

BREMEN-M 15"/17"

CPU : Intel Arrandale
 Chip Set : Intel Ixex Peak(HM55)
 GFX : N11P/ M-GE1(40nm)
 Remarks : Calpella Platform

Model Name : BREMEN-M
 PBA Name : MAIN
 PCB Code : BA41-01174A
 Dev. Step : PR
 Revision : 1.0
 T.R. Date : 2009.11.12

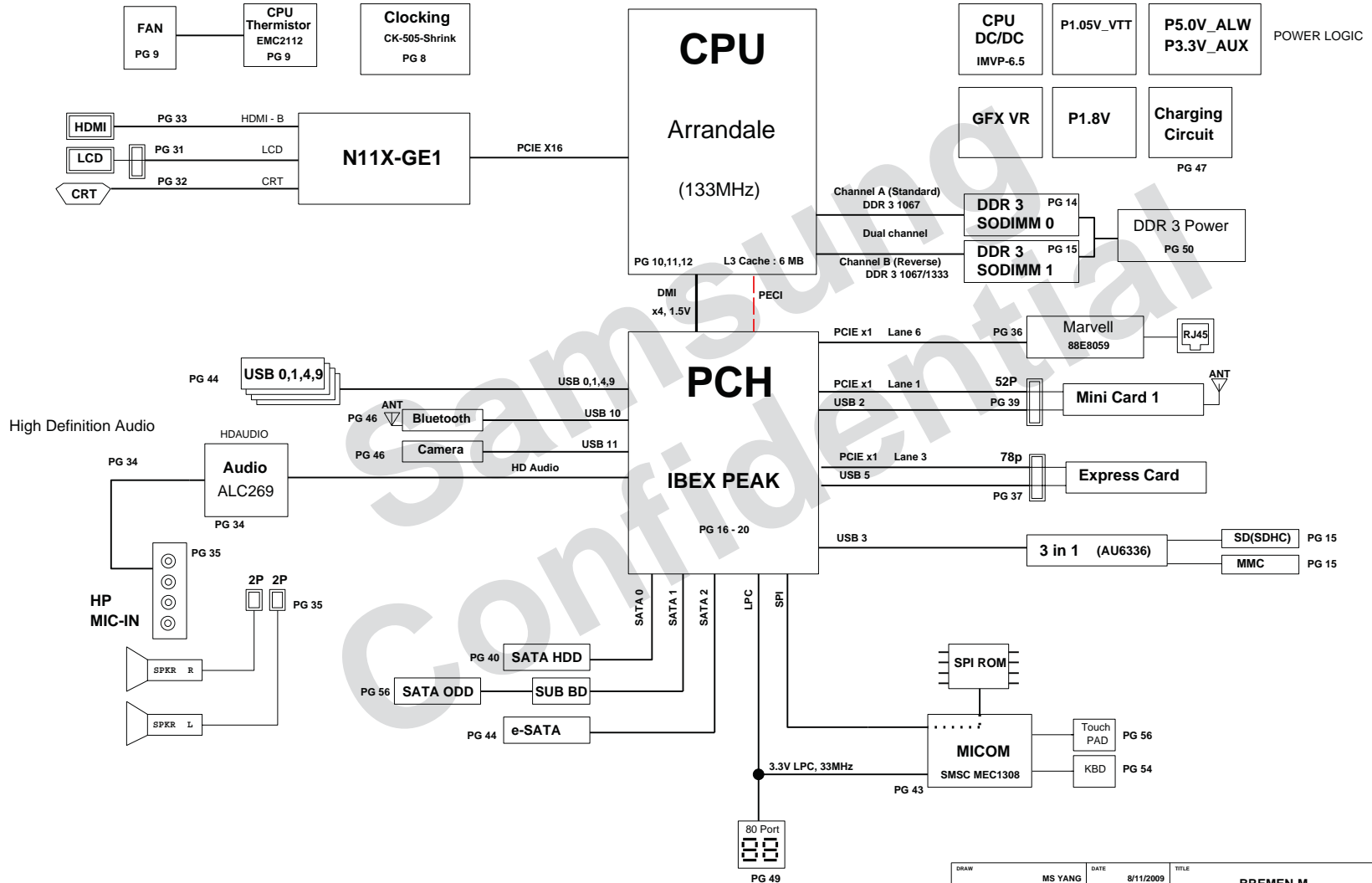
Design	CHECK	APPROVAL

Owner : SEC Mobile R & D Signature : X

Sheet 1.	Cover
Sheet 2-6.	Diagram (Block/Power) & Annotations
Sheet 7.	Clock Generator -CK505 Shrink Version
Sheet 8	Thermal Sensor & FAN
Sheet 9-12	Arrandale CPU
Sheet 13.	DDR3 SODIMM A
Sheet 14.	DDR3 SODIMM B
Sheet 15-19.	IBEX PEAK
Sheet 20-24.	GFx_External_N11X
Sheet 25-28.	Graphics_Memory_gDDR3 1g bit
Sheet 29.	Graphic Strap
Sheet 30-32.	Graphic Interface
Sheet 33-34.	High Definition Audio (ALC269Q-GR)
Sheet 35.	LAN_Marvell_88E8059
Sheet 36.	Express_Card
Sheet 37.	MultiCard_AU6336 (3 in 1)
Sheet 38.	PCIE_Minicard_Slot (Half type only)
Sheet 39.	SATA I/F CONN
Sheet 40.	MICOM_MEC1308-NU
Sheet 41.	Micom Glue Logic
Sheet 42.	LED_Switch
Sheet 43.	USB Port
Sheet 44.	Touchpad LED
Sheet 45.	USB Interface
Sheet 46.	Charger
Sheet 47.	PWR_3V_5V
Sheet 48.	PWR_Calpella
Sheet 49.	PWR_Memory
Sheet 50.	PWR_CPU_VRM
Sheet 51.	PWR_GFX_Ext
Sheet 52.	PWR_MV_Switched
Sheet 53.	PWR_MV_DisCharger
Sheet 54.	2 USB Port & Power S/W SUB B'D
Sheet 55.	SATA ODD SUB B'D Battery IF B'D
Sheet 56.	EMC Capacitor & ICT Port

DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	MAIN	PART NO.	
APPROVAL	MK KIM	REV	REV 0.9	COVER	BA41-01174A	
MODULE CODE	LAST EDIT		October 20, 2009 21:30:55 PM		PAGE	1 OF 56

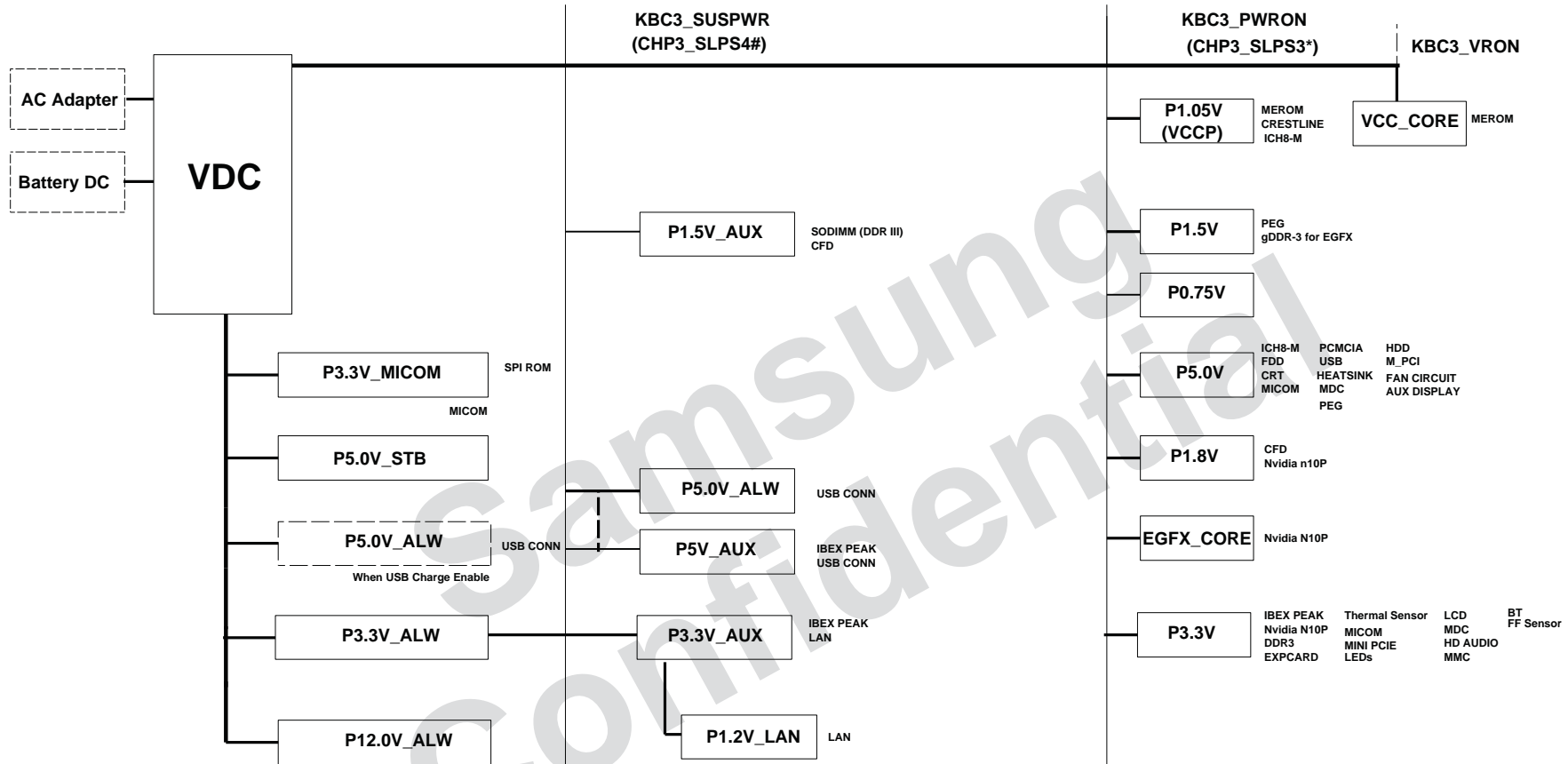
BLOCK DIAGRAM



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MAIN BLOCK DIAGRAM	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE	undefined	LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE	2 OF 56

POWER DIAGRAM

Rev 0.1



Power On/Off Table by S-state

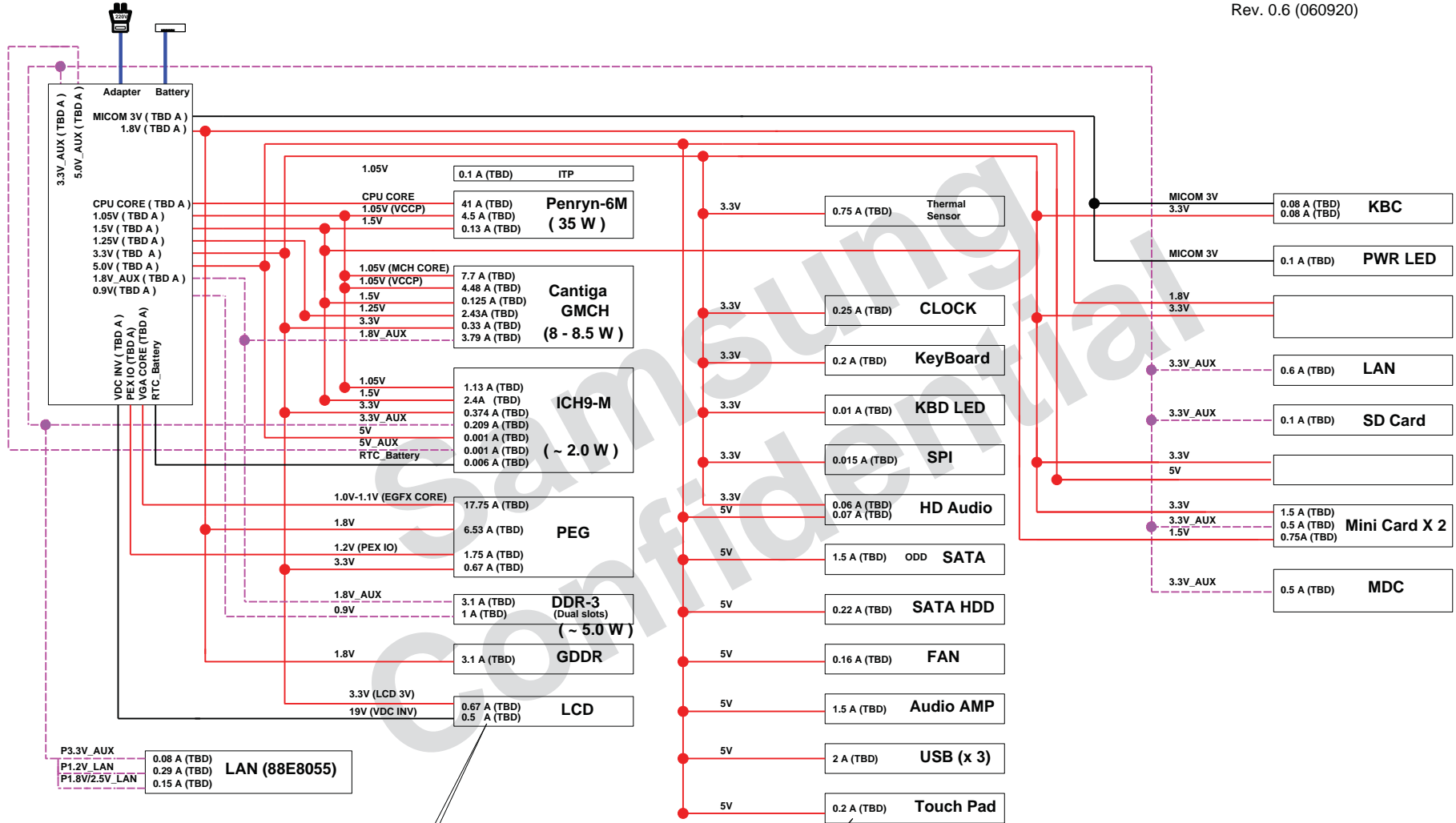
Rail \ State	S0	S3	S4	S5
+V*(LWS) +V*LAN	ON	ON	ON	ON
+1.8V_AUX +0.9V	ON	ON	—	—
+V*AUX	ON	ON	—	—
+V	ON	—	—	—
+V* (CORE)	ON	—	—	—



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MAIN		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	POWER DIAGRAM		PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9				
MODULE CODE	undefined	LAST EDIT		October 20, 2009 21:30:55 PM		PAGE	3 OF 56

POWER RAILS ANALYSIS

Rev. 0.6 (060920)

