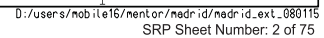


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<h1>Madrid-EXT</h1>																																	
CPU : Intel Penryn-6M (1067/800) MHz Chip Set : Intel Cantiga & ICH9M Remarks : Montevina Platform																																	
<div style="border: 1px solid black; padding: 5px;">         Model Name : Madrid-EXT          PBA Name : MAIN          PCB Code : BA41-#####A          Dev. Step : PV          Revision : 1.0          T.R. Date : 2008.02.29       </div>																																	
<table border="1" style="width: 100%;"> <thead> <tr> <th>Design</th> <th>CHECK</th> <th>APPROVAL</th> </tr> </thead> <tbody> <tr> <td>SE LEE</td> <td>SE LEE</td> <td>ES CHO</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						Design	CHECK	APPROVAL	SE LEE	SE LEE	ES CHO																						
Design	CHECK	APPROVAL																															
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<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div> <b>Owner : SEC Mobile R &amp; D</b> </div> <div> <b>Signature :</b> <i>X</i> </div> </div>																																	
<table border="1" style="width: 100%;"> <tr> <td>DRAW</td> <td>SE LEE</td> <td>DATE</td> <td>11/8/2006</td> <td>TITLE</td> <td>MADRID MAIN COVER</td> <td>SAMSUNG ELECTRONICS</td> </tr> <tr> <td>CHECK</td> <td>SE LEE</td> <td>DEV. STEP</td> <td>ADV2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>APPROVAL</td> <td>ES CHO</td> <td>REV</td> <td>REV 0.7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>MODULE CODE</td> <td></td> <td>LAST EDIT</td> <td>January 15, 2008 17:28:38 PM</td> <td>PAGE</td> <td>1</td> <td>OF 19</td> </tr> </table>						DRAW	SE LEE	DATE	11/8/2006	TITLE	MADRID MAIN COVER	SAMSUNG ELECTRONICS	CHECK	SE LEE	DEV. STEP	ADV2				APPROVAL	ES CHO	REV	REV 0.7				MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 19
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## BOARD INFORMATION

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## SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

## PCI Devices

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 LPC bridgeIDE/AC97/SMBUS	AD30(internal) AD31(internal)	- -	- B
Internal MAC AC Link GLAN	AD24(internal) - -	- - -	- E F

## Voltage Rails

VDC_CORE	Primary DC system power supply (7 to 21V)
VCC_CORE	Core Voltage for CPU
GPU_CORE	Core Voltage for GPU
P1.05V (VCCP)	VTT for CPU, Crestline & ICH8-M
P3.3V_MICOM	3.3V always power rail (for Microm)
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

## USB PORT Assign

PORT #	ASSIGNED TO
0	SYSTEM PORT 0
1	SYSTEM PORT 1
2	SYSTEM PORT 2
3	NC
4	NC
5	Bluetooth
6	Mini PCI Express 2
7	Camera
8	NC
9	NC

## PCI Express Assign

PORT #	ASSIGNED TO
0	NC
1	Mini Card 1 (WLAN)
2	NC
3	LOM
4	Mini Card 2 (ROBSON or DVB-T)
5	NC

## 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 Pannel Detect (TBD)

Devices	Resolution	PANNEL_DETECT_0

I<sup>2</sup>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

## REVISION HISTORY

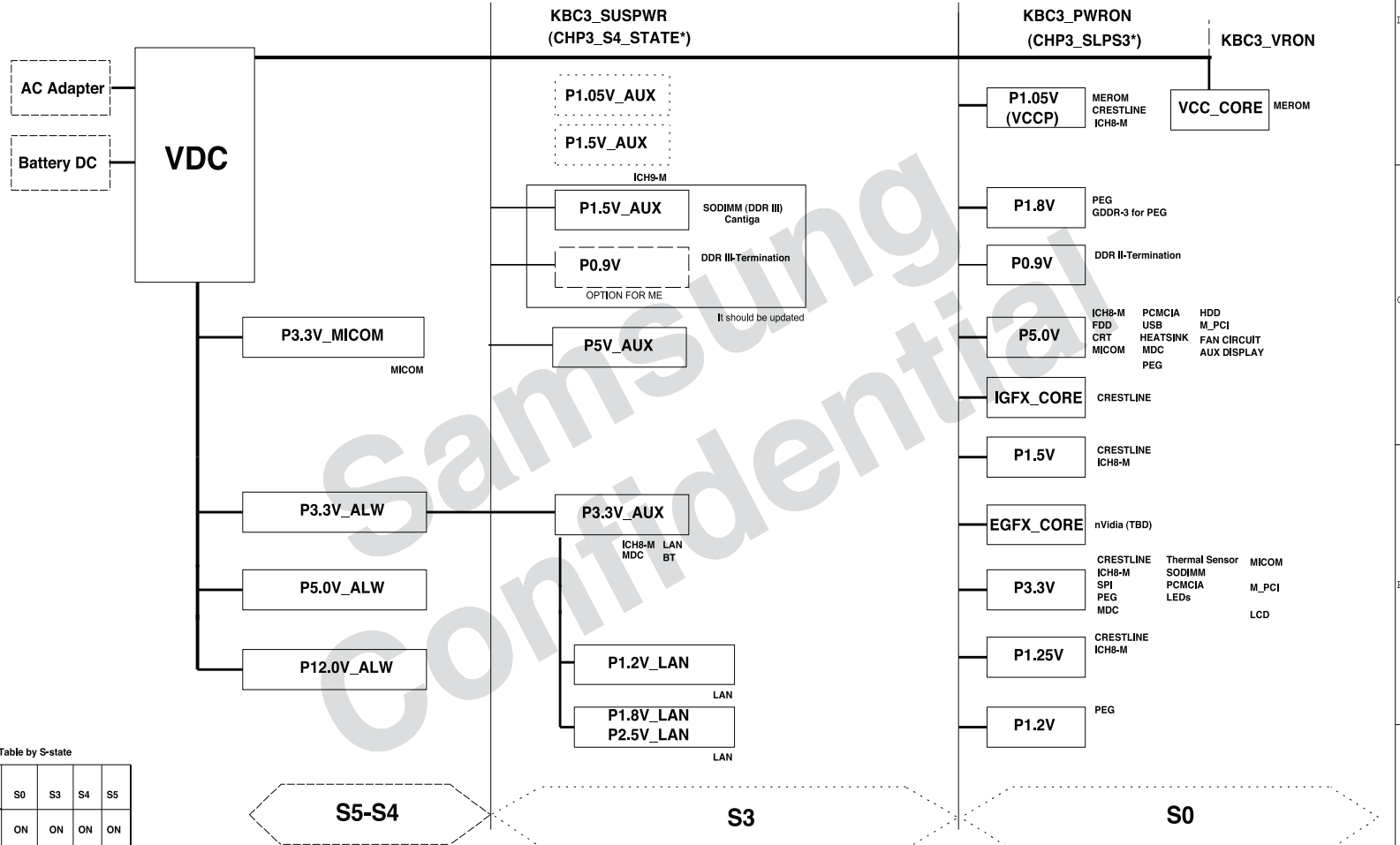
See rev notes for more information.

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# POWER DIAGRAM

Rev 0.1

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Power On/Off Table by S-state

Rail	S0	S3	S4	S5
+V*(LWS)	ON	ON	ON	ON
+V*LAN	ON	ON	ON	ON
+1.8V_AUX	ON	ON	ON	ON
+0.9V	ON	ON	ON	ON
+V*AUX	ON	ON	ON	ON
+V	ON	ON	ON	ON
+V* (CORE)	ON	ON	ON	ON

DATE	11/8/2006	TITLE	MADRID MAIN POWER DIAGRAM	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	ADV2	PART NO.
APPROVAL	ES CHO	REV	REV 0.7	BA41-####A
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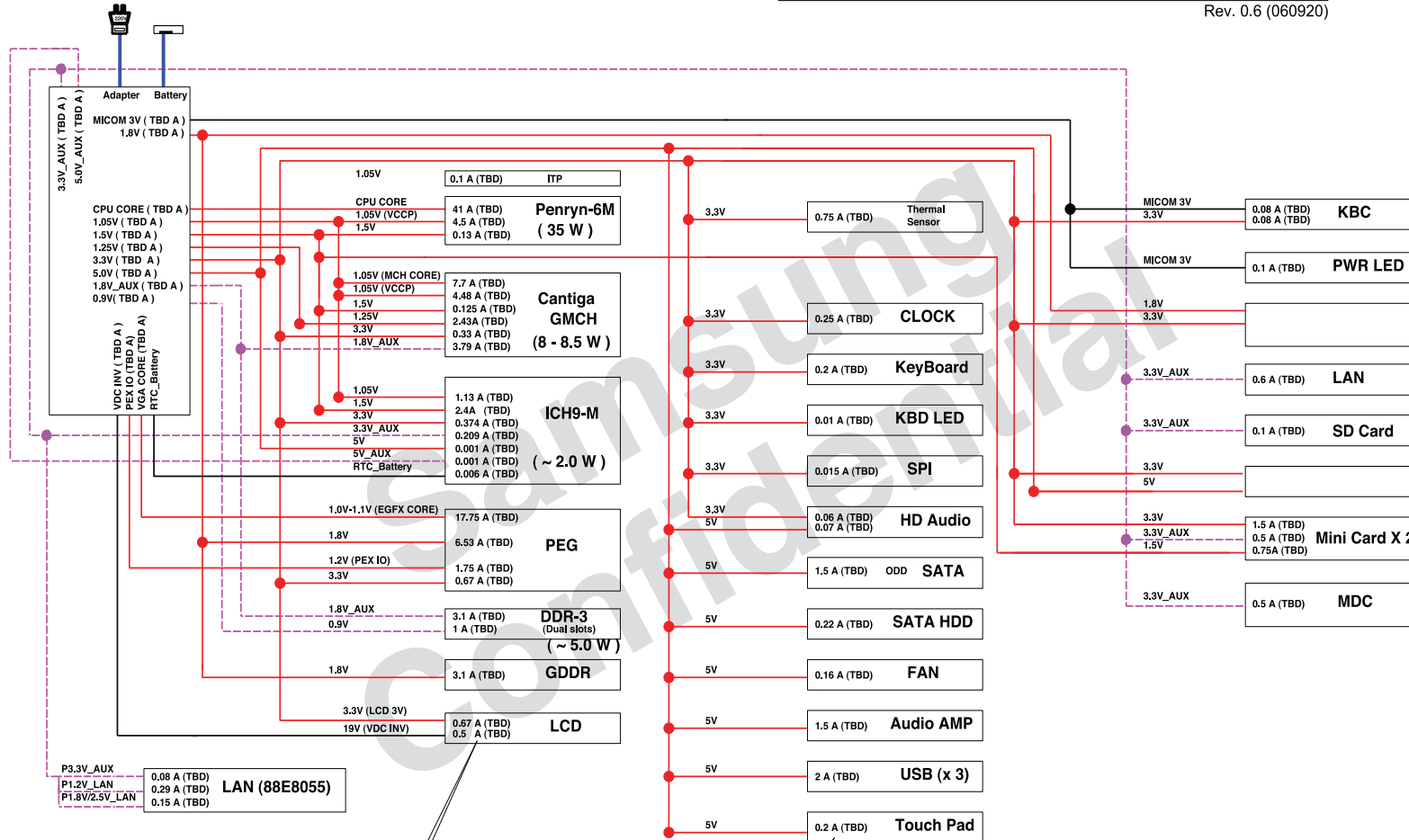
# POWER RAILS ANALYSIS

Rev. 0.6 (060920)

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Value by Datasheet/Application notes (Value by measurement)

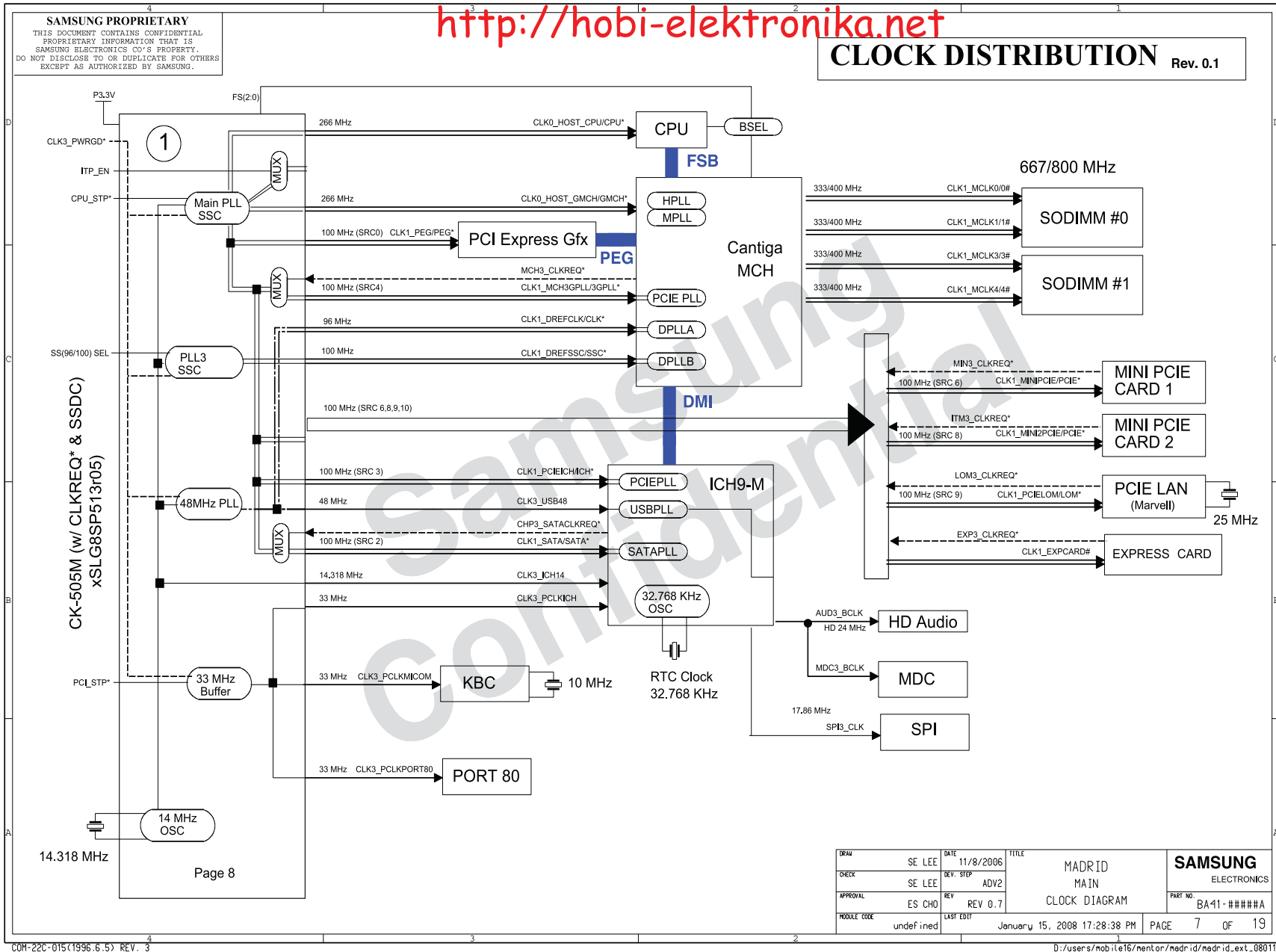
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# CLOCK DISTRIBUTION Rev. 0.1

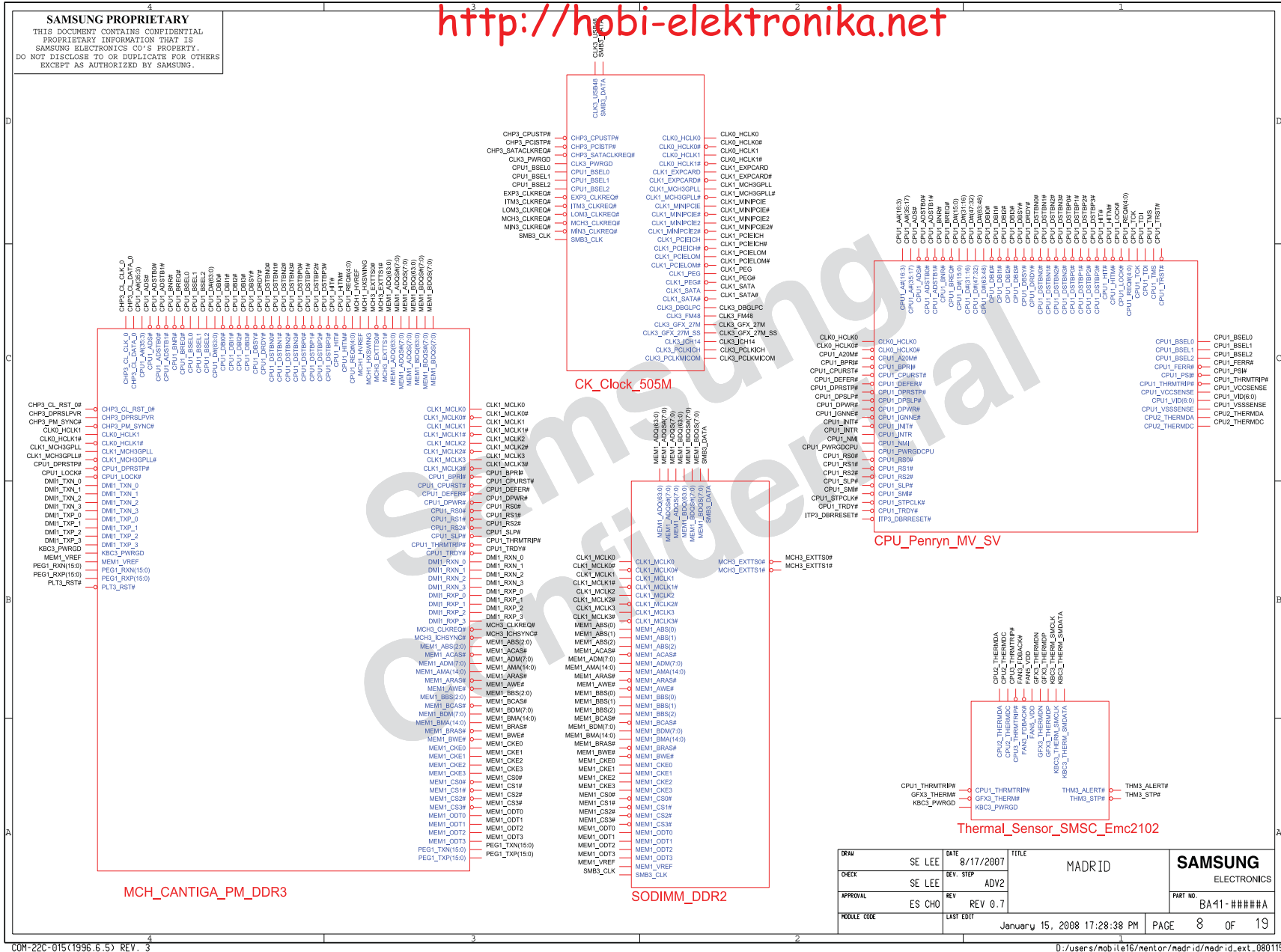
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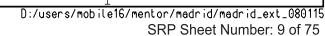


