

BREMEN2-L

CPU : Intel Arrandale
Chip Set : Intel Ibex Peak(HM55)
GFX : M92-XTX / Park-XT
Remarks : Calpella Platform

Model Name	: BREMEN2-L
PBA Name	: MAIN
PCB Code	: BA41-01285A BA41-01286A BA41-01287A
Dev. Step	: PR
Revision	: 0.9
T.R. Date	: 2010.04.25

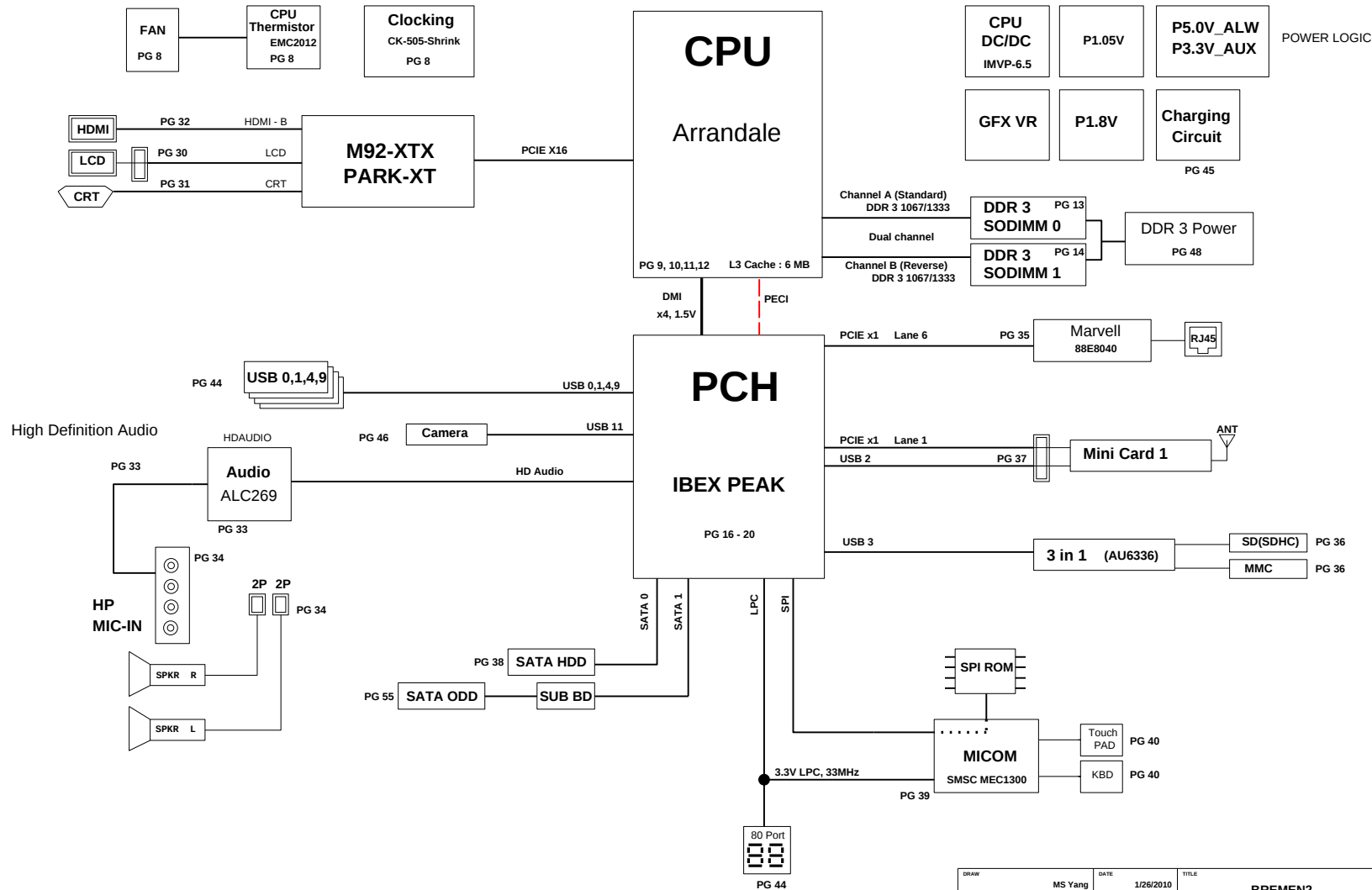
Design	CHECK	APPROVAL
MS Yang	SE Lee	MK Kim

Owner : SEC Mobile R & D Signature : X

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DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	SAMSUNG
CHECK	SE Lee	REV. STEP	ADV		MAIN	ELECTRONICS
APPROVAL	MK Kim	REV	REV 0.1		COVER	PART NO.
MODULE CODE		LAST EDIT				BA41-
				March 06, 2010 17:48:35 PM	PAGE	1 OF 54

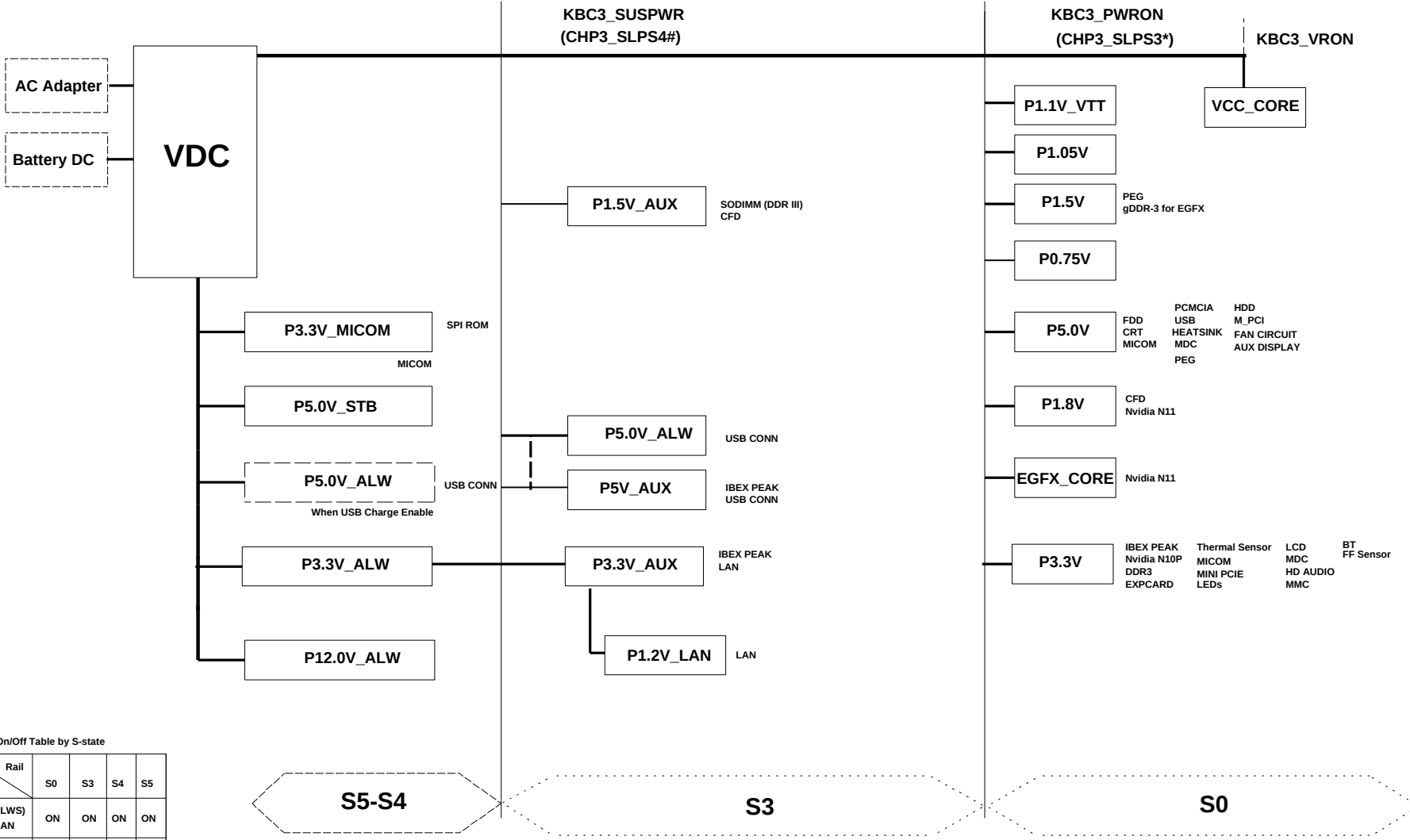
BLOCK DIAGRAM



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CHECK	SE Lee	REV. STEP	ADV			PART NO.
APPROVAL	MK Kim	REV	REV 0.1		BLOCK DIAGRAM	BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE 2 OF 54	

POWER DIAGRAM

Rev 0.1



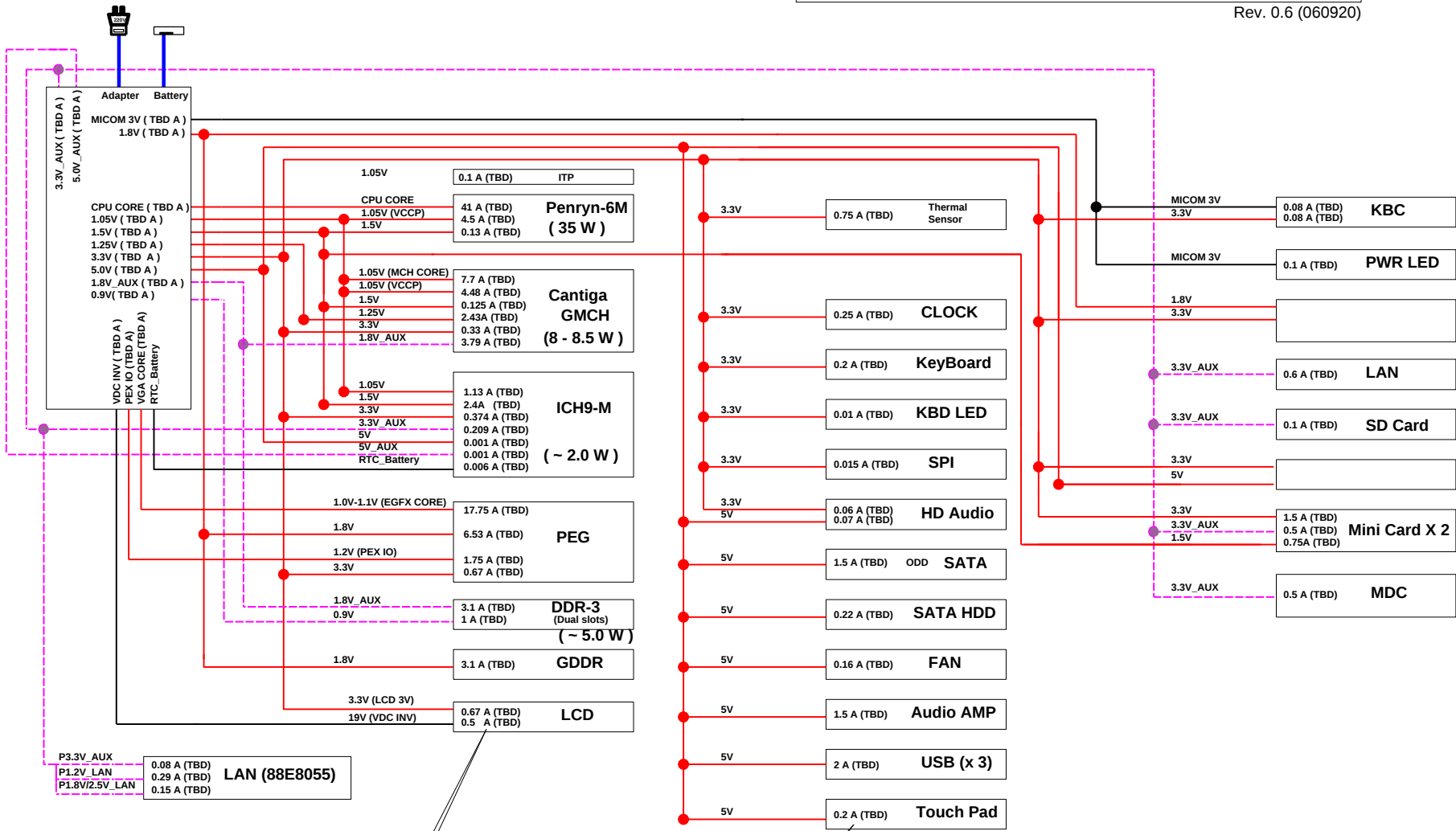
Power On/Off Table by S-state

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



POWER RAILS ANALYSIS

Rev. 0.6 (060920)

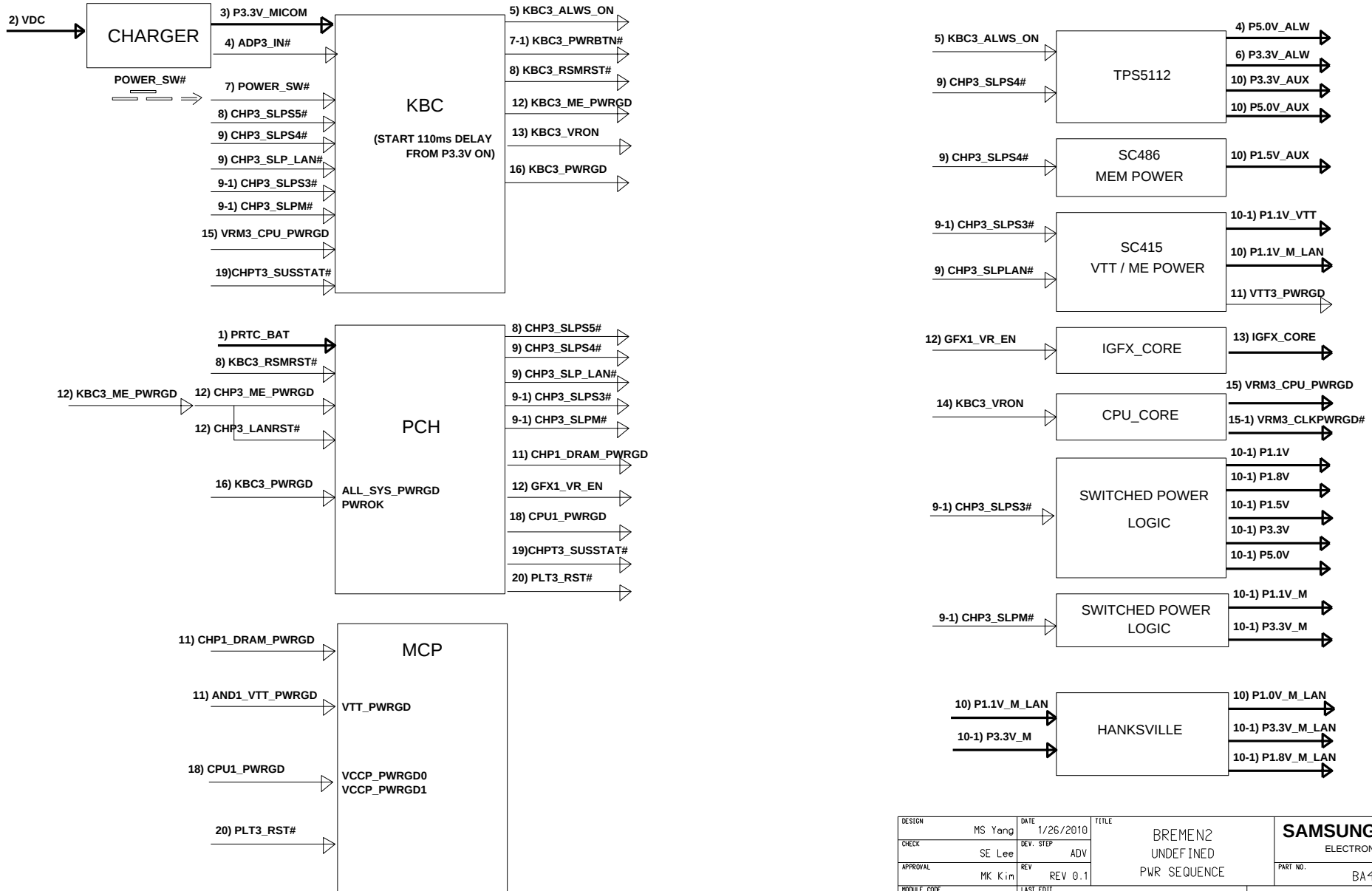


Value by Datasheet/Application notes (Value by measurement)