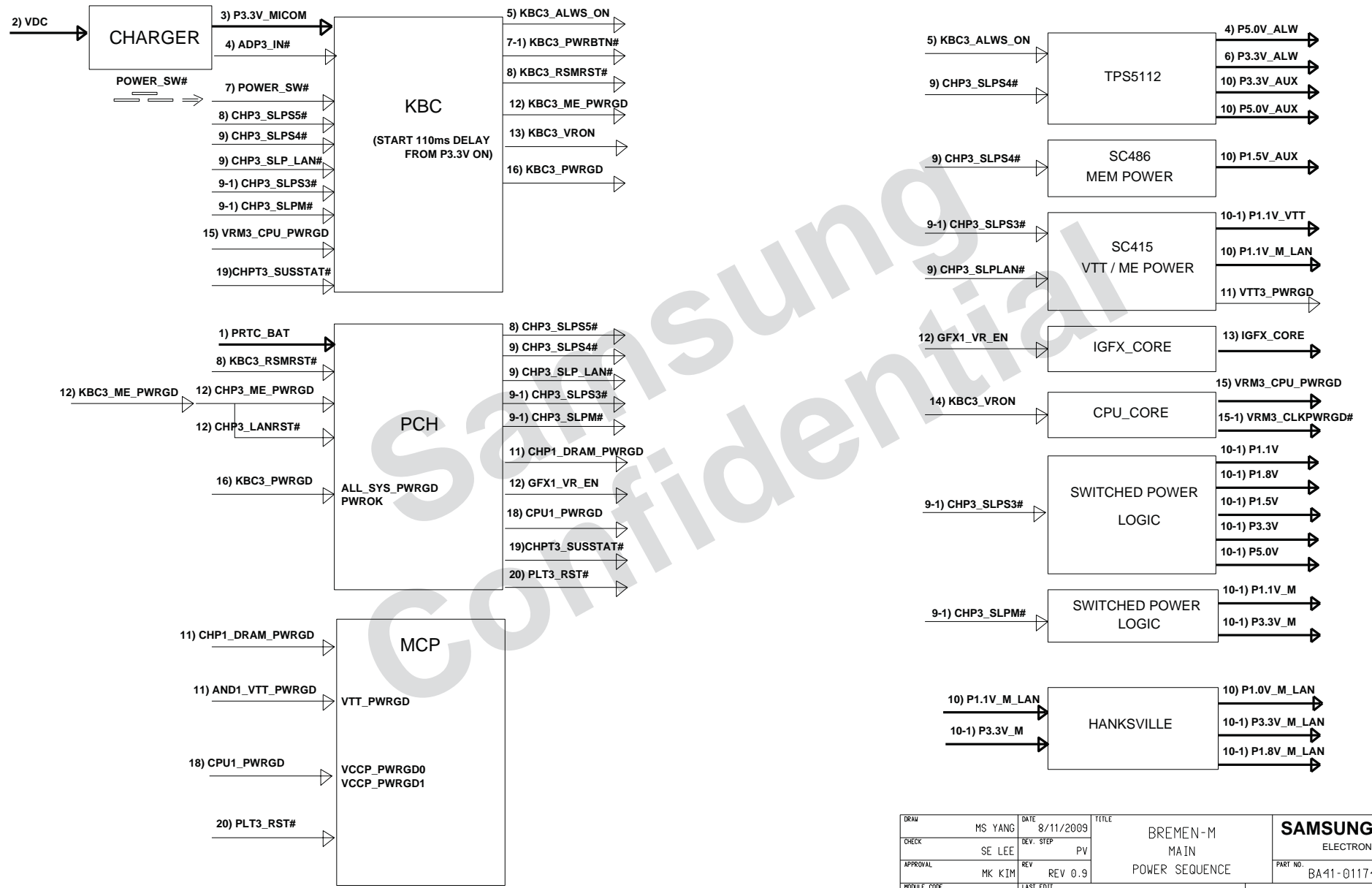


Value by Datasheet/Application notes (Value by measurement)

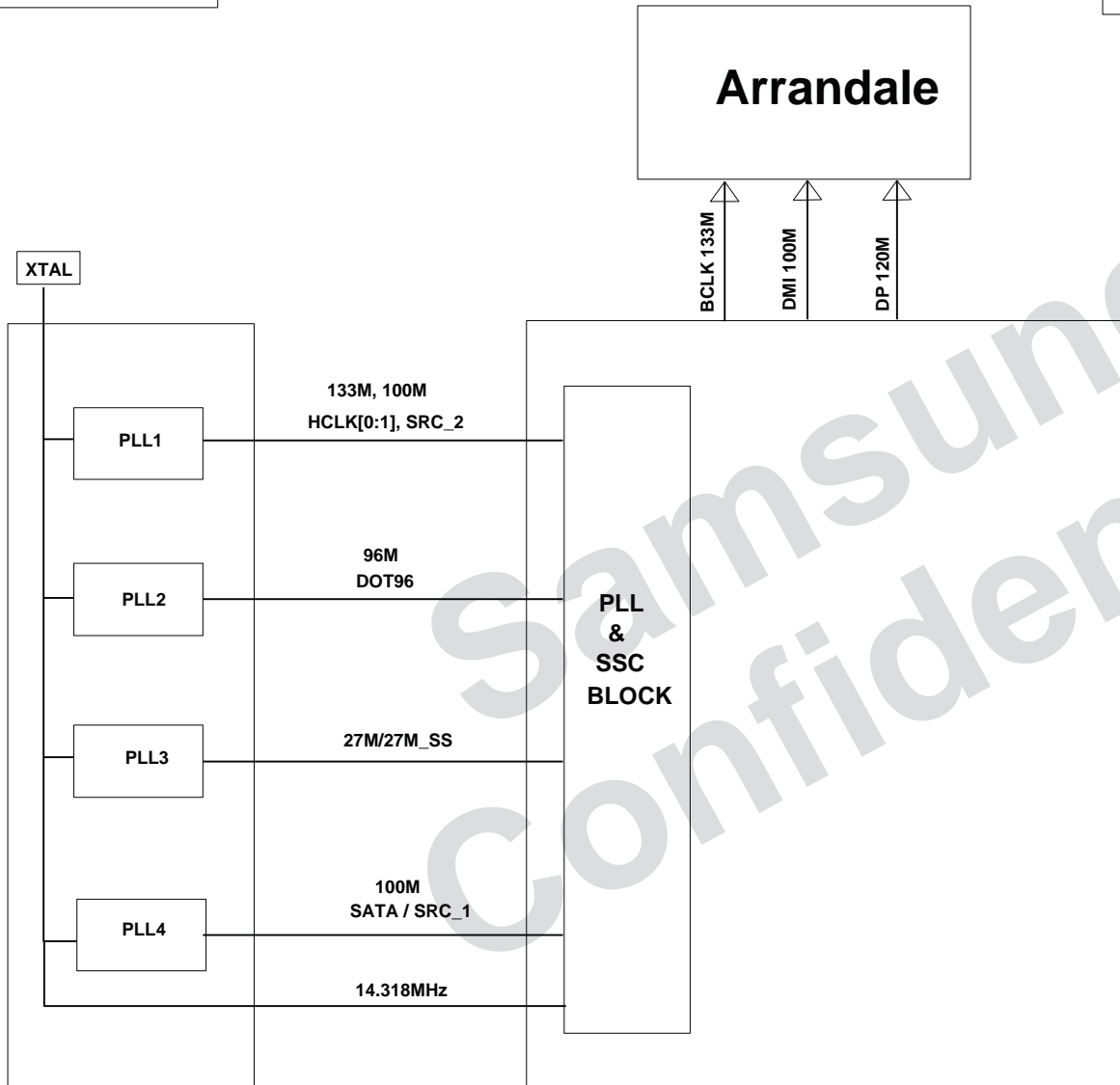
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CHECK	SE LEE	DEV. STEP	PV	POWER RAILS	PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE	undefined	LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE	4 OF 56

PRELIMINARY

POWER SEQUENCE Rev. 0.5



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MAIN	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	POWER SEQUENCE	PART NO.	
APPROVAL	MK KIM	REV	REV 0.9		BA41-01174A	
MODULE CODE	undefined	LAST EDIT	October 20, 2009 21:30:55 PM	PAGE	5 OF 56	

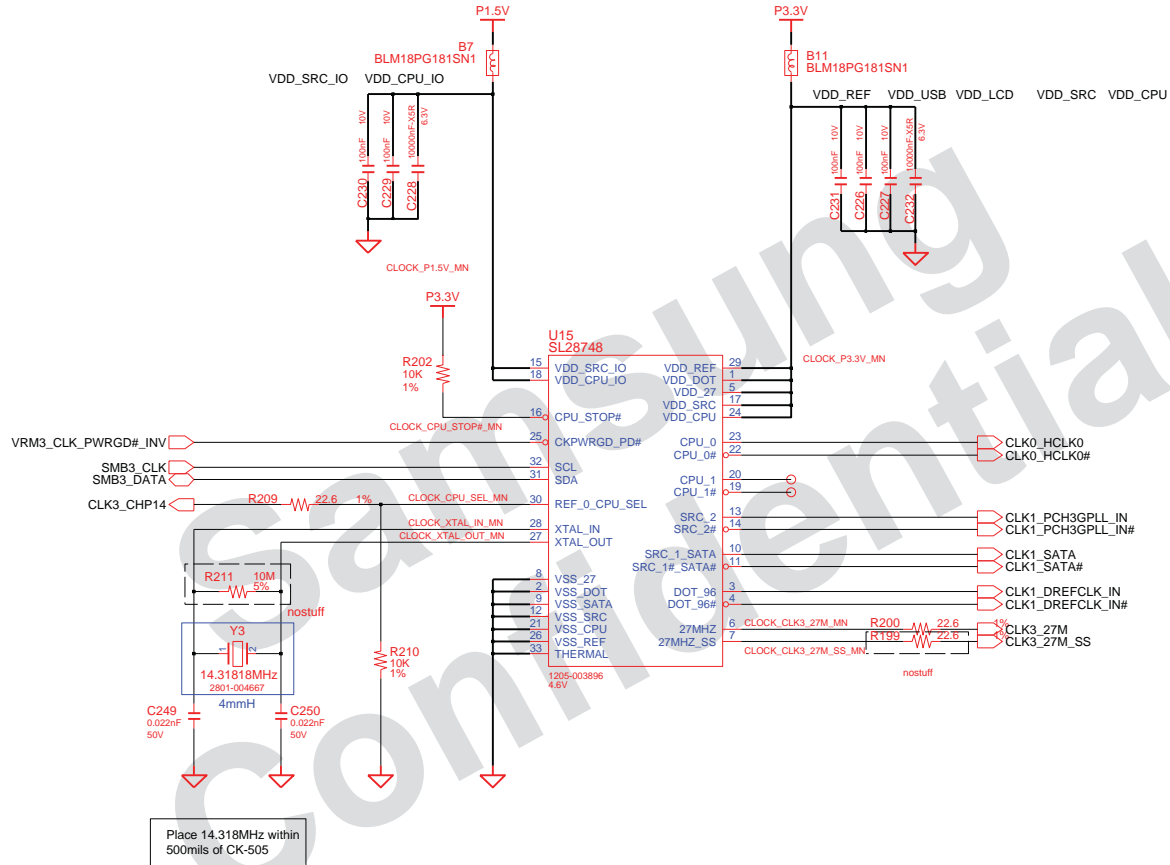


DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MAIN CLOCK DIAGRAM	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			PART NO. BA41-01174A
MODULE CODE	undefined	LAST EDIT			October 20, 2009 21:30:55 PM	PAGE 6 OF 56

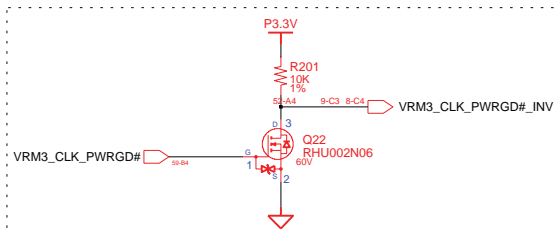
CK505M SHRINK VERSION

CPU_MODE SEL

Pin 30	CPU_0	CPU_1
CPU_SEL = 0	133MHz	133MHz

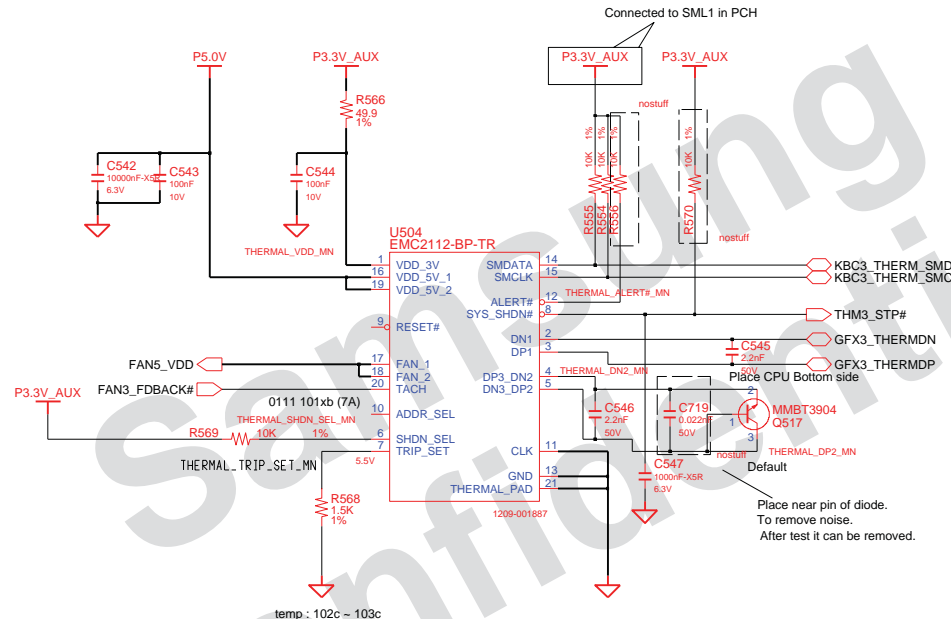


Place 14.318MHz within 500mils of CK-505



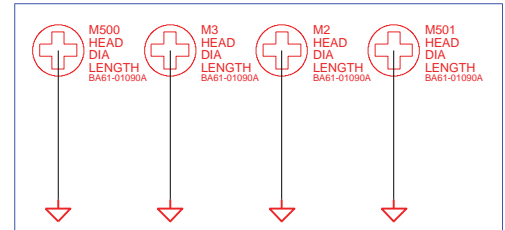
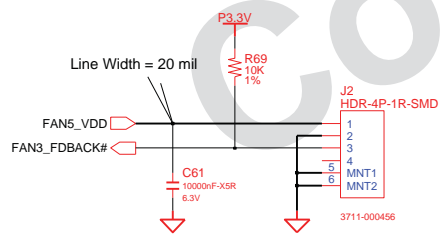
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG
CHECK	SE LEE	DEV. STEP	PV	CLOCK	CLOCK	ELECTRONICS
APPROVAL	MK KIM	REV	REV 0.9	CK505-SHRINK	CK505-SHRINK	PART NO.
MODULE CODE		LAST EDIT				BA41-01174A
				October 20, 2009 21:30:55 PM	PAGE	7 OF 56