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http://hobi-elektronika.net



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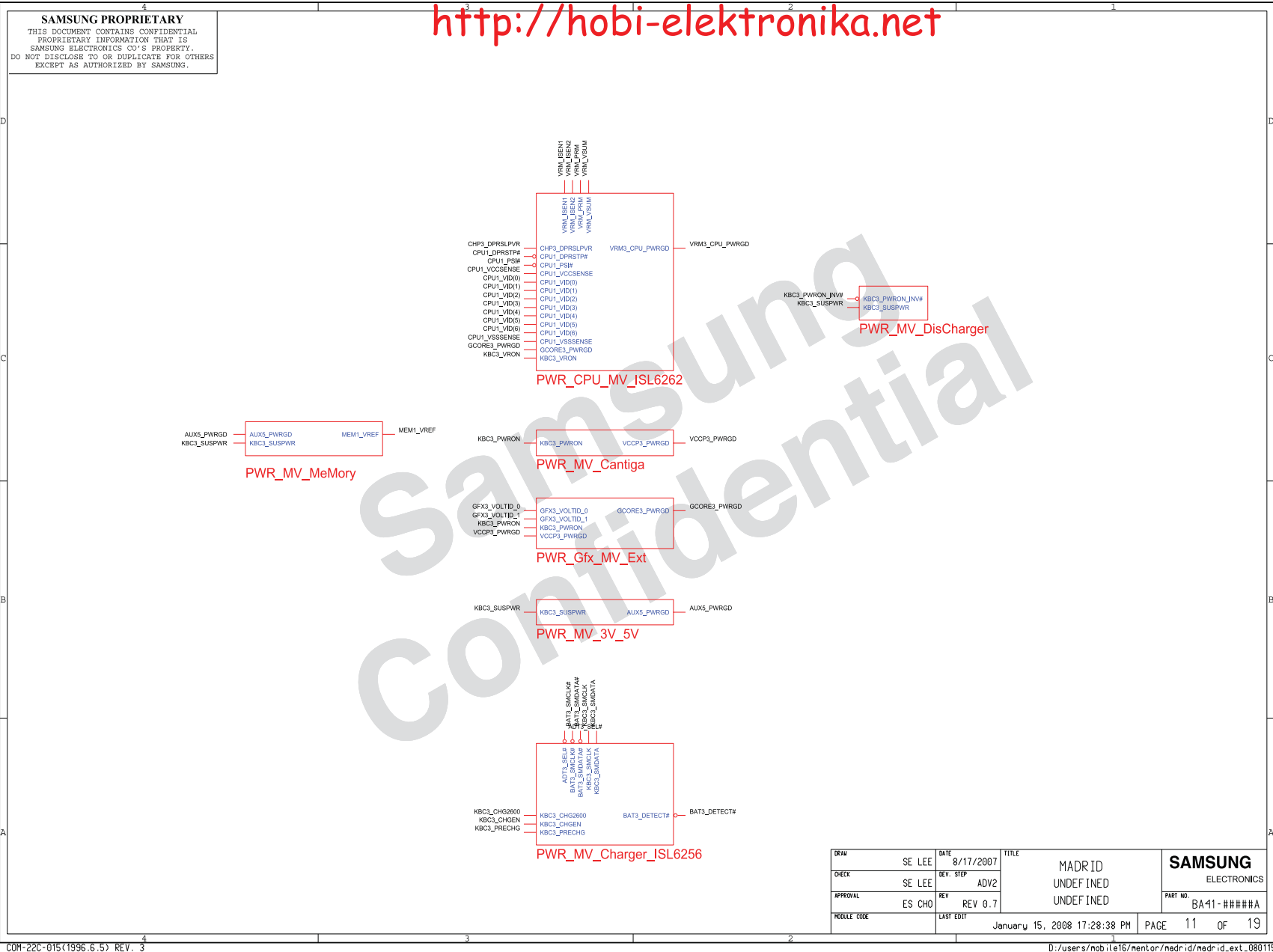


COM-22C-015(1996.6.5) REV. 3

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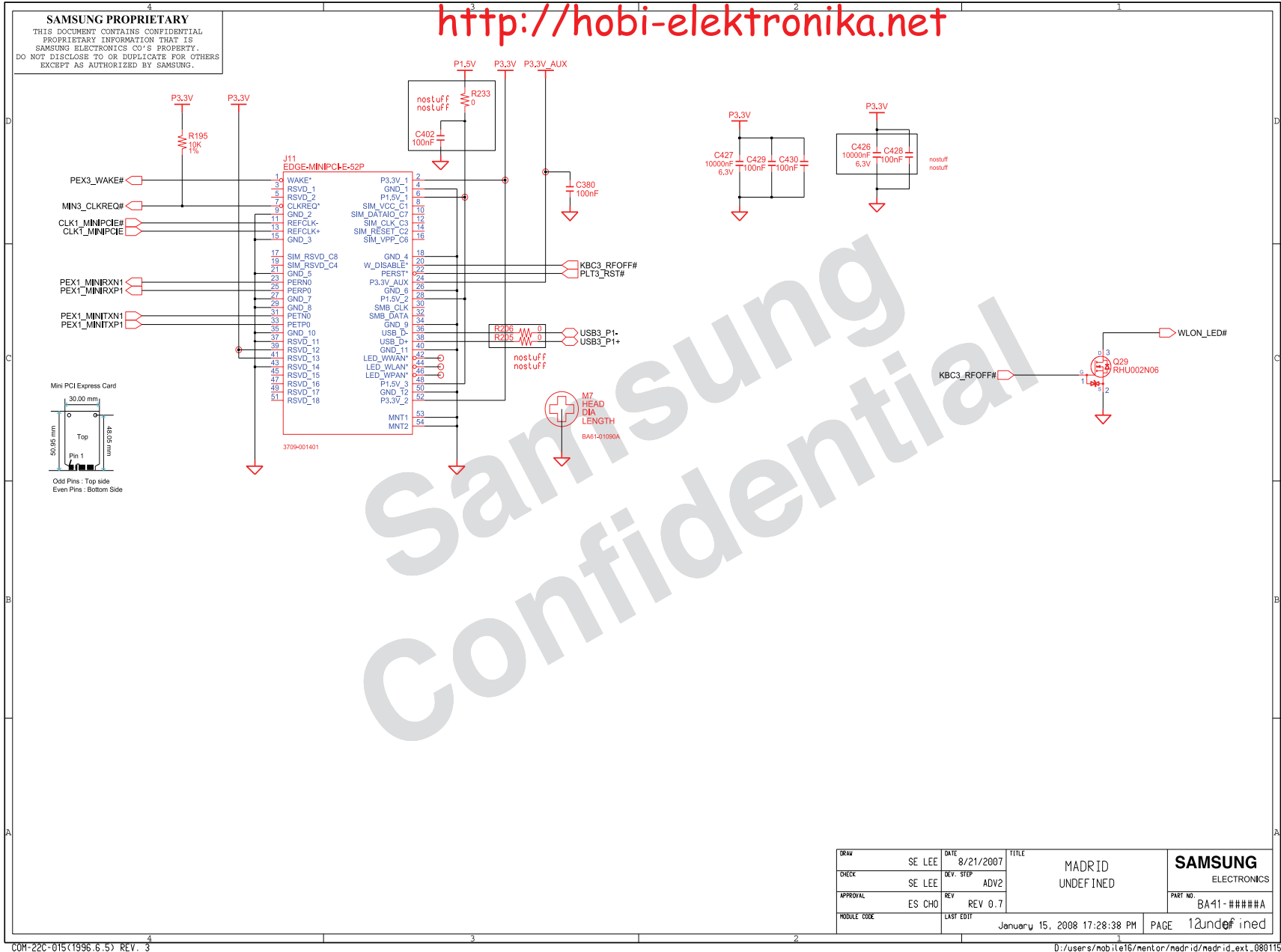
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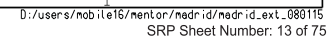


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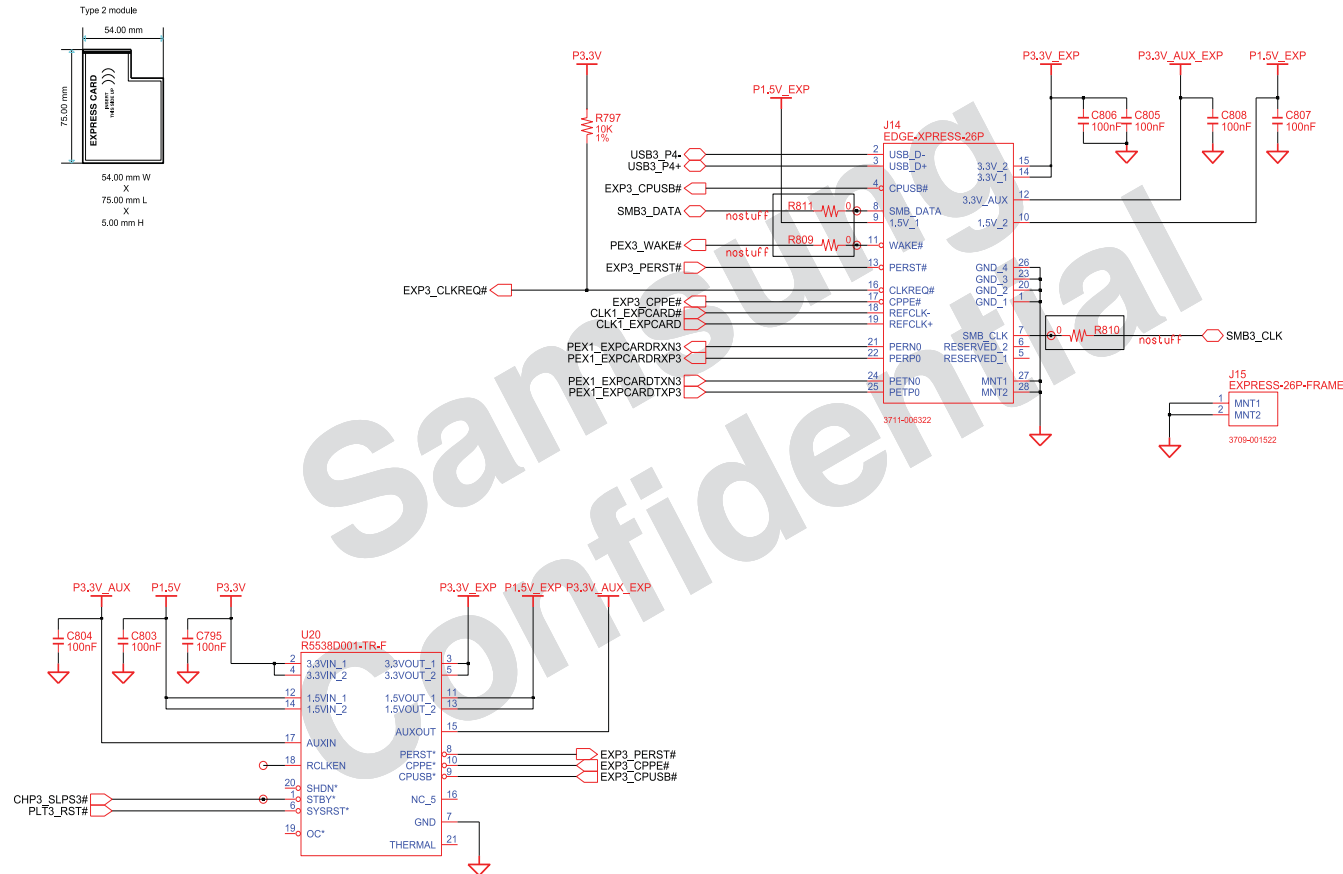






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MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	14	undefined

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P3.3V\_MCD distance between R5U880 and socket should be less than 2 inches

**40mil pattern**

**40 mil trace for medica card socket ground**

MSEL5	SD Write Protec Selection
Connected to VCC	High Enable
Connected to GND	Low Enable

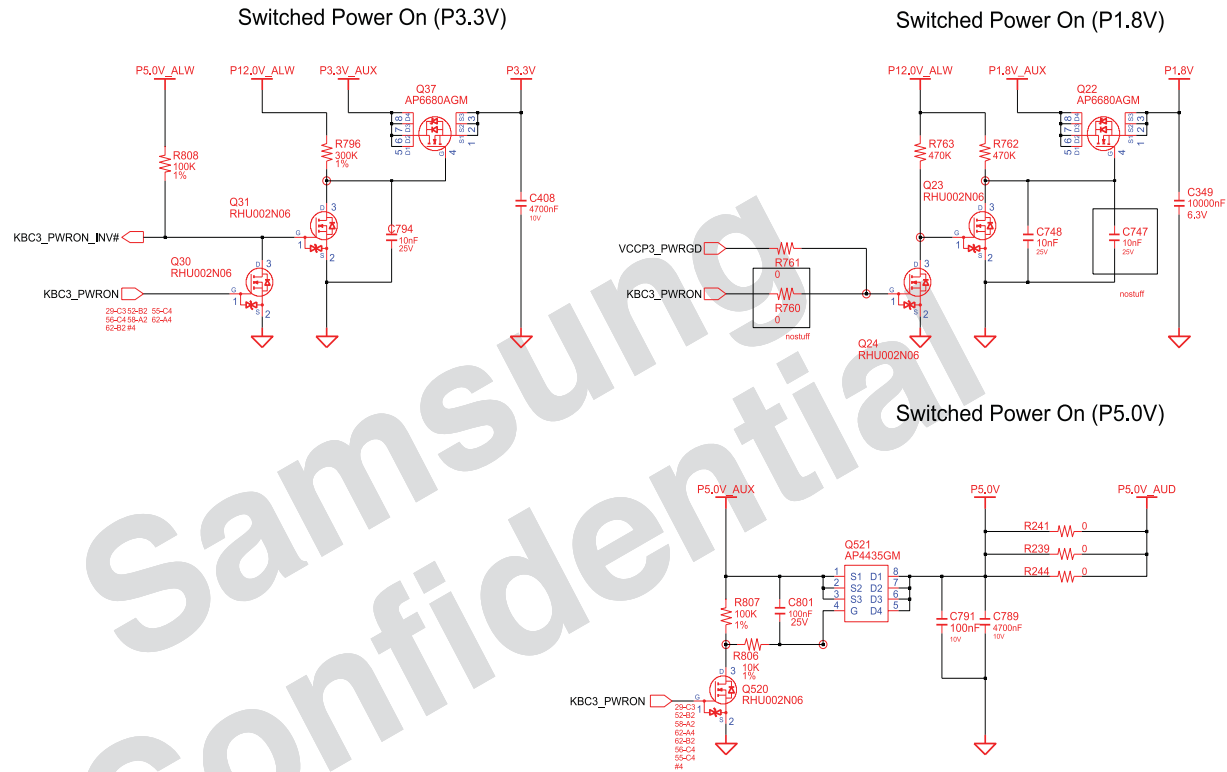
MSEL7	PLL BASE CLOCK SELECTION
Connected to VCC	12MHz
Connected to GND	48MHz

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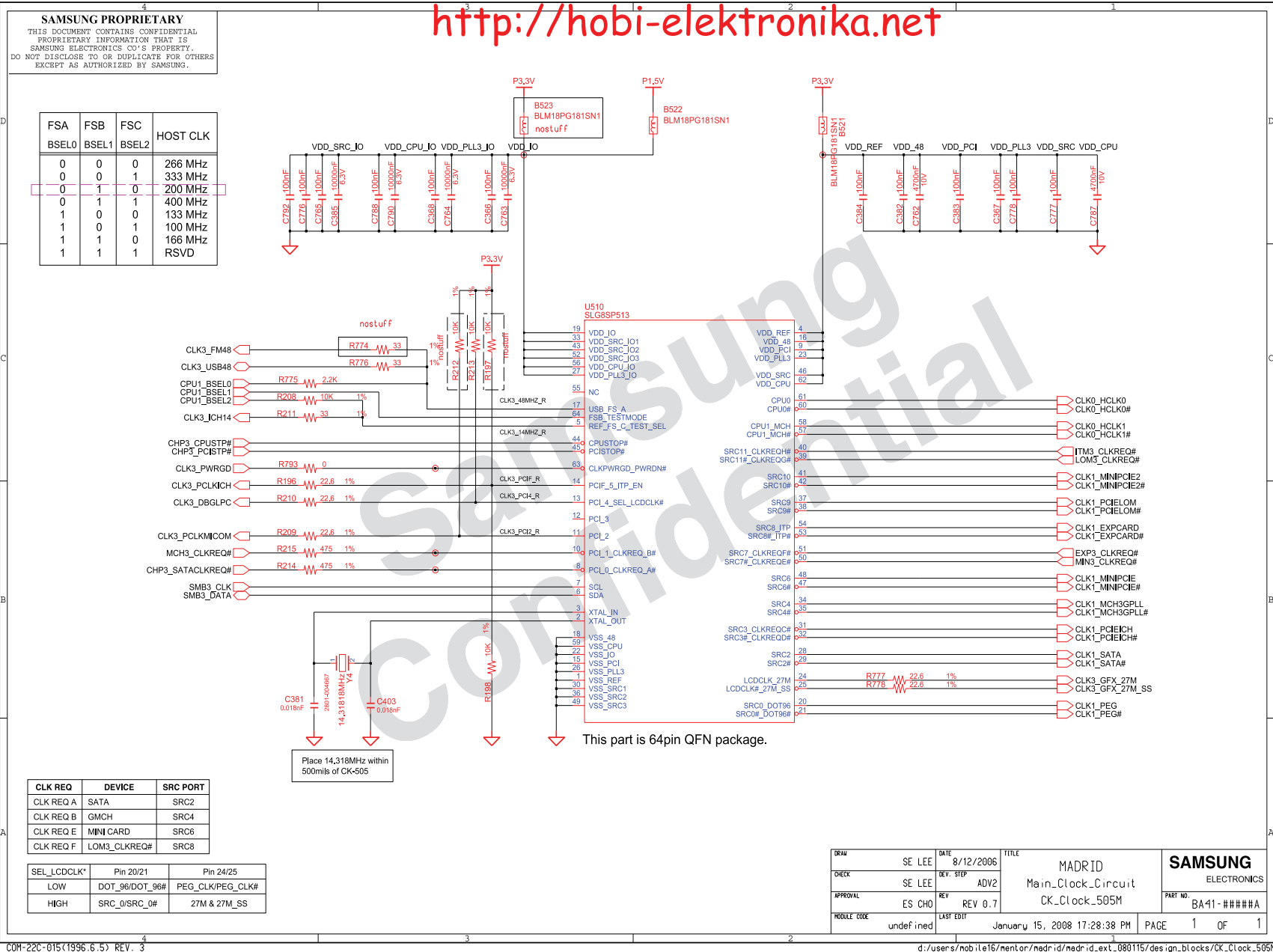
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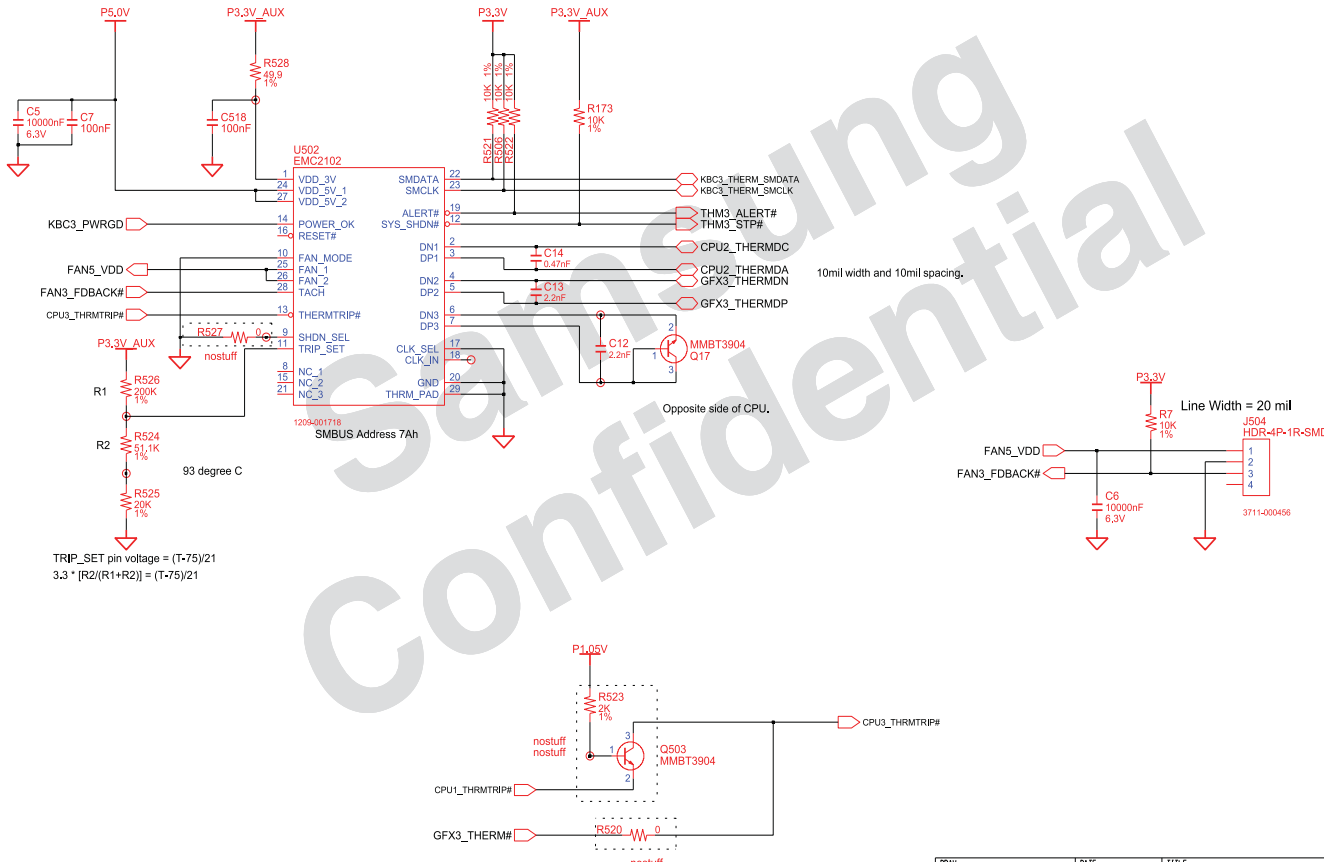
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# THERMAL SENSOR & FAN CONTROL