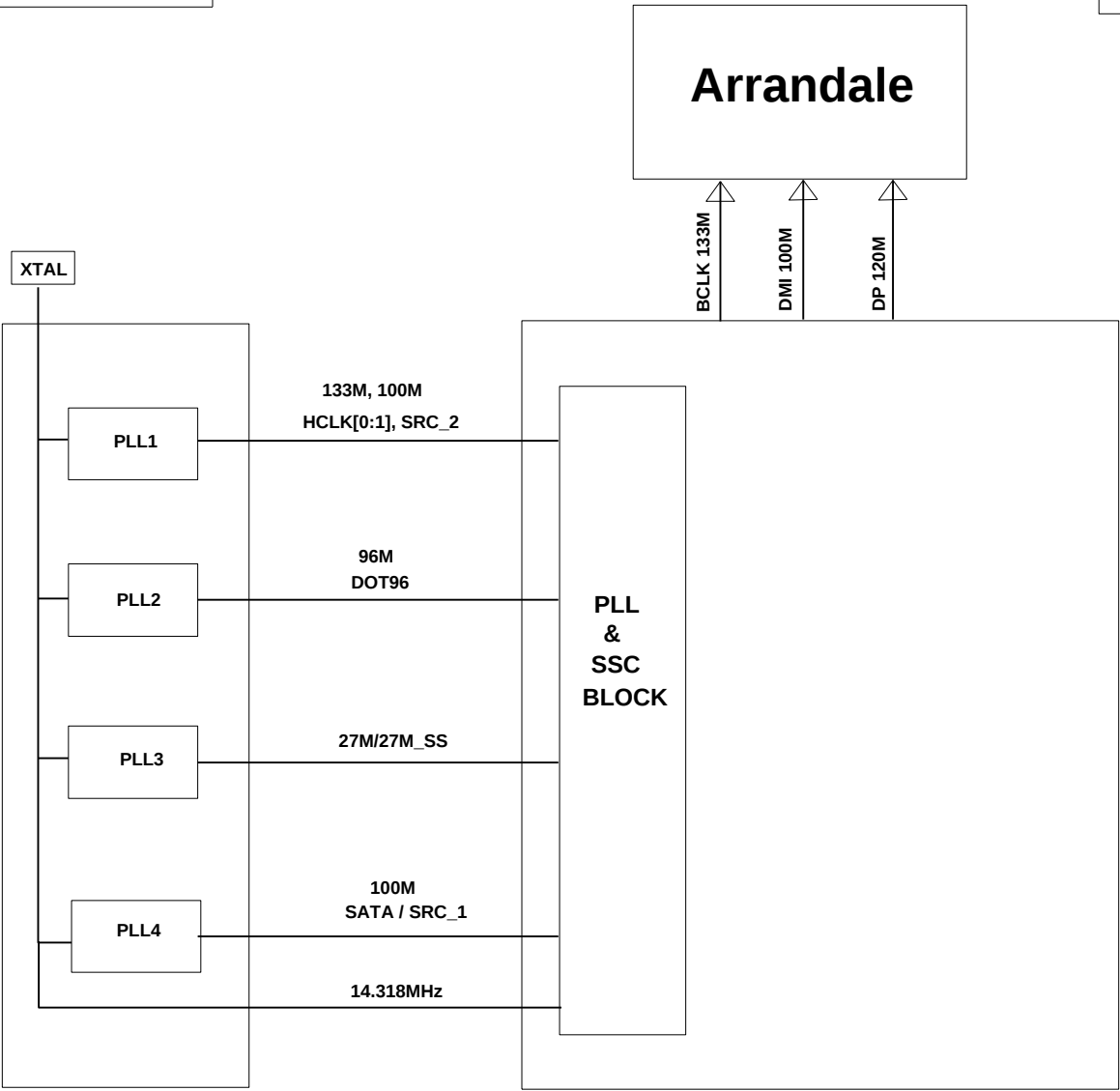
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APPROVAL	MK Kim	REV	REV 0.1			BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE 4 OF 54	

PRELIMINARY

POWER SEQUENCE Rev. 0.5



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 UNDEFINED PWR SEQUENCE	SAMSUNG ELECTRONICS
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APPROVAL	MK Kin	REV	REV 0.1			
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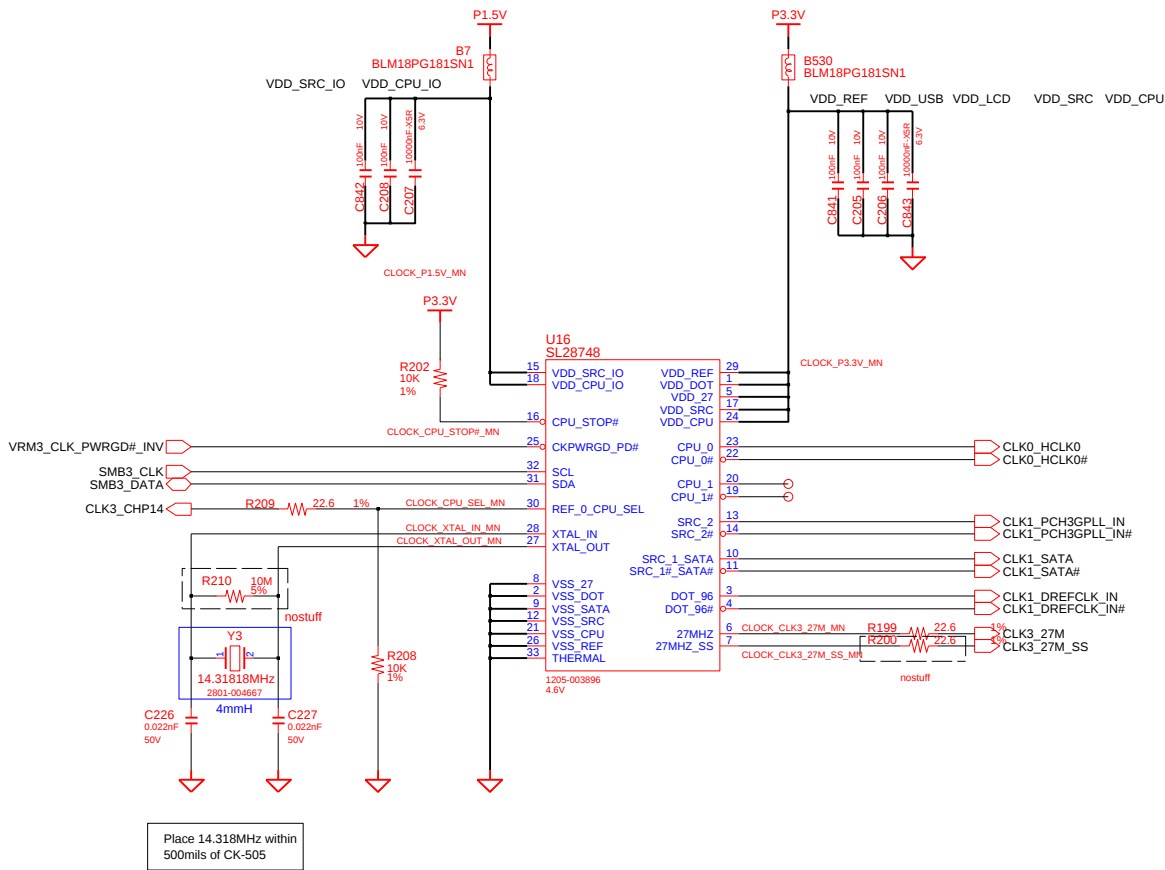


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APPROVAL	MK Kim	LAST EDIT	March 06, 2010 17:48:35 PM	MODULE CODE	undefined		

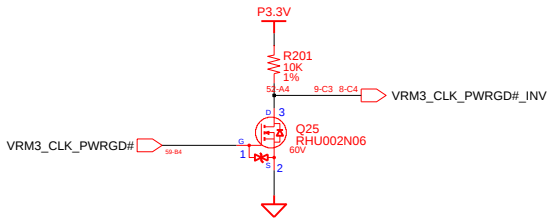
CK505M SHRINK VERSION

CPU_MODE SEL

Pin 30	CPU_0	CPU_1
CPU_SEL = 0	133MHz	133MHz

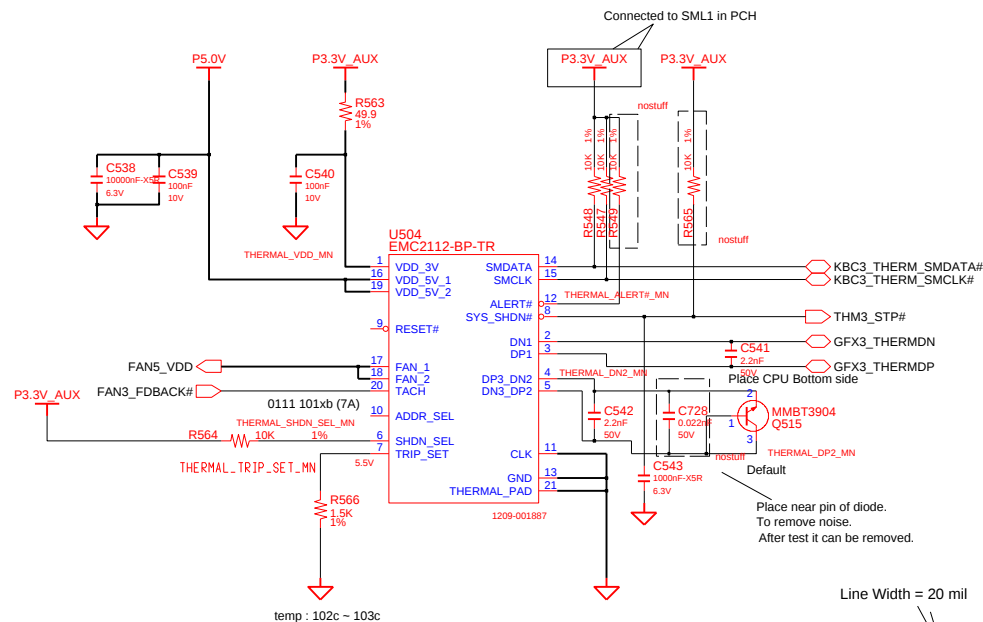


Place 14.318MHz within
500mils of CK-505



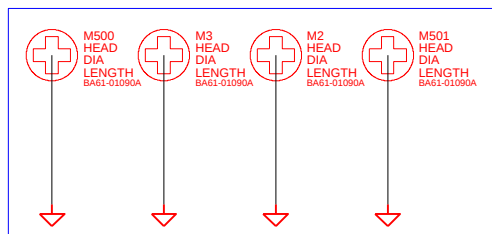
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APPROVAL	MK Kim	REV	REV 0.1	CK505-SHRINK		
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	7 OF 54	

THERMAL SENSOR & FAN CONTROL

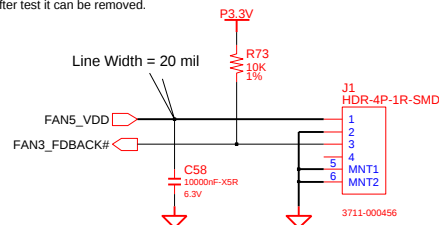


ADDRESSSEL MODE	
0	0101 111xb
✓ HIGH Z	0111 101xb (7A)
1	0101 110xb

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



To support heatsink



DESIGN	MS Yang	DATE	1/26/2010	BREMEN2 THERMAL SENSOR THERMAL SENSOR G7923	SAMSUNG ELECTRONICS			
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APPROVAL	MK Kim	REV	REV 0.1					
MODULE CODE	undefined		LAST EDIT					March 06, 2010 17:48:35 PM
					PAGE	8	OF	54



The schematic diagram illustrates a two-stage 10-bit SAR ADC. The top stage (5-bit) includes comparators C115, C116, C117, and C118, and DACs D115, D116, D117, and D118. The bottom stage (5-bit) includes comparators C121, C122, C123, and C124, and DACs D121, D122, D123, and D124. The DACs are implemented as current sources with resistors and current mirrors. The circuit is powered by a 1.2V supply and a 0.5V reference voltage.

Stuff/NoStuff Check ?
(depends on placement)

ALL VTT DECAP IS SHARED

CPU1-3
ARD/CFD PGA

3 / 5

P1.05V

CPU1-4
ARD/CFD PGA

4 / 5

ADD 1K PD in discrete GFX design

GRAPHICS

POWER
1.5V RAILS

1.1V

PEG & DMI

8.

