPROVAL	BL Lee	REV	REV 1.0	CPU VRM (IMVP6+)		PART NO.
MODULE CODE	undefined	LAST EDIT	April 11, 2009 10:05:58 AM	PAGE	59	OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

Ext. GFX Core Power [Semtech]



Power Table (by AMD Power Play)

Condition	GFX3_VOLTID2	GFX3_VOLTID1	GFX3_VOLTID0	M92-M2 LP		GFX3_VOLTID2	GFX3_VOLTID1	GFX3_VOLTID0	M96		
				Spec	Calculated				Spec	Calculated	Measured
High Performance	Reserved	Reserved	1	0.95V	0.953V	Reserved	1	1	1.15V	1.139V	1.1543V
UVD	Reserved	Reserved	1	0.95V	0.953V	Reserved	1	0	1.10V	1.073V	1.0865V
Battery - Dual Display	Reserved	Reserved	1	0.95V	0.953V	Reserved	0	1	1.00V	0.997V	1.0085V
Battery - Single Display	Reserved	Reserved	0	0.90V	0.908V	Reserved	0	0	0.90V	0.904V	0.9133V

BOM Table

REF	M92LP	REF	M96
R535	5.11k(2007-008300)	R917	3.01k(2007-008359)
R534	24.3k(2007-007237)	R925	14.7k(2007-007521)
R544	61.9k(2007-002991)	R916	0(2007-000070)
R550	nostuff	R550	2k(2007-000669)
R549	nostuff	R549	9.09k(2007-007445)
R545	nostuff	R545	10k(2007-007142)
Q12	nostuff	Q12	A0N6414L(0505-000280)
EC506	nostuff	EC506	330uF(2402-001316)

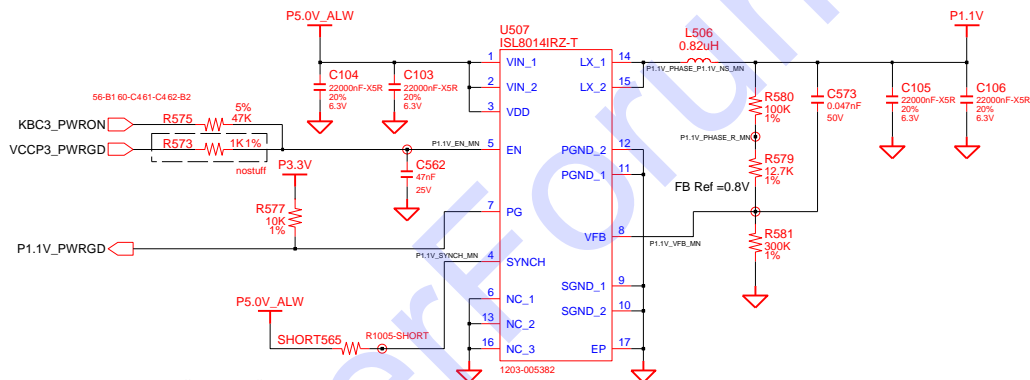
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E GFX_POWER	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	EXT. GFX VDDC (SC471M)	PART NO.	
APPROVAL	BL Lee	REV	REV 1.0		BA41-01060A	
MODULE CODE		LAST EDIT				
April 11, 2009 10:05:58 AM						PAGE 60 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

P1.1V

P1.1V(External Gfx)



Burst mode : R569 nostuff & R570 stuff
Continuous mode : R569 stuff & R570 nostuff

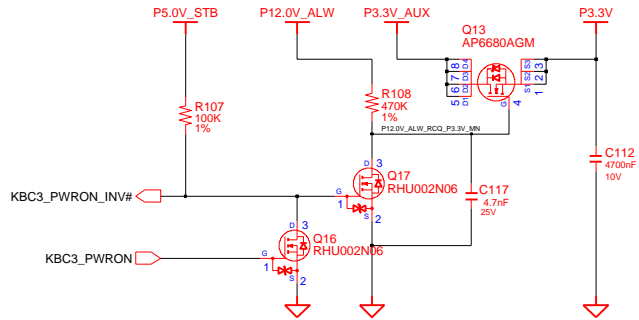
DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS	
CHECK	MK Kim	DEV. STEP	MP		PWR_MV_Switched		
APPROVAL	BL Lee	REV	REV 1.0		P1.1V	PART NO.	BA41-01060A
MODULE CODE		LAST EDIT				PAGE	61 OF 67
				April 11, 2009 10:05:58 AM			