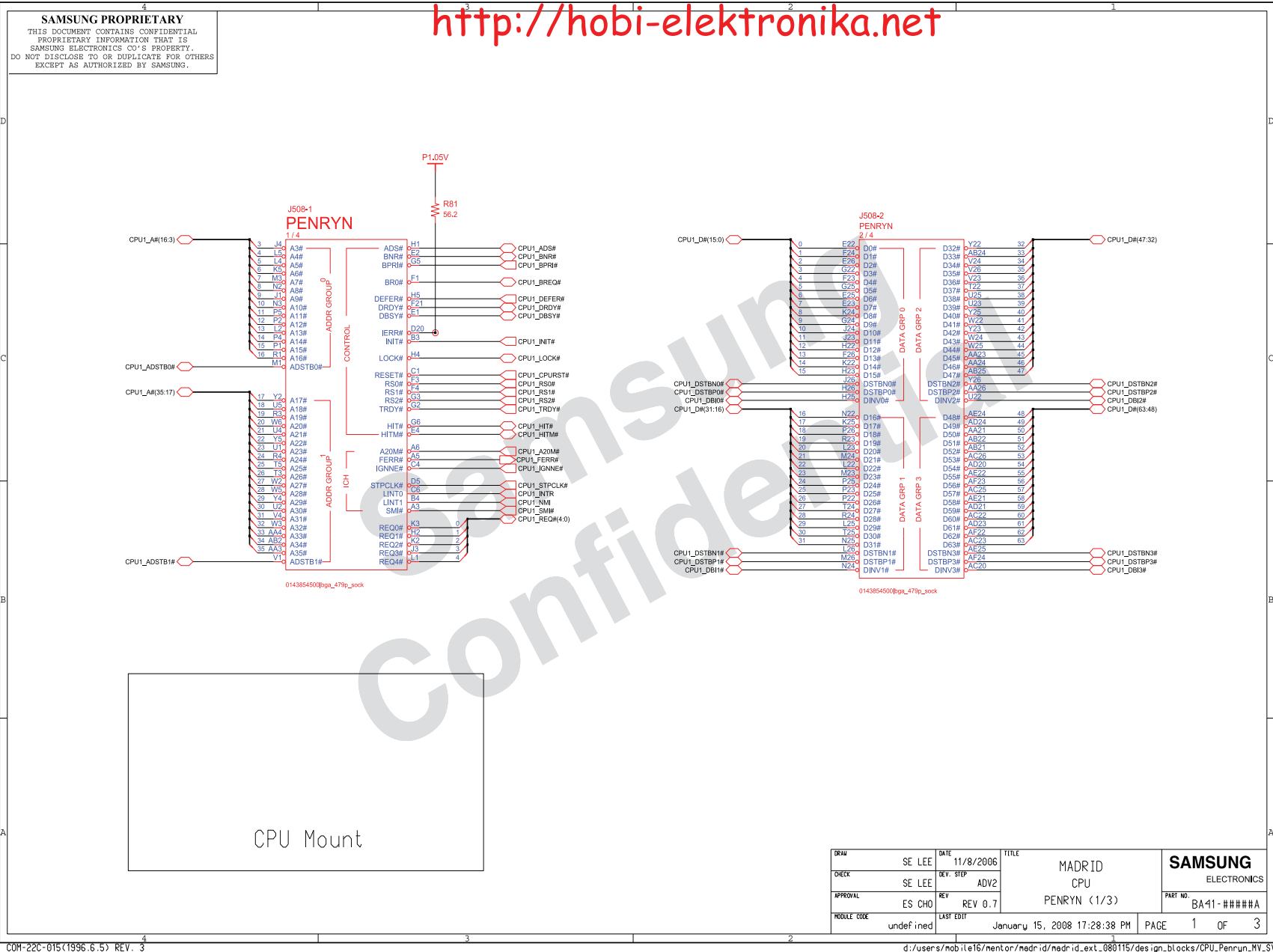
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MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

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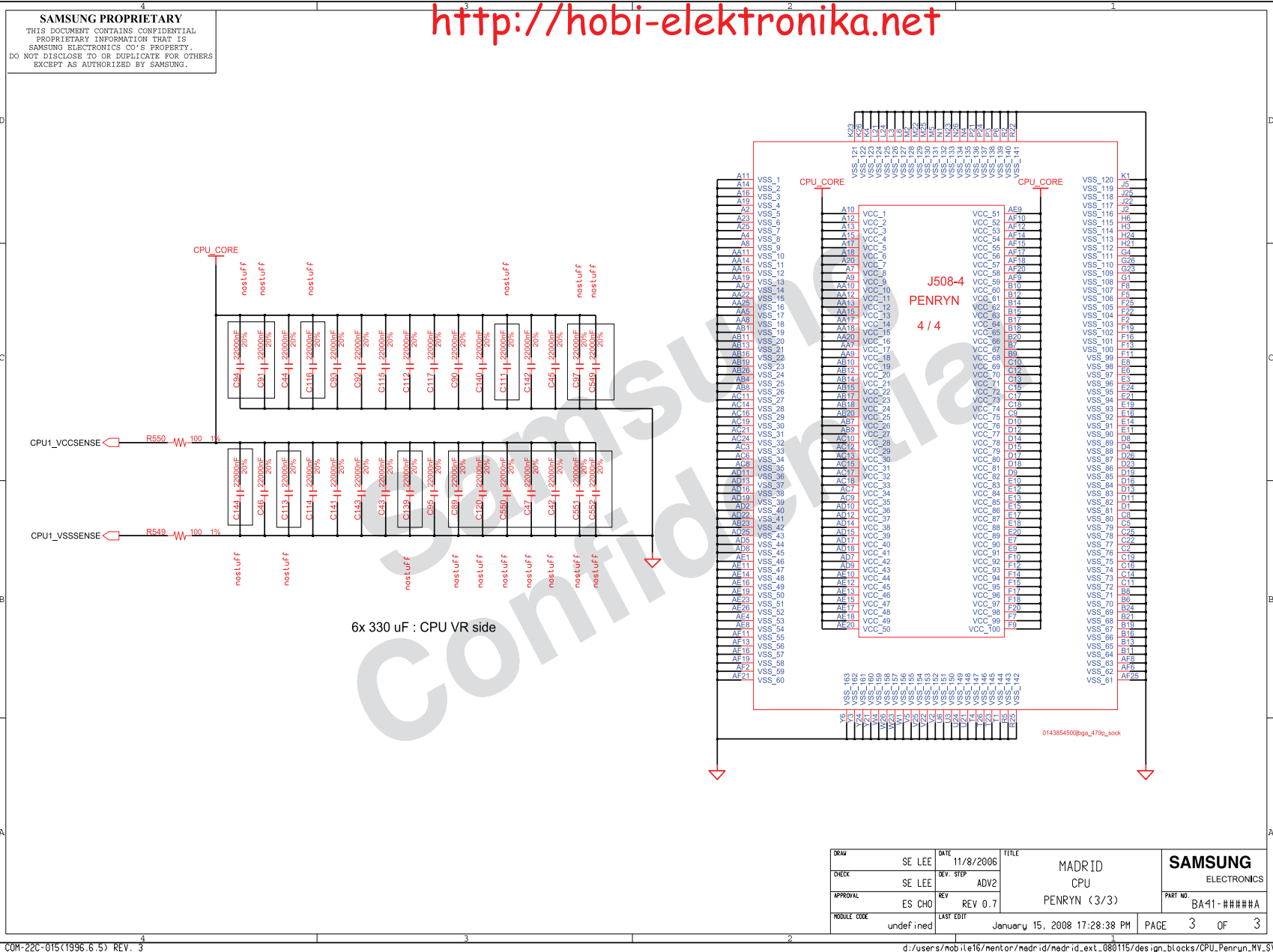






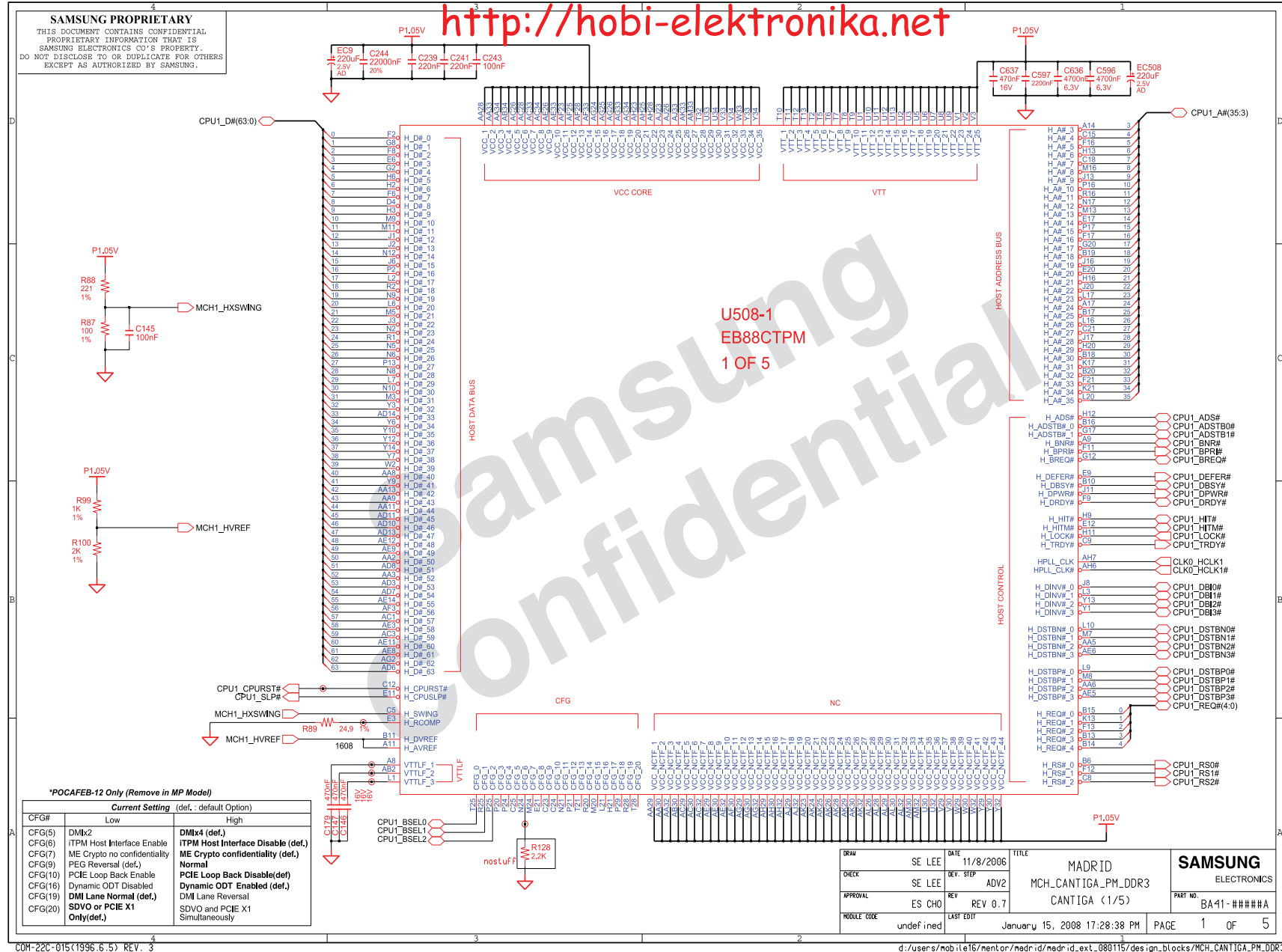
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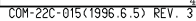
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PLACE EACH CAP NEAR AV42 PIN