VTT_SEL	VOLTAGE	CPU
1	P1.05V	ARRANDALE
0	P1.1V	CLARKS FIELD

VTT SEL signal (for CFD/ARD shared) CPU CORE

CPU CORE

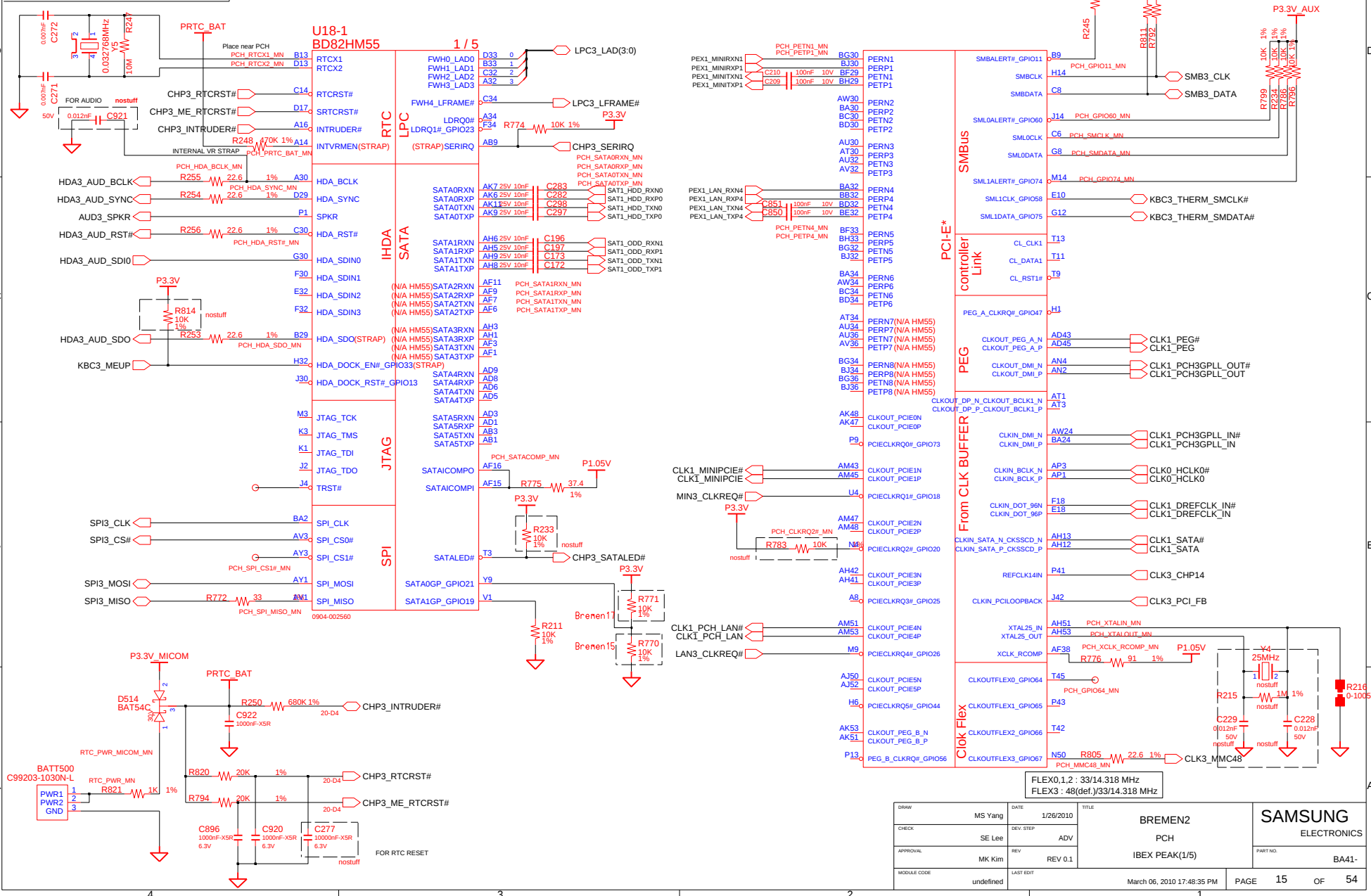
MON |

100
1%

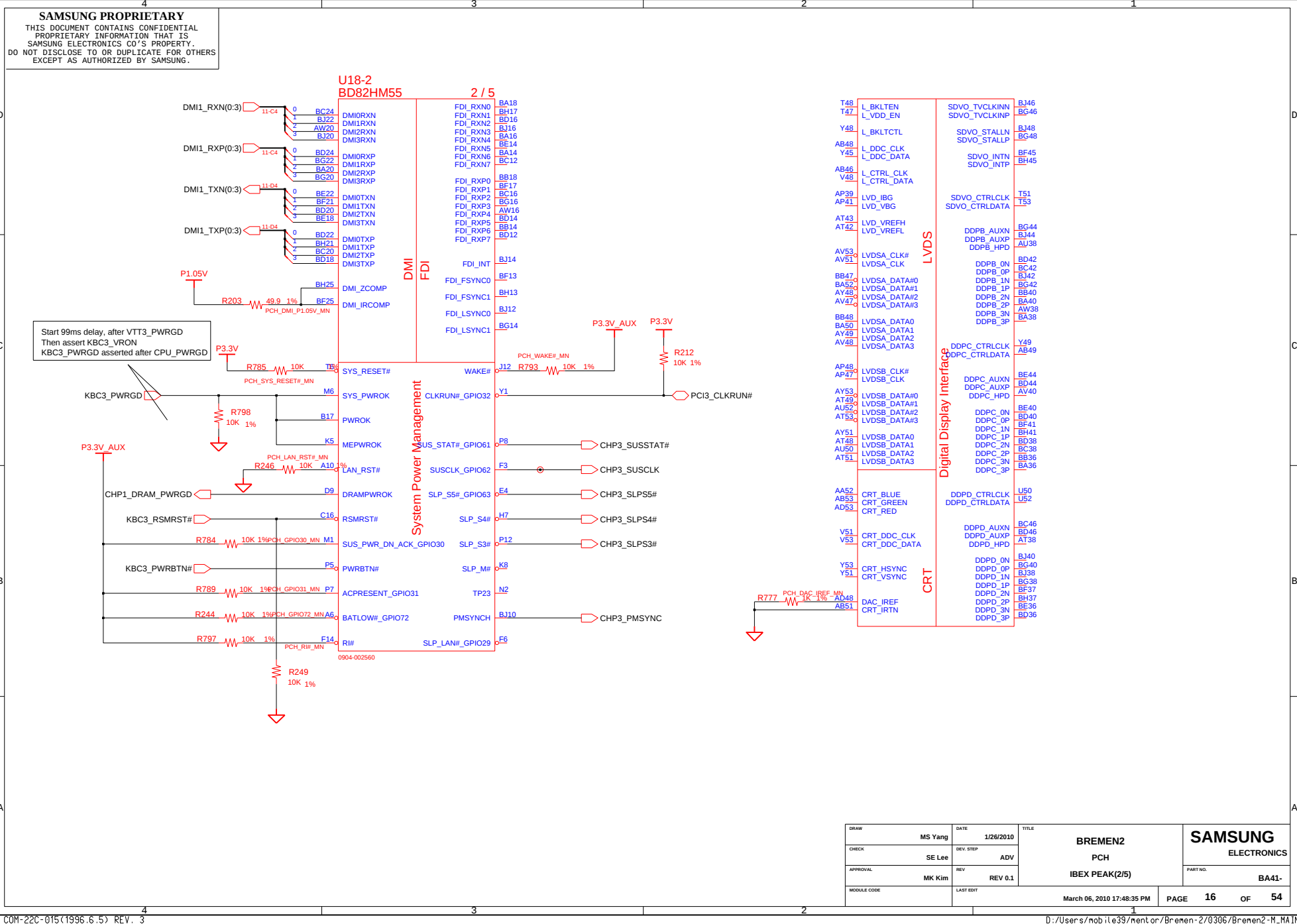
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APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE	LAST EDIT					
				ARRANDALE (3/4)	PART NO.	BA41-

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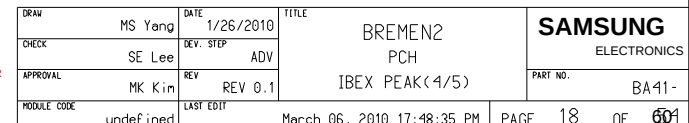


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APPROVAL	MK Kim	REV	REV 0.1			
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				March 06, 2010 17:48:35 PM	PAGE	15
					OF	54



DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	SAMSUNG
CHECK	SE Lee	REV. STEP	ADV		PCH	ELECTRONICS
APPROVAL	MK Kim	REV	REV 0.1		IBEX PEAK(2/5)	PART NO.
MODULE CODE		LAST EDIT				BA41-
				March 06, 2010 17:48:35 PM	PAGE	16 OF 54

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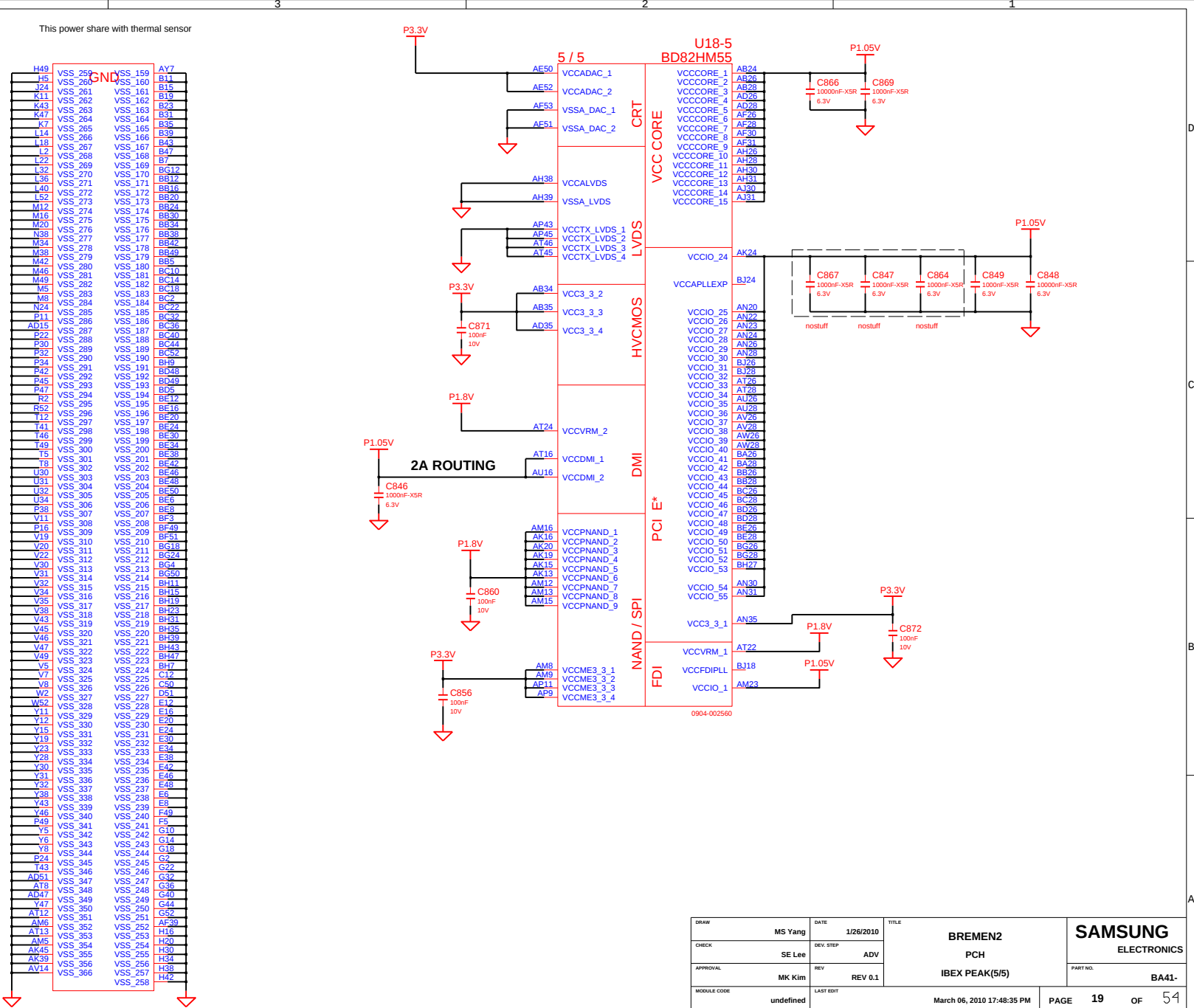


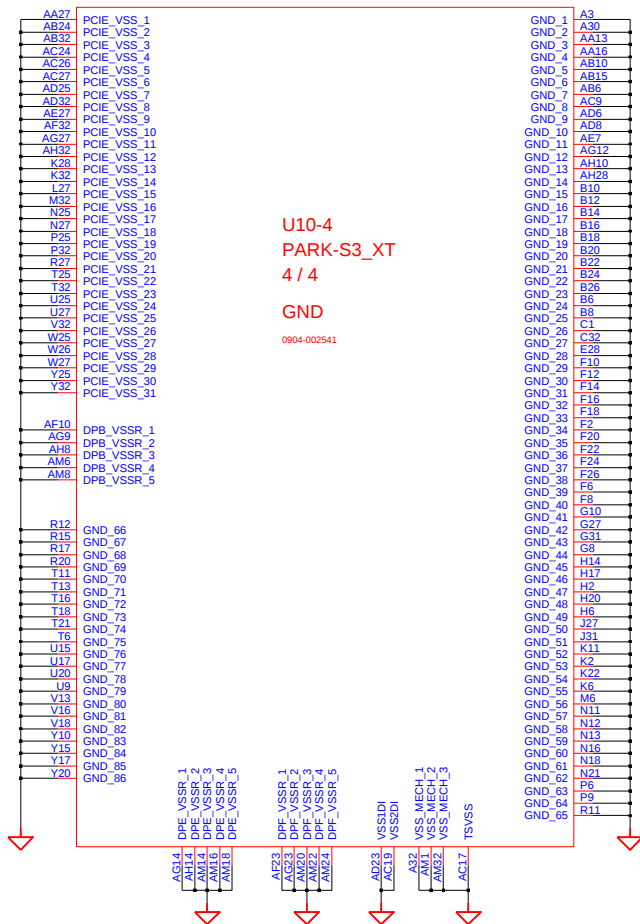
D

C

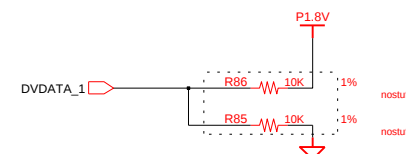
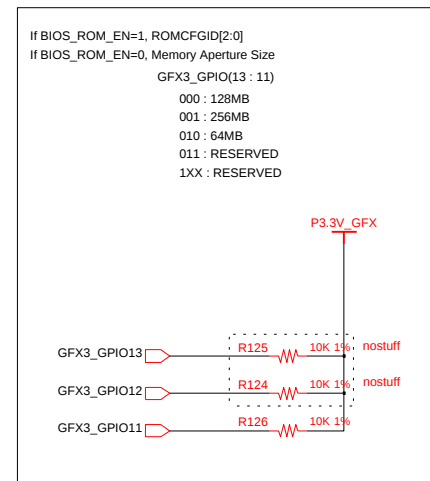
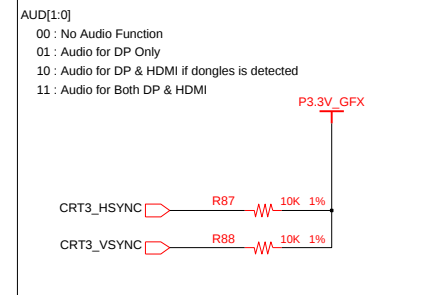
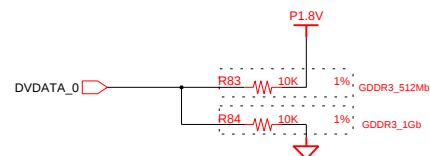
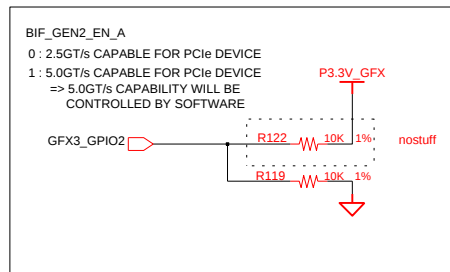
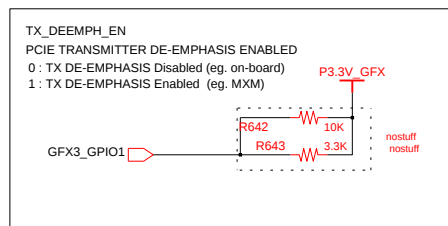
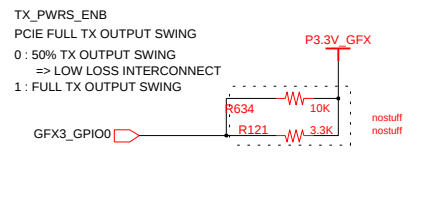
B

A



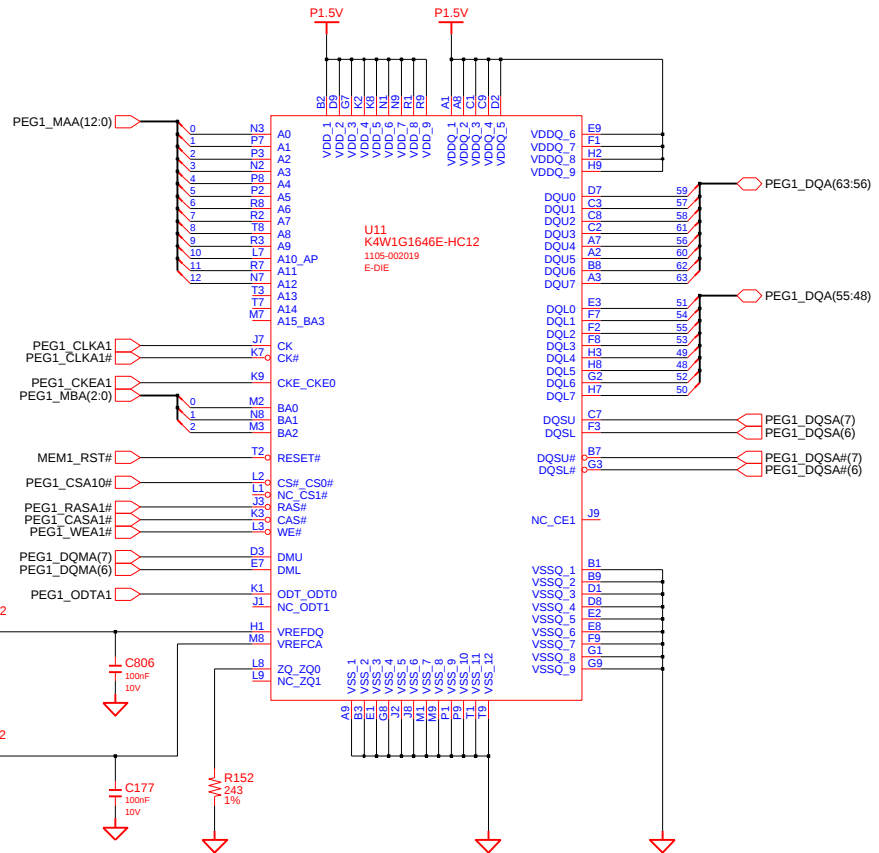
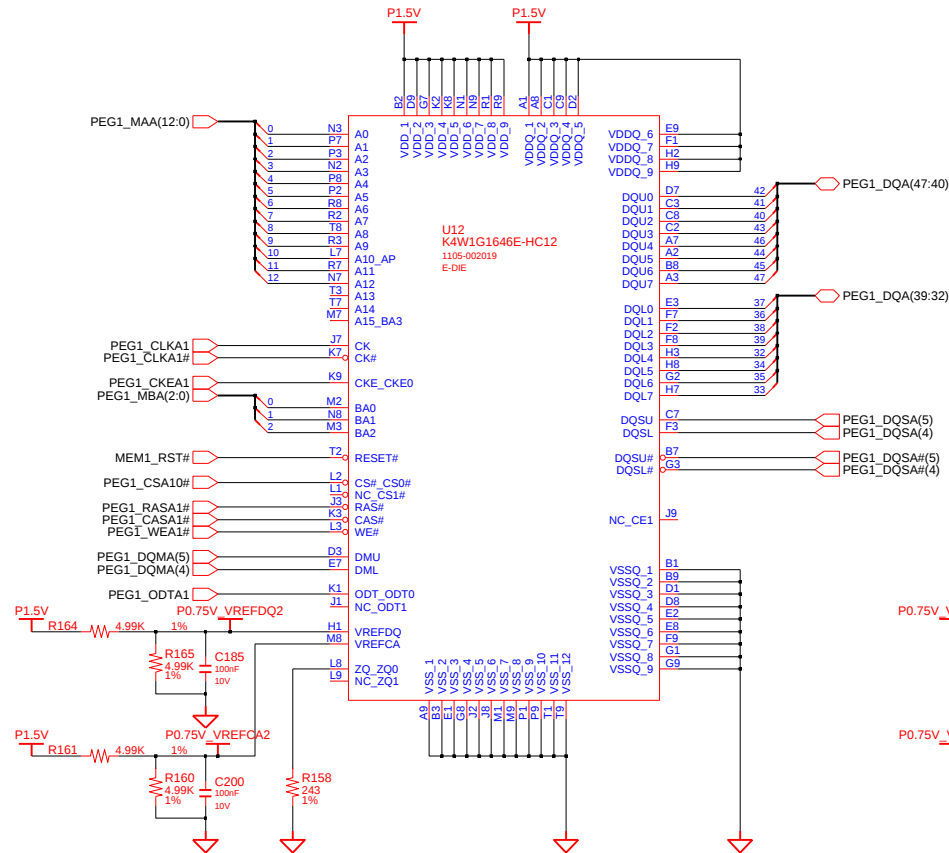