SAMSUNG PROPRIETARY

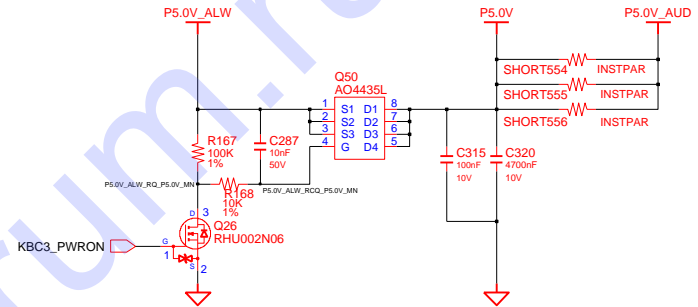
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

Switched Power

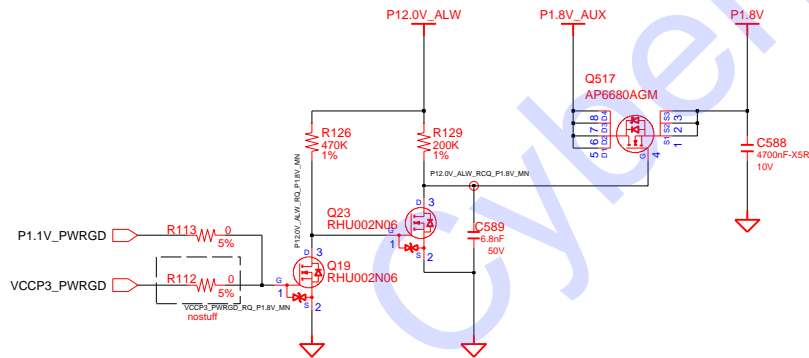
Switched Power On (P3.3V)



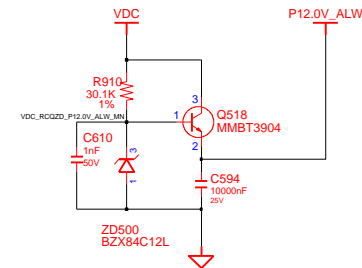
Switched Power On (P5.0V)



Switched Power On (P1.8V)