THERMAL SENSOR & FAN CONTROL



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

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

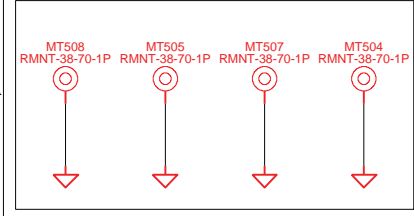
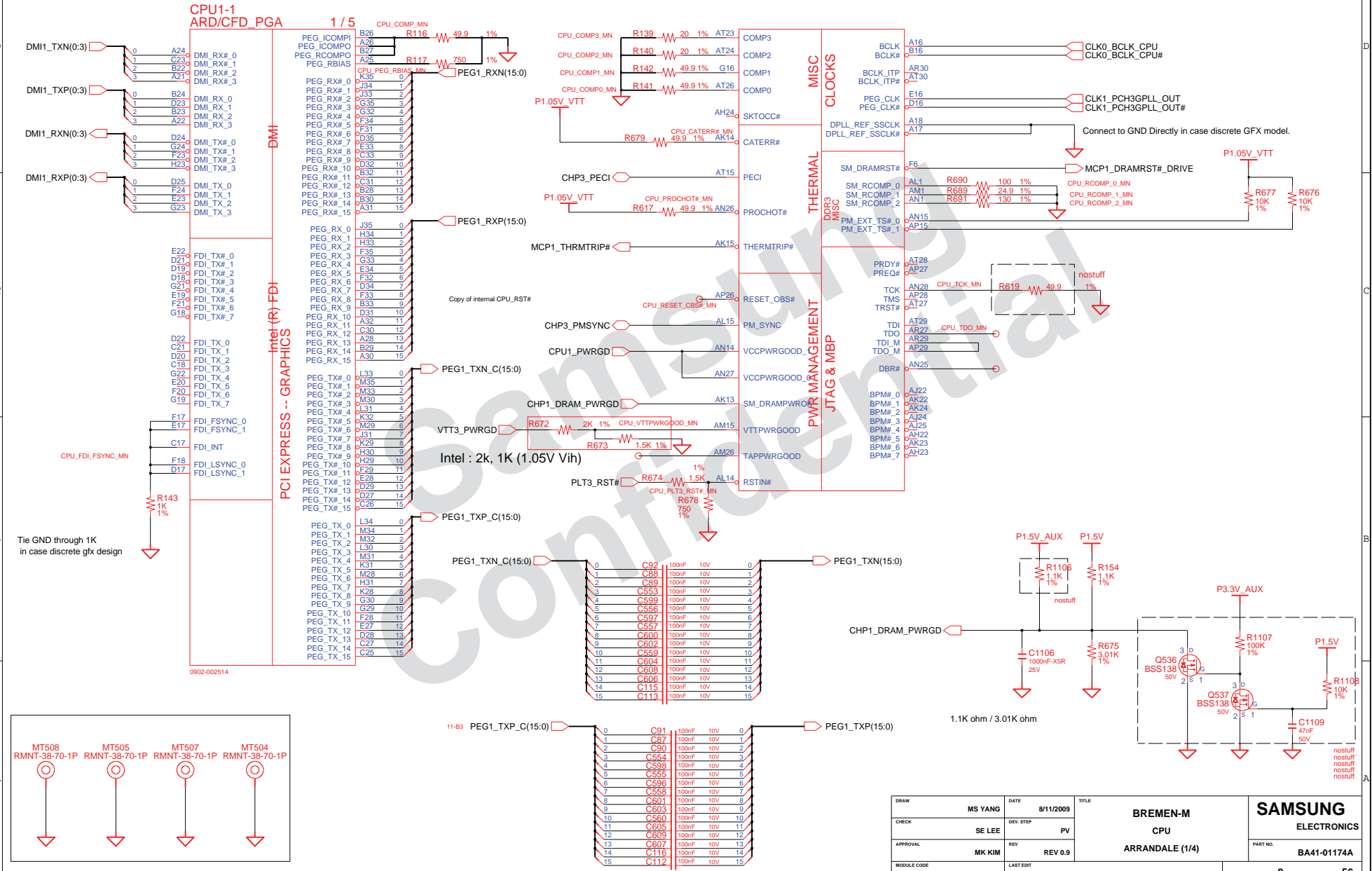


To support heatsink

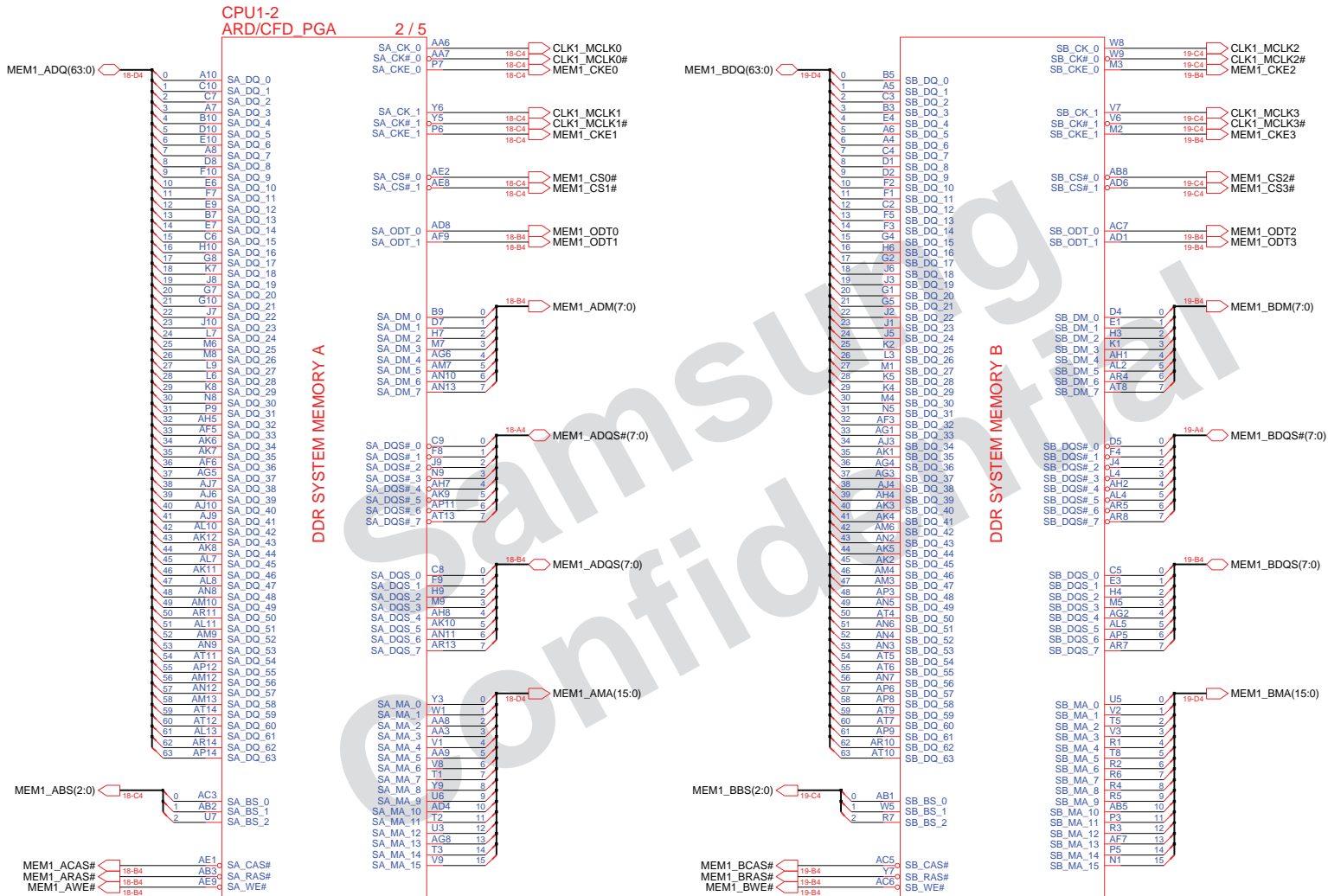
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	THERMAL SENSOR		
APPROVAL	MK KIM	REV	REV 0.9	THERMAL SENSOR EMC2112	PART NO.	BA41-01174A
MODULE CODE		LAST EDIT			October 20, 2009 21:30:55 PM	PAGE 8 OF 56

ARRANDALE PROCESSOR (DMI,PEG, FDI)

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DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M CPU	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV		ARRANDALE (1/4)	
APPROVAL	MK KIM	REV	REV 0.9			PART NO. BA41-01174A
MODULE CODE	undefined	LAST EDIT			October 20, 2009 21:30:55 PM	PAGE 9 OF 56

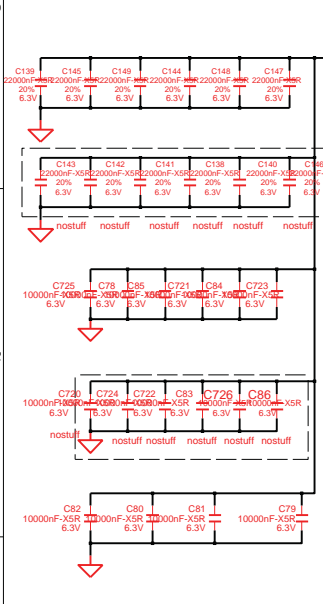


9902-002514

DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M CPU ARRANDALE (2/4)	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	PART NO.	BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9	October 20, 2009 21:30:55 PM	PAGE 10 OF 56	
MODULE CODE	undefined	LAST EDIT				

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4x 470 uF : CPU VR side

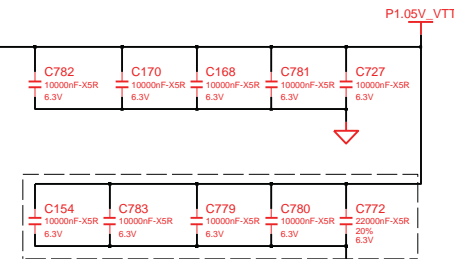


Stuff/NoStuff Check ?
 (depends on placement)

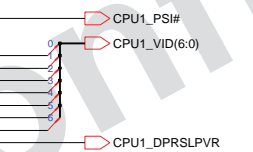
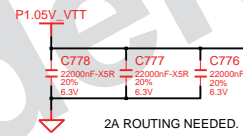
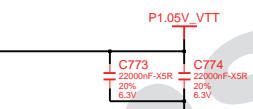
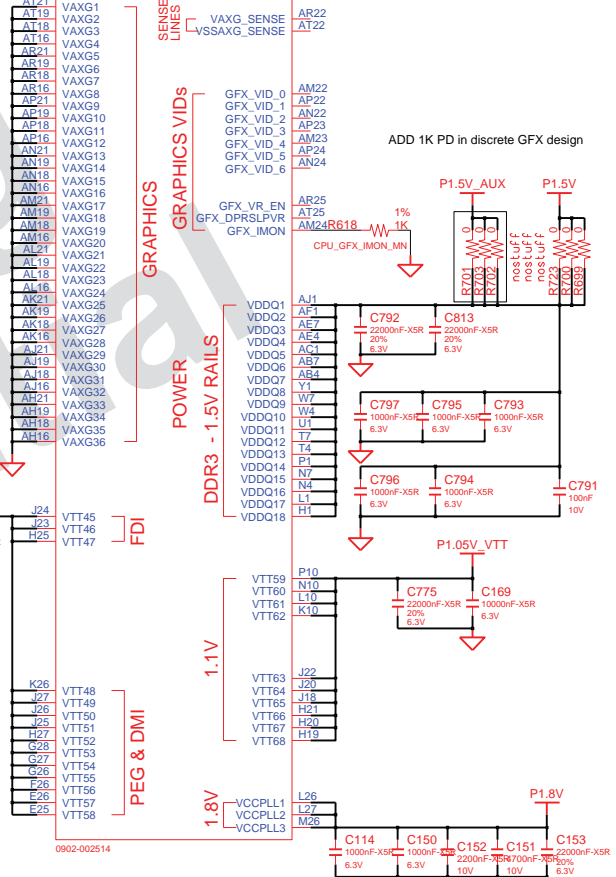
CPU CORE

AG35	VCC1
AG34	VCC2
AG33	VTT3
AG32	VCC4
AG31	VCC5
AG30	VTT6
AG29	VCC7
AG28	VTT8
AG27	VCC9
AG26	VTT10
AF35	VCC11
AF34	VTT12
AF33	VCC13
AF32	VTT14
AF31	VCC15
AF30	VTT16
AF29	VCC17
AF28	VTT18
AF27	VCC18
AF26	VTT19
AD35	VCC20
AD34	VTT22
AD33	VCC23
AD32	VTT24
AD31	VCC24
AD30	VTT25
AD29	VCC26
AD28	VTT27
AD27	VCC28
AD26	VTT28
AD25	VCC29
AD24	VTT29
AC35	VCC30
AC34	VTT31
AC33	VCC32
AC32	VTT33
AC31	VCC35
AC30	VTT34
AC29	VCC36
AC28	VTT35
AC27	VCC38
AC26	VTT36
AC25	VCC40
AC24	VTT37
AA35	VCC41
AA34	VTT39
AA33	VCC42
AA32	VTT40
AA31	VCC44
AA30	VTT41
AA29	VCC46
AA28	VTT42
AA27	VCC48
AA26	VTT43
AA25	VCC50
Y35	VCC51
Y34	VTT44
Y33	VCC52
Y32	VTT45
Y31	VCC54
Y30	VTT46
Y29	VCC56
Y28	VTT47
Y27	VCC57
Y26	VTT48
Y25	VCC58
Y24	VTT49
Y23	VCC59
Y22	VTT50
Y21	VCC60
Y20	VTT51
Y19	VCC61
Y18	VTT52
Y17	VCC62
Y16	VTT53
Y15	VCC63
Y14	VTT54
Y13	VCC64
Y12	VTT55
Y11	VCC65
Y10	VTT56
Y09	VCC66
Y08	VTT57
Y07	VCC67
Y06	VTT58
Y05	VCC68
Y04	VTT59
Y03	VCC69
Y02	VTT60
Y01	VCC70
U35	VCC71
U34	VTT61
U33	VCC72
U32	VTT62
U31	VCC74
U30	VTT63
U29	VCC75
U28	VTT64
U27	VCC76
U26	VTT65
U25	VCC77
U24	VTT66
U23	VCC78
U22	VTT67
U21	VCC79
U20	VTT68
U19	VCC80
U18	VCC81
U17	VCC82
U16	VCC83
U15	VCC84
U14	VCC85
U13	VCC86
U12	VCC87
U11	VCC88
U10	VCC89
U09	VCC90
U08	VCC91
U07	VCC92
U06	VCC93
U05	VCC94
U04	VCC95
U03	VCC96
U02	VCC97
U01	VCC98
P29	VCC99
P28	VCC100
P27	
P26	

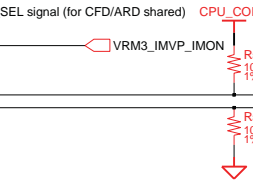
ALL VTT DECAP IS SHARED



CPU1-4 ARD/CFD PGA 4 / 5



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



POWER

CPU VIDS

SENSE LINES

GRAPHICS

POWER

1.1V

1.8V

DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M CPU ARRANDALE (3/4)	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				