DR 3 : Connect to VR  
DR 2 : Connect to GN

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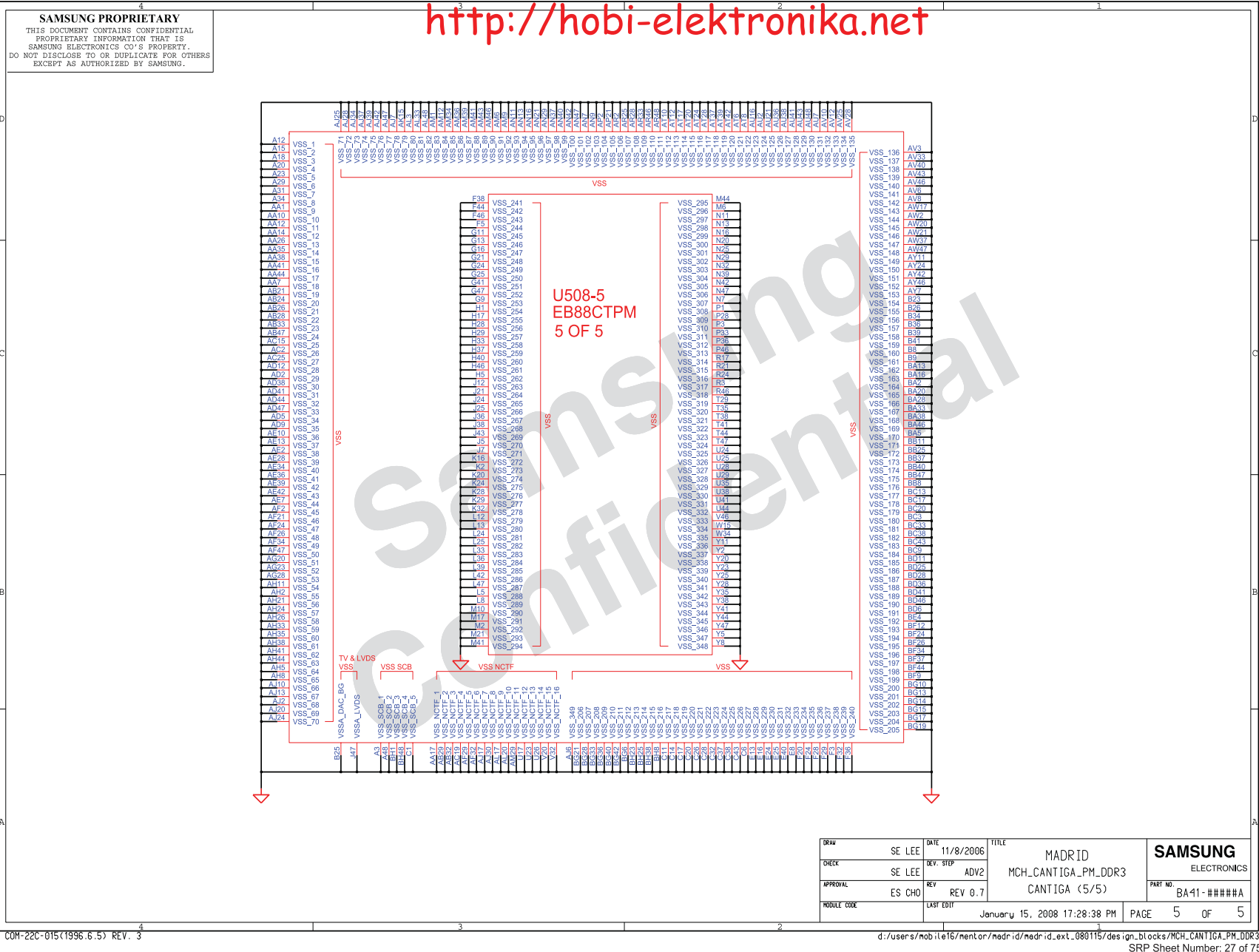
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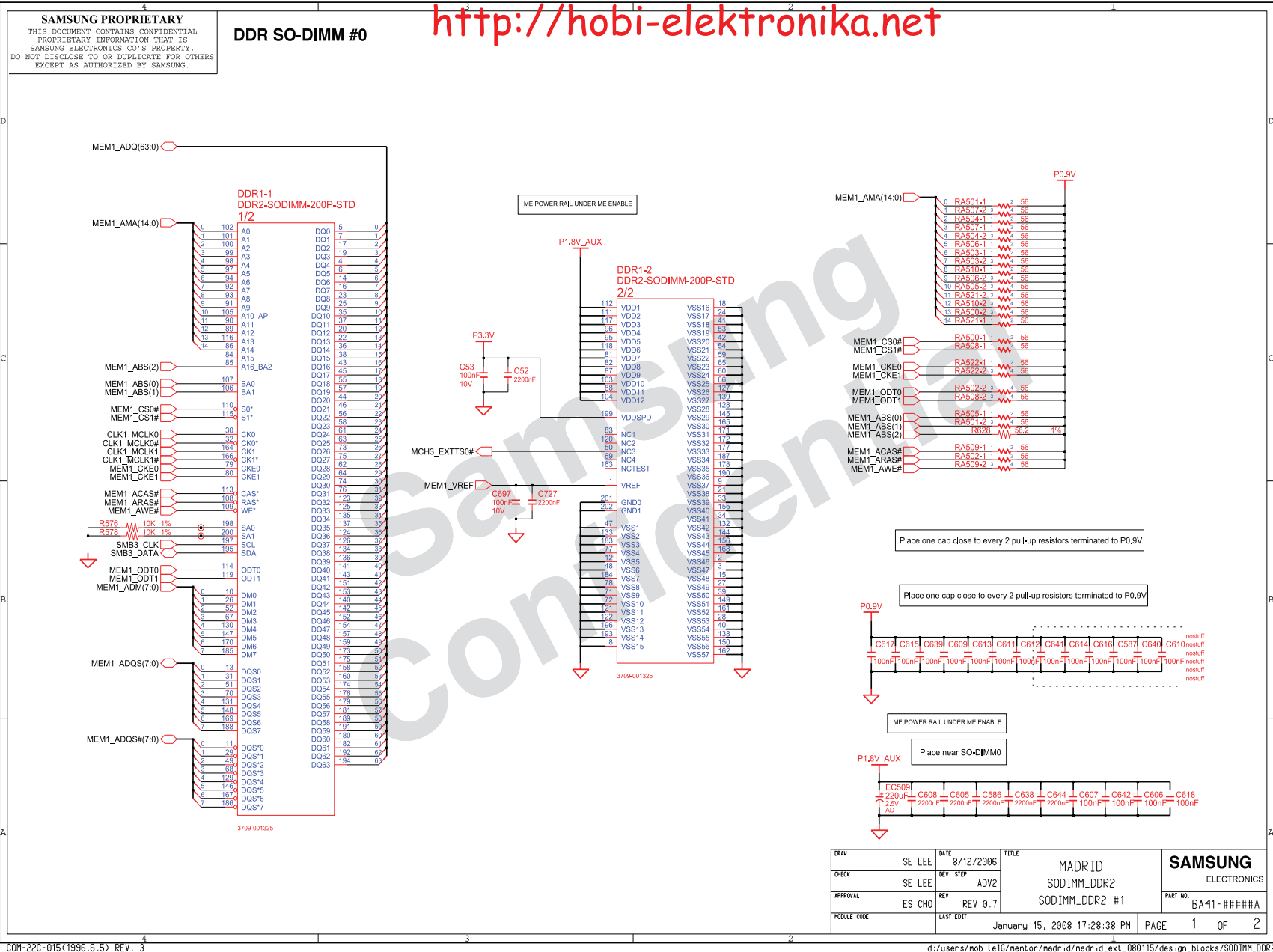
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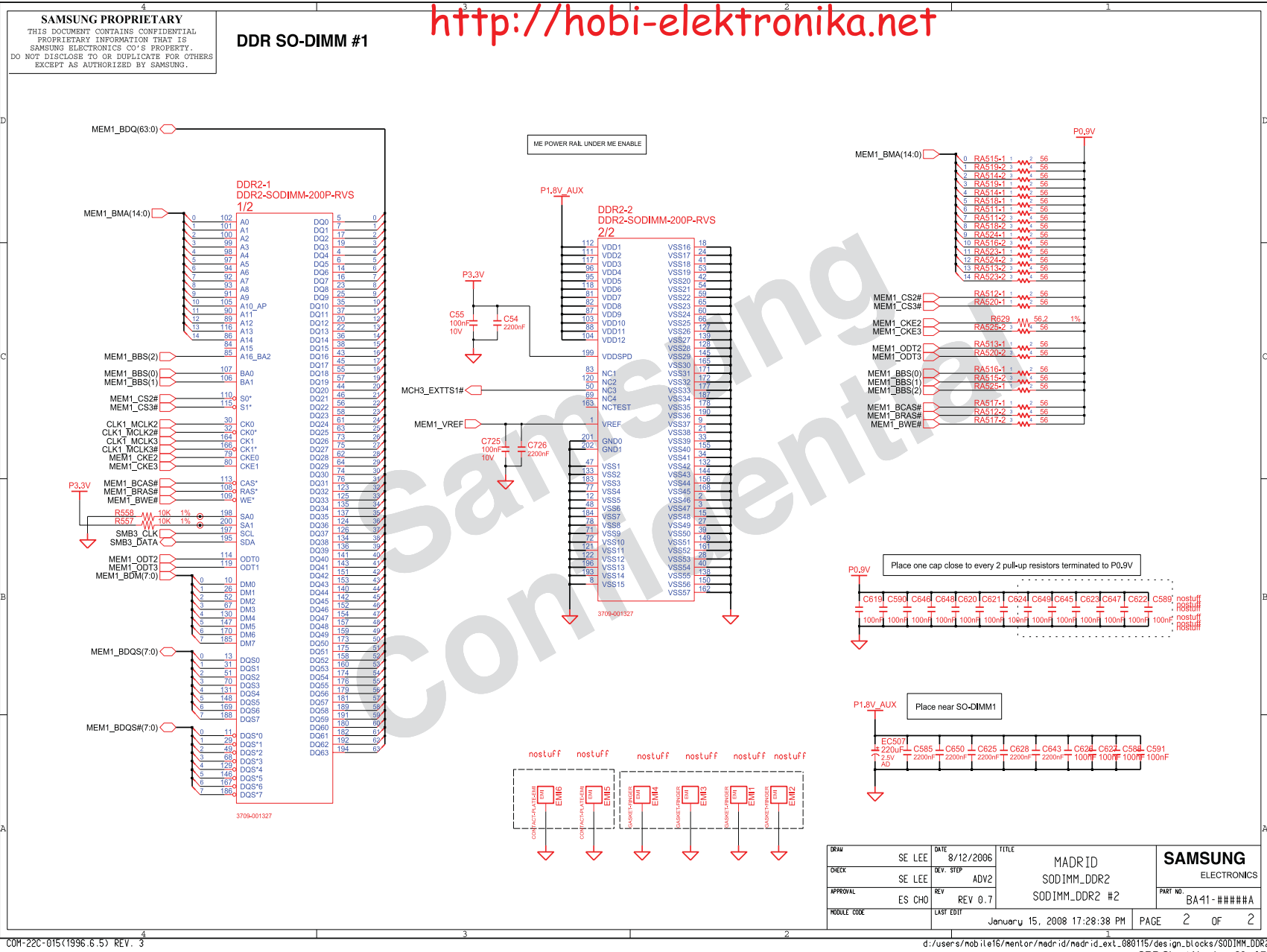
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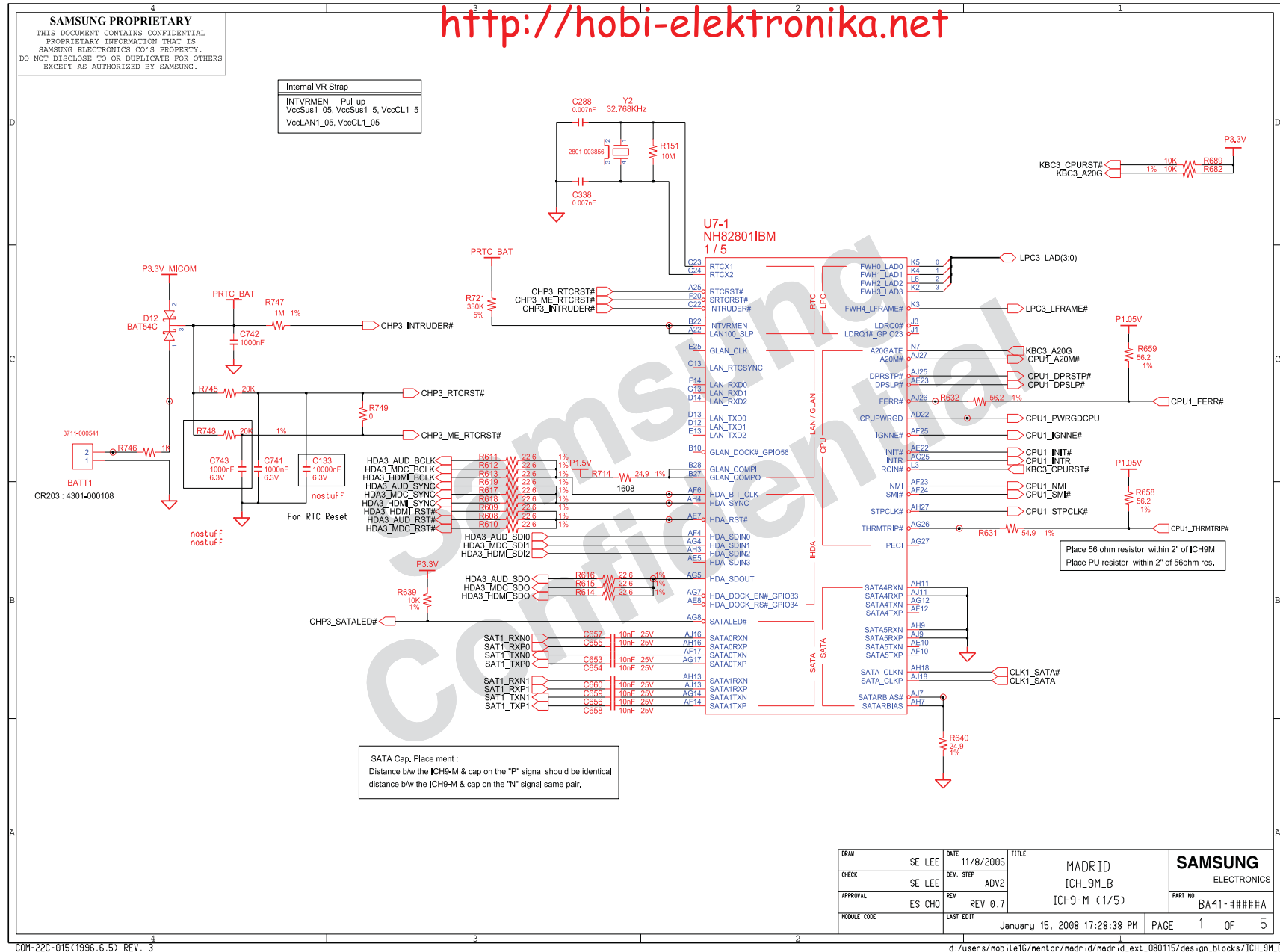
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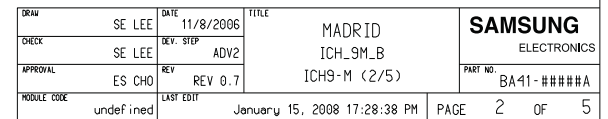


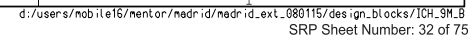
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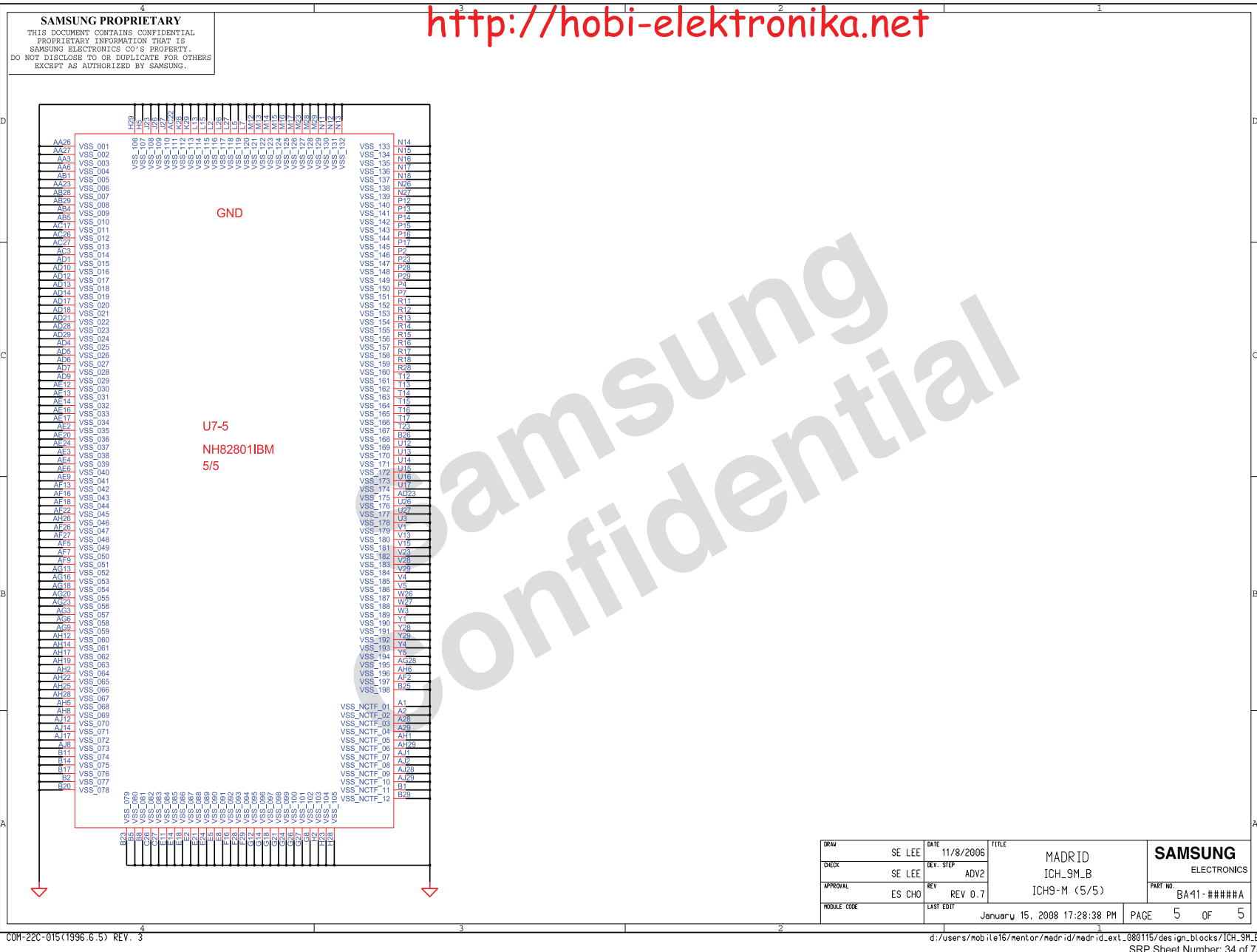


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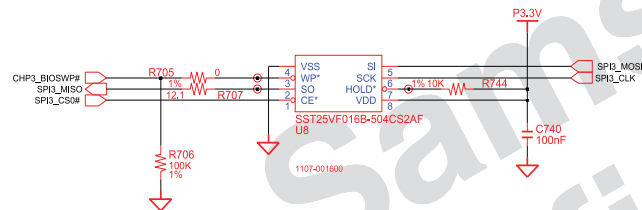
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### - SPI ROM LIST -

Macronix - MX25L8005M2C-15G  
 -> 1107-001646

STM - M25PE80  
 -> 1107-001674



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

DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	SPI_BIOS.ROM	ELECTRONICS	
APPROVAL	ES CHO	REV	REV 0.7	SPI_BIOS.ROM	PART NO.	BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

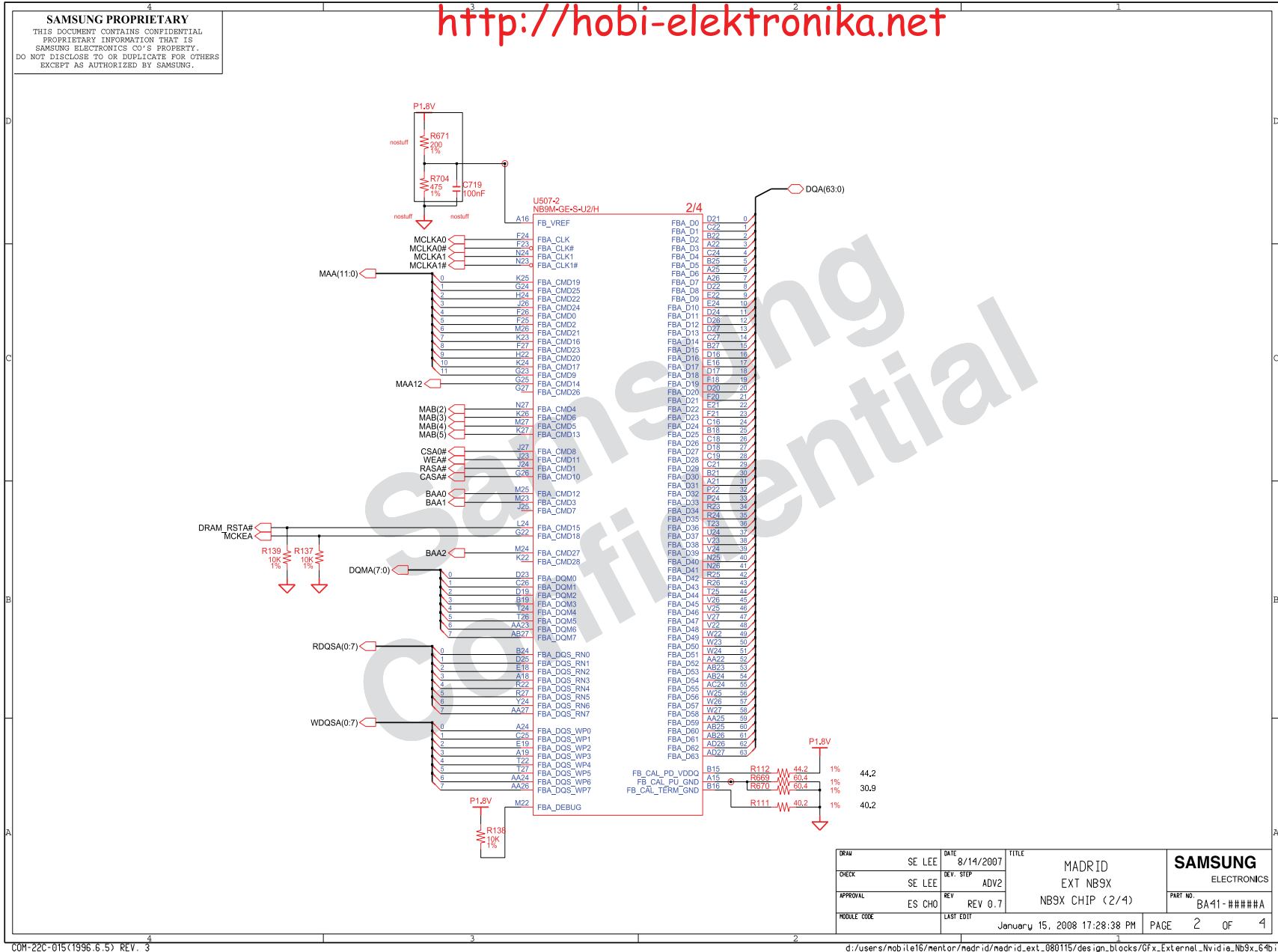


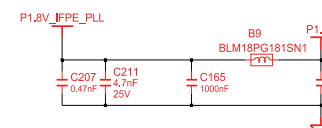
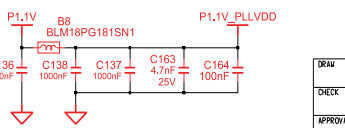