PARK-S3 Straps



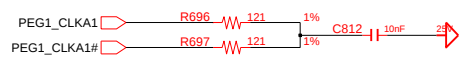
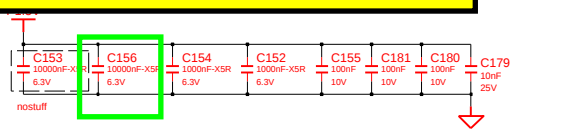
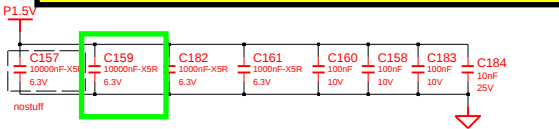
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APPROVAL	MK Kim	REV	REV 0.1		
MODULE CODE	LAST EDIT				
March 06, 2010 17:48:35 PM					PAGE 23 OF 54

RANK0 Upper Data



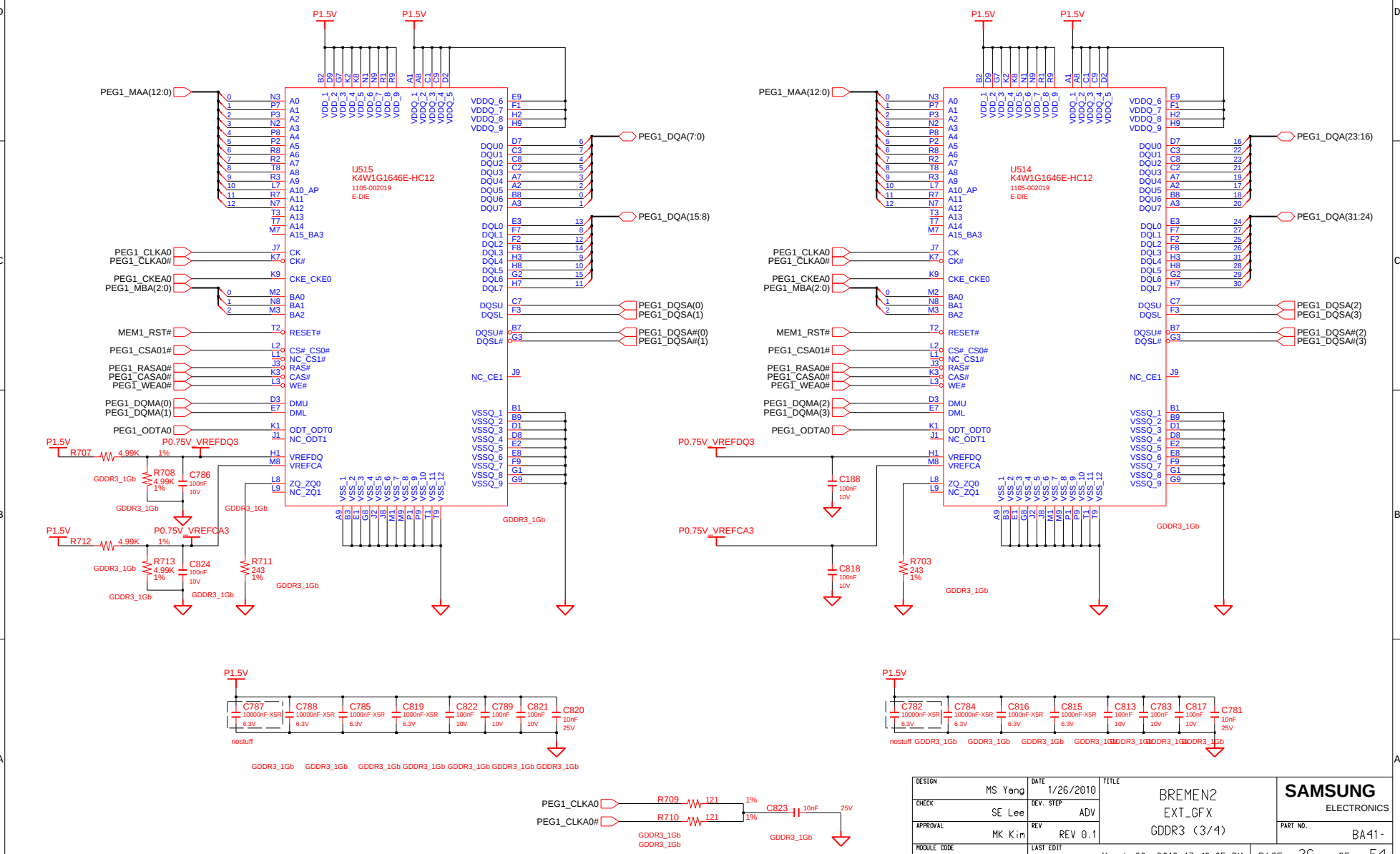
C159 - - -> 1000nF, 1608 2203 - 006348

C156 - - -> 1000nF, 1608 2203 - 006348



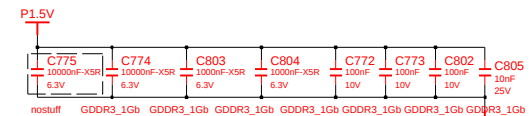
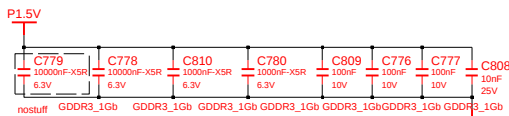
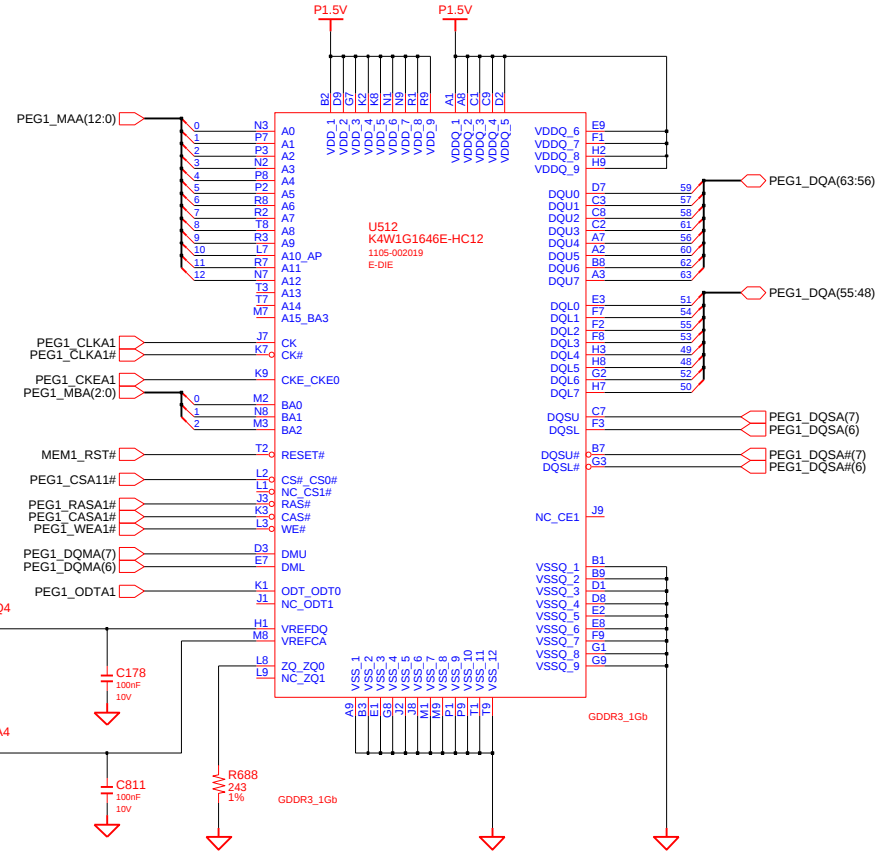
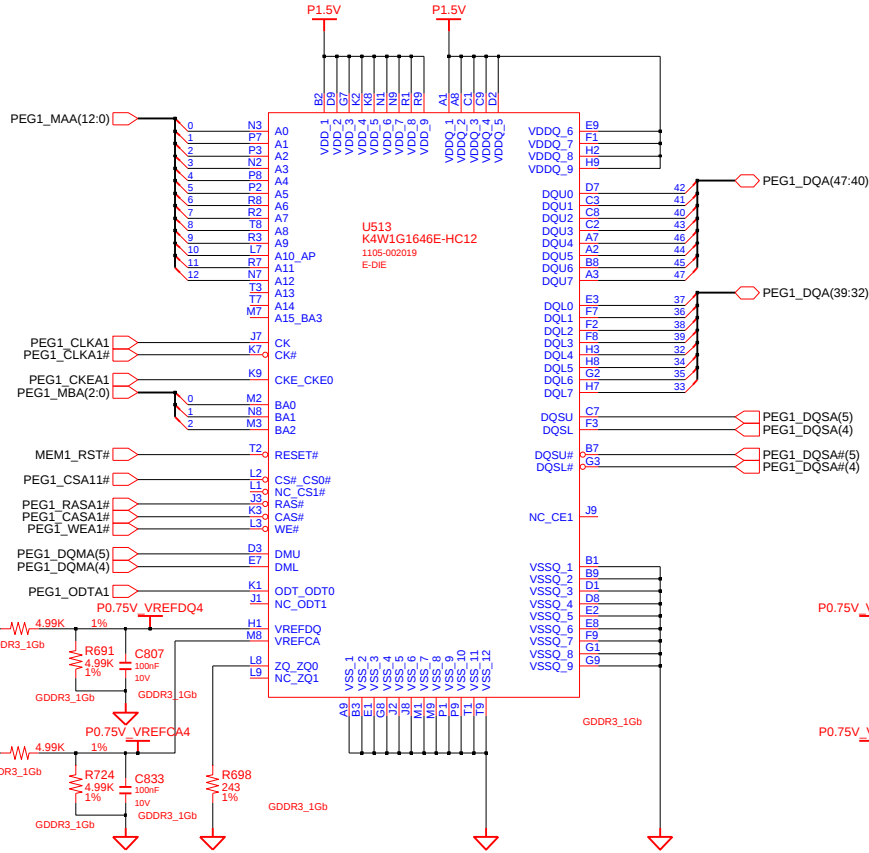
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RANK1 Lower Data



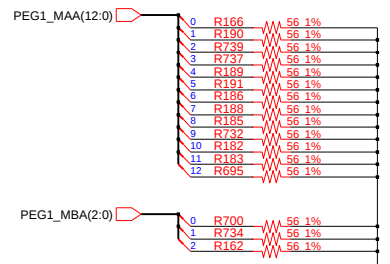
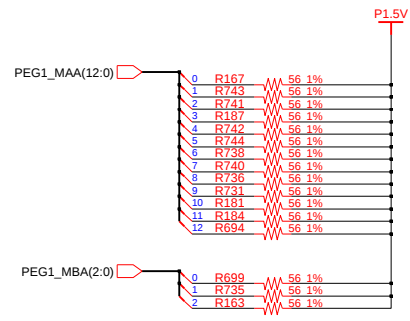
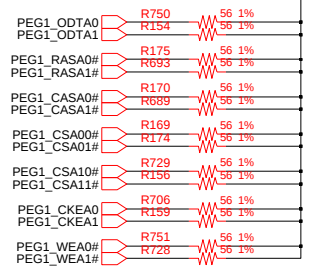
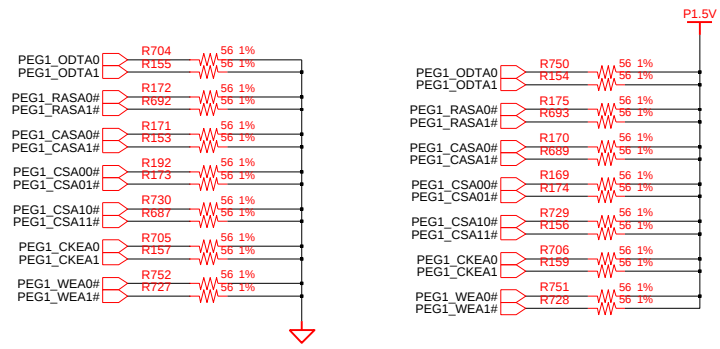
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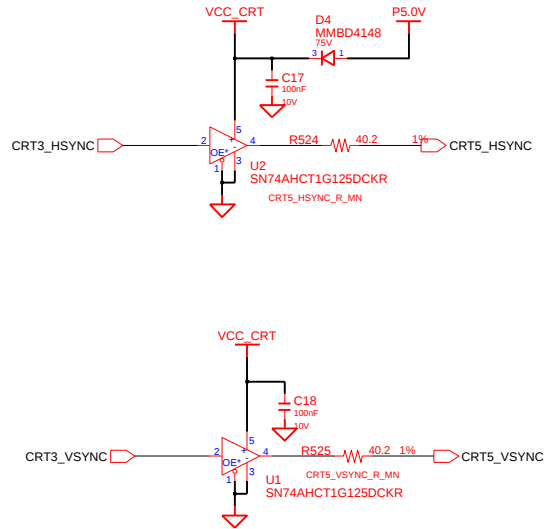


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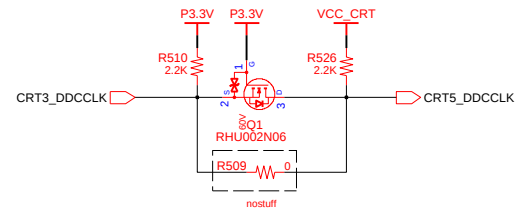
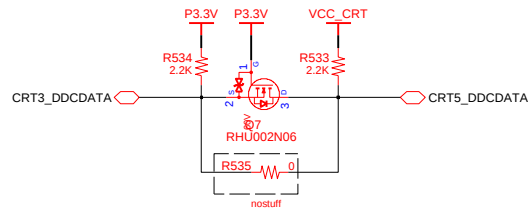
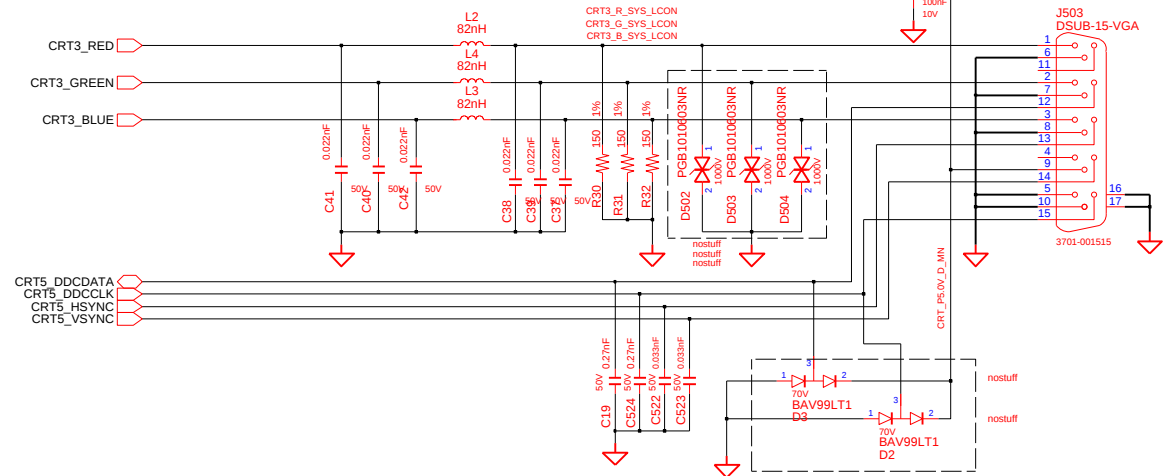
DUAL RANK Terminations