CPU1-5
ARD/CFD_PG45 / 5

AT20	VSS1	VSS81	AE34
AT17	VSS2	VSS82	AE33
AR37	VSS3	VSS83	AE32
AR28	VSS4	VSS84	AE31
AR26	VSS5	VSS85	AE30
AR24	VSS6	VSS86	AE29
AR23	VSS7	VSS87	AE28
AR20	VSS8	VSS88	AE27
AR17	VSS9	VSS89	AE26
VSS10	VSS10	VSS90	AE6
AR12	VSS11	VSS91	AD10
AR9	VSS12	VSS92	AC7
AR6	VSS13	VSS93	AC2
AR3	VSS14	VSS94	AC2
AP20	VSS15	VSS95	AB35
AP17	VSS16	VSS96	AB34
AP13	VSS17	VSS97	AB33
AP10	VSS18	VSS98	AB32
AP7	VSS19	VSS99	AB31
AP4	VSS20	VSS100	AB30
AN34	VSS21	VSS101	AB29
AN31	VSS22	VSS102	AB28
AN23	VSS23	VSS103	AB27
AN20	VSS24	VSS104	AB26
AN17	VSS25	VSS105	AA10
AM29	VSS26	VSS106	Y8
AM27	VSS27	VSS107	Y8
AM25	VSS28	VSS108	Y4
AM20	VSS29	VSS109	W35
AM17	VSS30	VSS110	W34
AM14	VSS31	VSS111	W33
AM11	VSS32	VSS112	W32
AM8	VSS33	VSS113	W31
AM6	VSS34	VSS114	W30
AM2	VSS35	VSS115	W29
AL34	VSS36	VSS116	W28
AL31	VSS37	VSS117	W27
AL29	VSS38	VSS118	W26
AL20	VSS39	VSS119	W6
AL17	VSS40	VSS120	W10
AL12	VSS41	VSS121	U8
AL9	VSS42	VSS122	U8
AL6	VSS43	VSS123	U2
AL3	VSS44	VSS124	T35
AK29	VSS45	VSS125	T34
AK27	VSS46	VSS126	T33
AK25	VSS47	VSS127	T32
AK20	VSS48	VSS128	T31
AK17	VSS49	VSS129	T30
AK13	VSS50	VSS130	T29
AK23	VSS51	VSS131	T28
AK20	VSS52	VSS132	T27
AJ17	VSS53	VSS133	T26
AJ14	VSS54	VSS134	T25
AJ11	VSS55	VSS135	T6
AJ9	VSS56	VSS136	R10
AJ6	VSS57	VSS137	P4
AJ2	VSS58	VSS138	P2
AH35	VSS59	VSS139	N35
AH34	VSS60	VSS140	N34
AH32	VSS61	VSS141	N33
AH31	VSS62	VSS142	N32
AH30	VSS63	VSS143	N31
AH29	VSS64	VSS144	N30
AH28	VSS65	VSS145	N28
AH27	VSS66	VSS146	N28
AH26	VSS67	VSS147	N27
AH25	VSS68	VSS148	N26
AH24	VSS69	VSS149	N26
AH17	VSS70	VSS150	N6
AH13	VSS71	VSS151	L35
AH9	VSS72	VSS152	L32
AH6	VSS73	VSS153	L29
AH3	VSS74	VSS154	L6
AF8	VSS75	VSS155	L5
AF4	VSS76	VSS156	L2
AF2	VSS77	VSS157	K34
AE56	VSS78	VSS158	K33
	VSS79	VSS159	K30
	VSS80	VSS160	K30

K27	VSS161
K6	VSS162
K3	VSS163
K32	VSS164
J30	VSS165
J21	VSS166
J19	VSS167
H35	VSS168
H32	VSS169
H28	VSS170
H26	VSS171
H24	VSS172
H22	VSS173
H18	VSS175
H15	VSS176
H11	VSS177
H8	VSS178
H5	VSS179
H2	VSS180
G34	VSS181
G31	VSS182
G20	VSS183
G9	VSS184
G6	VSS185
G3	VSS186
F30	VSS188
F27	VSS189
F25	VSS190
F22	VSS191
F19	VSS192
F16	VSS193
F15	VSS194
E32	VSS195
E29	VSS196
E24	VSS197
E21	VSS198
E18	VSS199
E13	VSS200
E11	VSS201
E8	VSS202
E5	VSS203
E2	VSS204
D33	VSS205
D30	VSS206
D26	VSS207
D9	VSS208
D6	VSS209
D3	VSS210
C34	VSS211
C28	VSS212
C26	VSS213
C24	VSS214
C22	VSS215
C20	VSS216
C19	VSS217
C16	VSS218
C15	VSS219
B31	VSS220
B25	VSS221
B21	VSS222
B18	VSS223
B17	VSS224
B13	VSS225
B11	VSS226
B8	VSS227
B6	VSS228
B4	VSS229
A29	VSS230
A27	VSS231
A23	VSS232
A9	VSS233

VSS	VSS161
VSS	VSS162
VSS	VSS163
VSS	VSS164
VSS	VSS165
VSS	VSS166
VSS	VSS167
VSS	VSS168
VSS	VSS169
VSS	VSS170
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VSS	VSS219
VSS	VSS220
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VSS	VSS222
VSS	VSS223
VSS	VSS224
VSS	VSS225
VSS	VSS226
VSS	VSS227
VSS	VSS228
VSS	VSS229
VSS	VSS230
VSS	VSS231
VSS	VSS232
VSS	VSS233

AP25	RSVD1	RSVD32	AJ13
AL25	RSVD2	RSVD33	AJ12
AL22	RSVD3	RSVD34	AH25
AJ33	RSVD4	RSVD35	AK26
AG9	RSVD5	RSVD36	AL26
M27	RSVD6	RSVD_NCTF_37	AR2
L26	RSVD7	RSVD_NCTF_37	AJ26
H17	RSVD8	RSVD38	AJ27
G25	SA_DIMM_VREFDD	RSVD39	
G17	SB_DIMM_VREFDD		
E31	RSVD11	RSVD_NCTF_40	AP1
E30	RSVD13	RSVD_NCTF_41	AT2
	RSVD14	RSVD_NCTF_41	AT3
		RSVD_NCTF_42	AR1
		RSVD_NCTF_43	
AM30	CFG_0	RSVD45	AL28
AM28	CFG_1	RSVD46	AL29
AP31	CFG_2	RSVD47	AP30
AL32	CFG_3	RSVD48	AP32
AL30	CFG_4	RSVD49	AL27
AN29	CFG_5	RSVD50	AT31
AM32	CFG_6	RSVD51	AT32
AK32	CFG_7	RSVD52	AP33
AK31	CFG_8	RSVD53	AR33
AK28	CFG_9	RSVD_NCTF_54	AT33
AJ28	CFG_10	RSVD_NCTF_55	AT34
AN30	CFG_11	RSVD_NCTF_56	AP35
AK32	CFG_12	RSVD_NCTF_57	AR35
AJ29	CFG_13	RSVD58	AR32
AJ29	CFG_14		
AJ30	CFG_15	RSVD_TP_69	E15
AK30	CFG_16	RSVD_TP_69	F15
H16	CFG_17	KEY	A2
	RSVD_TP_86	RSVD62	D15
		RSVD63	C15
		RSVD64	AJ15
		RSVD65	AH15
B19	RSVD15		
A19	RSVD16		
A20	RSVD17		
B20	RSVD18		
U9	RSVD19	RSVD_TP_66	AA5
T9	RSVD20	RSVD_TP_67	V4
AC9	RSVD21	RSVD_TP_68	R8
AB9	RSVD22	RSVD_TP_69	AD3
		RSVD_TP_70	AD2
		RSVD_TP_71	AA2
		RSVD_TP_72	AA1
		RSVD_TP_73	R9
		RSVD_TP_74	AE7
		RSVD_TP_75	AE3
C1	RSVD_NCTF_23	RSVD_TP_76	V4
A3	RSVD_NCTF_24	RSVD_TP_77	V4
		RSVD_TP_78	N2
		RSVD_TP_79	AD5
		RSVD_TP_80	AD7
J29	RSVD26	RSVD_TP_81	W3
J28	RSVD27	RSVD_TP_82	W2
		RSVD_TP_83	N3
A34	RSVD_NCTF_28	RSVD_TP_84	AE5
A33	RSVD_NCTF_29	RSVD_TP_85	AD9
C35	RSVD_NCTF_30		
B35	RSVD_NCTF_31		
	(VSS) RSVD86	AP34	

1% 3.01K Ω R616
 CPU_CFG_7_MN

RESERVED

CRB is NC
 EDS/DG is GND recommend

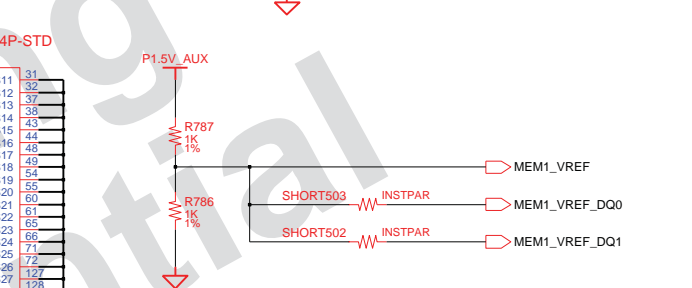
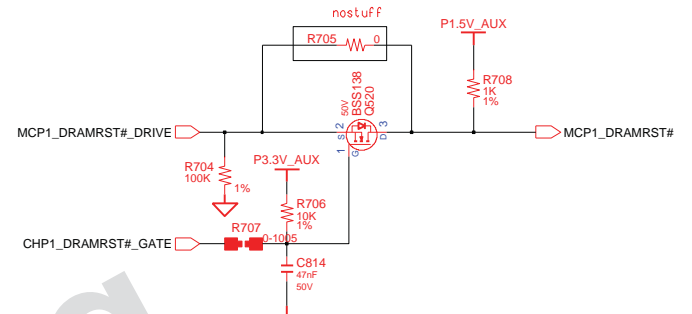
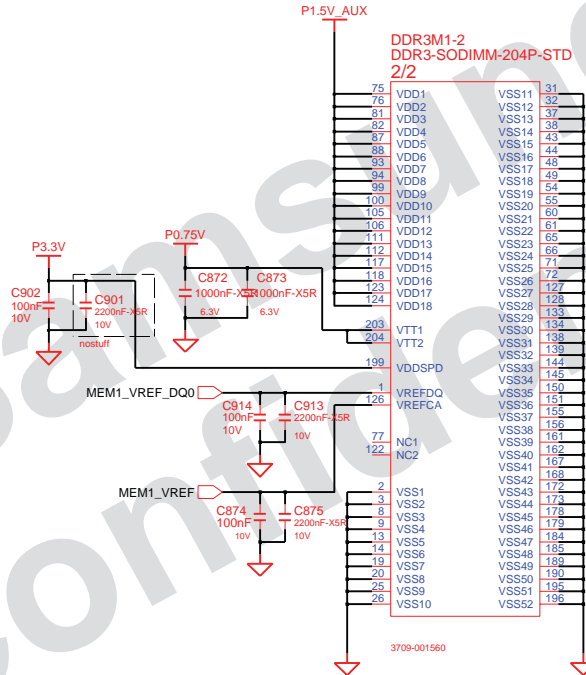
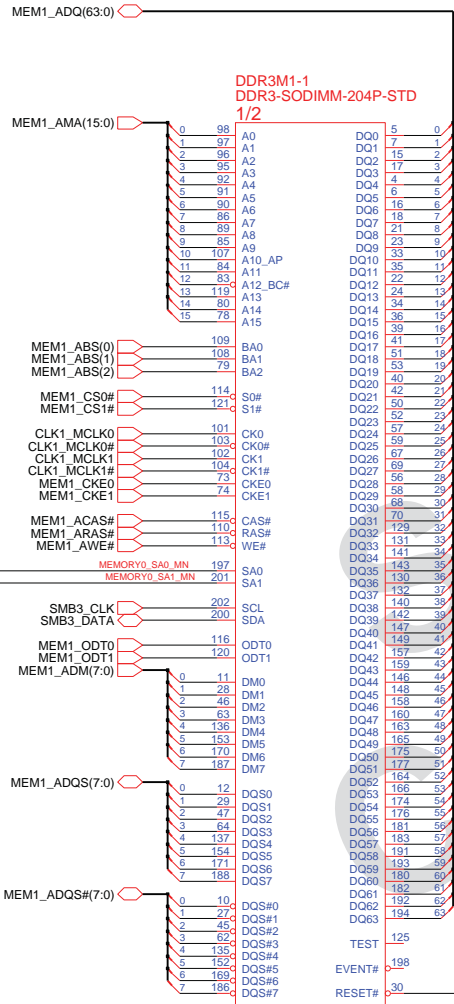
CFG Straps for Processor

PCI Express Configuration Select	
CFG0	1: Single PEG 0: Bifunction enabled
PCI Express Static Lane Reversal	
CFG3	1: Normal operation 0: Lane Reversed
Display Port Presence	
CFG4	1: Disabled - No DP device is connected to eDP 0: Enabled - (DP device is connected to eDP
PCIe 2.0 SUPPORT	
CFG7	1: Normal operation 0: PCIe2.0 Jitter support

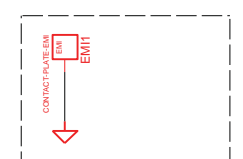
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CHECK	SE LEE	DEV. STEP	PV		CPU	
APPROVAL	MK KIM	REV	REV 0.9		ARRANDALE (4/4)	PART NO. BA41-01174A
MODULE CODE	undefined	LAST EDIT			October 20, 2009 21:30:55 PM	PAGE 12 OF 56

DDR SO-DIMM #0

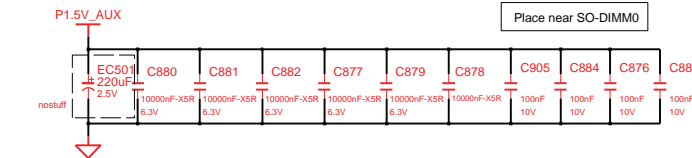
Height : 4 mm (STANDARD)
 P/N : 3709-001532 (Molex)
 P/N : 3709-001560 (Foxconn)