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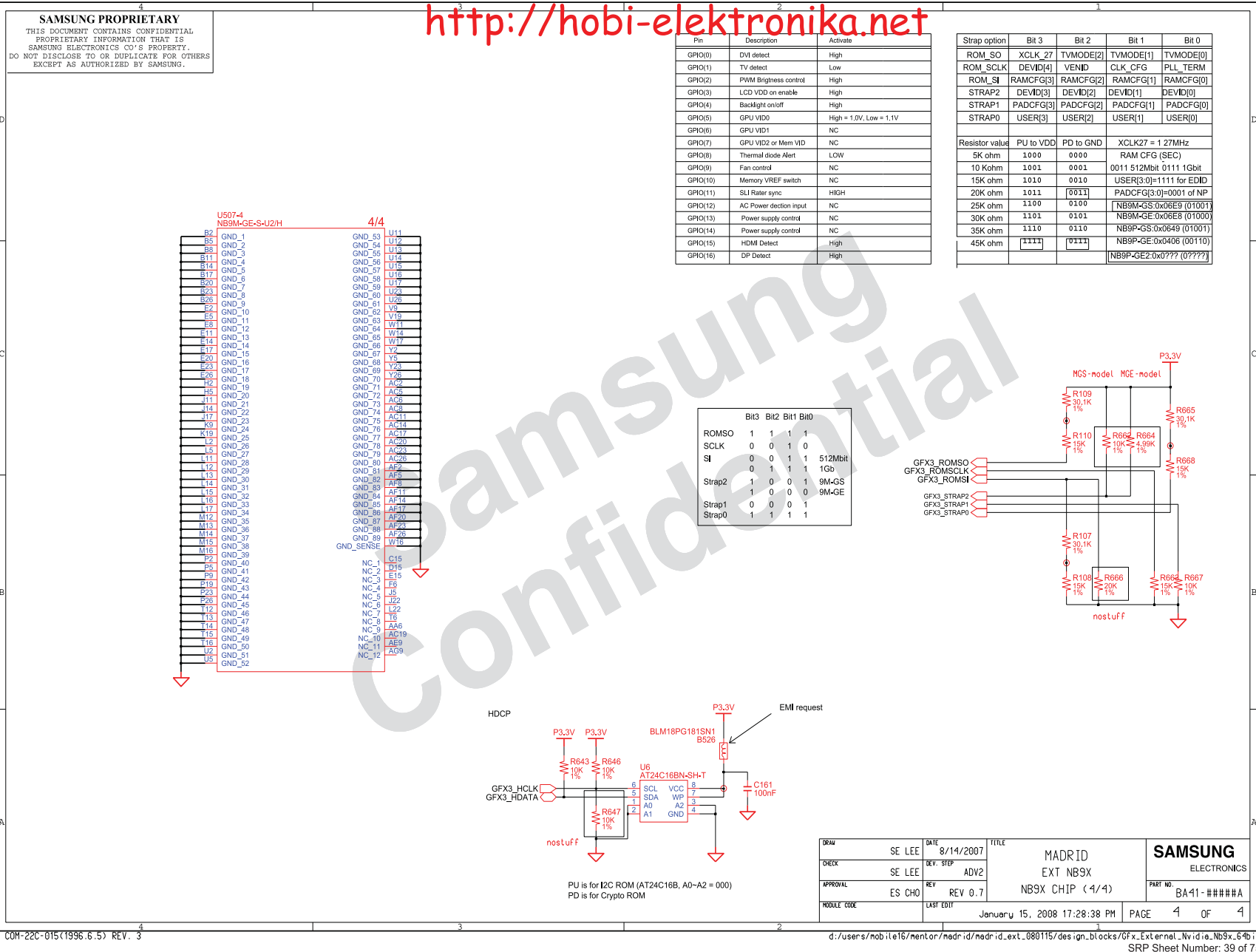
8-37





d:/users/mobile16/mentor/madrid/madrid\_ext\_080115/design\_blocks/Gfx\_External\_Nvidia\_Nb9x\_64bit

## 8. 블록도 및 회로도

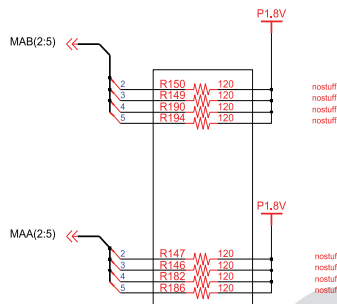




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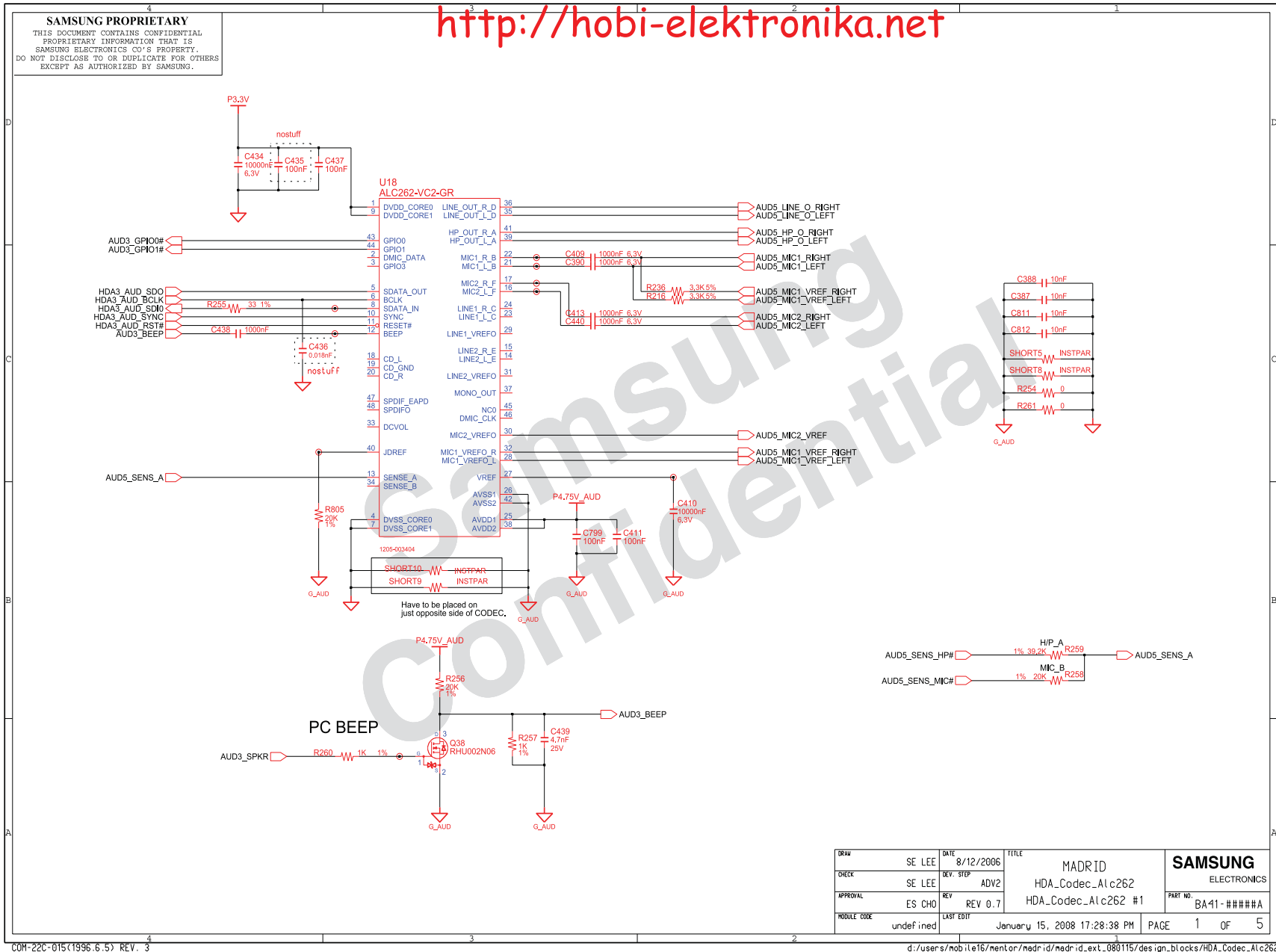


DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
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APPROVAL	ES CHO	REV	REV 0.7	Graphics_Memory_Nvidia #3	PART NO.	BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	2	OF 2

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D

C

B

A

4

3

2

1

GAIN  
10dB

P5.0V AMP

P5.0V AMP

P5.0V AUD

P4.75V AUD

AUD5\_LINE\_O\_RIGHT

AUD5\_LINE\_O\_LEFT

U16  
TPA6017A2

U19  
MIC5252-4.75BM5

C781 10V 100nF

C394 100nF 10V

C371 100nF

C372 470nF 10V

C391 100nF

R220 10K 1%

R219 10K 1%

R217 10K 1%

R218 10K 1%

C383 100nF

C382 100nF

C389 100nF

C395 10000nF 6.3V

C780 100nF

C441 1000nF

C419 100nF 6.3V

C416 100nF 10V

C418 1000nF 6.3V

C417 1000nF 6.3V

C415 1000nF 6.3V

C414 100nF 10V

C413 1000nF 6.3V

C412 1000nF 6.3V

C411 1000nF 6.3V

C410 1000nF 6.3V

C409 1000nF 6.3V

C408 1000nF 6.3V

C407 1000nF 6.3V

C406 1000nF 6.3V

C405 1000nF 6.3V

C404 1000nF 6.3V

C403 1000nF 6.3V

C402 1000nF 6.3V

C401 1000nF 6.3V

C400 1000nF 6.3V

C399 1000nF 6.3V

C398 1000nF 6.3V

C397 1000nF 6.3V

C396 1000nF 6.3V

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C297 1000nF 6.3V

C296 1000nF 6.3V

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C294 1000nF 6.3V

C293 1000nF 6.3V

C292 1000nF 6.3V

C291 1000nF 6.3V

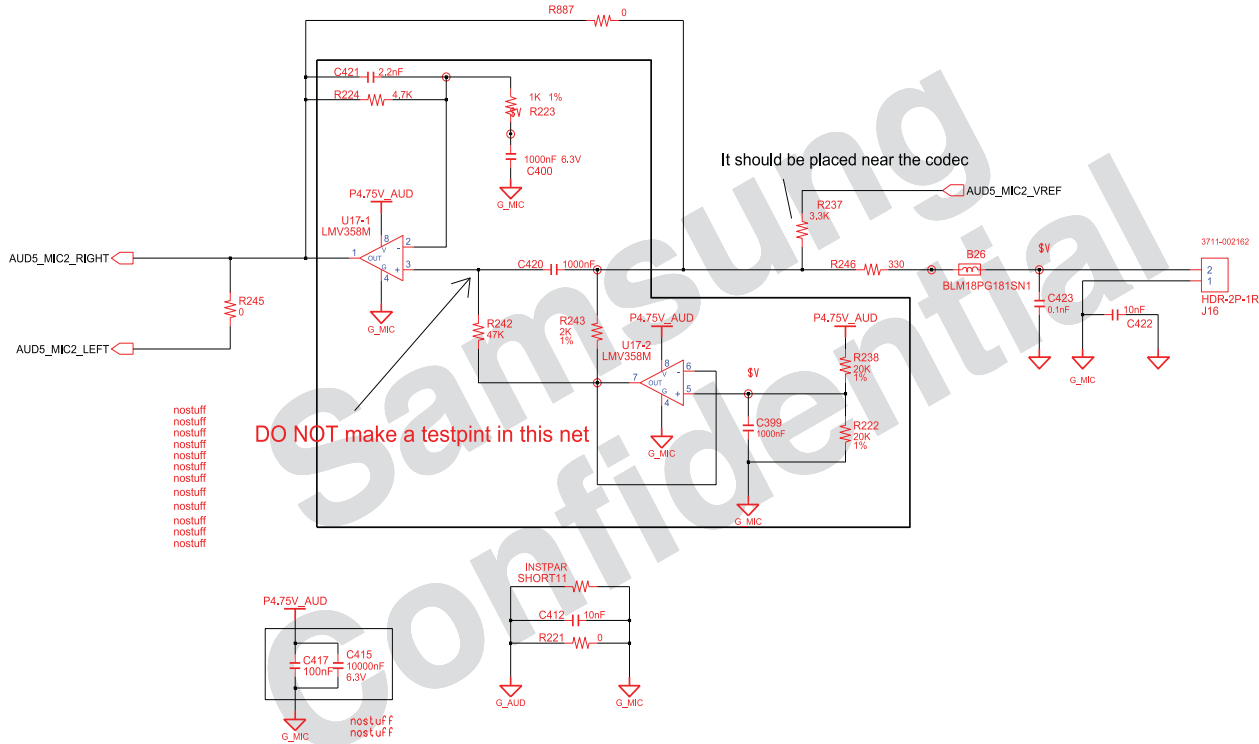
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C289 1000nF 6.3V



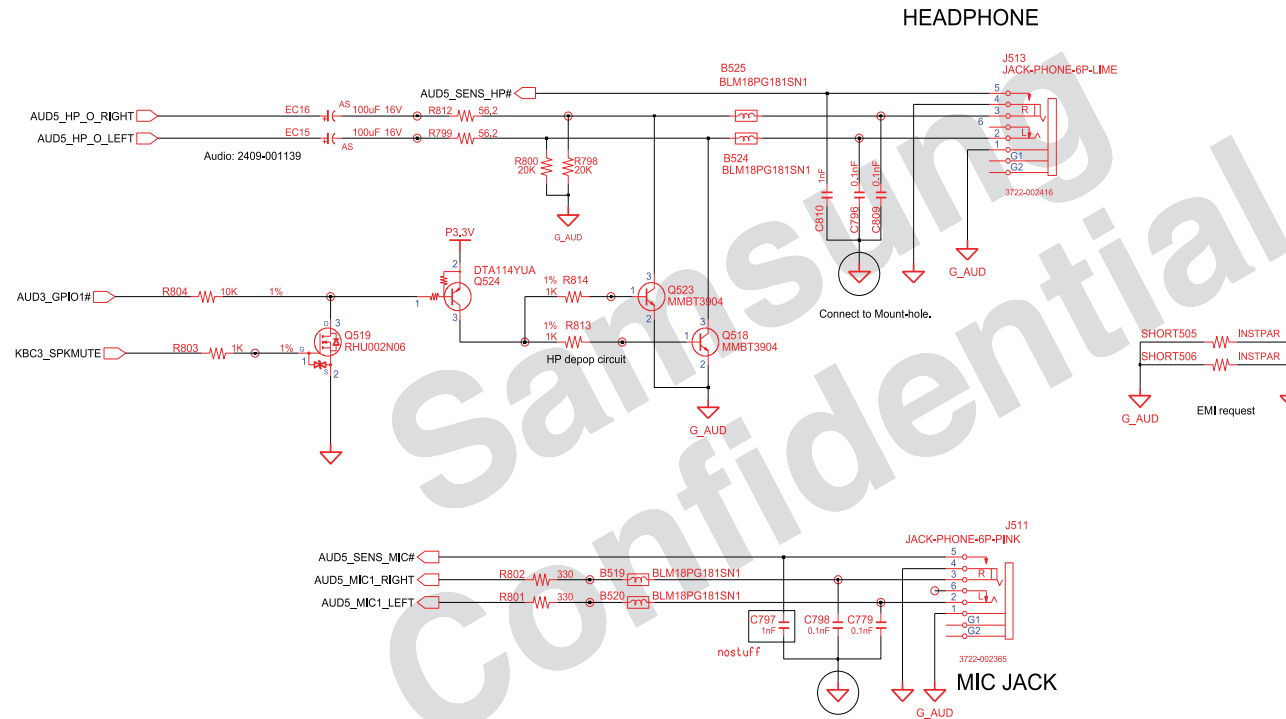
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DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	HDA_CODEC_Alc262	ELECTRONICS	
APPROVAL	ES CHO	REV	REV 0.7	HDA_CODEC_Alc262 #3	PART NO.	BA41-#####A
MODULE CODE	undefined	LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	3	OF 5

## 8. 블록도 및 회로도

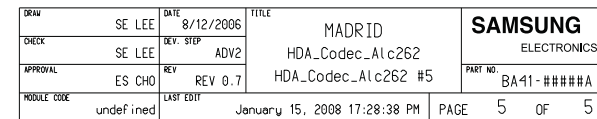


The traces led to Audio Jacks have the width over 10mil

DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2		HDA_Codec_Alc262	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7		HDA_Codec_Alc262 #4	PART NO. BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	4	OF 5

**8. 10월 1일부터 11월 1일까지**

## AUDIO POWER

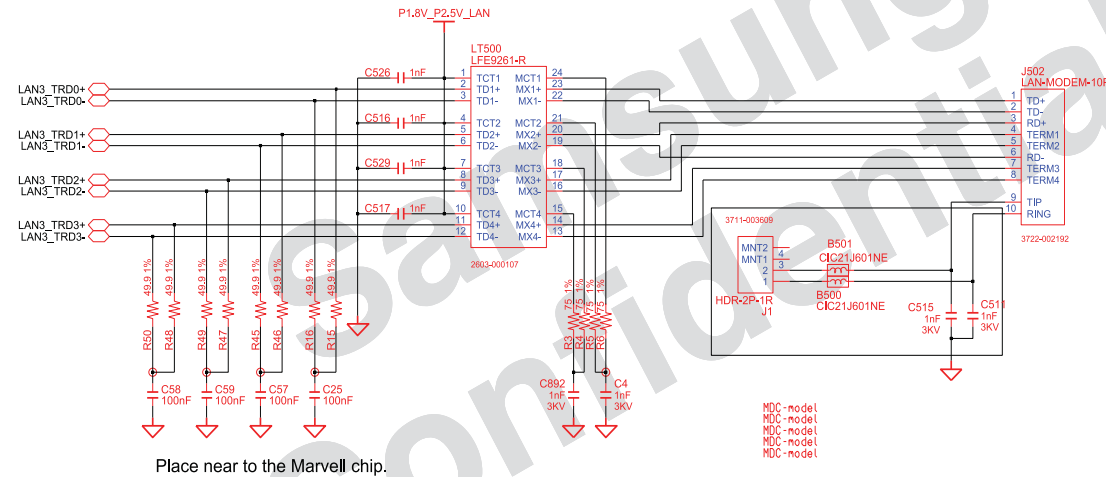


d:/users/mobile16/mentor/madrid/madrid\_ext\_080115/design\_blocks/LAN\_Marvell\_8055  
SRP Sheet Number: 47 of 75