P12.0V_ALW

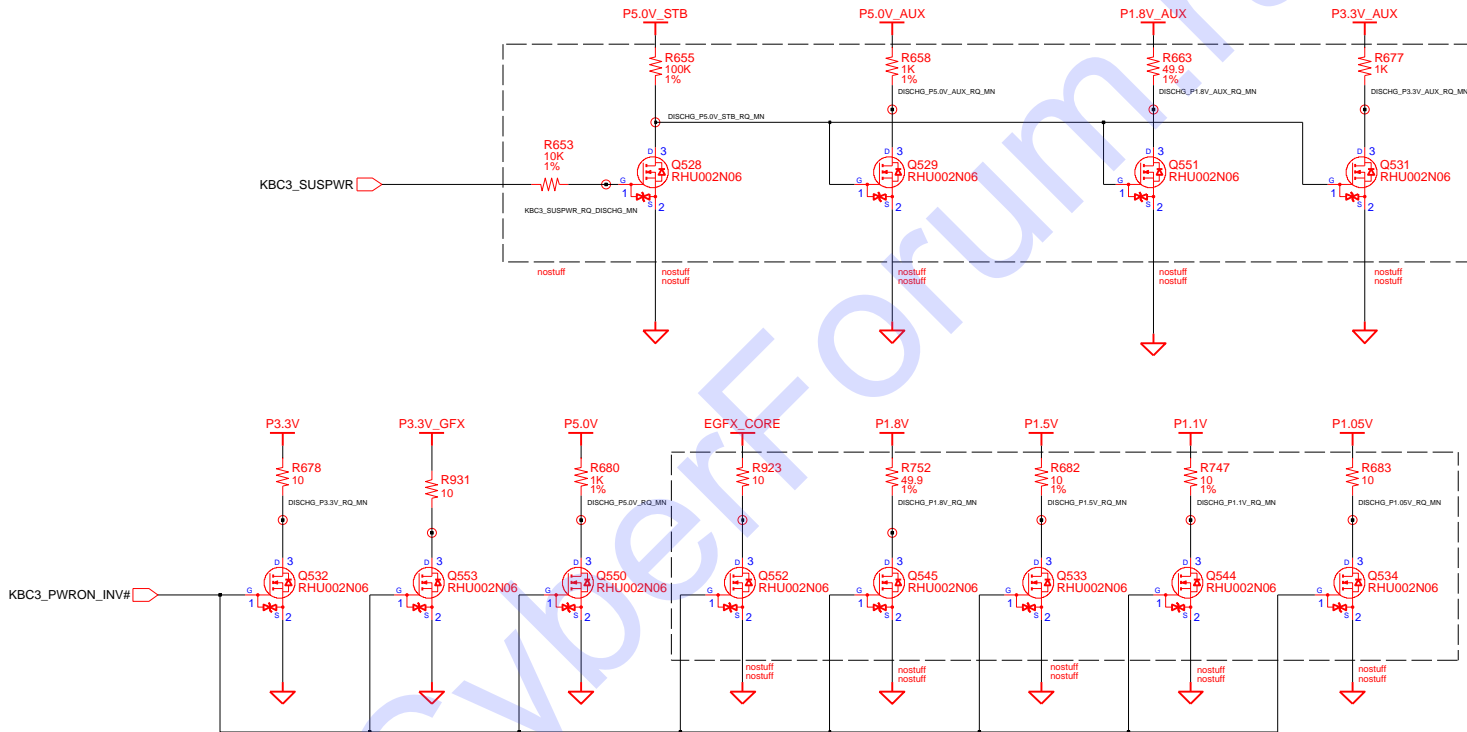


DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	PWR_MV_SWITCHED		
APPROVAL	BL Lee	REV	REV 1.0	SWITCHED POWER		PART NO.
MODULE CODE		LAST EDIT		April 11, 2009 10:05:58 AM		BA41-01060A
						PAGE 62 OF 67

SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

POWER DISCHARGER

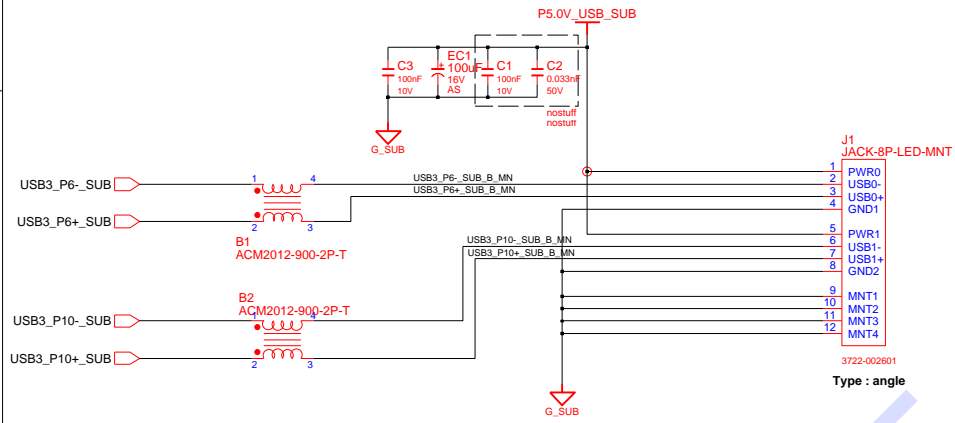


DRAWN	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	PWR_MV_DISCHARGER		
APPROVAL	BL Lee	REV	REV 1.0	DISCHARGING LOGIC		PART NO. BA41-01060A
MODULE CODE	undefined	LAST EDIT	April 11, 2009 10:05:58 AM		PAGE	63 OF 67

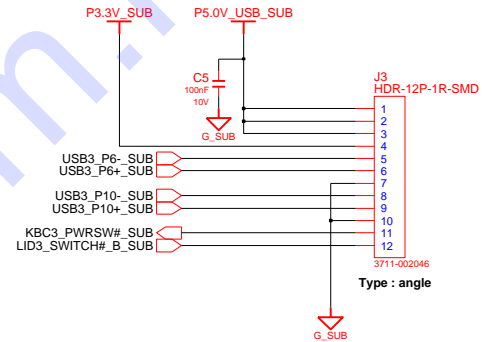
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