Place between two memory Connector



Place near SO-DIMM



Place near SO-DIMM0

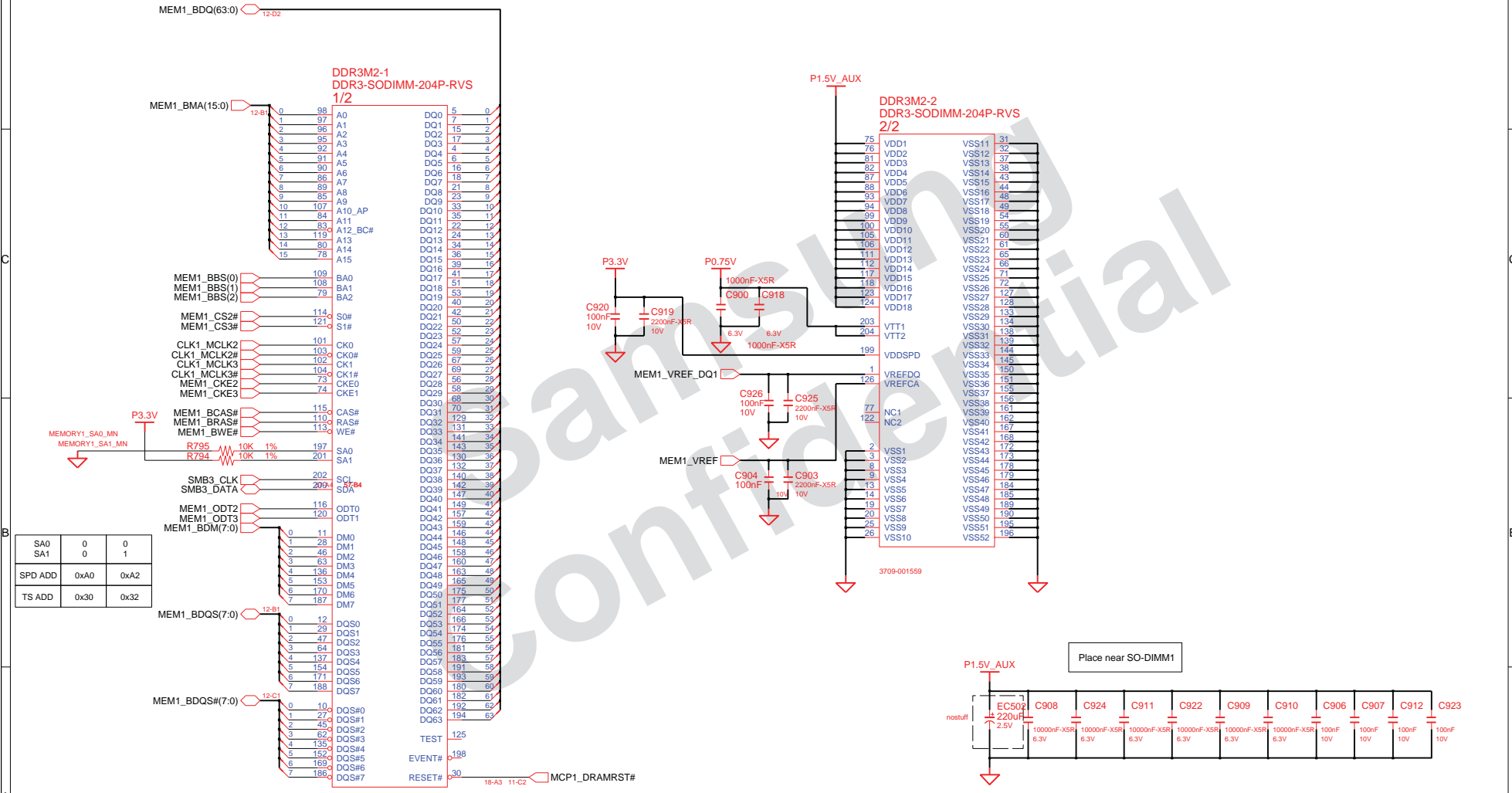
DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M SODIMM A	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9		DDR3	PART NO. BA41-01174A
MODULE CODE		LAST EDIT				October 20, 2009 21:30:55 PM
						PAGE 13 OF 56

DDR SO-DIMM #1

Height : 4 mm (REVERSE)

P/N : 3709-001533 (Molex)

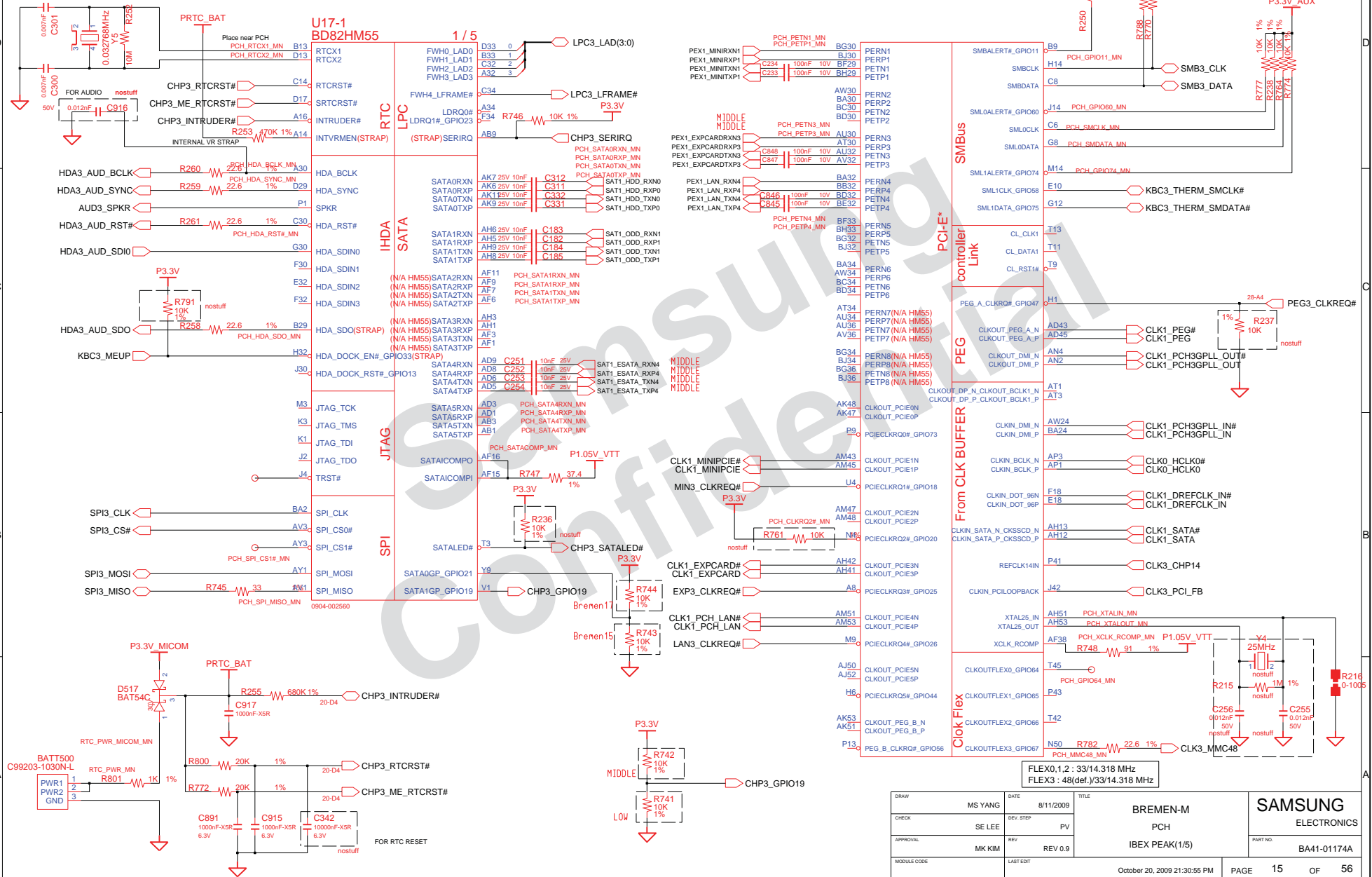
P/N : 3709-001559 (Foxconn)



SA0	0	0
SA1	0	1
SPD ADD	0xA0	0xA2
TS ADD	0x30	0x32

DRAW	MS YANG	DATE	B/11/2009	TITLE	BREMEN-M SODIMM B	SAMSUNG ELECTRONICS PART NO. BA41-01174A	
CHECK	SE LEE	DEV. STEP	PV	APPROVAL	DDR3		
APPROVAL	MK KIM	REV	REV 0.9	MODULE CODE			
MODULE CODE		LAST EDIT					
October 20, 2009 21:30:55 PM						PAGE	14
October 20, 2009 21:30:55 PM						OF	56

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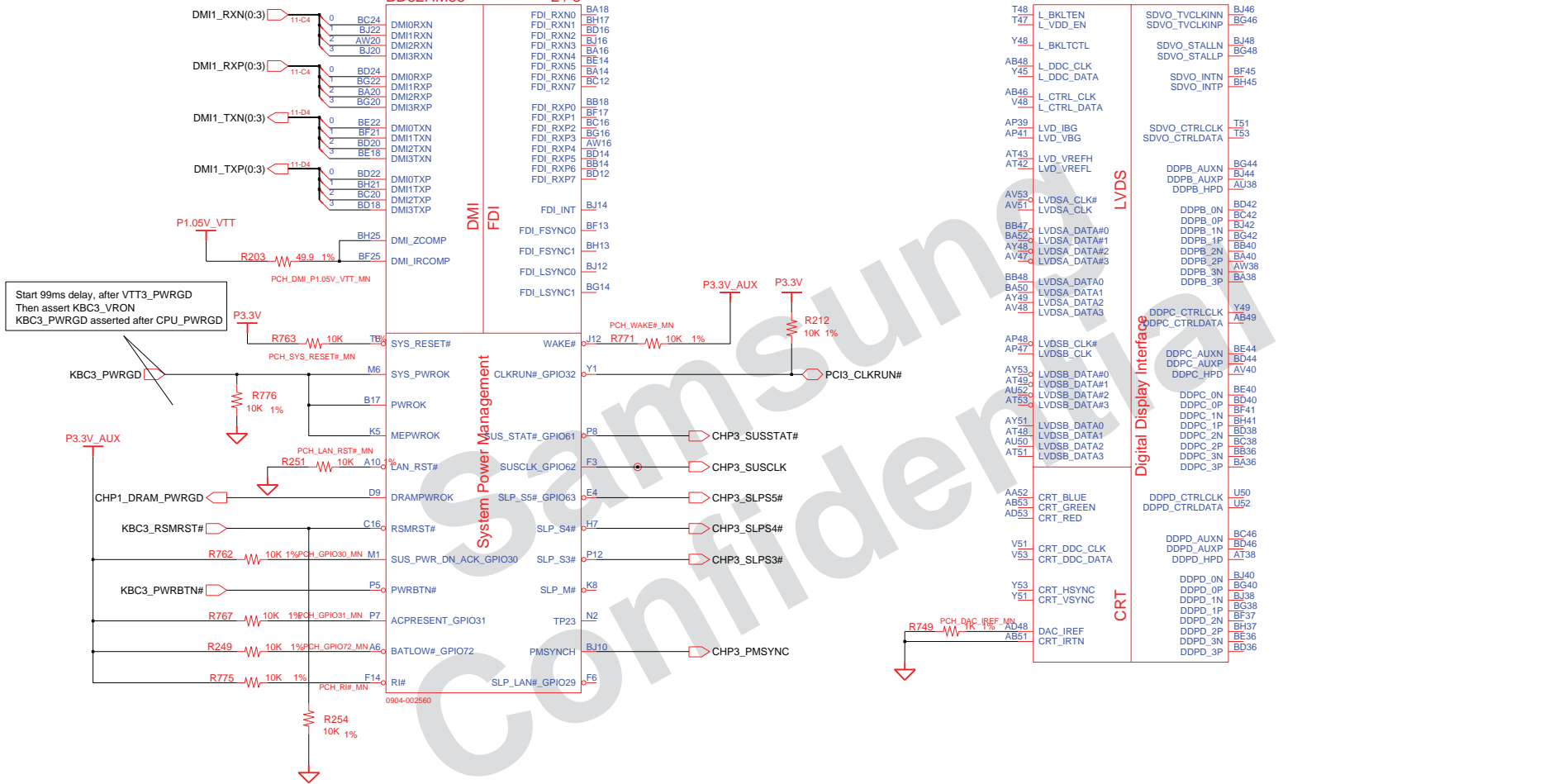
DRAW	MS YANG	DATE	B/11/2009	TITLE	BREMEN-M PCH		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV		IBEX PEAK(1/5)		
APPROVAL	MK KIM	REV	0.9				PART NO. BA41-01174A
MODULE CODE		LAST EDIT					October 20, 2009 21:30:55 PM
						PAGE	15 OF 56

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**U17-2
BD82HM55**

2 / 5



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M PCH IBEX PEAK(2/5)	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE 16	OF 56

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**U17-3
 BD82HM55**

H40	AD0	NV_CE#0	AY9
N34	AD1	NV_CE#1	BD1
C44	AD2	NV_CE#2	AP15
A39	AD3	NV_CE#3	BD8
C38	AD4		
J34	AD5	NV_DQS0	AV9
A40	AD6	NV_DQS1	BG9
D45	AD7		
E38	AD8	NV_DQ0_NV_I00	AP7
H48	AD9	NV_DQ1_NV_I01	AP6
E40	AD10	NV_DQ2_NV_I02	AT6
C40	AD11	NV_DQ3_NV_I03	AT9
M49	AD12	NV_DQ4_NV_I04	EB1
M45	AD13	NV_DQ5_NV_I05	AV6
F53	AD14	NV_DQ6_NV_I06	BB3
M40	AD15	NV_DQ7_NV_I07	BA4
M43	AD16	NV_DQ8_NV_I08	BE4
J35	AD17	NV_DQ9_NV_I09	BB6
K48	AD18	NV_DQ10_NV_I010	BD6
F40	AD19	NV_DQ11_NV_I011	BB7
C42	AD20	NV_DQ12_NV_I012	BC8
K48	AD21	NV_DQ13_NV_I013	BJ8
M51	AD22	NV_DQ14_NV_I014	BJ6
J52	AD23	NV_DQ15_NV_I015	BG6
K51	AD24		
L34	AD25		
F42	AD26	(STRAP)NV_ALE	BD3
J40	AD27	(STRAP)NV_CLE	AY6
G46	AD28		
F44	AD29	NV_RCOMP	AU2
M47	AD30	NV_RB#	AV7
H36	AD31	NV_WR#0_RE#	AY8
		NV_WR#1_RE#	AY5
		NV_WE#_CK0	AV11
		NV_WE#_CK1	AV5

PCI

USB

H18	USBP0N	USB3_P0-	USB3_P0-
J18	USBP0P	USB3_P0+	USB3_P0+
A18	USBP1N	USB3_P1-	USB3_P1-
C18	USBP1P	USB3_P1+	USB3_P1+ USB DEBUG
N20	USBP2N	USB3_MINIPCIE1-	USB3_MINIPCIE1-
P20	USBP2P	USB3_MINIPCIE1+	USB3_MINIPCIE1+
J20	USBP3N	USB3_MMC-	USB3_MMC-
L20	USBP3P	USB3_MMC+	USB3_MMC+
F20	USBP4N	USB3_P4-	USB3_P4-
A20	USBP4P	USB3_P4+	USB3_P4+
C20	USBP5N	USB3_EXPCCARD-	USB3_EXPCCARD-
N22	USBP5P	USB3_EXPCCARD+	USB3_EXPCCARD+
H22	(N/A HM55)USBP6N		
B21	(N/A HM55)USBP6P		
D21	(N/A HM55)USBP7N		
H22	(N/A HM55)USBP7P		
J22	USBP8N	USB3_LCD_CAMERA-	USB3_LCD_CAMERA-
E22	USBP8P	USB3_LCD_CAMERA+	USB3_LCD_CAMERA+
F22	USBP9N	USB3_P9-	USB3_P9-
A22	USBP10N	USB3_P9+	USB3_P9+ USB DEBUG
C22	USBP10P	USB3_BLUETOOTH-	USB3_BLUETOOTH-
C24	USBP11N	USB3_BLUETOOTH+	USB3_BLUETOOTH+
H24	USBP11P	USB3_CAMERA-	USB3_CAMERA-
L24	USBP12N	USB3_CAMERA+	USB3_CAMERA+
M24	USBP12P		
A24	USBP13N		
C24	USBP13P		