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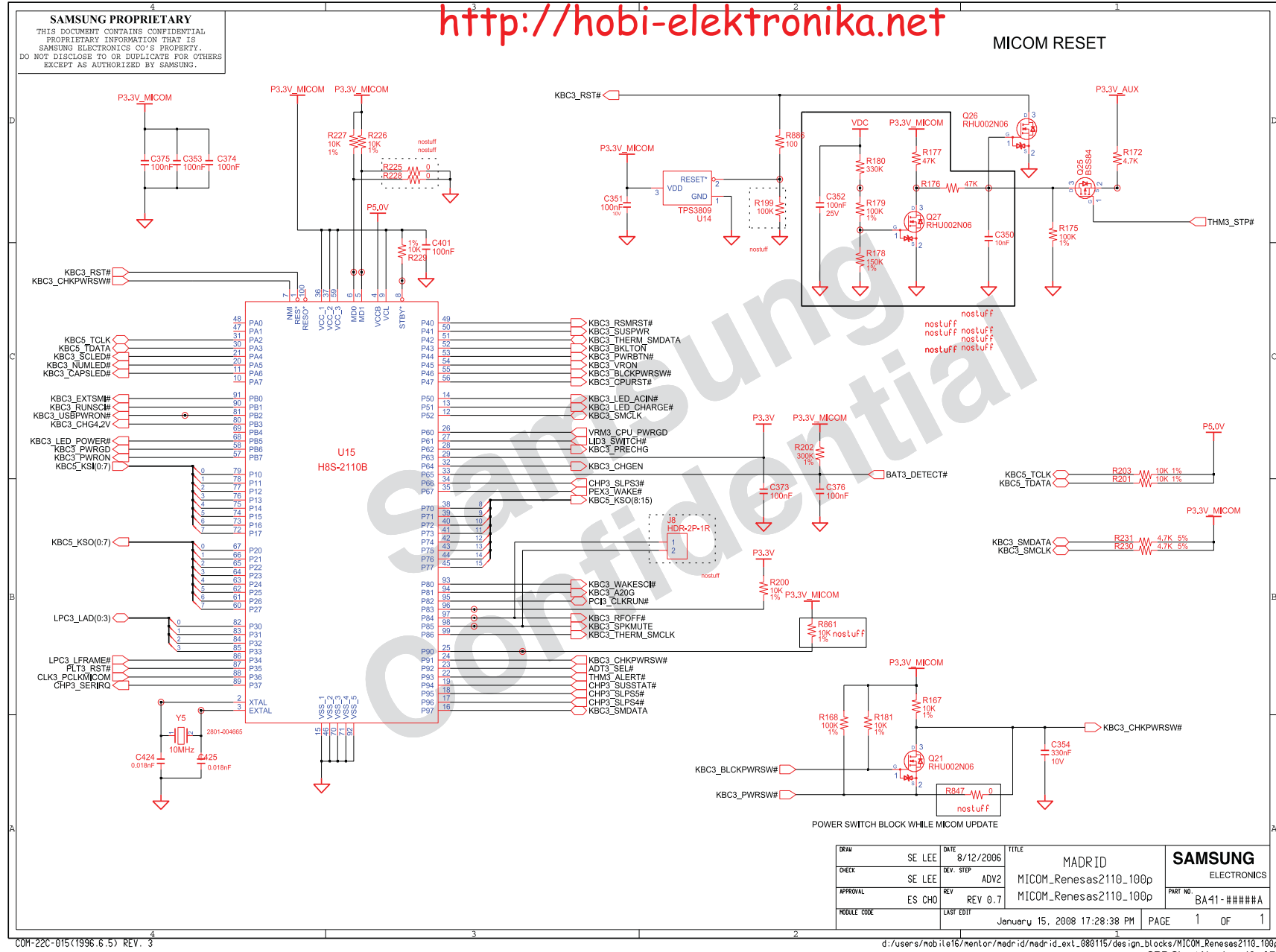
The distance between LAN controller and transformer is designed to extend less than two inches.



DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	LAN_Marvell_8055	ELECTRONICS	
APPROVAL	ES CHO	REV	REV 0.7	LAN_Marvell_8055	PART NO.	BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	2	OF 2

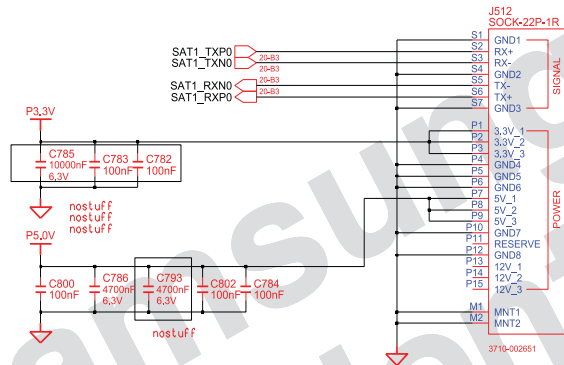
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Main to HDD

DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	HDD_IF_Conn		ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7	HDD_IF_Conn		PART NO. BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

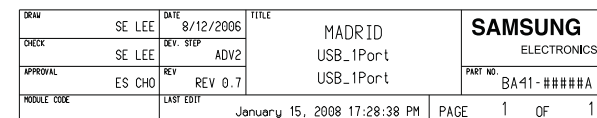


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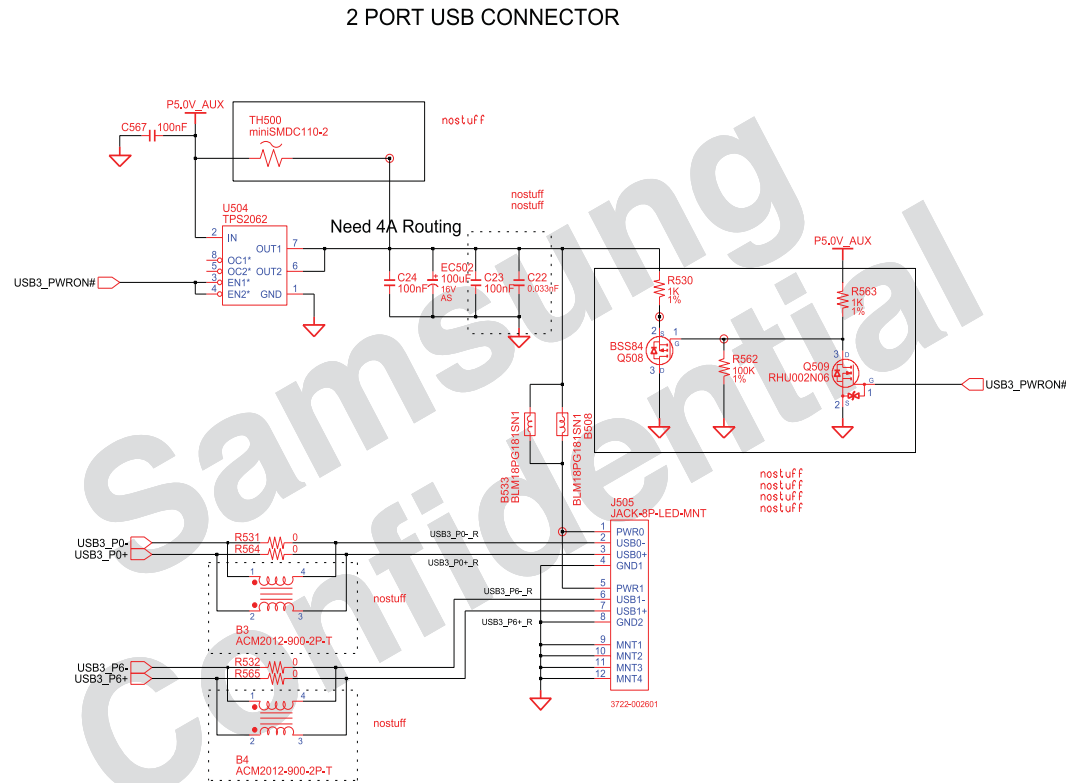
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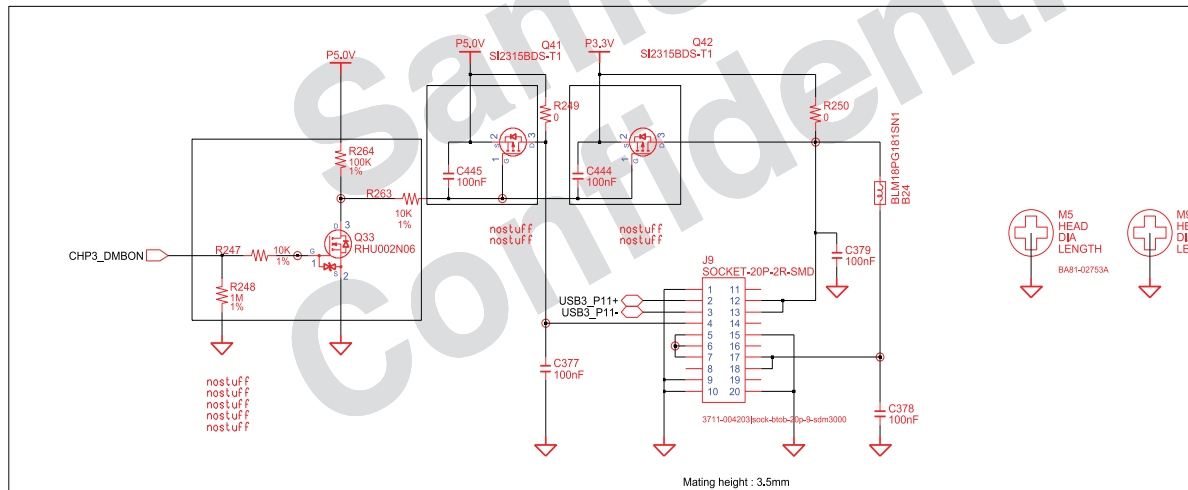
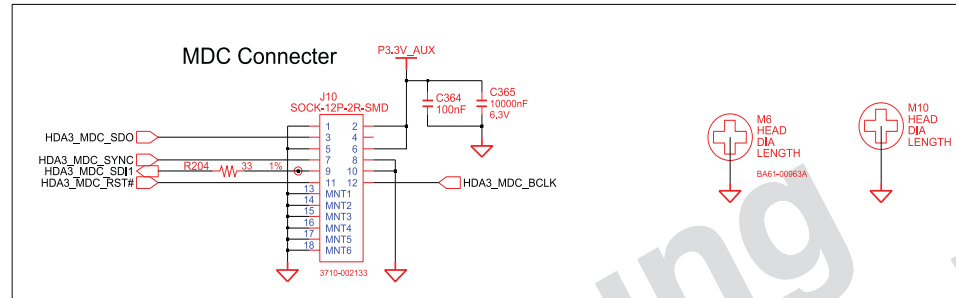
## 8. 블록도 및 회로도

8-53



DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	USB_2Port	USB_2Port	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7	USB_2Port	USB_2Port	PART NO. BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

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DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG ELECTRONICS
CHECK	SE LEE	REV. STEP	ADV2		HDA_Modem	
APPROVAL	ES CHO	REV	REV 0.7		HDA_Modem	
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1 OF 1	

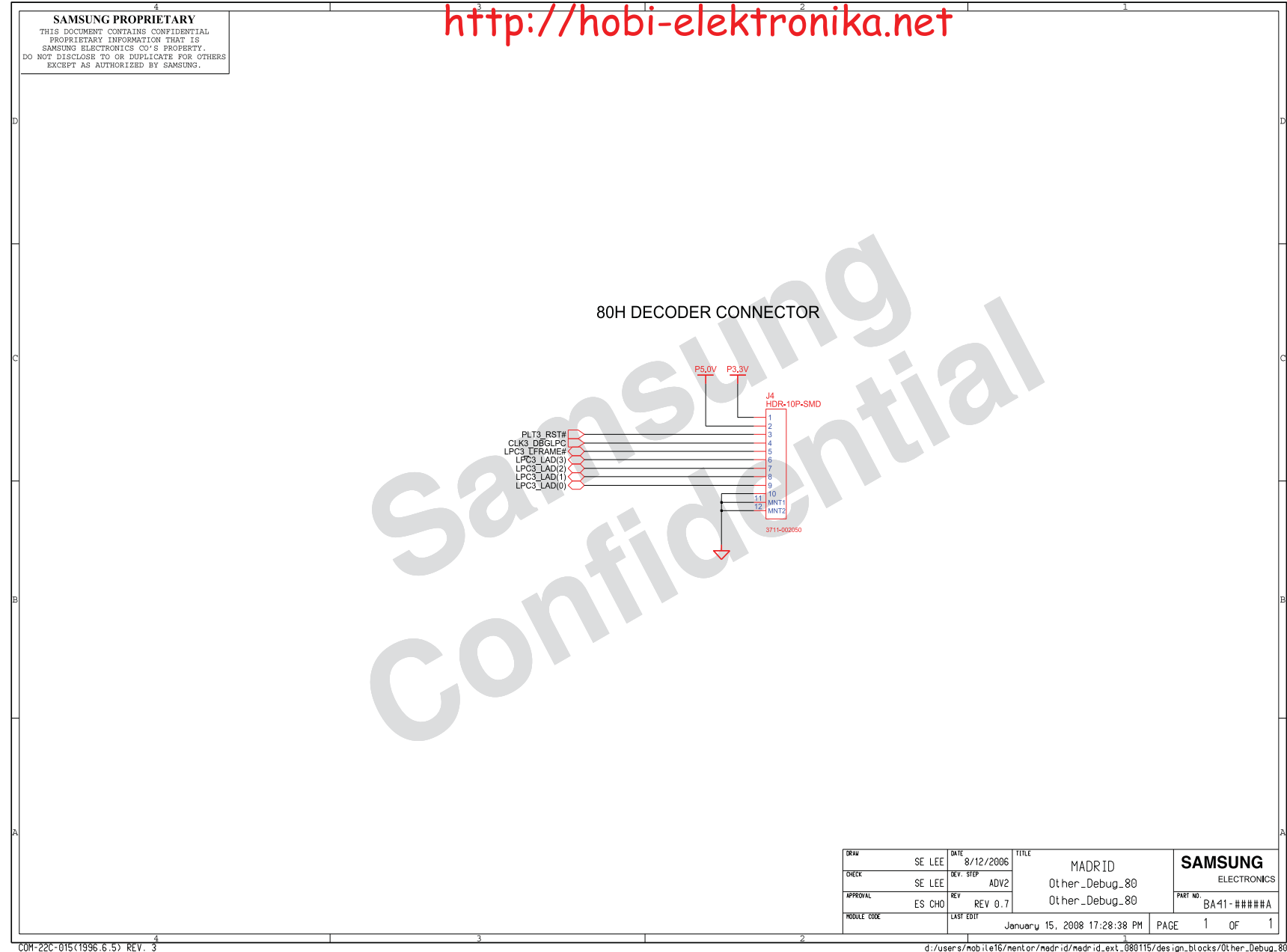
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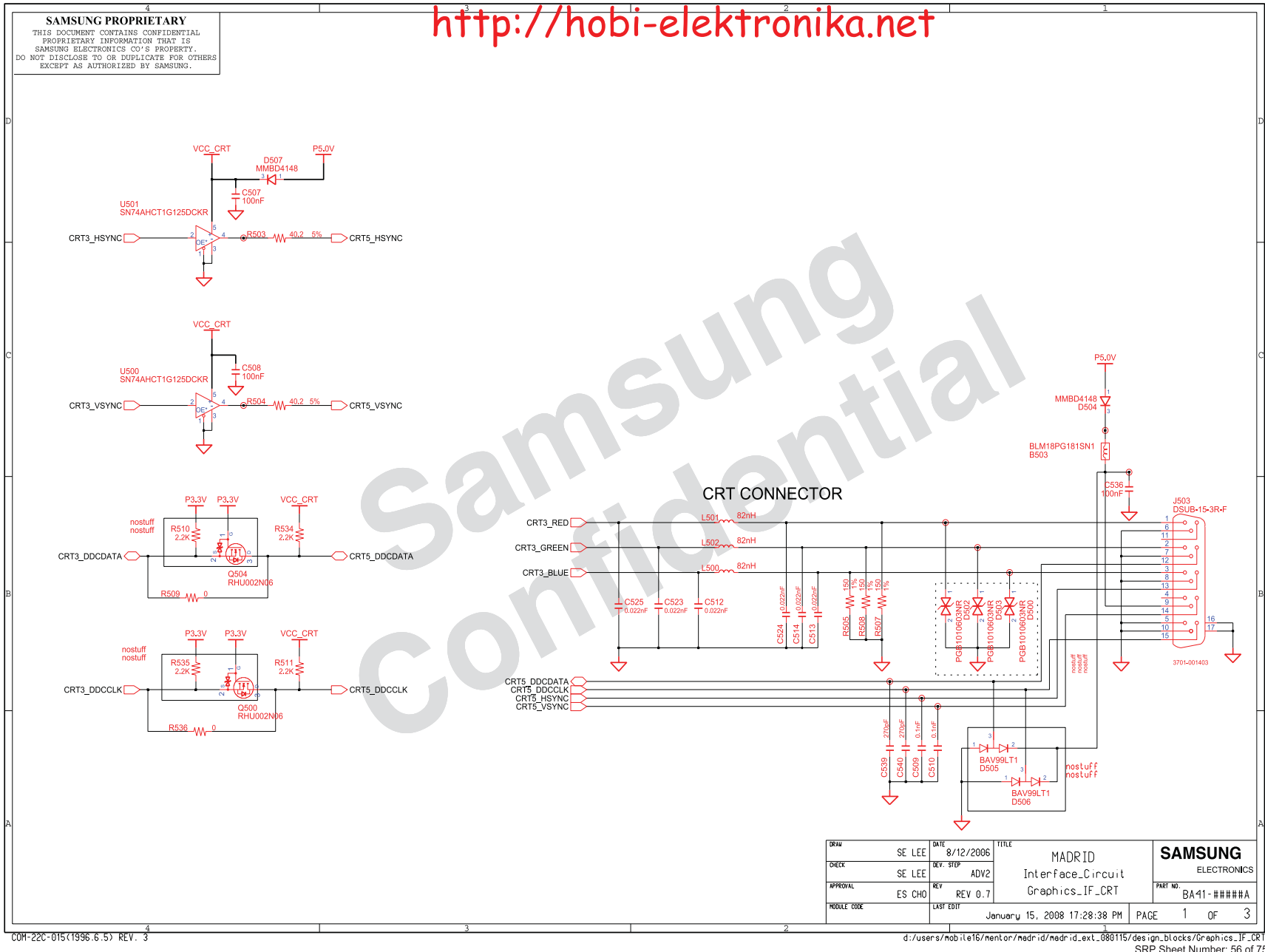
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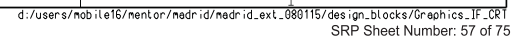
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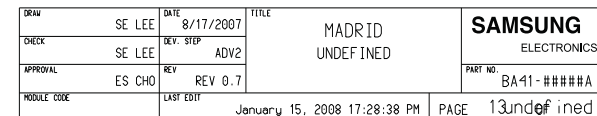
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**8. 10월 1일부터 11월 30일까지**