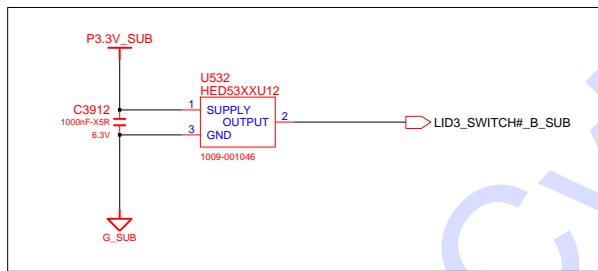
2 USB PORT & POWER S/W SUB B'D



SUB TO MAIN USB CONN



LID_SWITCH (Bonn only)



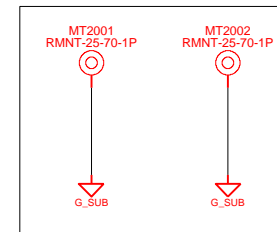
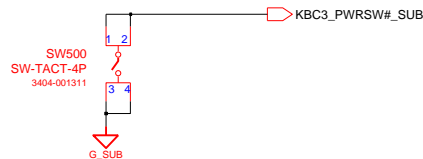
Bonn : stuff
Canne : nostuff

Power ON LED



Put this LED located near PWRSW from ME recommendation
Power LED, Blue color

Power Switch Button



USB sub board mount hole

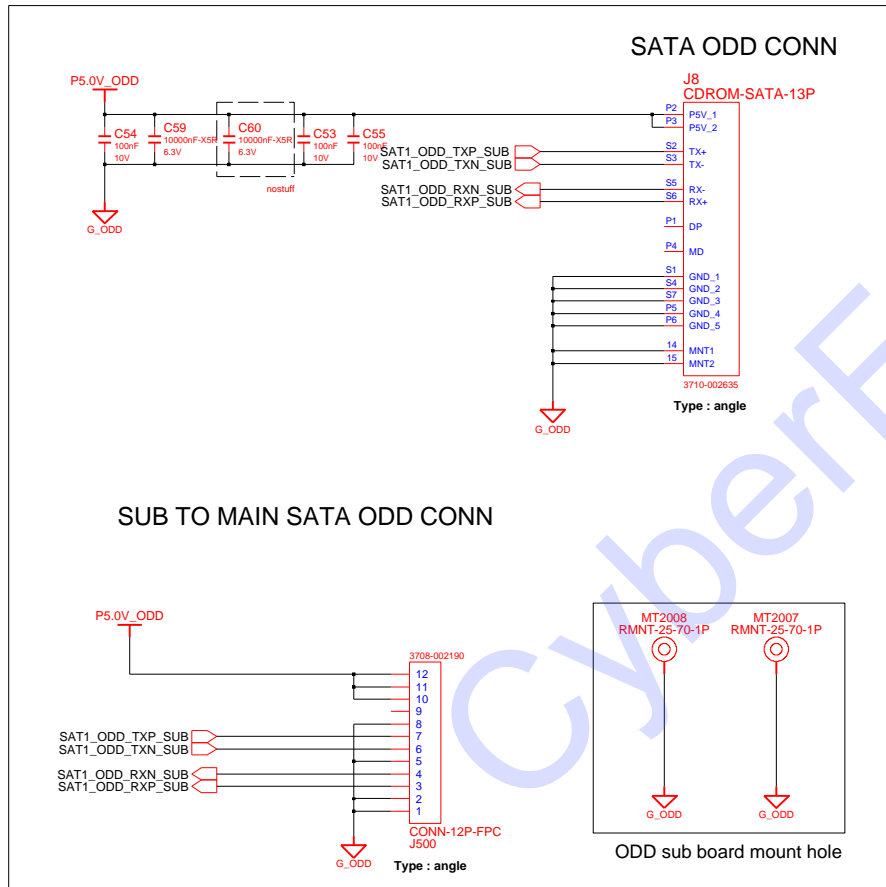
DESIGN	MS Yang	DATE	12/05/2008	TITLE	BONN-E SUB BOARD1	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP			
APPROVAL	BL Lee	REV	REV 1.0		2 USB & POWER SW	PART NO. BA41-01060A
MODULE CODE		LAST EDIT			April 11, 2009 10:05:58 AM	PAGE 64 OF 67