N18	OC0#_GPIO59		
C16	OC1#_GPIO40		
F16	OC2#_GPIO41		
L16	OC3#_GPIO42		
E14	OC4#_GPIO43		
F16	OC5#_GPIO9		
E12	OC6#_GPIO10		
F15	OC7#_GPIO14		

**NCTF
 RSVD**

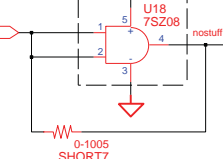
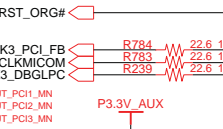
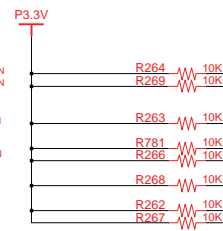
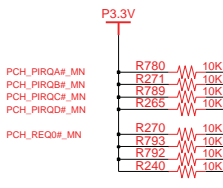
A4	VSS_NCTF_1		
A49	VSS_NCTF_2		
A5	VSS_NCTF_3		
A50	VSS_NCTF_4		
A52	VSS_NCTF_5		
A53	VSS_NCTF_6		
B2	VSS_NCTF_7		
B4	VSS_NCTF_8		
B52	VSS_NCTF_9		
B53	VSS_NCTF_10		
BE1	VSS_NCTF_11		
BE53	VSS_NCTF_12		
BFI	VSS_NCTF_13		
BF53	VSS_NCTF_14		
BH1	VSS_NCTF_15		
BH2	VSS_NCTF_16		
BH52	VSS_NCTF_17		
BH53	VSS_NCTF_18		
BJ1	VSS_NCTF_19		
BJ2	VSS_NCTF_20		
BJ49	VSS_NCTF_21		
BJ5	VSS_NCTF_22		
BJ50	VSS_NCTF_23		
BJ52	VSS_NCTF_24		
BJ53	VSS_NCTF_25		
BT1	VSS_NCTF_26		
D2	VSS_NCTF_27		
D53	VSS_NCTF_28		
E1	VSS_NCTF_29		
E53	VSS_NCTF_30		
	VSS_NCTF_31		

MISC

GPIO

CPU

Y3	BMBUSY#_GPIO0	CLKOUT_PCIE6N	AH45
C38	TACH1_GPIO1	CLKOUT_PCIE6P	AH46
D37	TACH2_GPIO6		
J32	TACH3_GPIO7	CLKOUT_PCIE7N	AF48
F10	GPIO8	CLKOUT_PCIE7P	AF47
K9	LAN_PHY_PWR_CTRL_GPIO12	A20GATE	U2
T7	GPIO15		
A2	SATA4GP_GPIO16	BCLK0_N_CLKOUT_PCIEEN	AM3
F38	TACH0_GPIO17	BCLK0_P_CLKOUT_PCIEEN	AM1
Y7	SCLOCK_GPIO22	PECI	BG10
H10	GPIO24	RCIN#	T1
AB12	GPIO27(STRAP)	PROCPWRGD	BE10
GPIO28		THRMTRIP#	BD10
M11	STP_PCIE_GPIO34		
V8	GPIO35		
AB7	SATA2GP_GPIO36		
AB13	SATA3GP_GPIO37		
V3	SLOAD_GPIO38		
P3	SDATAOUT0_GPIO39		
H3	PCIECLKR06#_GPIO45		
F1	PCIECLKRQ7#_GPIO46		
AB6	SDATAOUT1_GPIO48		
AA4	SATA5GP_GPIO48_TEMP_ALERT#		
F8	GPIO57		



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M PCH	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV		IBEX PEAK(3/5)	
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM	PAGE 17 OF 56	PART NO. BA41-01174A

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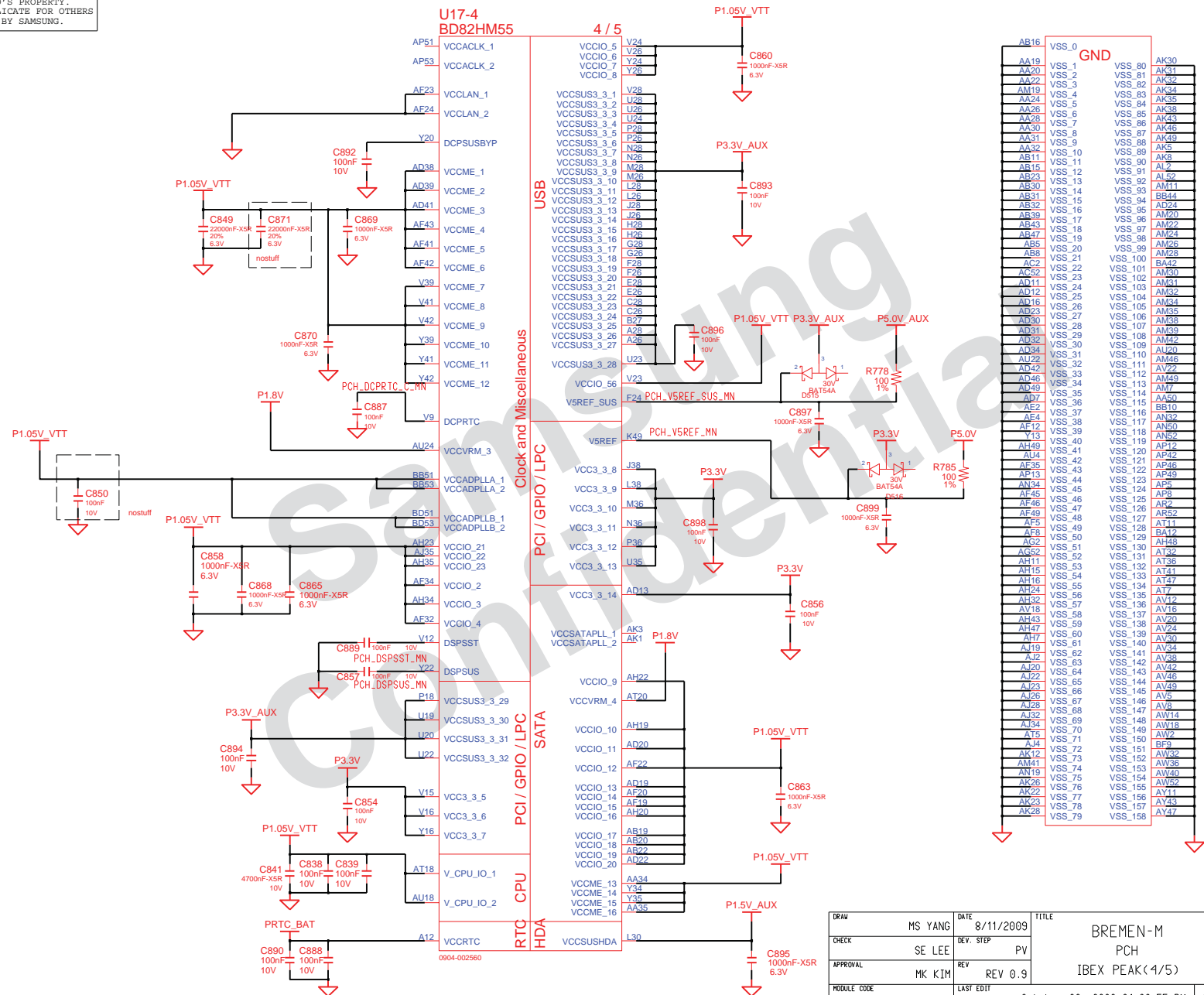
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4

3

2

1



AB16	VSS_0	GND	AK30
AA19	VSS_1	VSS_80	AK31
AA20	VSS_2	VSS_81	AK32
AA21	VSS_3	VSS_82	AK33
AA22	VSS_4	VSS_83	AK34
AA23	VSS_5	VSS_84	AK35
AA24	VSS_6	VSS_85	AK38
AA25	VSS_7	VSS_86	AK39
AA26	VSS_8	VSS_87	AK46
AA27	VSS_9	VSS_88	AK49
AA28	VSS_10	VSS_89	AK5
AA29	VSS_11	VSS_90	AL2
AA30	VSS_12	VSS_91	AL52
AA31	VSS_13	VSS_92	AL2
AA32	VSS_14	VSS_93	AM11
AA33	VSS_15	VSS_94	BB44
AA34	VSS_16	VSS_95	AM20
AA35	VSS_17	VSS_96	AM22
AA36	VSS_18	VSS_97	AM24
AA37	VSS_19	VSS_98	AM28
AA38	VSS_20	VSS_99	AM29
AA39	VSS_21	VSS_100	BA42
AA40	VSS_22	VSS_101	AM30
AA41	VSS_23	VSS_102	AM30
AA42	VSS_24	VSS_103	AM31
AA43	VSS_25	VSS_104	AM32
AA44	VSS_26	VSS_105	AM34
AA45	VSS_27	VSS_106	AM35
AA46	VSS_28	VSS_107	AM38
AA47	VSS_29	VSS_108	AM39
AA48	VSS_30	VSS_109	AJ20
AA49	VSS_31	VSS_110	AM42
AA50	VSS_32	VSS_111	AM46
AA51	VSS_33	VSS_112	AV22
AA52	VSS_34	VSS_113	AM49
AA53	VSS_35	VSS_114	AM7
AA54	VSS_36	VSS_115	AM7
AA55	VSS_37	VSS_116	BB10
AA56	VSS_38	VSS_117	AN32
AA57	VSS_39	VSS_118	AN52
AA58	VSS_40	VSS_119	AN52
AA59	VSS_41	VSS_120	AP12
AA60	VSS_42	VSS_121	AP42
AA61	VSS_43	VSS_122	AP49
AA62	VSS_44	VSS_123	AP5
AA63	VSS_45	VSS_124	AP8
AA64	VSS_46	VSS_125	AP8
AA65	VSS_47	VSS_126	AP8
AA66	VSS_48	VSS_127	AT11
AA67	VSS_49	VSS_128	AP46
AA68	VSS_50	VSS_129	BA12
AA69	VSS_51	VSS_130	AH48
AA70	VSS_52	VSS_131	AT36
AA71	VSS_53	VSS_132	AT41
AA72	VSS_54	VSS_133	AT41
AA73	VSS_55	VSS_134	AT47
AA74	VSS_56	VSS_135	AT7
AA75	VSS_57	VSS_136	AV16
AA76	VSS_58	VSS_137	AV30
AA77	VSS_59	VSS_138	AV20
AA78	VSS_60	VSS_139	AV24
AA79	VSS_61	VSS_140	AV34
AA80	VSS_62	VSS_141	AV38
AA81	VSS_63	VSS_142	AV32
AA82	VSS_64	VSS_143	AV42
AA83	VSS_65	VSS_144	AV48
AA84	VSS_66	VSS_145	AV5
AA85	VSS_67	VSS_146	AV8
AA86	VSS_68	VSS_147	AV8
AA87	VSS_69	VSS_148	AV14
AA88	VSS_70	VSS_149	AV18
AA89	VSS_71	VSS_150	AV18
AA90	VSS_72	VSS_151	AV2
AA91	VSS_73	VSS_152	AV32
AA92	VSS_74	VSS_153	AV36
AA93	VSS_75	VSS_154	AV36
AA94	VSS_76	VSS_155	AV40
AA95	VSS_77	VSS_156	AV43
AA96	VSS_78	VSS_157	AV43
AA97	VSS_79	VSS_158	AV47

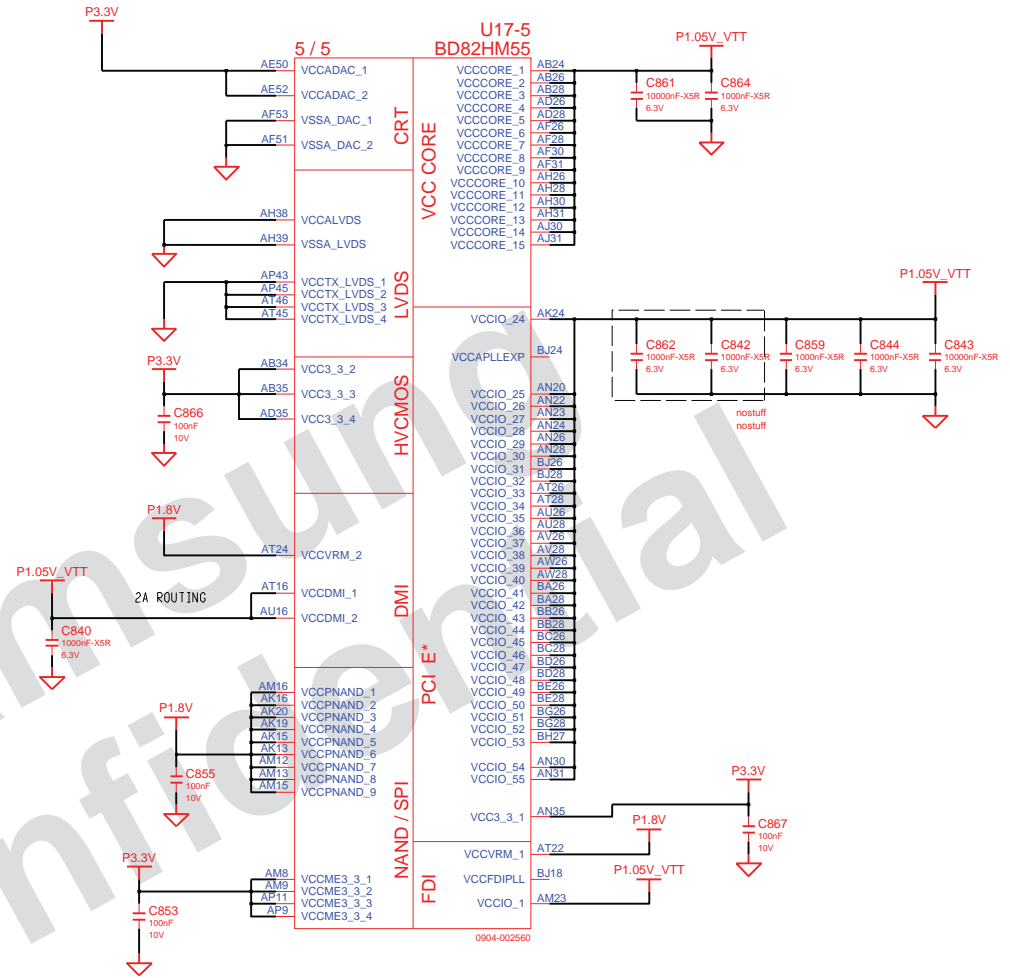
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APPROVAL	MK KIM	REV	REV 0.9		IBEX PEAK(4/5)	PART NO. BA41-01174A
MODULE CODE		LAST EDIT				