CRT



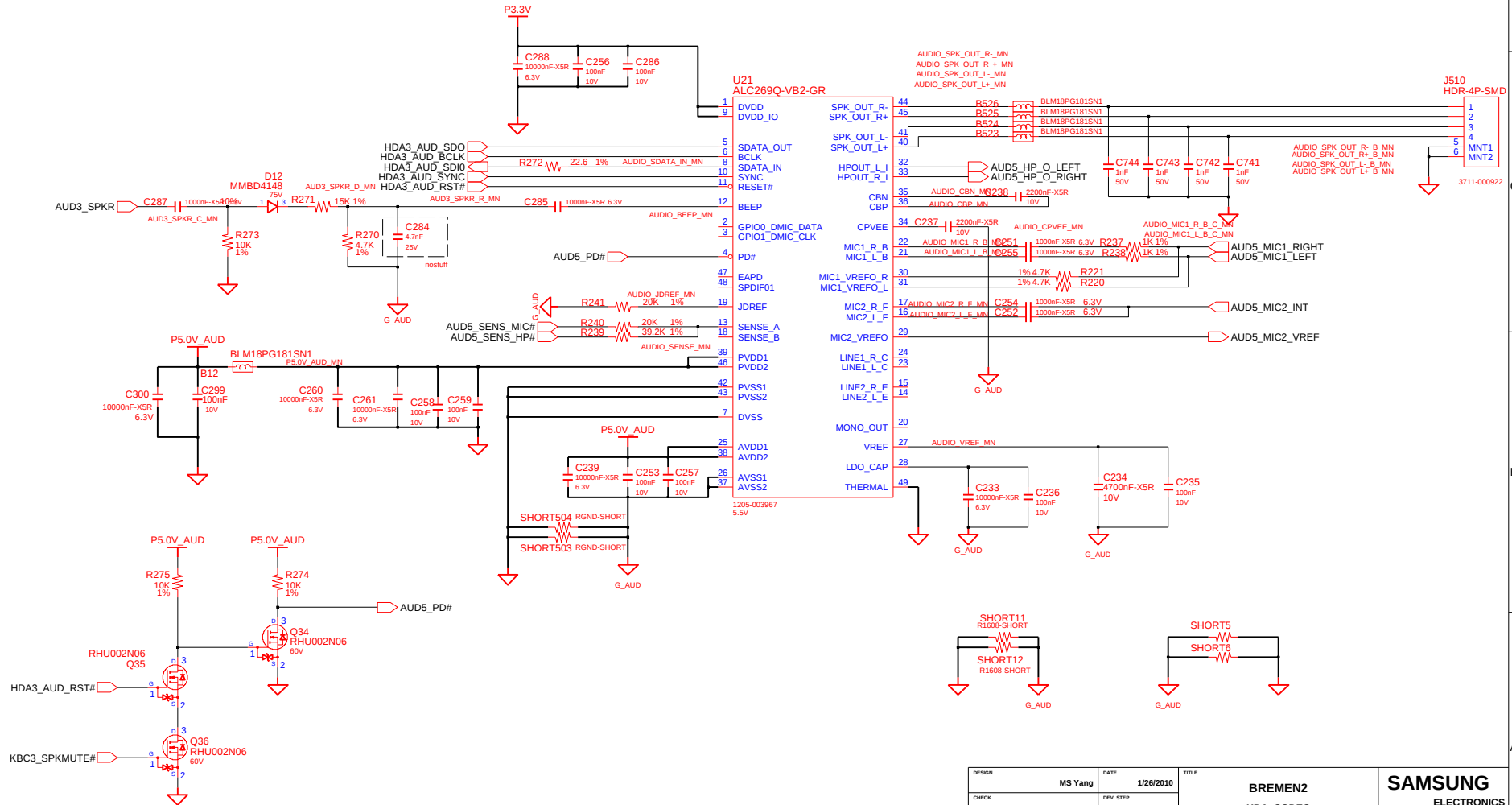
CRT CONNECTOR



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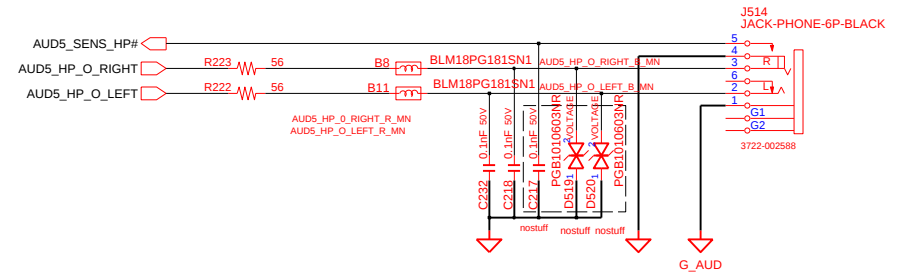
HD AUDIO

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

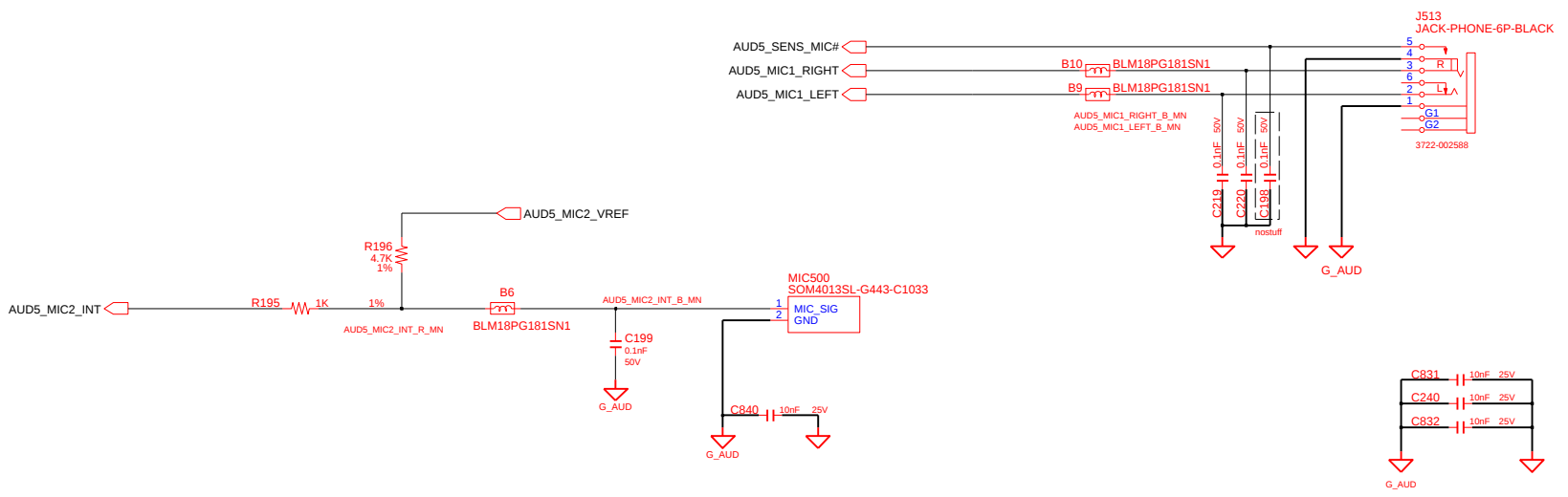


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March 06, 2010 17:48:35 PM						PAGE 32 OF 54

HEADPHONE(BLACK)

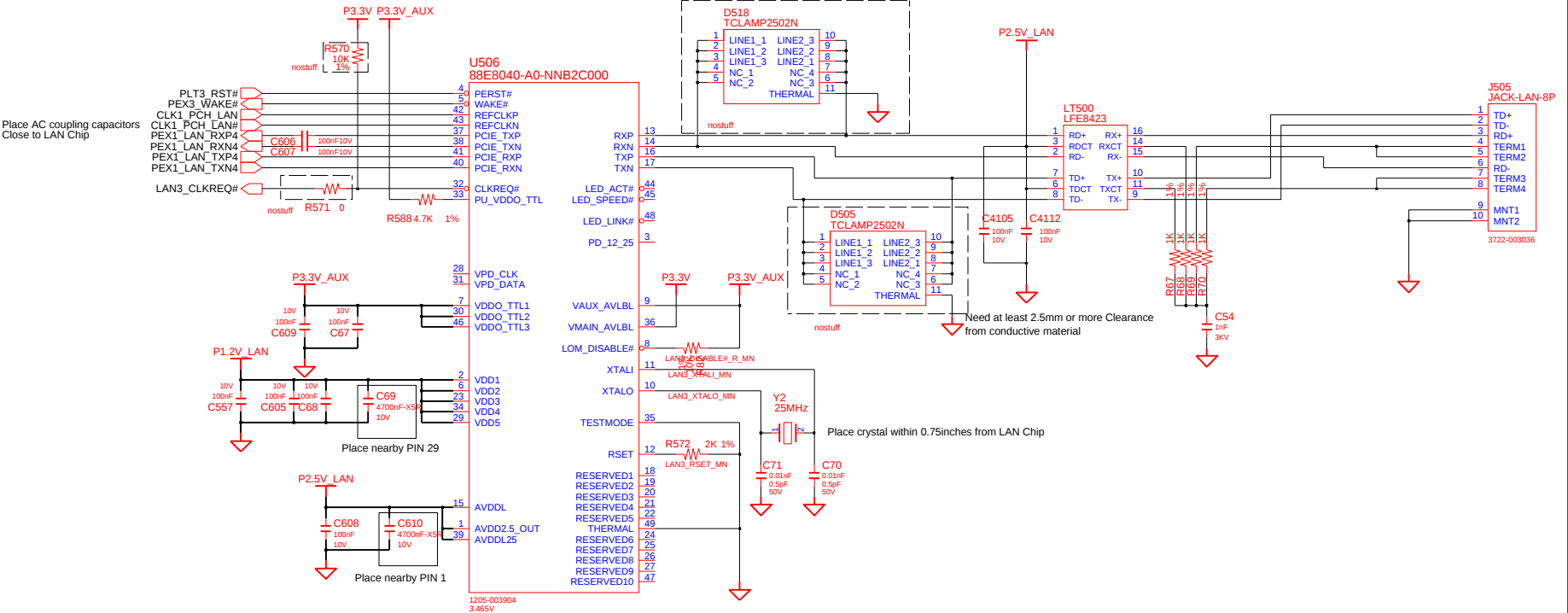


MIC JACK(BLACK)

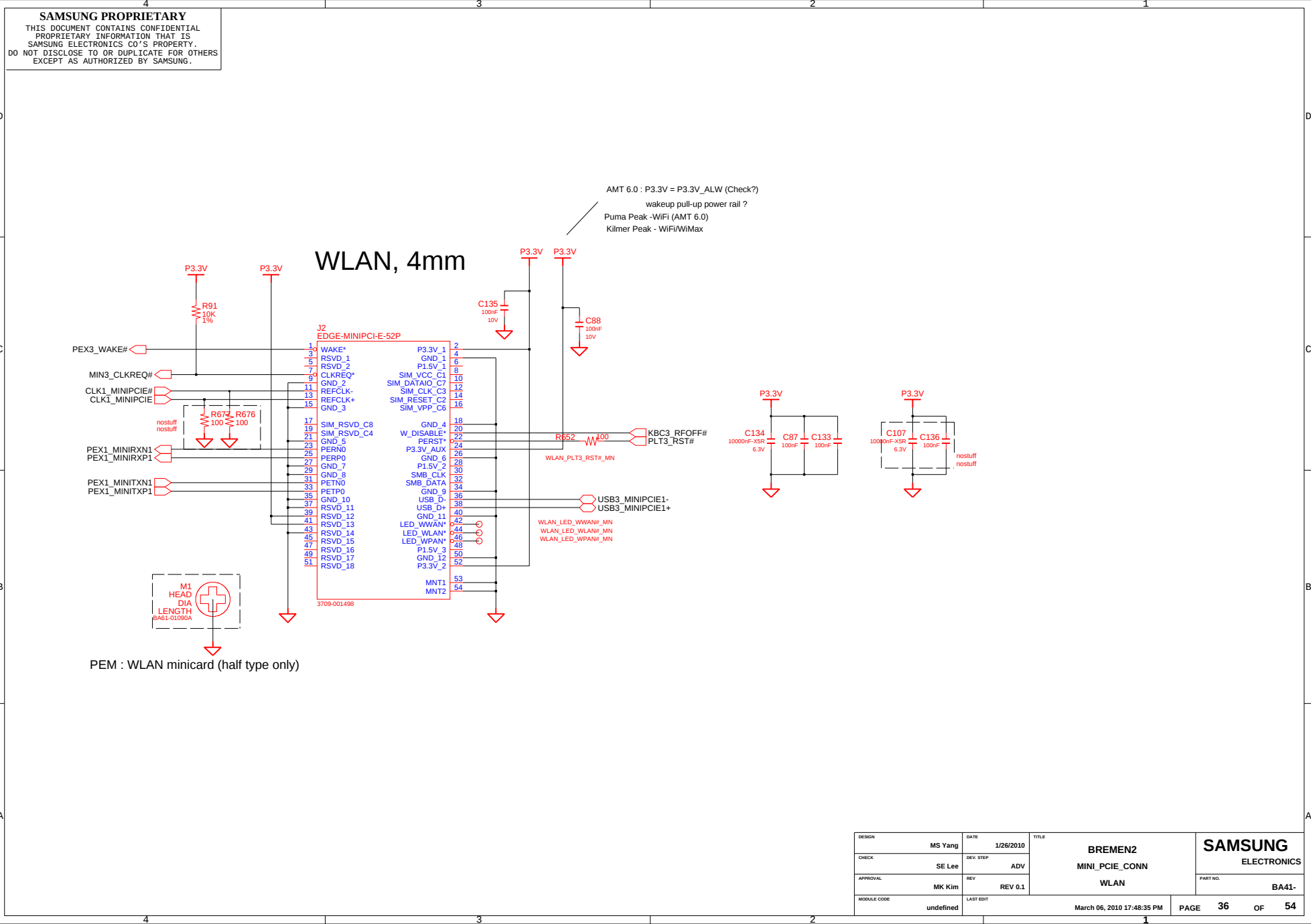


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LAN Controller (88E8040)

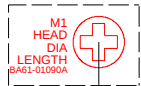


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APPROVAL	MK Kim	REV	REV 0.1			
				PART NO.	BA41-	
MODULE CODE	undefined	LAST EDIT			March 06, 2010 17:48:35 PM	PAGE 34 OF 54



AMT 6.0 : P3.3V = P3.3V_ALW (Check?)
wake up pull-up power rail ?
Puma Peak -WiFi (AMT 6.0)
Kilmer Peak - WiFi/WiMax

WLAN, 4mm

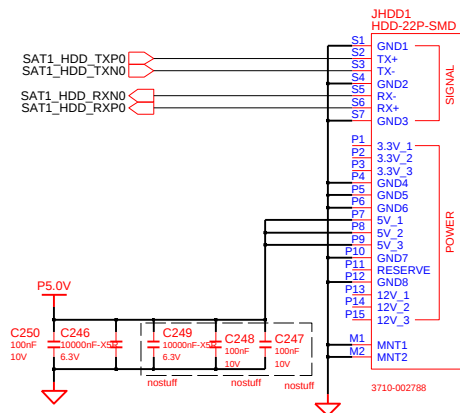


PEM : WLAN minicard (half type only)

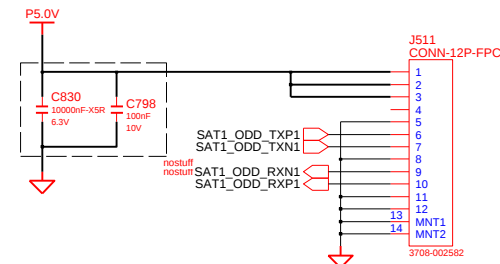
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SATA I/F CONN

SATA HDD CONN



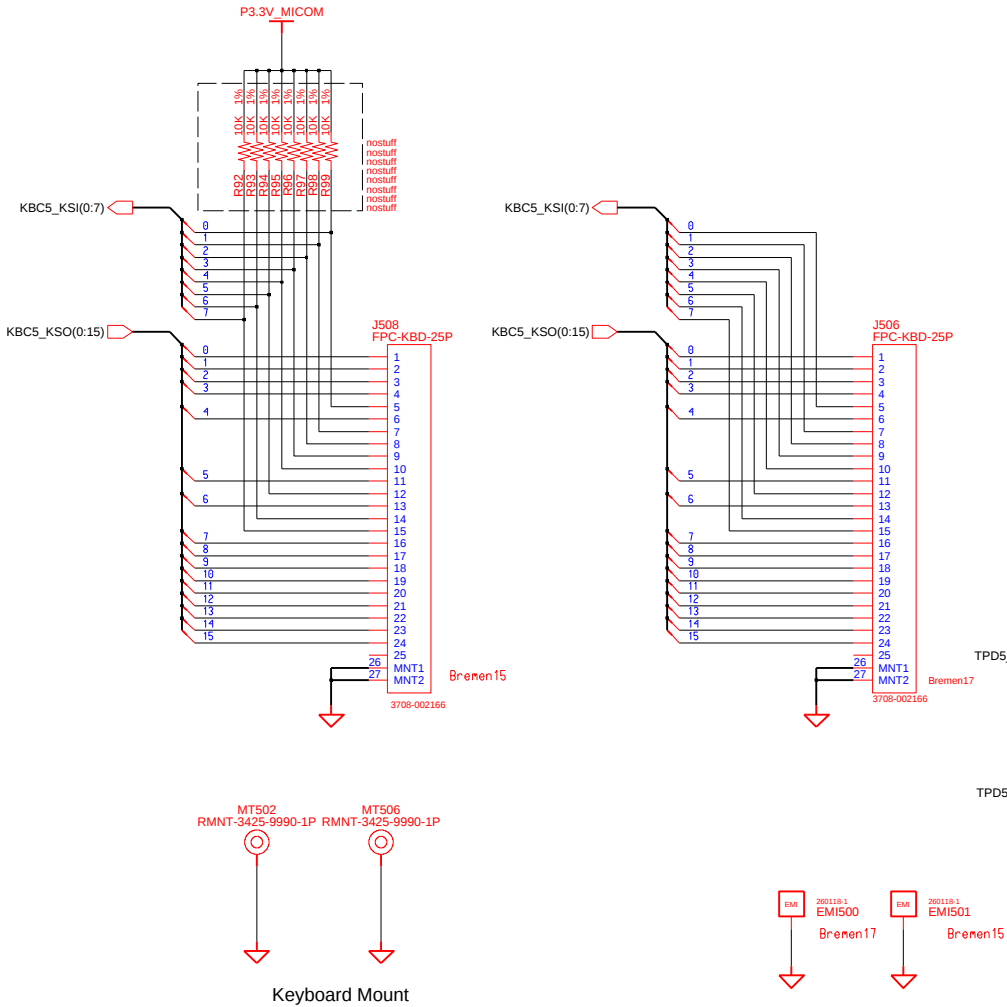
MAIN TO SUB SATA ODD CONN



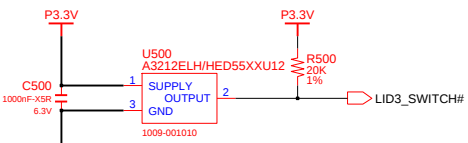
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CHECK	SE Lee	DEV. STEP	ADV	REV	REV 0.1	PAGE	37
APPROVAL	MK Kim	LAST EDIT	March 06, 2010 17:48:35 PM	OF	54		
MODULE CODE	undefined						