SAMSUNG PROPRIETARY

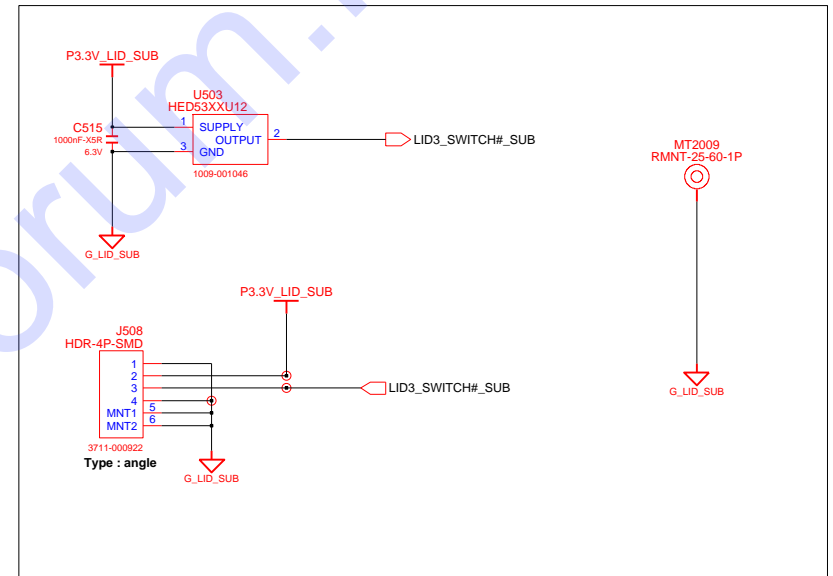
THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

SATA ODD & LID SW SUB BOARD

SATA ODD SUB BOARD



LID SWITCH SUB BOARD (Canne only)



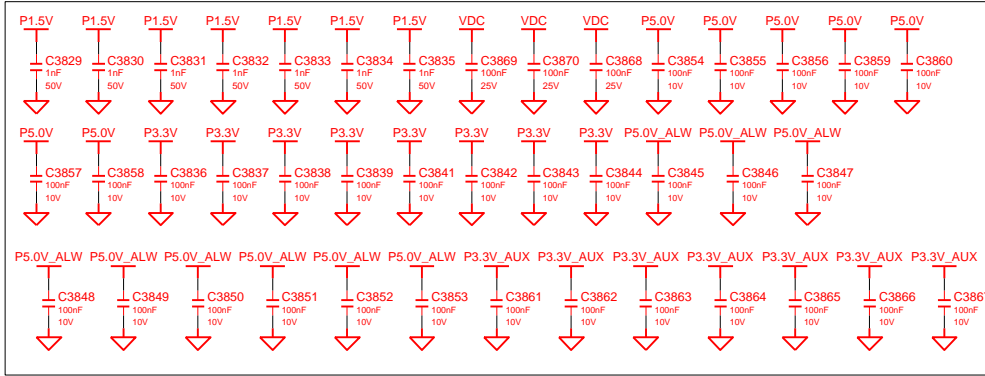
Bonn : nostuff
Cannes : stuff

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	SUB BOARD2		
APPROVAL	BL Lee	REV	REV 1.0	SATA ODD SUB BOARD	PART NO.	BA41-01060A
MODULE CODE	undefined	LAST EDIT	April 11, 2009 10:05:58 AM	PAGE	65	OF 67

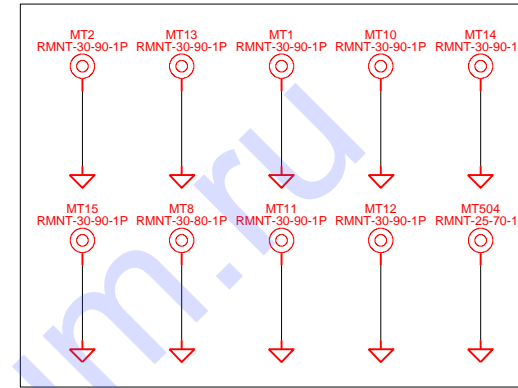
SAMSUNG PROPRIETARY

THIS DOCUMENT CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION THAT IS SAMSUNG ELECTRONICS CO.'S PROPERTY. DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS EXCEPT AS AUTHORIZED BY SAMSUNG.