October 20, 2009 21:30:55 PM PAGE 18 OF 66

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This power share with thermal sensor

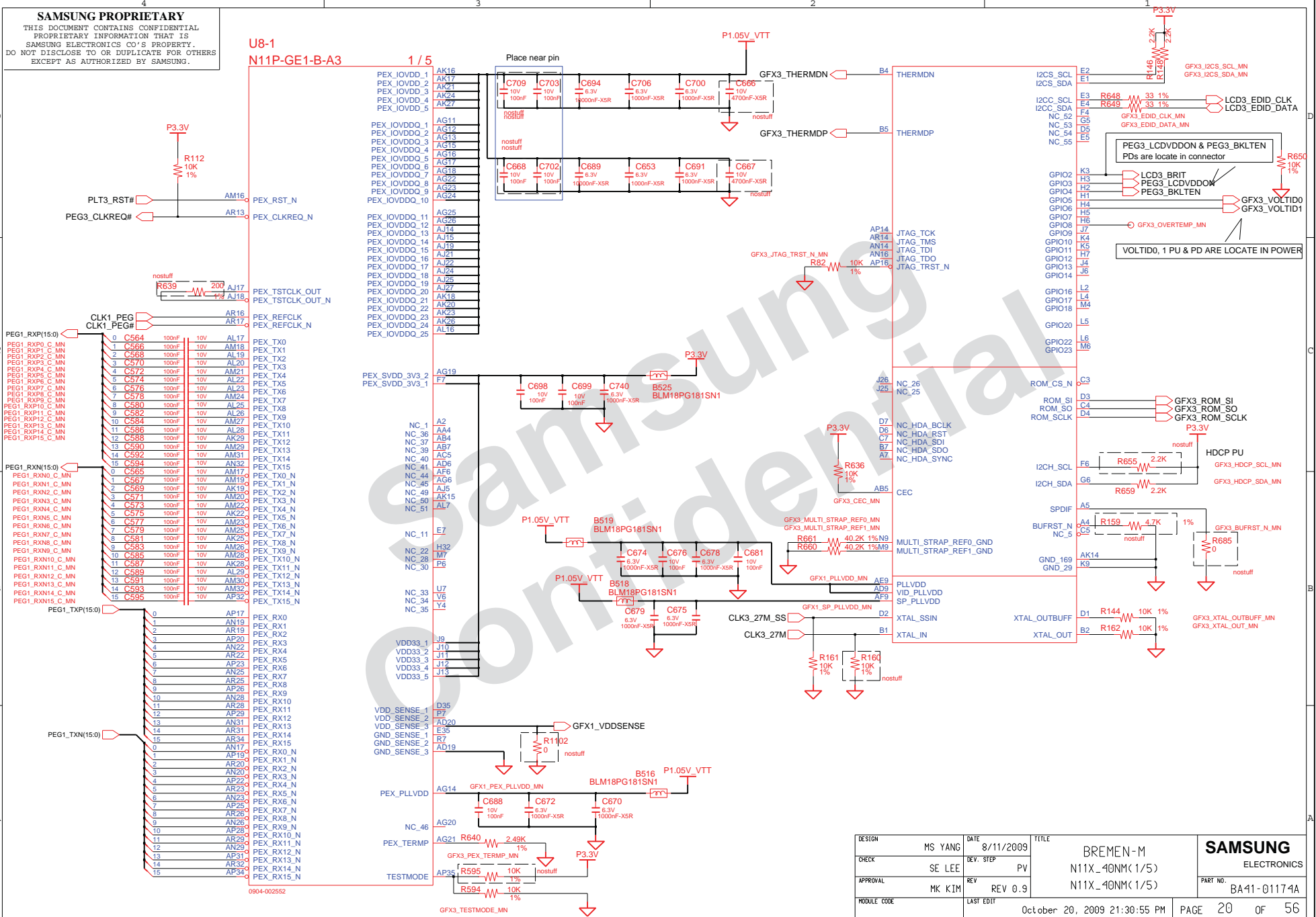
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H5	VSS_260	VSS_160	B11
J24	VSS_261	VSS_161	B15
K11	VSS_262	VSS_162	B19
K43	VSS_263	VSS_163	B23
K47	VSS_264	VSS_164	B31
K7	VSS_265	VSS_165	B35
L14	VSS_266	VSS_166	B39
L18	VSS_267	VSS_167	B43
L2	VSS_268	VSS_168	B47
L22	VSS_269	VSS_169	B7
L32	VSS_270	VSS_170	BG12
L36	VSS_271	VSS_171	BB12
L40	VSS_272	VSS_172	BB16
L52	VSS_273	VSS_173	BB20
M12	VSS_274	VSS_174	BB24
M16	VSS_275	VSS_175	BB30
M20	VSS_276	VSS_176	BB34
M38	VSS_277	VSS_177	BB38
M34	VSS_278	VSS_178	BB42
M38	VSS_279	VSS_179	BB49
M42	VSS_280	VSS_180	BB5
M46	VSS_281	VSS_181	BC10
M49	VSS_282	VSS_182	BC14
M5	VSS_283	VSS_183	BC2
M8	VSS_284	VSS_184	BC22
N24	VSS_285	VSS_185	BC22
F11	VSS_286	VSS_186	BC32
AD15	VSS_287	VSS_187	BC36
P22	VSS_288	VSS_188	BC40
P30	VSS_289	VSS_189	BC44
P32	VSS_290	VSS_190	BC52
P34	VSS_291	VSS_191	BH9
P42	VSS_292	VSS_192	BD48
P45	VSS_293	VSS_193	BD49
P47	VSS_294	VSS_194	BD5
R2	VSS_295	VSS_195	BE12
R12	VSS_296	VSS_196	BE20
R52	VSS_297	VSS_197	BE16
T41	VSS_298	VSS_198	BE24
T46	VSS_299	VSS_199	BE30
T49	VSS_300	VSS_200	BE38
T5	VSS_301	VSS_201	BE42
T8	VSS_302	VSS_202	BE46
U30	VSS_303	VSS_203	BE46
U31	VSS_304	VSS_204	BE48
U32	VSS_305	VSS_205	BE50
U34	VSS_306	VSS_206	BE6
P38	VSS_307	VSS_207	BE8
V11	VSS_308	VSS_208	BF3
P16	VSS_309	VSS_209	BF48
P19	VSS_310	VSS_210	BF51
V20	VSS_311	VSS_211	BG18
V22	VSS_312	VSS_212	BG24
V30	VSS_313	VSS_213	BG4
V31	VSS_314	VSS_214	BG13
V32	VSS_315	VSS_215	BH11
V34	VSS_316	VSS_216	BH15
V35	VSS_317	VSS_217	BH19
V38	VSS_318	VSS_218	BH23
V43	VSS_319	VSS_219	BH31
V45	VSS_320	VSS_220	BH35
V46	VSS_321	VSS_221	BH39
V47	VSS_322	VSS_222	BH43
V49	VSS_323	VSS_223	BH47
V5	VSS_324	VSS_224	BH7
V7	VSS_325	VSS_225	C12
V8	VSS_326	VSS_226	C50
V2	VSS_327	VSS_227	D51
W52	VSS_328	VSS_228	E12
Y11	VSS_329	VSS_229	E16
Y12	VSS_330	VSS_230	E20
Y15	VSS_331	VSS_231	E24
Y19	VSS_332	VSS_232	E30
Y23	VSS_333	VSS_233	E34
Y28	VSS_334	VSS_234	E38
Y30	VSS_335	VSS_235	E42
Y31	VSS_336	VSS_236	E48
Y32	VSS_337	VSS_237	E48
Y38	VSS_338	VSS_238	E48
Y43	VSS_339	VSS_239	E6
Y46	VSS_340	VSS_240	F49
F49	VSS_341	VSS_241	F5
Y5	VSS_342	VSS_242	G10
V6	VSS_343	VSS_243	G14
Y8	VSS_344	VSS_244	G18
T24	VSS_345	VSS_245	G2
T43	VSS_346	VSS_246	G22
AD51	VSS_347	VSS_247	G32
AT8	VSS_348	VSS_248	G36
AD47	VSS_349	VSS_249	G40
Y47	VSS_350	VSS_250	G44
AT12	VSS_351	VSS_251	G52
AM6	VSS_352	VSS_252	AF39
AT13	VSS_353	VSS_253	H16
AM5	VSS_354	VSS_254	H20
AK45	VSS_355	VSS_255	H30
AK39	VSS_356	VSS_256	H34
AV14	VSS_366	VSS_257	H38
		VSS_258	H42



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	PCH		PART NO.	
APPROVAL	MK KIM	REV	REV 0.9	IBEX PEAK(5/5)		BA41-01174A	
MODULE CODE	undefined	LAST EDIT		October 20, 2009 21:30:55 PM		PAGE 19 OF 56	

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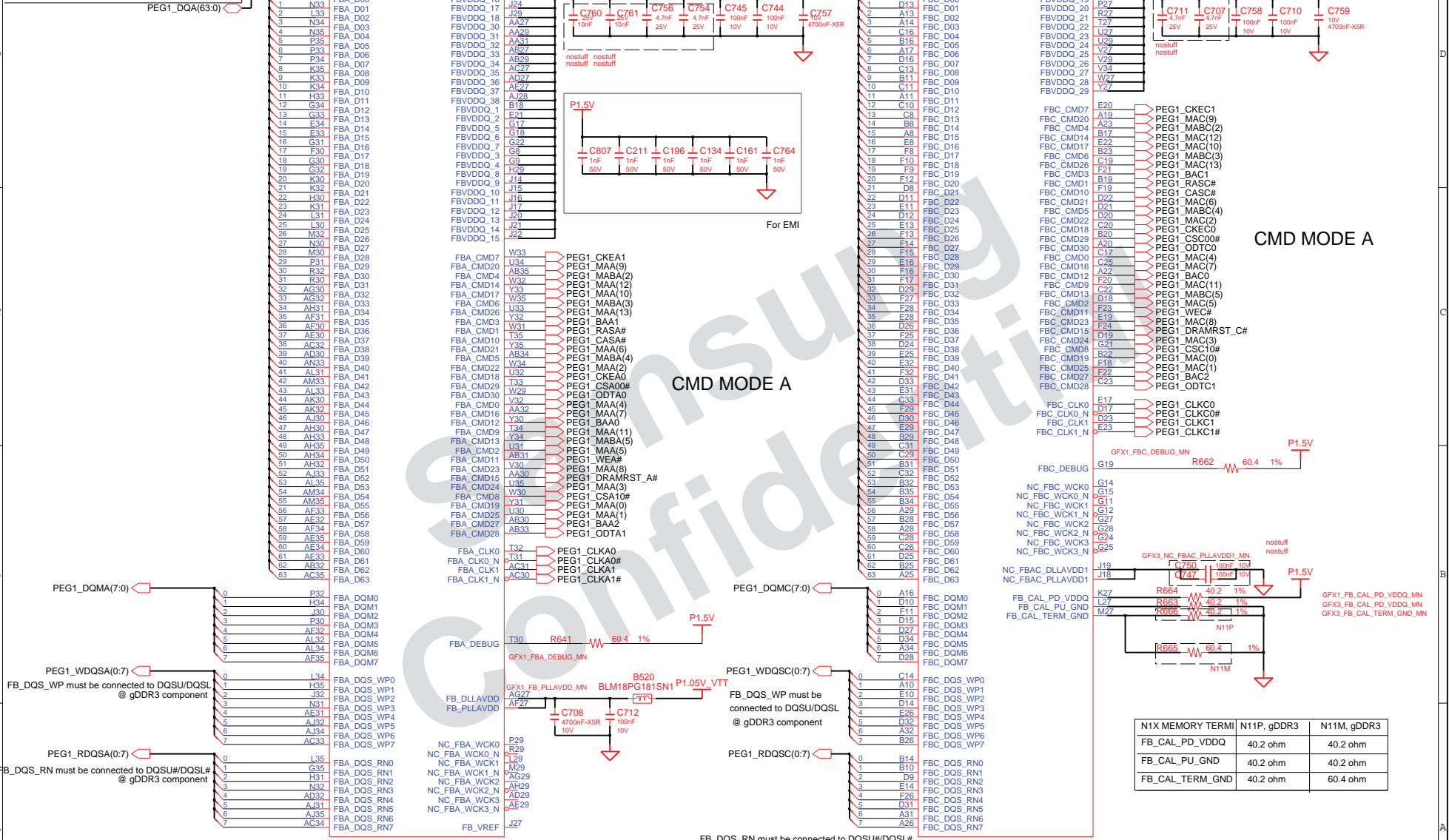
U8-1
N11P-GE1-B-A3 1 / 5



0904-002552

DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M N11X_40NM(1/5)	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV		N11X_40NM(1/5)	
APPROVAL	MK KIM	REV	REV 0.9			PART NO. BA41-01174A
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM	PAGE	20 OF 56

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N1X MEMORY TERM1	N11P, gDDR3	N11M, gDDR3
FB_CAL_PD_VDDQ	40.2 ohm	40.2 ohm
FB_CAL_TERM_GND	40.2 ohm	40.2 ohm
FB_CAL_TERM_GND	40.2 ohm	60.4 ohm

0904-002552

FB_DQS_RN must be connected to DQSU#/DQSL# @ gDDR3 component

DESIGN MS YANG DATE 8/11/2009 TITLE BREMEN-M N11X_40NM(2/5) SAMSUNG ELECTRONICS

CHECK SE LEE DEV. STEP PV

APPROVAL MK KIM REV 0.9

MODULE CODE LAST EDIT

October 20, 2009 21:30:55 PM PAGE 21 OF 56

0904-002552

FB_DQS_WP must be connected to DQSU/DQSL @ gDDR3 component

FB_DQS_WP must be connected to DQSU#/DQSL# @ gDDR3 component

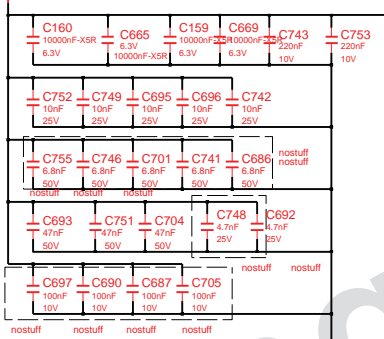
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U8-3
N11P-GE1-B-A3 **3 / 5**