Micom Glue Logic

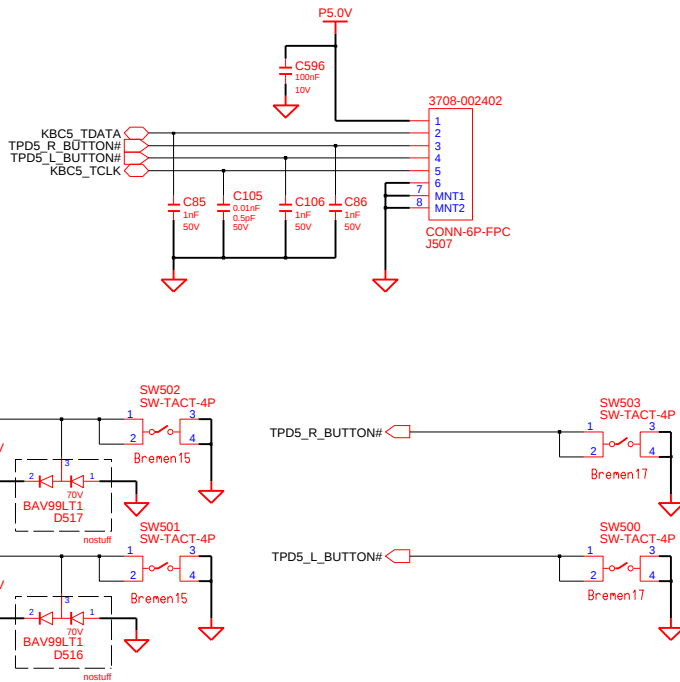
KEYBOARD



LID_SWITCH

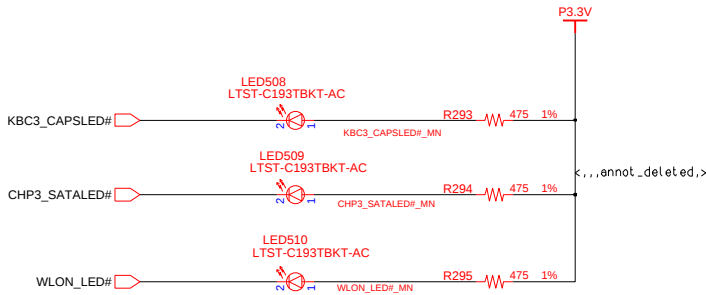


TOUCHPAD

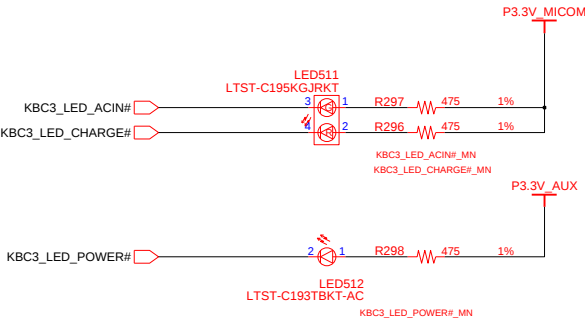


DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 MICOM GLUE LOGIC KETBOARD & TOUCHPAD	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV	REV	REV 0.1	PART NO. BA41-
APPROVAL	MK Kim	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	39	OF 54
MODULE CODE	undefined					

FUNCTION KEY LED

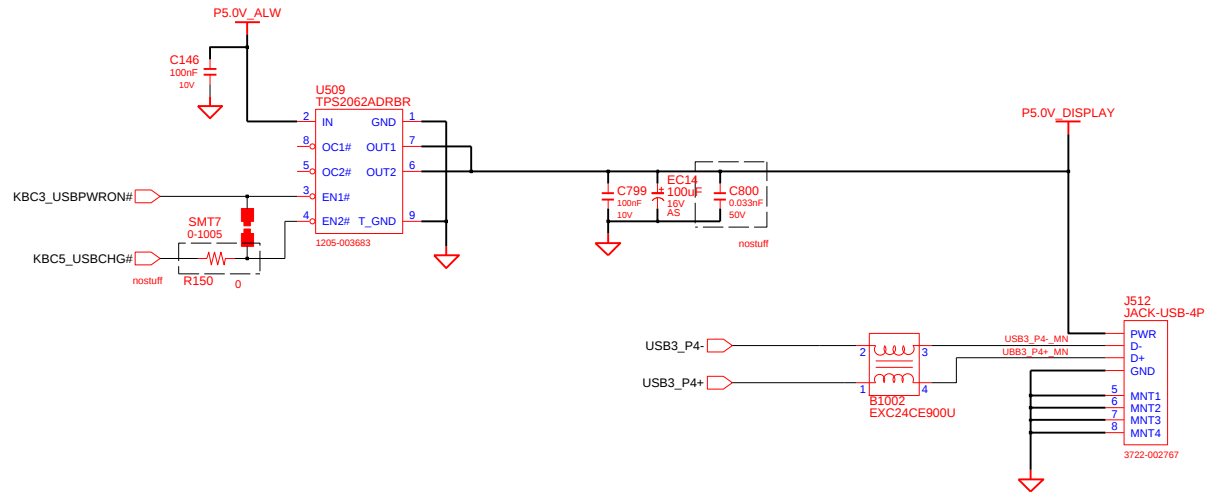


ADAPTERIN/CHARGING LED

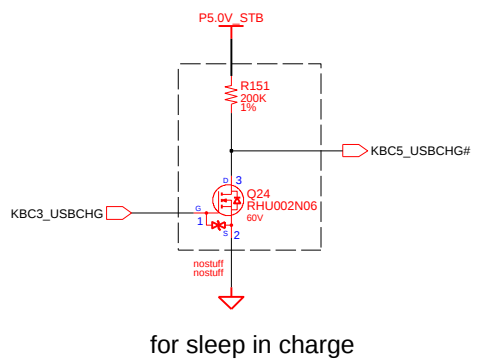
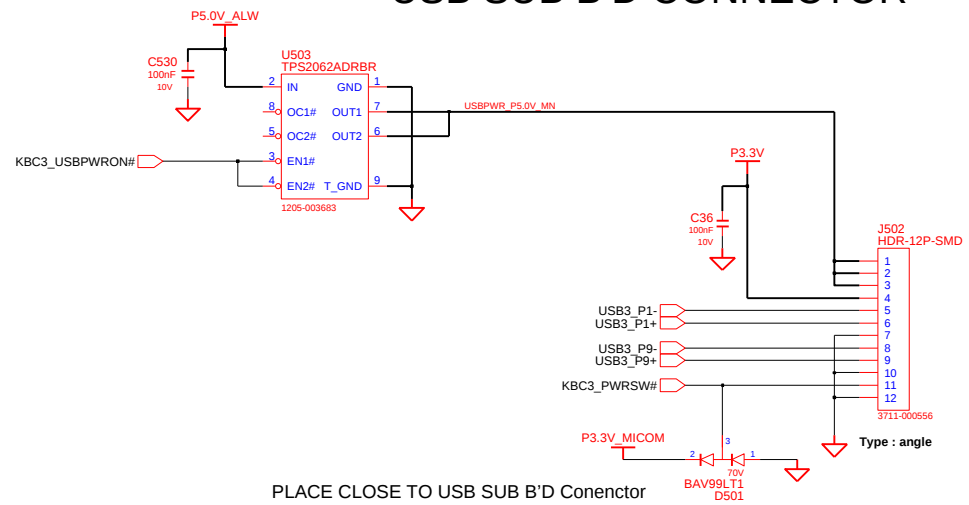


DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 LED_SWITCH LED_SWITCH	SAMSUNG ELECTRONICS			
CHECK	SE Lee	REV. STEP	ADV						
APPROVAL	MK Kim	REV	REV 0.1						
MODULE CODE		LAST EDIT			March 06, 2010 17:48:35 PM	PAGE	40	OF	54
						PART NO. BA41-			

USB Single connector



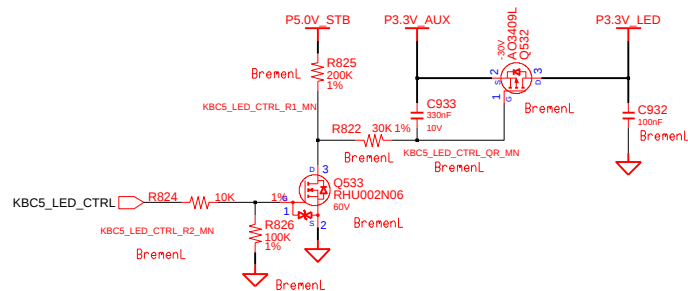
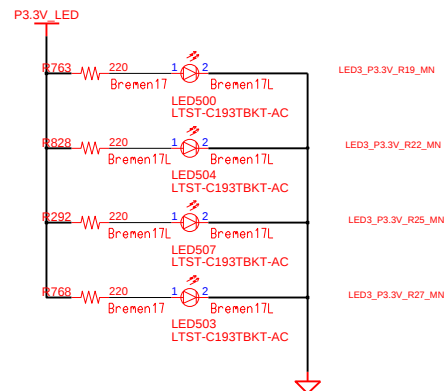
USB SUB B'D CONNECTOR



for sleep in charge

PLACE CLOSE TO USB SUB B'D Conenctor

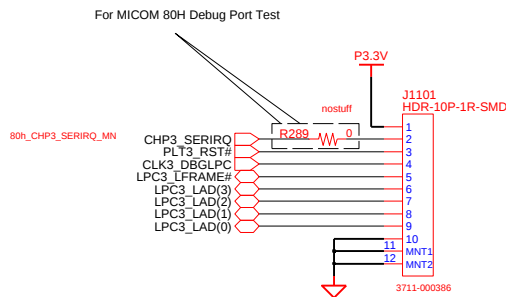
DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 USB_CONN	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1		Single USB	PART NO. BA41-
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	41	OF 54



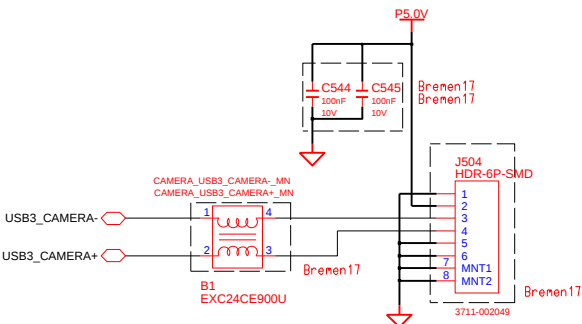
COM-22C-015(1996.6.5) REV. 3

USB I/F Devices

80h PORT DEBUG

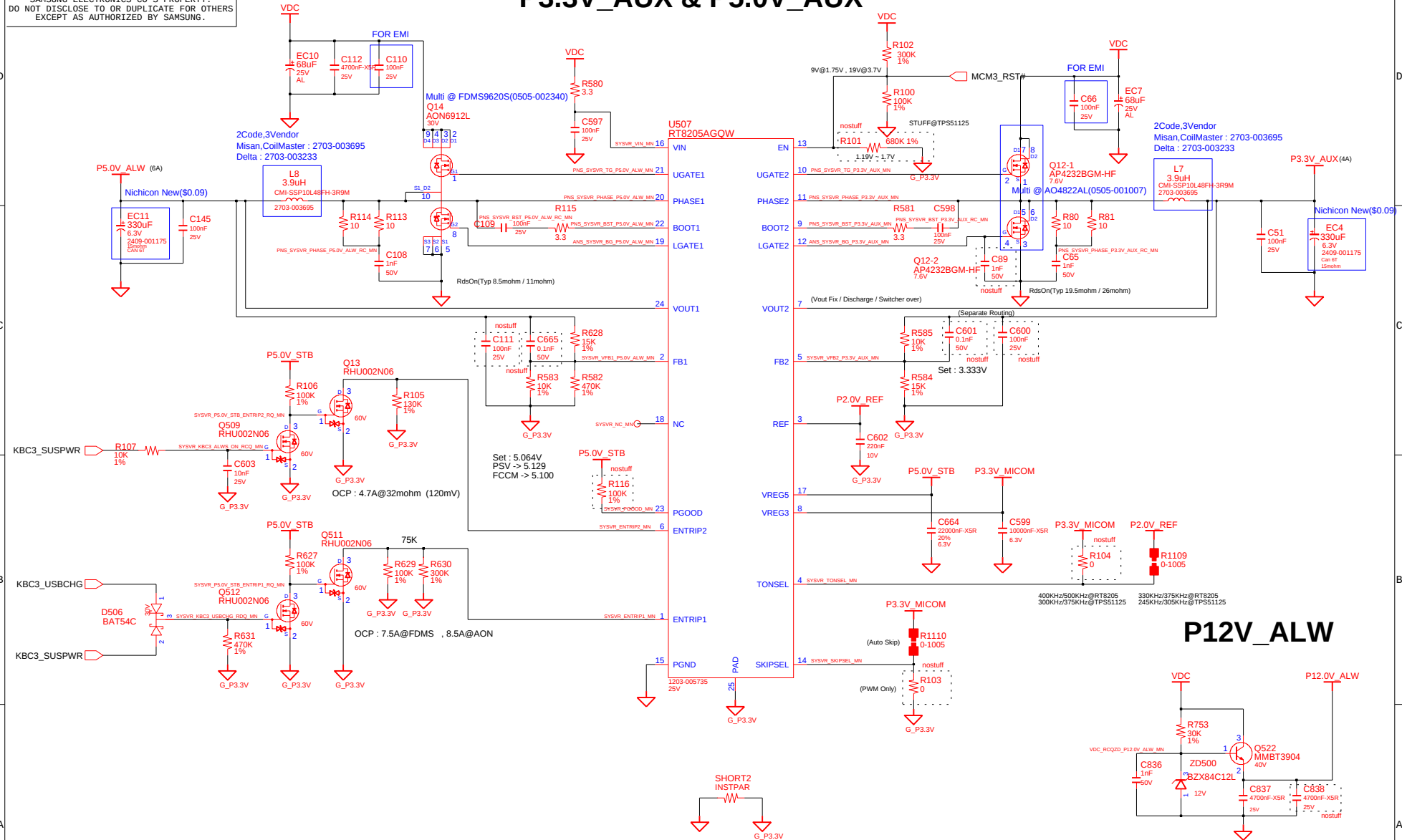


CAMERA (17Inch)



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 USB_DEVICES	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			PART NO.
APPROVAL	MK Kim	REV	REV 0.1		CAMERA	BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE 43	OF 54