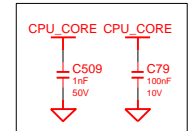
Mainboard Mount ((30,80)x9), (30,90)x9), (25,70)x1))



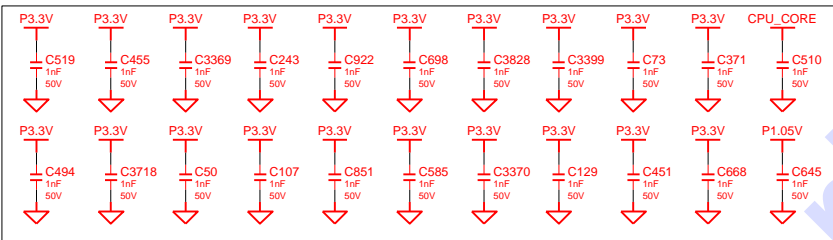
Add for EMC , 2009.01.06



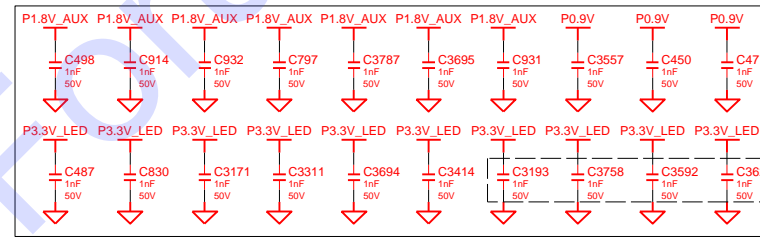
Top : (30,80) x 9
Bot : (30,90) x 9



Add for EMC (Top), 2008.11.19

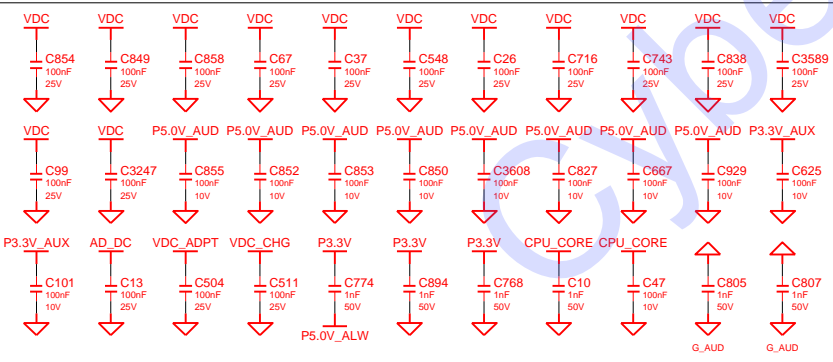


Add for EMC (5th Layer), 2008.11.19

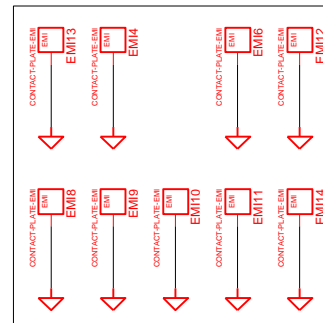


Add for EMC (Bottom), 2008.11.19

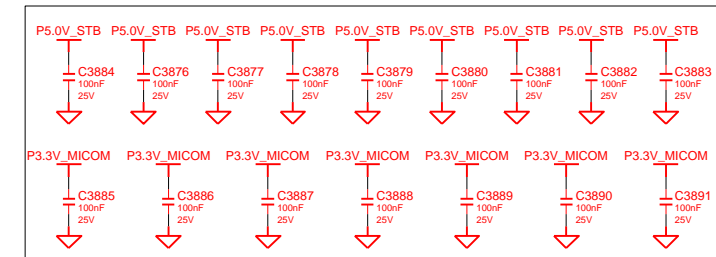
nostuff
nostuff
nostuff
nostuff



Add for EMC (Bottom), 2008.11.19



Add for EMC , 2009.01.07



Add for EMC , 2009.02.02

nostuff
nostuff
nostuff
nostuff
nostuff
nostuff

DRAW	MS Yang	DATE	12/05/2008	TITLE	BONN-E	SAMSUNG ELECTRONICS
CHECK	MK Kim	DEV. STEP	MP	ICT PORT	ICT PORT	
APPROVAL	BL Lee	REV	REV 1.0			PART NO. BA41-01060A
MODULE CODE		LAST EDIT				DATE April 11, 2009 10:05:58 AM
					PAGE	66 OF 67