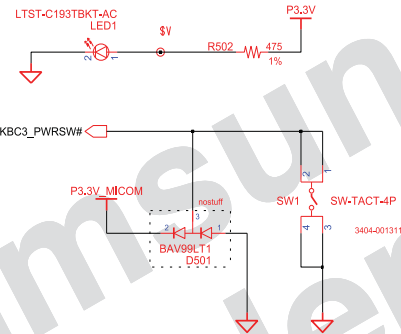




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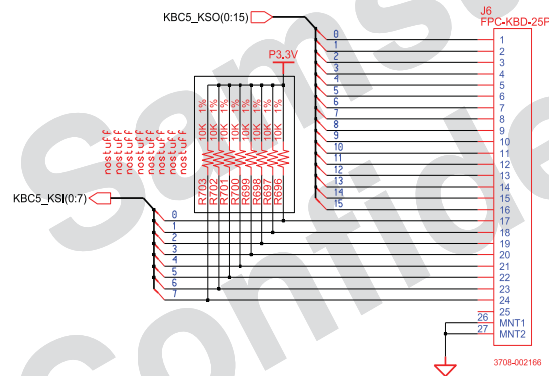
## 8. 블록도 및 회로도

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



DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	MIO_Switch	MIO_Switch	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7	MIO_Switch	PART NO.	BA41-#####A
MODULE CODE	LAST EDIT			January 15, 2008 17:28:38 PM	PAGE	1 OF 1

# KEYBOARD



DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	KBD_IF_Conn	KBD_IF_Conn	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7			PART NO. BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

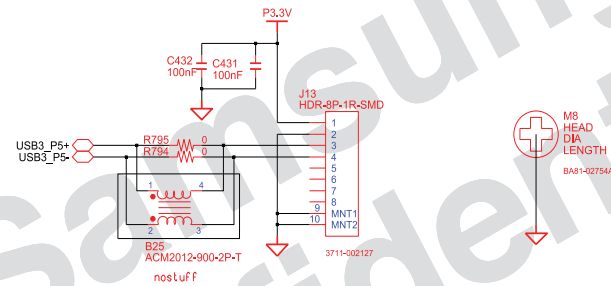
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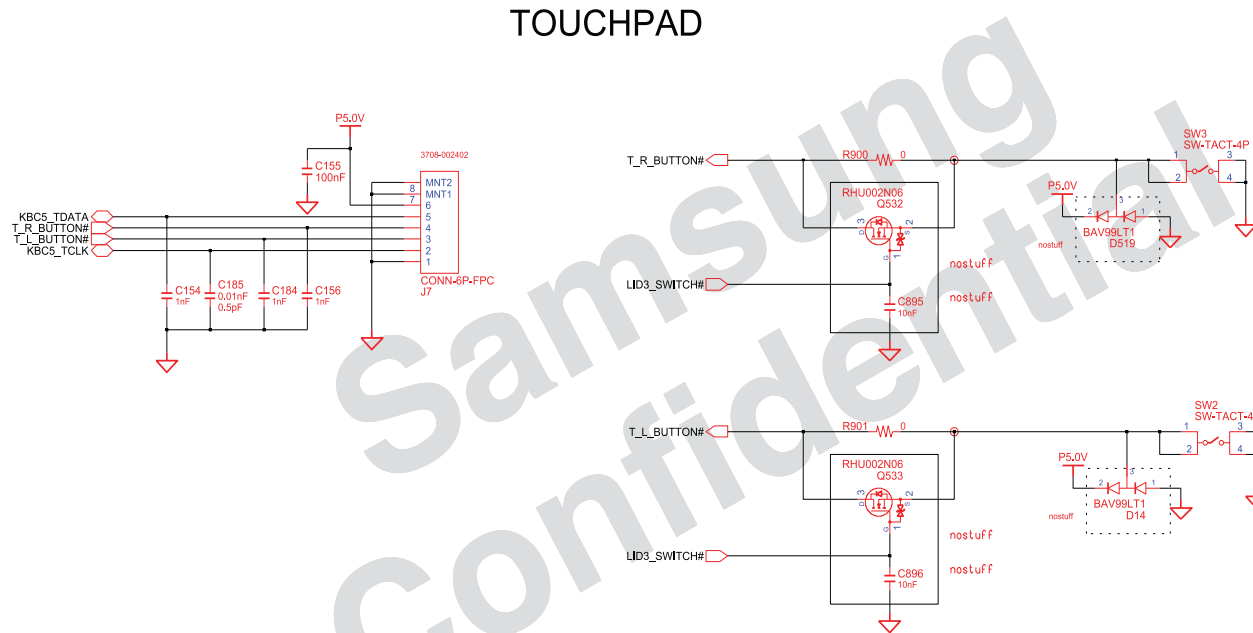
### Bluetooth Interface



DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	Bluetooth_IF_Conn	Bluetooth_IF_Conn	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7			PART NO. BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1 OF	1

## 8. 블록도 및 회로도

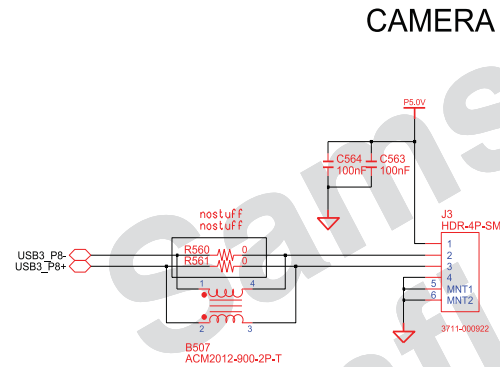
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DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	Touchpad_IF_Conn	Touchpad_IF_Conn	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7	Touchpad_IF_Conn	Touchpad_IF_Conn	PART NO. BA41-#####A
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

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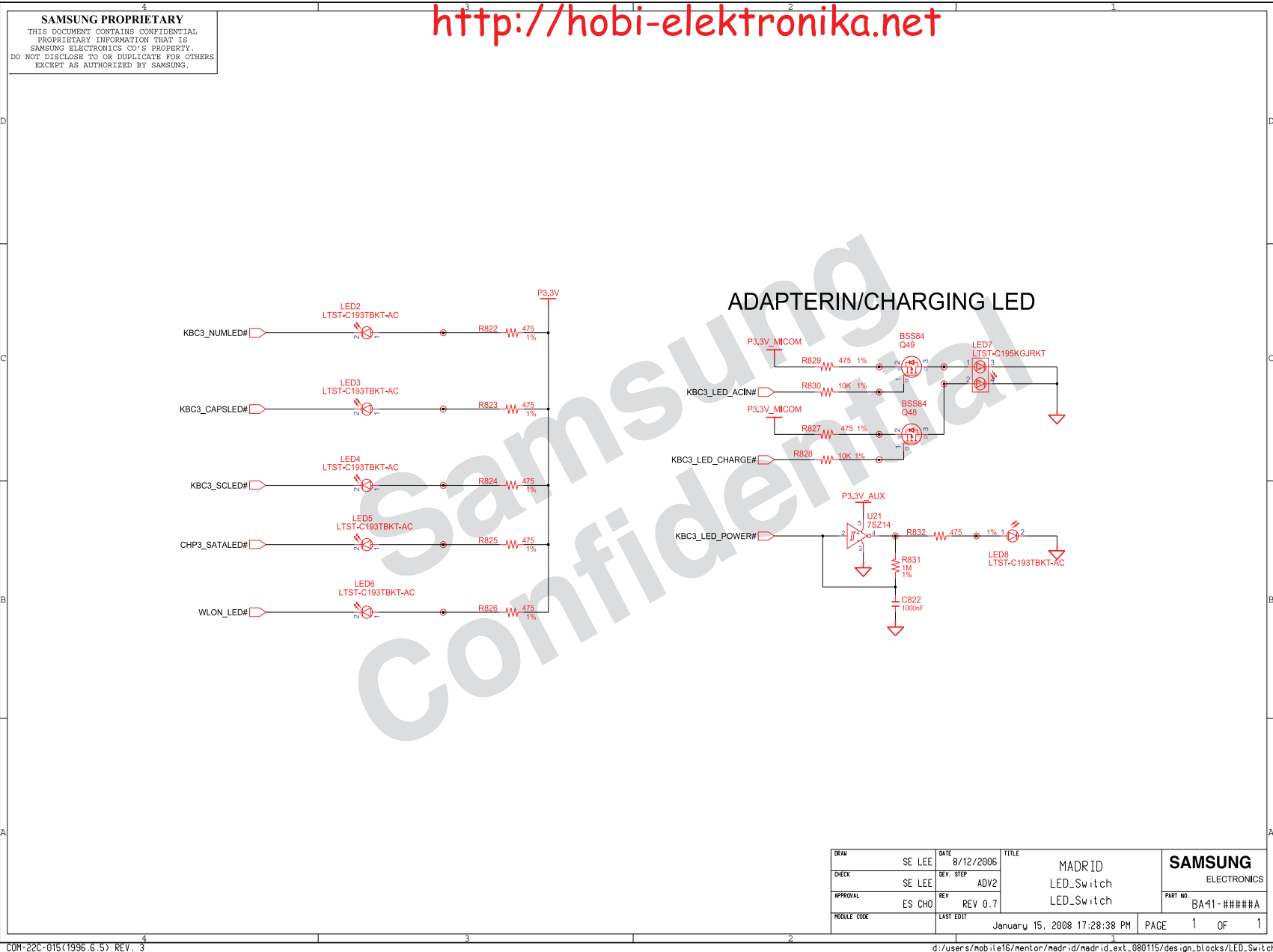
## 8. 블록도 및 회로도



DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID Camera_IF_Conn Camera_IF_Conn	SAMSUNG ELECTRONICS
CHECK	SE LEE	REV. STEP	ADV2			PART NO. BA41-#####A
APPROVAL	ES CHO	REV	REV 0.7			
MODULE CODE		LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1 OF 1	

## 8. 블록도 및 회로도

8-64

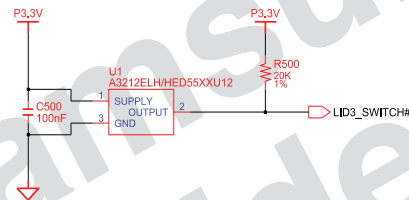




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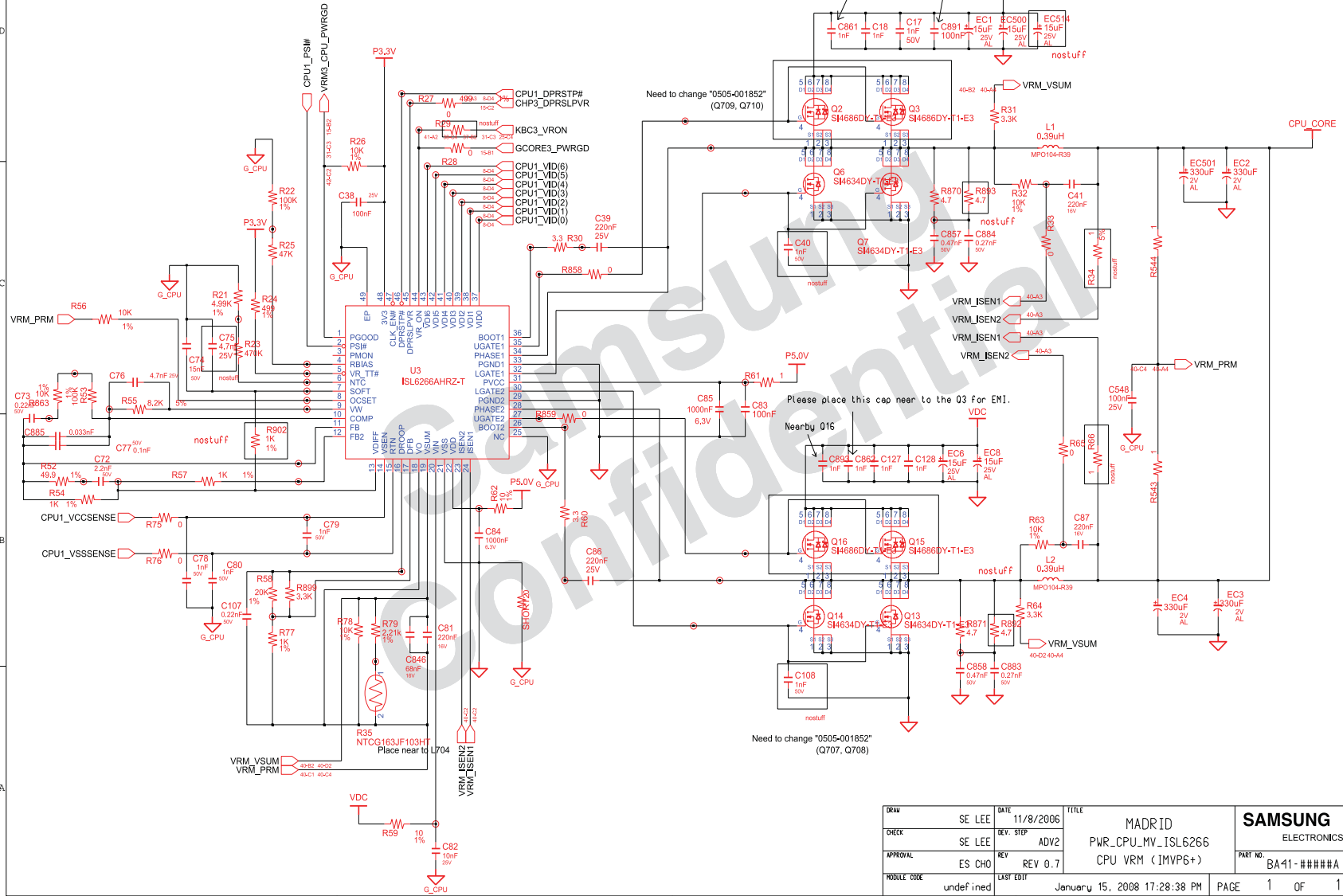
LID\_SWITCH



DRAW	SE LEE	DATE	8/12/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	LID_Switch	LID_Switch	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7	LID_Switch	LID_Switch	PART NO. BA41-#####A
MODULE CODE	LAST EDIT			January 15, 2008 17:28:38 PM	PAGE	1 OF 1

# CPU VRM [INTERSIL]

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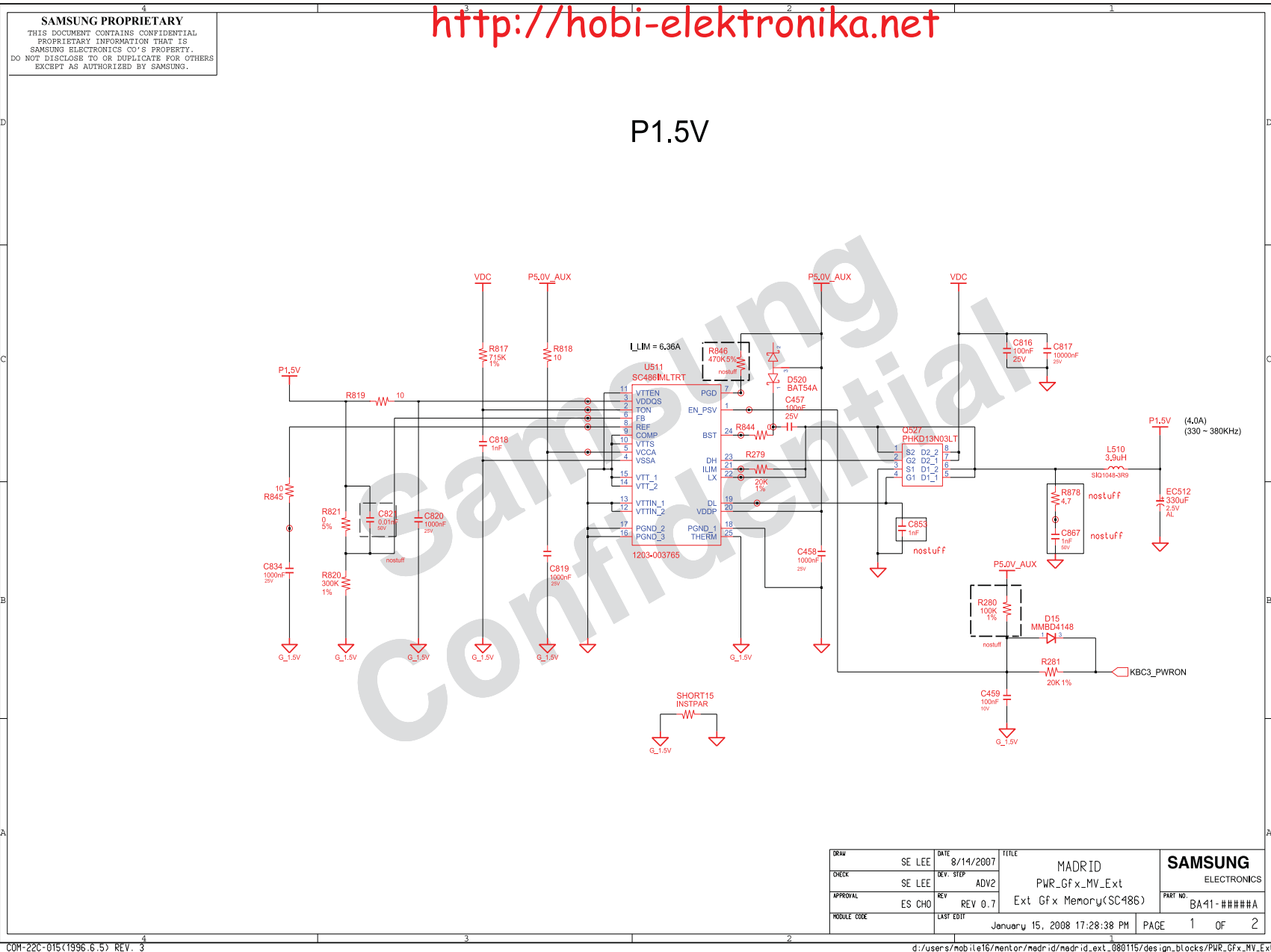
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DRAW	SE LEE	DATE	11/8/2006	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	PWR_CPU_MV_ISL6266	ELECTRONICS	
APPROVAL	ES CHO	REV	REV 0.7	CPU VRM (IMVP6+)	PART NO.	BA41-#####
MODULE CODE	undefined	LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