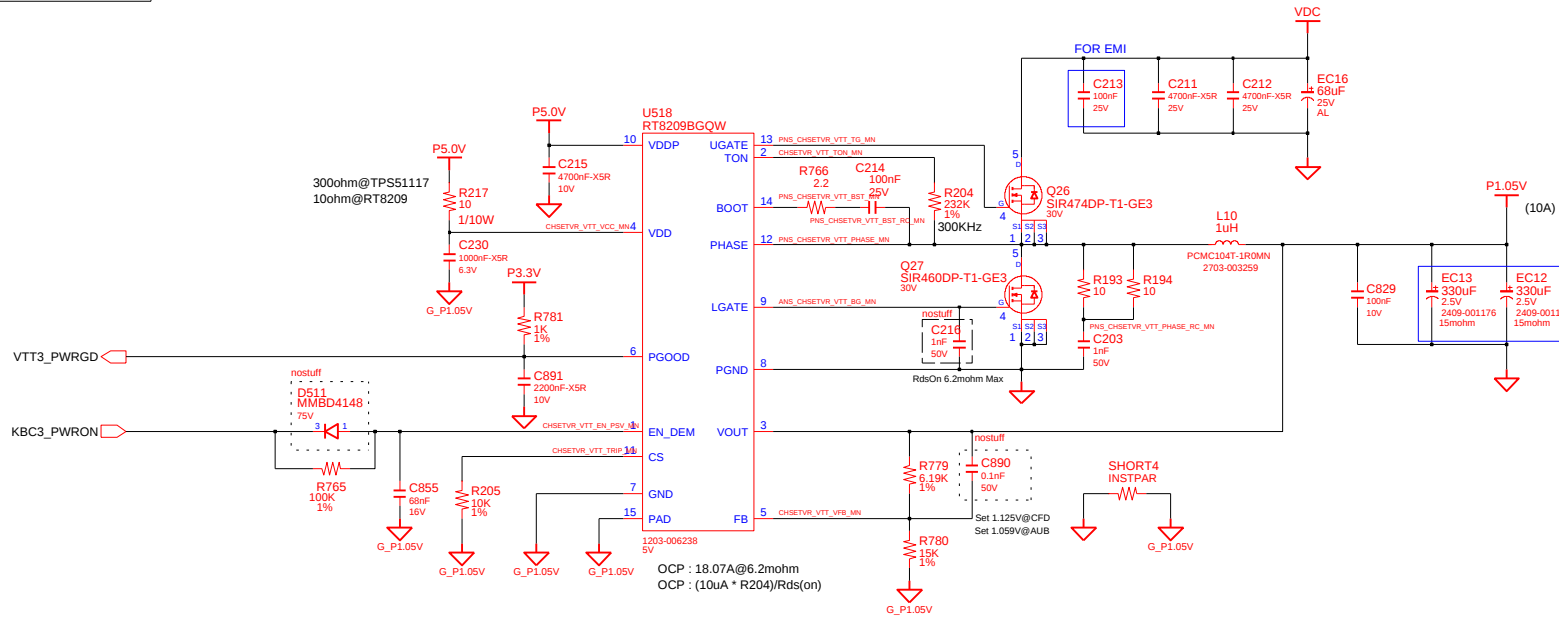
P3.3V_AUX & P5.0V_AUX



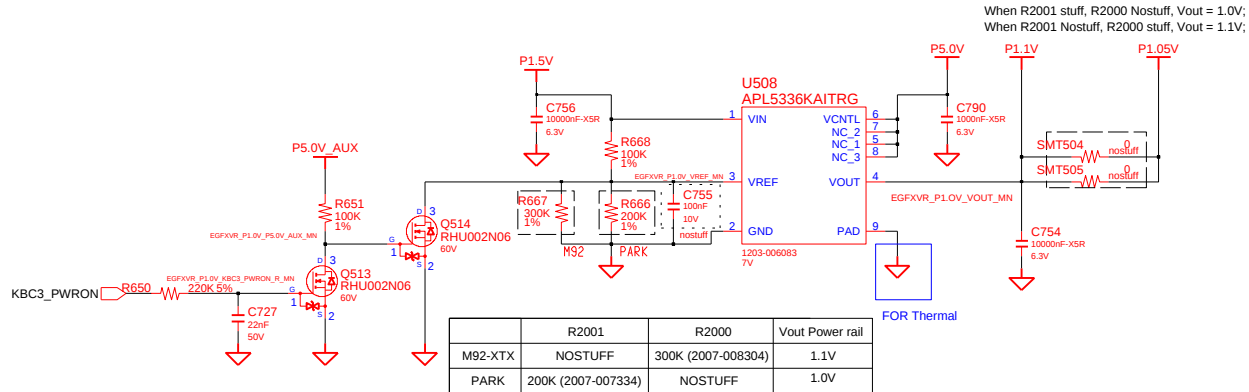
P12V_ALW

DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV		P3.3V_ALW / P5.0V_ALW	
APPROVAL	MK Kim	REV	REV 0.1		P3.3V_AUX & P5.0V_AUX	
MODULE CODE	undefined	LAST EDIT				
				March 06, 2010 17:48:35 PM	PAGE 45	OF 54

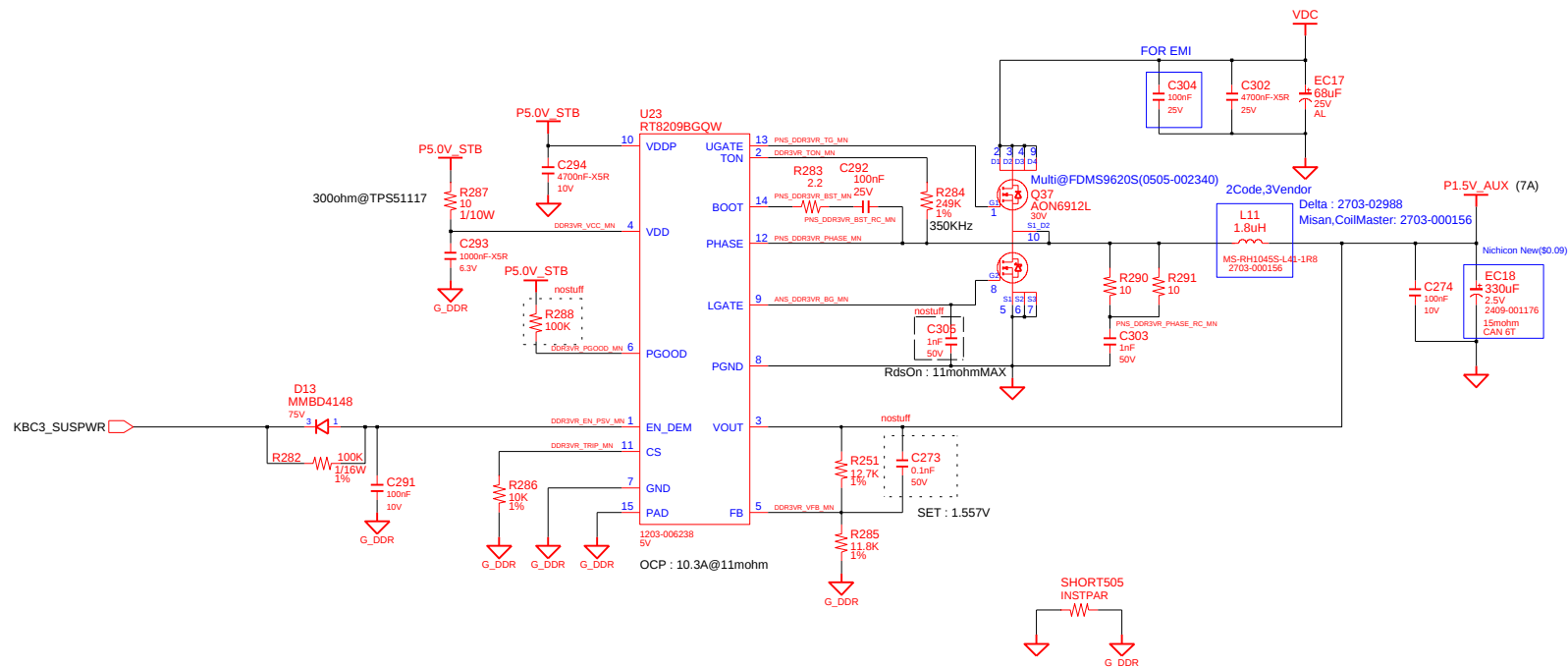
CHIPSET POWER(P1.05V)



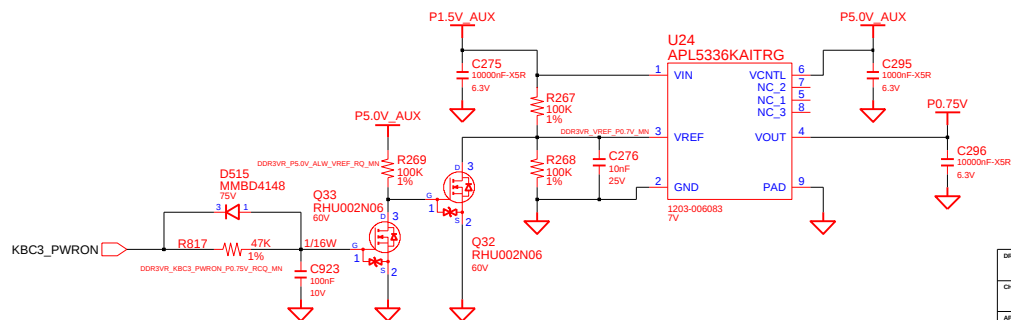
P1.1V



DDR3 Power

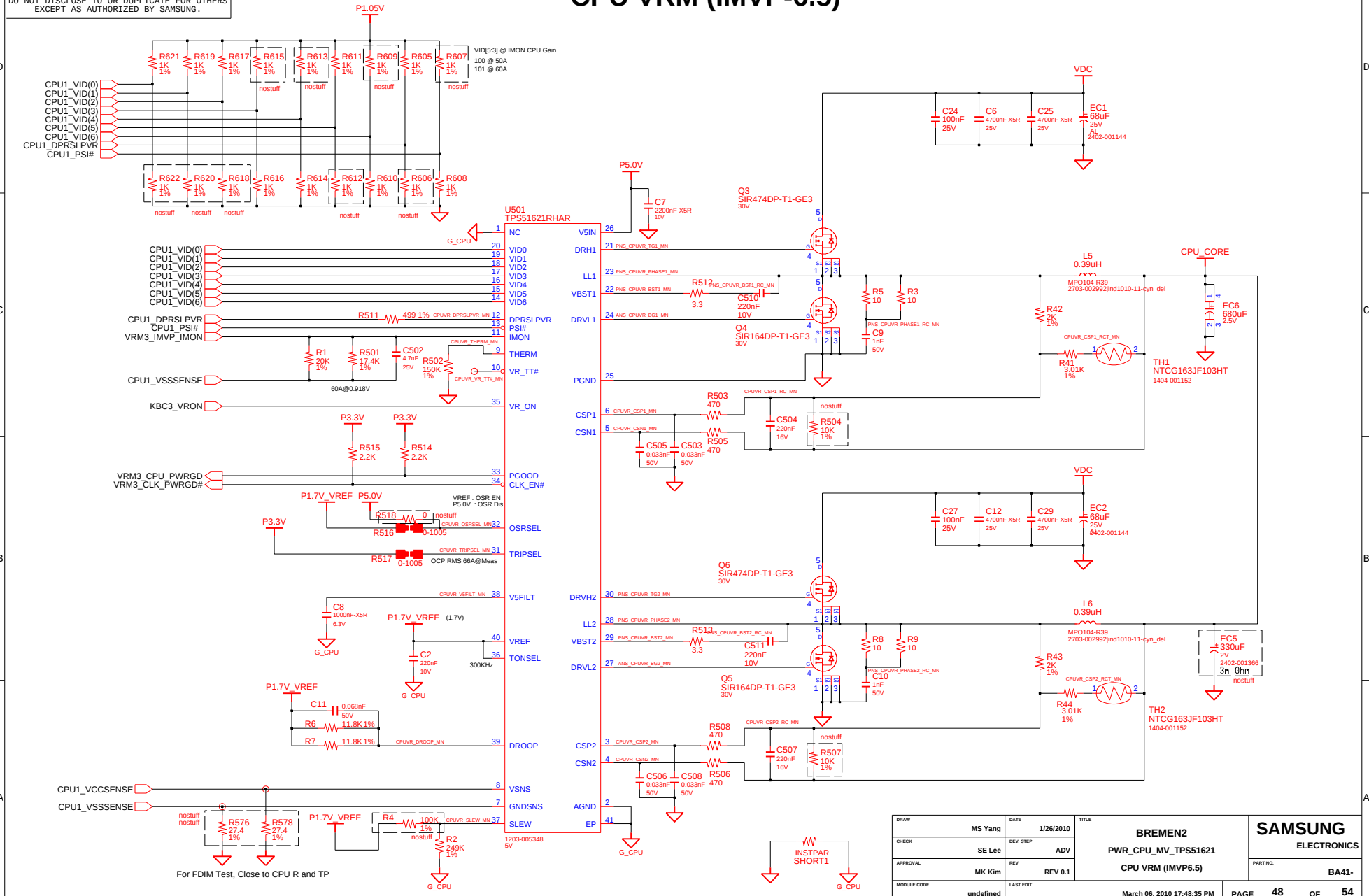


DDR3 VTT(0.75V)



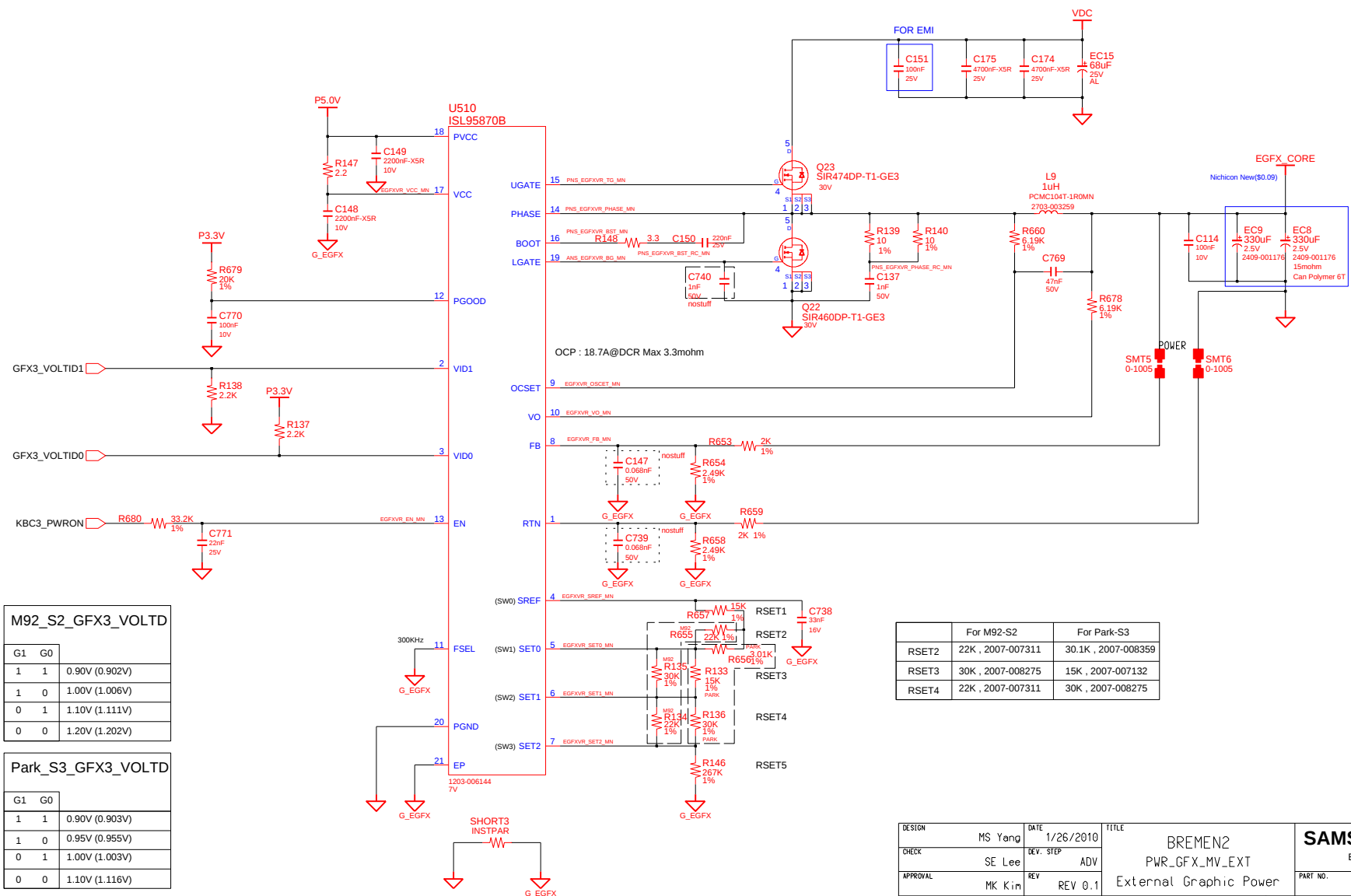
DRAW	MS Yang	DATE	1/26/2010	BREMEN2 PWR MEMORY DDR3 POWER	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV		
APPROVAL	MK Kim	REV	REV 0.1		
MODULE CODE		LAST EDIT			
undefined				March 06, 2010 17:48:35 PM	PAGE 47 OF 54

CPU VRM (IMVP-6.5)



DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	PWR_CPU_MV_TPS51621	CPU VRM (IMVP6.5)	SAMSUNG	
CHECK	SE Lee	DEV. STEP	ADV					ELECTRONICS	
APPROVAL	MK Kim	REV	REV 0.1					PART NO.	BA41-
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM					PAGE	48