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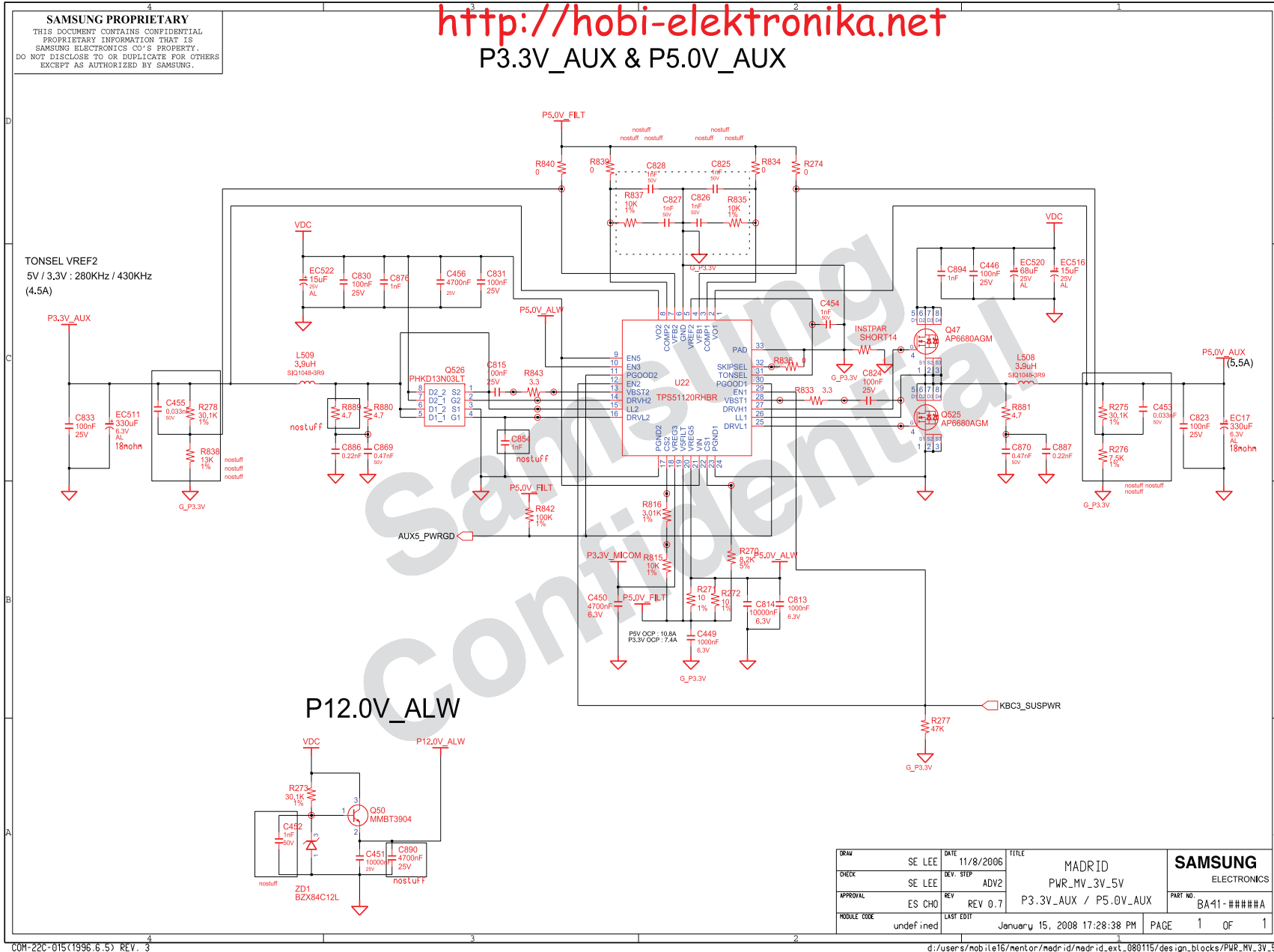
8-67



<http://hobi-elektronika.net>  
P3.3V\_AUX & P5.0V\_AUX

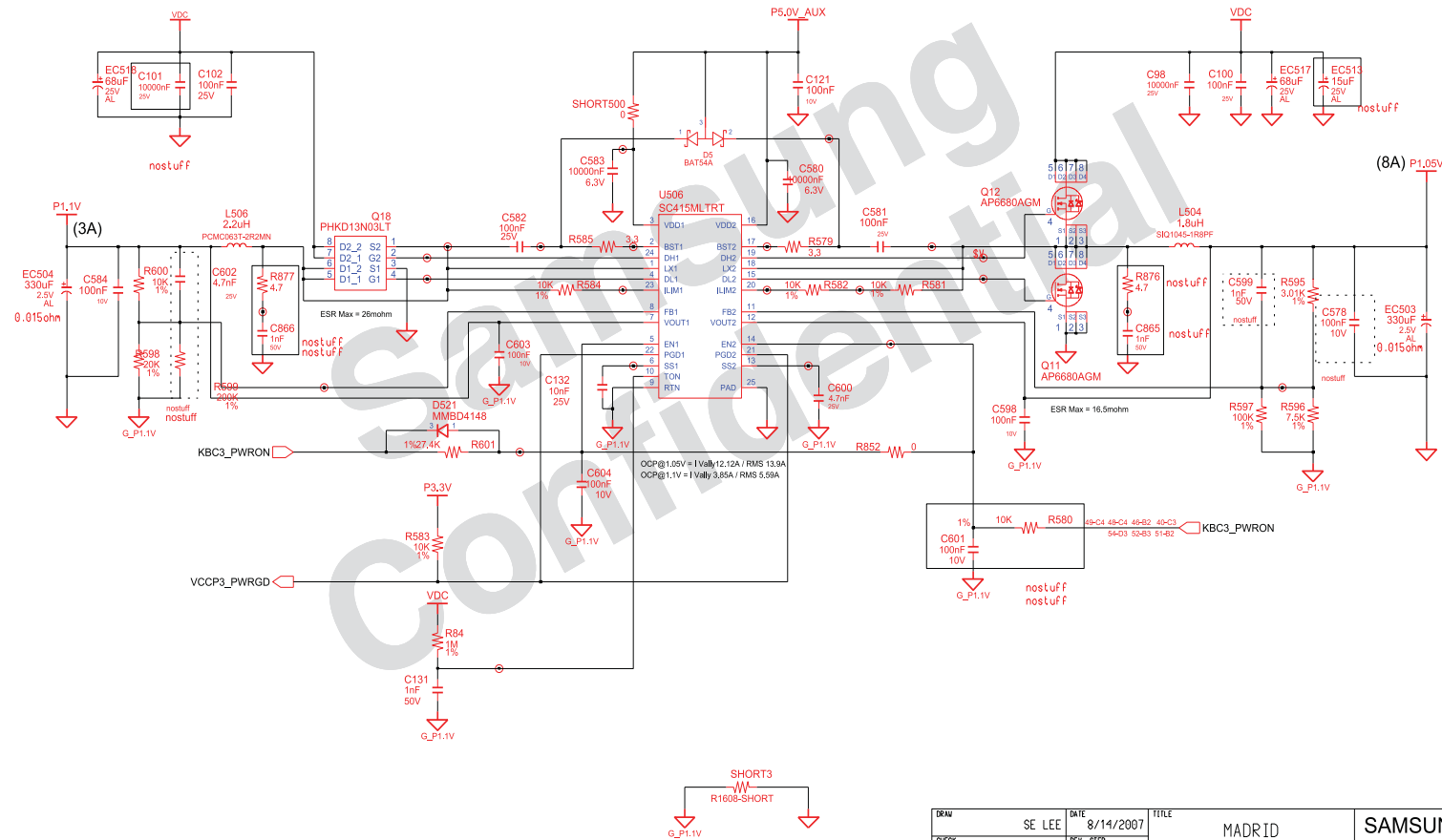
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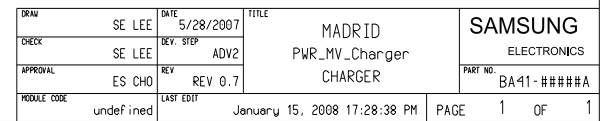


## 8. 블록도 및 회로도

### CHIPSET POWER(P1.05V & P1.1V)

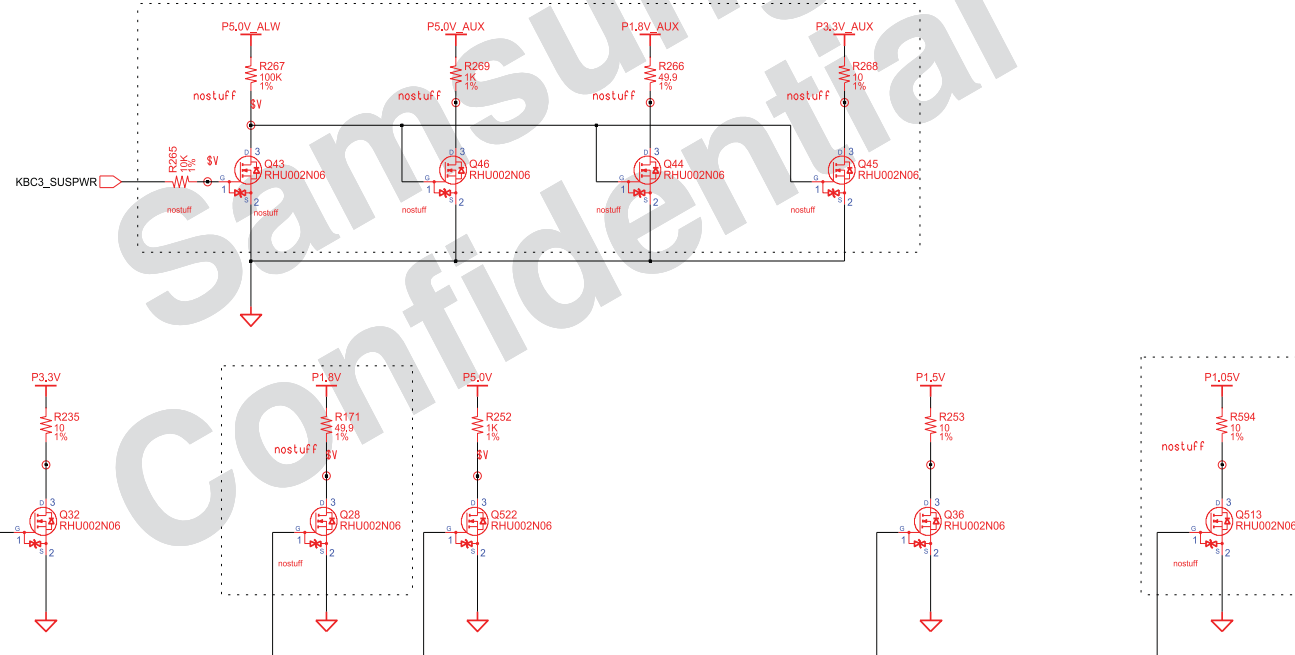


DATE	8/14/2007	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV	3/STEP	ELECTRONICS
APPROVAL	SE LEE	REV	0/STEP	
MODAL CODE	undefined	LAST EDIT	January 15, 2008 17:28:38 PM	PAGE 1 OF 1



# POWER DISCHARGER

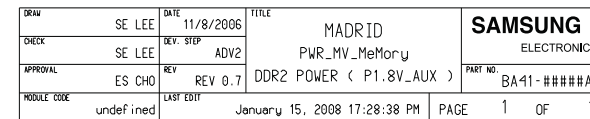
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DRAWN	SE LEE	DATE	8/14/2007	TITLE	MADRID	SAMSUNG
CHECK	SE LEE	REV. STEP	ADV2	PWR_MV_DisCharger	DISCHARGING LOGIC	ELECTRONICS
APPROVAL	ES CHO	REV	REV 0.7			PART NO. BA41-#####
MODULE CODE	undefined	LAST EDIT	January 15, 2008 17:28:38 PM	PAGE	1	OF 1

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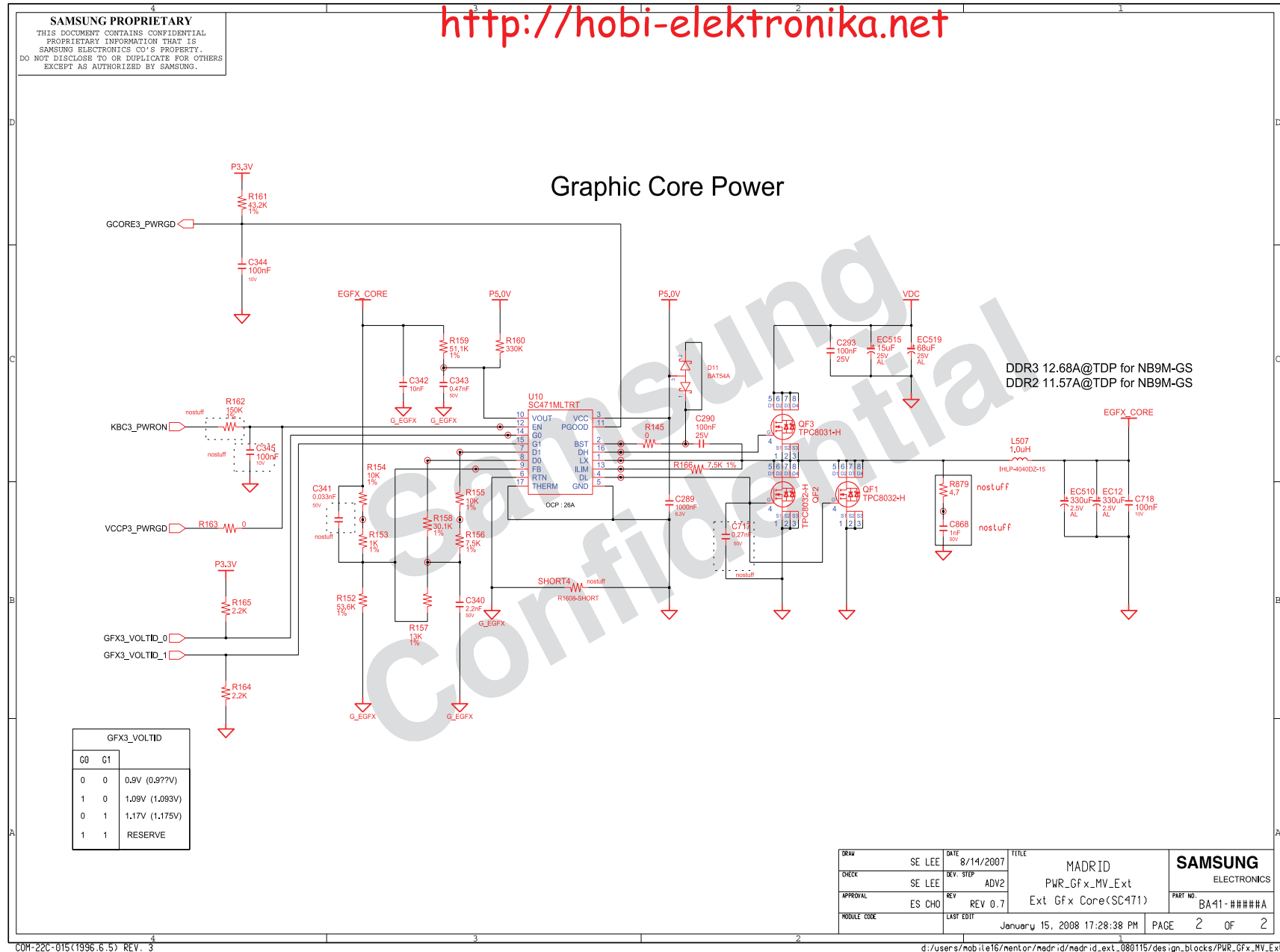
[illegible]



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8-73

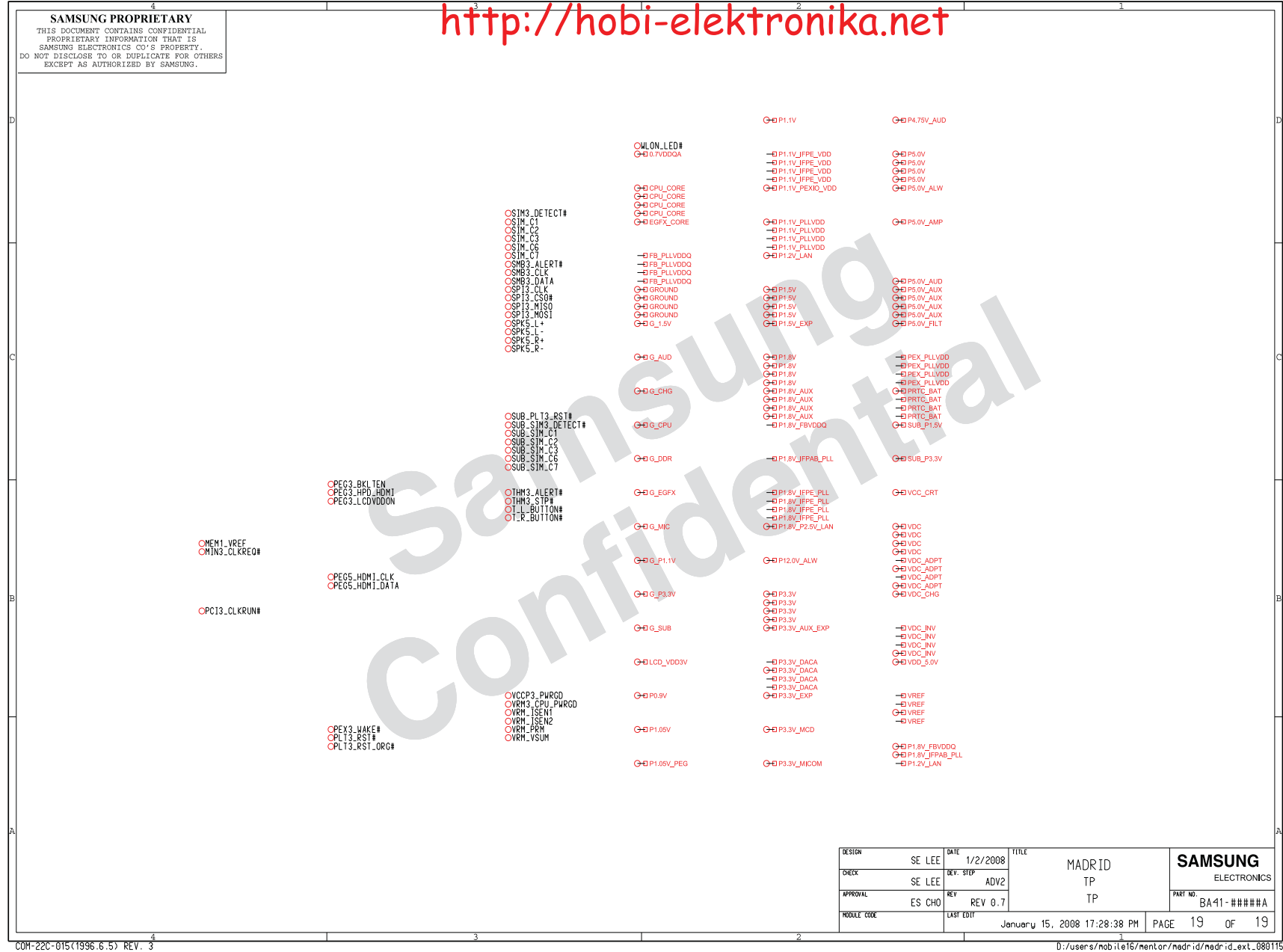


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D:/users/mobile16/mentor/madrid/madrid\_ext\_080115  
SRP Sheet Number: 74 of 75

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