Graphic Core Power



M92_S2_GFX3_VOLTID	
G1	G0
1	1
1	0
0	1
0	0

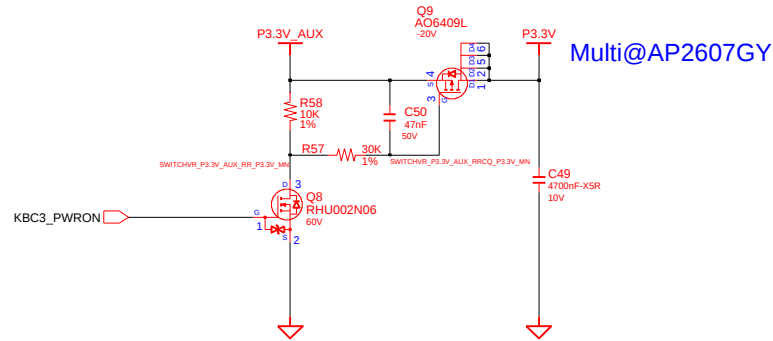
Park_S3_GFX3_VOLTID	
G1	G0
1	1
1	0
0	1
0	0

	For M92-S2	For Park-S3
RSET2	22K , 2007-007311	30.1K , 2007-008359
RSET3	30K , 2007-008275	15K , 2007-007132
RSET4	22K , 2007-007311	30K , 2007-008275

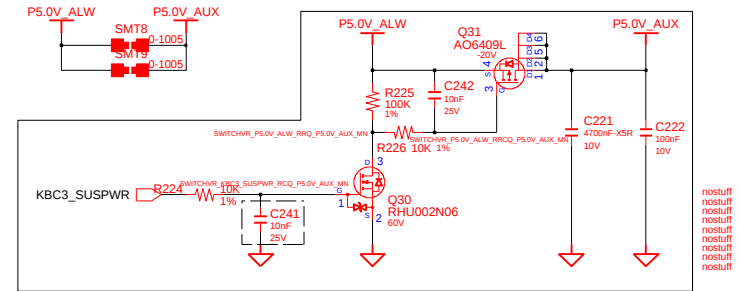
DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PWR_GFX_MV_EXT External Graphic Power	SAMSUNG ELECTRONICS PART NO. BA41-
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kin	REV	REV 0.1			
MODULE CODE	undefined	LAST EDIT				
				March 06, 2010 17:48:35 PM	PAGE 49 OF 54	

Switched Power

Switched Power On (P3.3V)

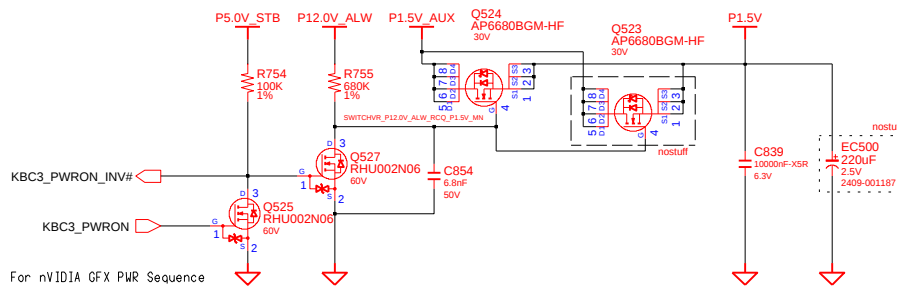


Sleep'n Charger



Switched Power On (P1.5V)

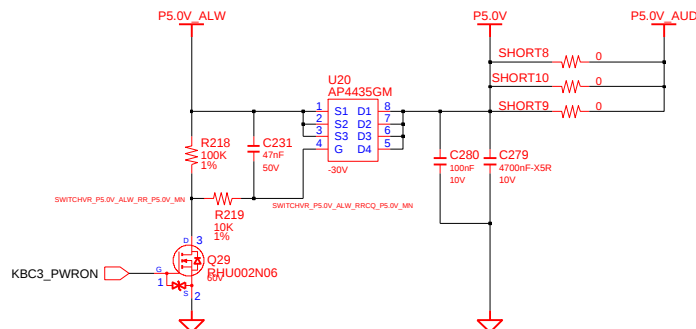
Multi@AO4476L



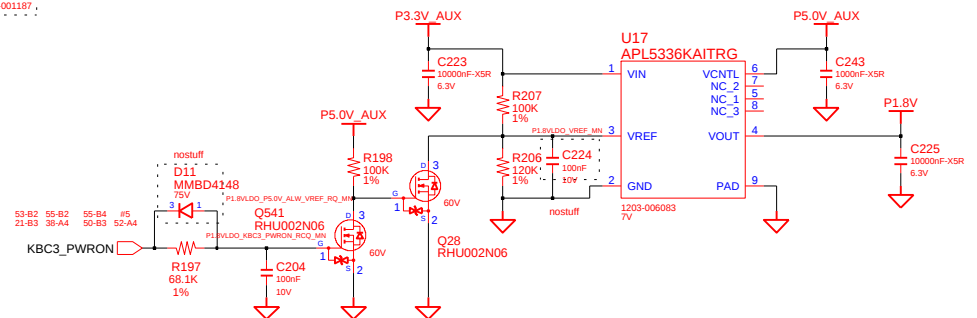
For nVIDIA GFX PWR Sequence
NVDD<EGFX_CORE> first and then FBVDD0<qDDR3>

Switched Power On (P5.0V)

Multi@Si4435DDY

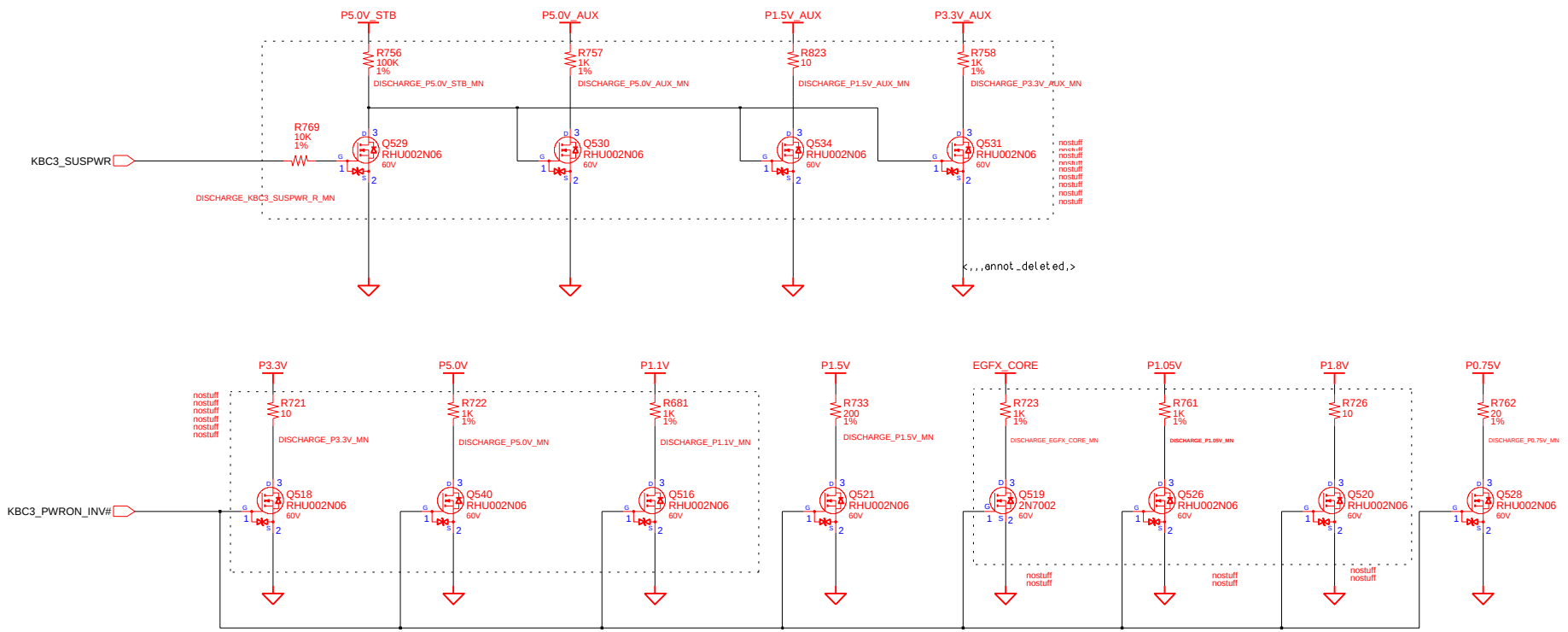


P1.8V(LDO)



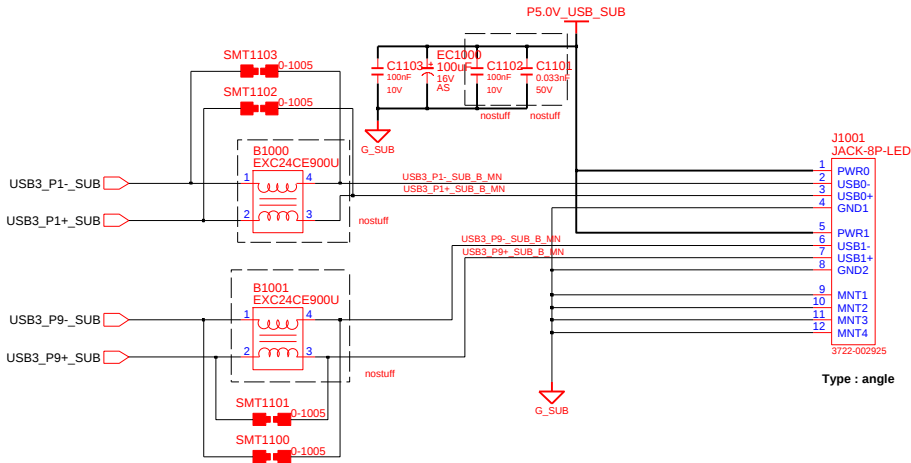
DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	SAMSUNG
CHECK	SE Lee	REV. STEP	ADV	PWR_MV_SWITCHED		ELECTRONICS
APPROVAL	MK Kim	REV	REV 0.1	SWITCHED POWER	PART NO.	BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	50
					OF	54

POWER DISCHARGER

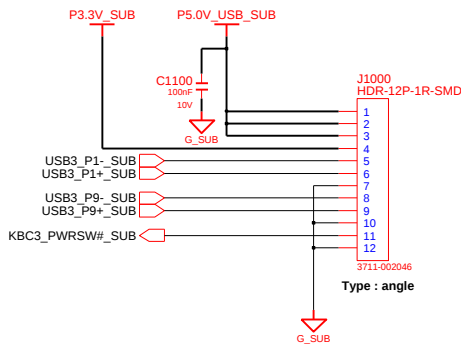


DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PWR_MV_DISCHARGER DISCHARGING LOGIC	SAMSUNG ELECTRONICS PART NO. BA41-
CHECK	SE Lee	REV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE	undefined	LAST EDIT				
				March 06, 2010 17:48:35 PM	PAGE 51 OF 54	

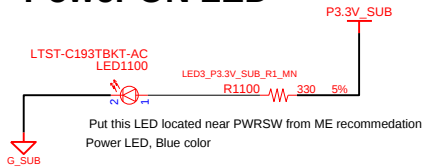
2 USB PORT & POWER S/W SUB B'D



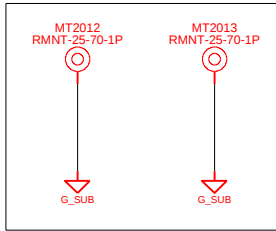
SUB TO MAIN USB CONN



Power ON LED



Power Button



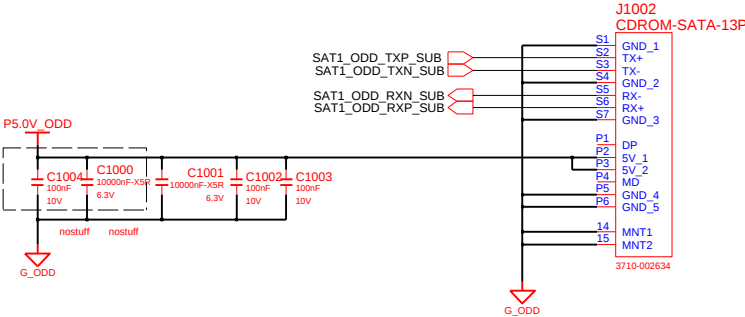
USB sub board mount hole

DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 SUB BOARD1 2 USB & POWER SW	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV			PART NO.
APPROVAL	MK Kim	REV	REV 0.1			BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE 52 OF 54	

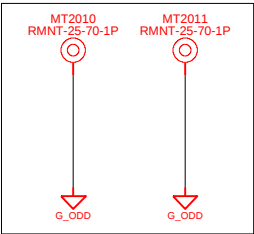
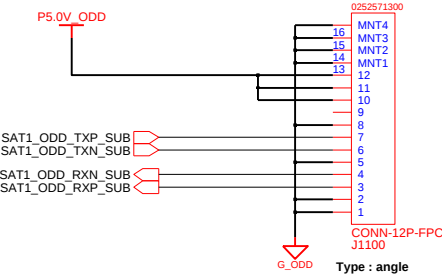
SATA ODD SUB BOARD

SATA ODD SUB BOARD

SATA ODD CONN

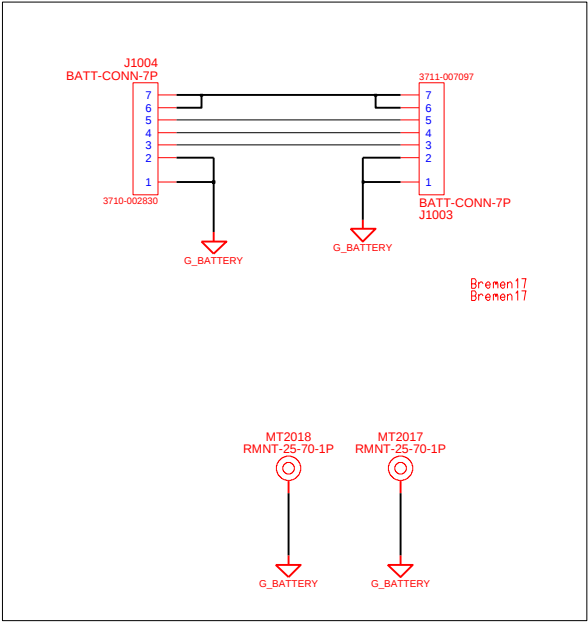


SUB TO MAIN SATA ODD CONN



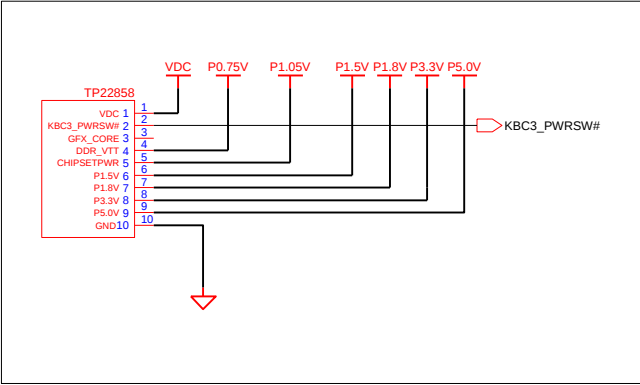
ODD sub board mount hole

17" BATTERY SUBBOARD

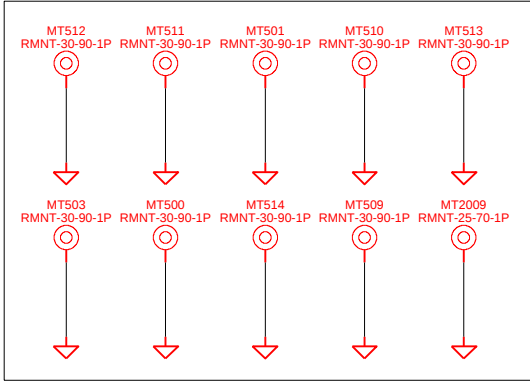


DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 SUB BOARD2 SATA ODD SUB BOARD	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV			PART NO.
APPROVAL	MK Kim	REV	REV 0.1			BA41-
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	53	OF 54

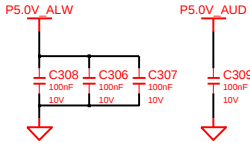
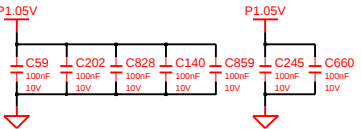
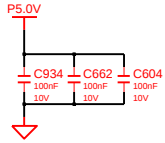
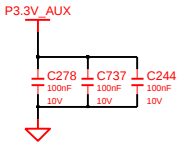
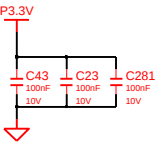
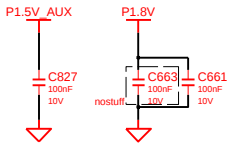
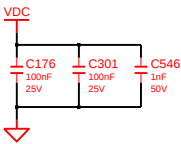
ICT PORT



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



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



DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	SAMSUNG
CHECK	SE Lee	REV. STEP	ADV	ICT PORT	ICT PORT	ELECTRONICS
APPROVAL	MK Kim	REV	REV 0.1	ICT PORT	PART NO.	BA41-
MODULE CODE		LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	54	OF 54