EGFX_CORE

EGFX_CORE

B3	GND 1	GND 97	V16
B6	GND 2	GND 98	V18
B9	GND 3	GND 99	V20
B12	GND 4	GND 100	V22
B15	GND 5	GND 101	V24
B21	GND 6	GND 102	V31
B24	GND 7	GND 103	V11
B27	GND 8	GND 104	V13
B30	GND 9	GND 105	V15
B33	GND 10	GND 106	V17
C2	GND 11	GND 107	V19
C4	GND 12	GND 108	V23
E6	GND 13	GND 109	V25
E9	GND 14	GND 110	V25
E12	GND 15	GND 111	AA5
E15	GND 16	GND 112	AA11
E18	GND 17	GND 113	AA12
E24	GND 18	GND 114	AA13
E27	GND 19	GND 115	AA14
E30	GND 20	GND 116	AA15
F2	GND 21	GND 117	AA16
F5	GND 22	GND 118	AA17
F31	GND 23	GND 119	AA18
F34	GND 24	GND 120	AA19
J2	GND 25	GND 121	AA20
J5	GND 26	GND 122	AA21
J31	GND 27	GND 123	AA22
J34	GND 28	GND 124	AA23
L3	GND 29	GND 125	AA24
L2	GND 30	GND 126	AA25
M5	GND 31	GND 127	AA34
M11	GND 33	GND 128	AB2
M13	GND 34	GND 129	AB2
M15	GND 35	GND 130	AB4
M17	GND 36	GND 131	AB8
M19	GND 37	GND 132	AB8
M21	GND 38	GND 133	AB20
M23	GND 39	GND 134	AB22
M25	GND 40	GND 135	AB24
M31	GND 41	GND 136	AC9
M34	GND 42	GND 137	AD2
N11	GND 43	GND 138	AD5
N12	GND 44	GND 139	AD11
N13	GND 45	GND 140	AD13
N14	GND 46	GND 141	AD15
N15	GND 47	GND 142	AD17
N16	GND 48	GND 143	AD21
N17	GND 49	GND 144	AD23
N18	GND 50	GND 145	AD25
N19	GND 51	GND 146	AD31
N20	GND 52	GND 147	AD34
N21	GND 53	GND 148	AE11
N22	GND 53	GND 149	AE12
N23	GND 54	GND 150	AE13
N24	GND 55	GND 151	AE14
N25	GND 56	GND 152	AE15
P12	GND 57	GND 153	AE16
P14	GND 58	GND 154	AE17
P16	GND 59	GND 155	AE18
P20	GND 60	GND 156	AE19
P22	GND 61	GND 157	AE21
P24	GND 62	GND 158	AE22
R2	GND 63	GND 159	AE20
R5	GND 64	GND 160	AE23
R31	GND 65	GND 161	AE24
R34	GND 66	GND 162	AG2
T11	GND 67	GND 163	AG5
T13	GND 68	GND 164	AG31
T15	GND 69	GND 165	AG34
T17	GND 70	GND 166	AK2
T19	GND 71	GND 167	AK3
T21	GND 72	GND 168	AK5
T23	GND 73	GND 170	AK31
T25	GND 74	GND 171	AK34
U11	GND 75	GND 172	AL5
U12	GND 76	GND 173	AL8
U13	GND 77	GND 174	AL12
U14	GND 78	GND 175	AL15
U15	GND 79	GND 176	AL18
U16	GND 80	GND 177	AL21
U17	GND 81	GND 178	AL24
U18	GND 82	GND 179	AL27
U19	GND 83	GND 180	AL30
U20	GND 84	GND 181	AN2
U21	GND 85	GND 181	AN34
U22	GND 86	GND 182	AP3
U23	GND 87	GND 183	AP6
U24	GND 88	GND 184	AP6
U25	GND 89	GND 185	AP12
V5	GND 90	GND 186	AP15
V9	GND 91	GND 187	AP18
V12	GND 92	GND 188	AP21
V14	GND 93	GND 189	AP24
	GND 94	GND 190	AP27
	GND 95	GND 191	AP30
	GND 96	GND 192	AP33
		GND 193	



L11	VDD_1	V19	VDD 57
L13	VDD_2	V21	VDD 58
L14	VDD_3	V23	VDD 59
L15	VDD_4	V25	VDD 60
L16	VDD_5	W11	VDD 61
L17	VDD_6	W12	VDD 62
L18	VDD_7	W13	VDD 63
L19	VDD_8	W14	VDD 64
L20	VDD_9	W15	VDD 65
L21	VDD_10	W16	VDD 66
L22	VDD_11	W17	VDD 67
L23	VDD_12	W18	VDD 68
L24	VDD_13	W19	VDD 69
M12	VDD_14	W20	VDD 70
M14	VDD_15	W21	VDD 71
M16	VDD_16	W22	VDD 72
M18	VDD_17	W23	VDD 73
M20	VDD_18	W24	VDD 74
M22	VDD_19	W25	VDD 75
M24	VDD_20	Y14	VDD 76
P11	VDD_21	Y16	VDD 77
P13	VDD_22	Y18	VDD 78
P15	VDD_23	Y20	VDD 79
P17	VDD_24	Y22	VDD 80
P19	VDD_25	Y24	VDD 81
P21	VDD_26	AB11	VDD 82
P23	VDD_27	AB13	VDD 83
P25	VDD_28	AB15	VDD 84
R11	VDD_29	AB17	VDD 85
R12	VDD_30	AB19	VDD 86
R13	VDD_31	AB21	VDD 87
R14	VDD_32	AB23	VDD 88
R15	VDD_33	AB25	VDD 89
R16	VDD_34	AC11	VDD 90
R17	VDD_35	AC12	VDD 91
R18	VDD_36	AC13	VDD 92
R19	VDD_37	AC15	VDD 93
R20	VDD_38	AC16	VDD 94
R21	VDD_39	AC17	VDD 95
R22	VDD_40	AC18	VDD 96
R23	VDD_41	AC19	VDD 97
R24	VDD_42	AC20	VDD 98
R25	VDD_43	AC21	VDD 99
T12	VDD_44	AC22	VDD 100
T14	VDD_45	AC23	VDD 101
T16	VDD_46	AC24	VDD 102
T18	VDD_47	AC25	VDD 103
T20	VDD_48	AD12	VDD 104
T22	VDD_49	AD14	VDD 105
T24	VDD_50	AD18	VDD 106
V11	VDD_51	AD18	VDD 107
V13	VDD_52	AD22	VDD 108
V15	VDD_53	AD22	VDD 109
V17	VDD_54	AD24	VDD 110
	VDD_55	AD24	VDD 111
	VDD_56		

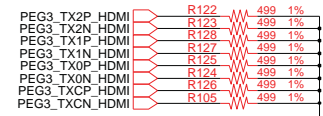
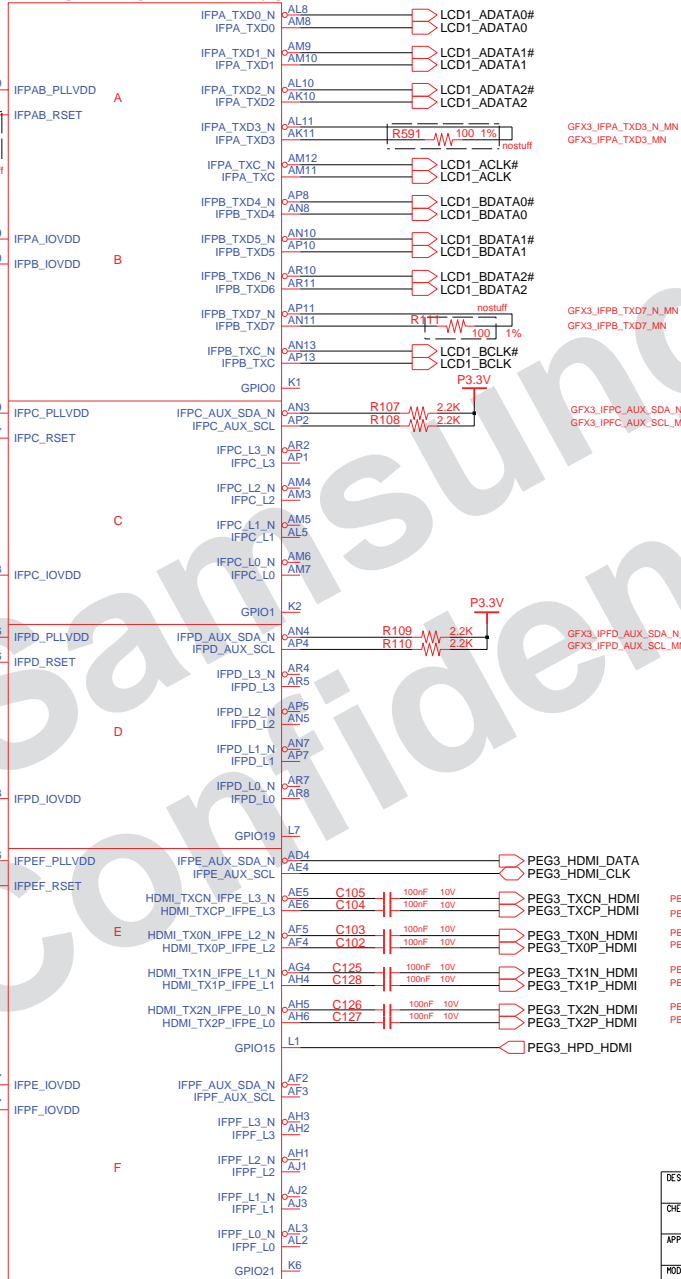
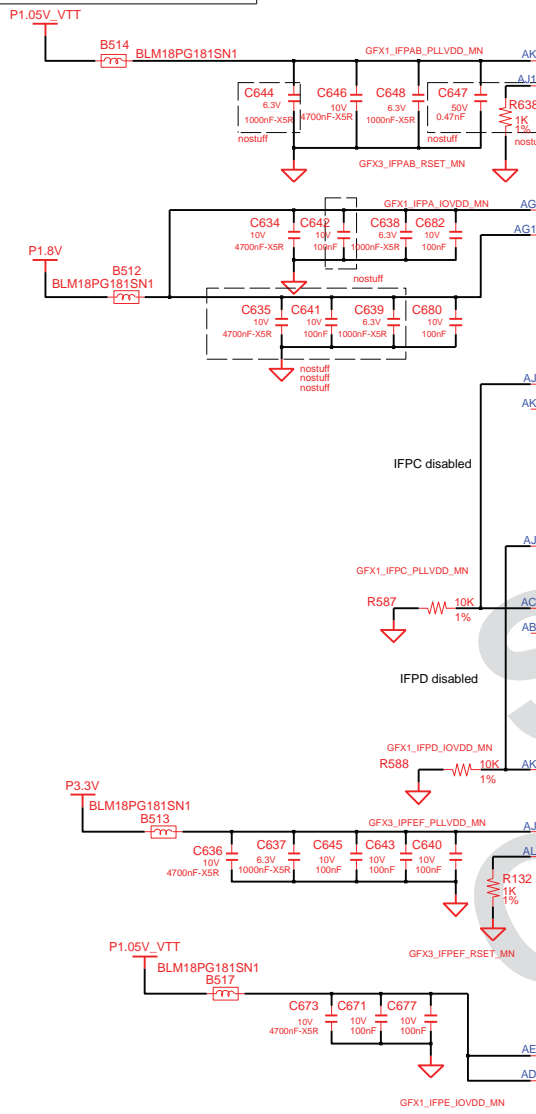
0904-002552

DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M N11X_40NM(3/5)	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV		N11X_40NM(3/5)	
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				
October 20, 2009 21:30:55 PM						PAGE 22 OF 56

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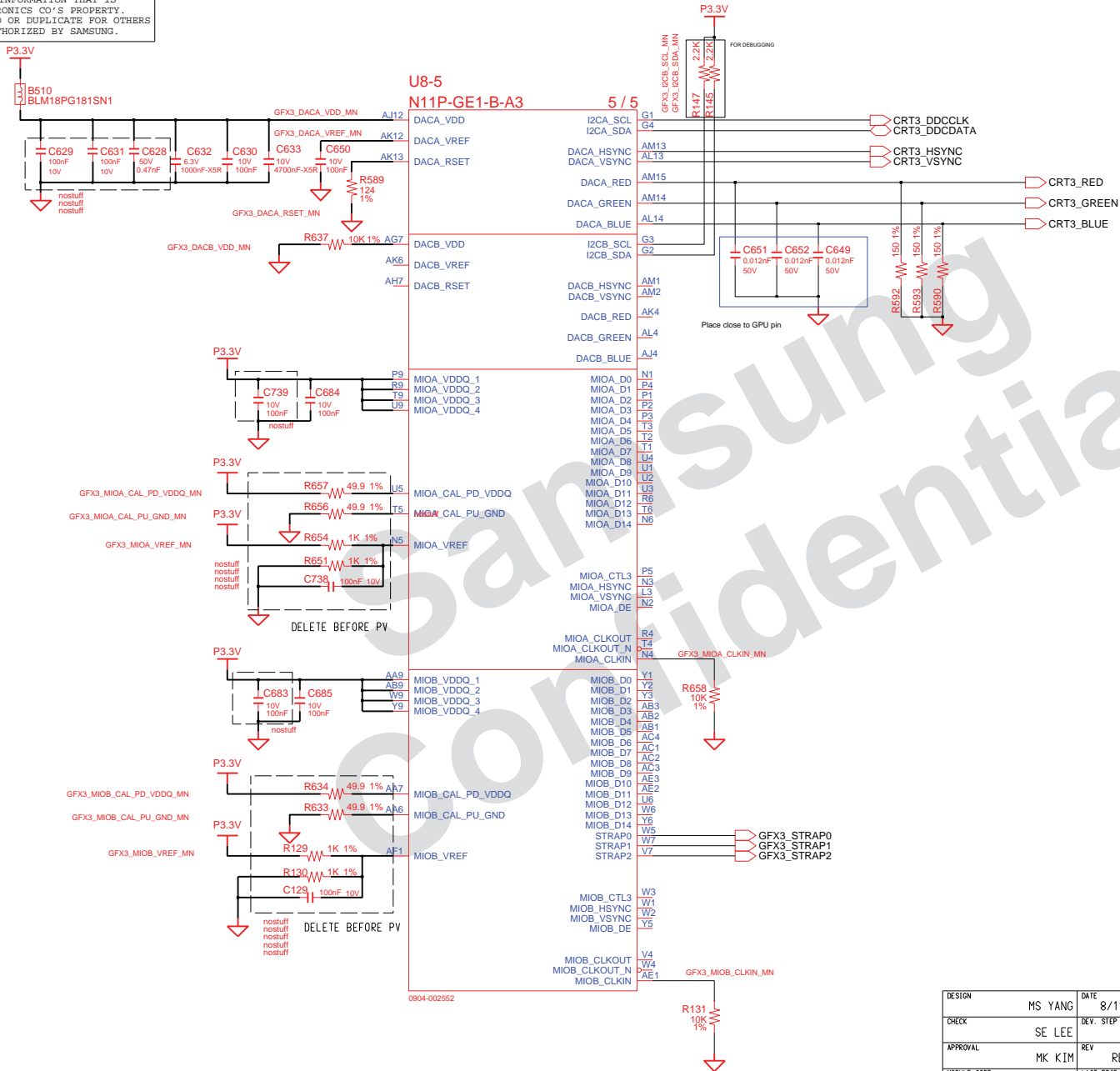
**U8-4
N11P-GE1-B-A3 4 / 5**



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M N11X_40NM(4/5) N11X_40NM(4/5)	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE 23	OF 56

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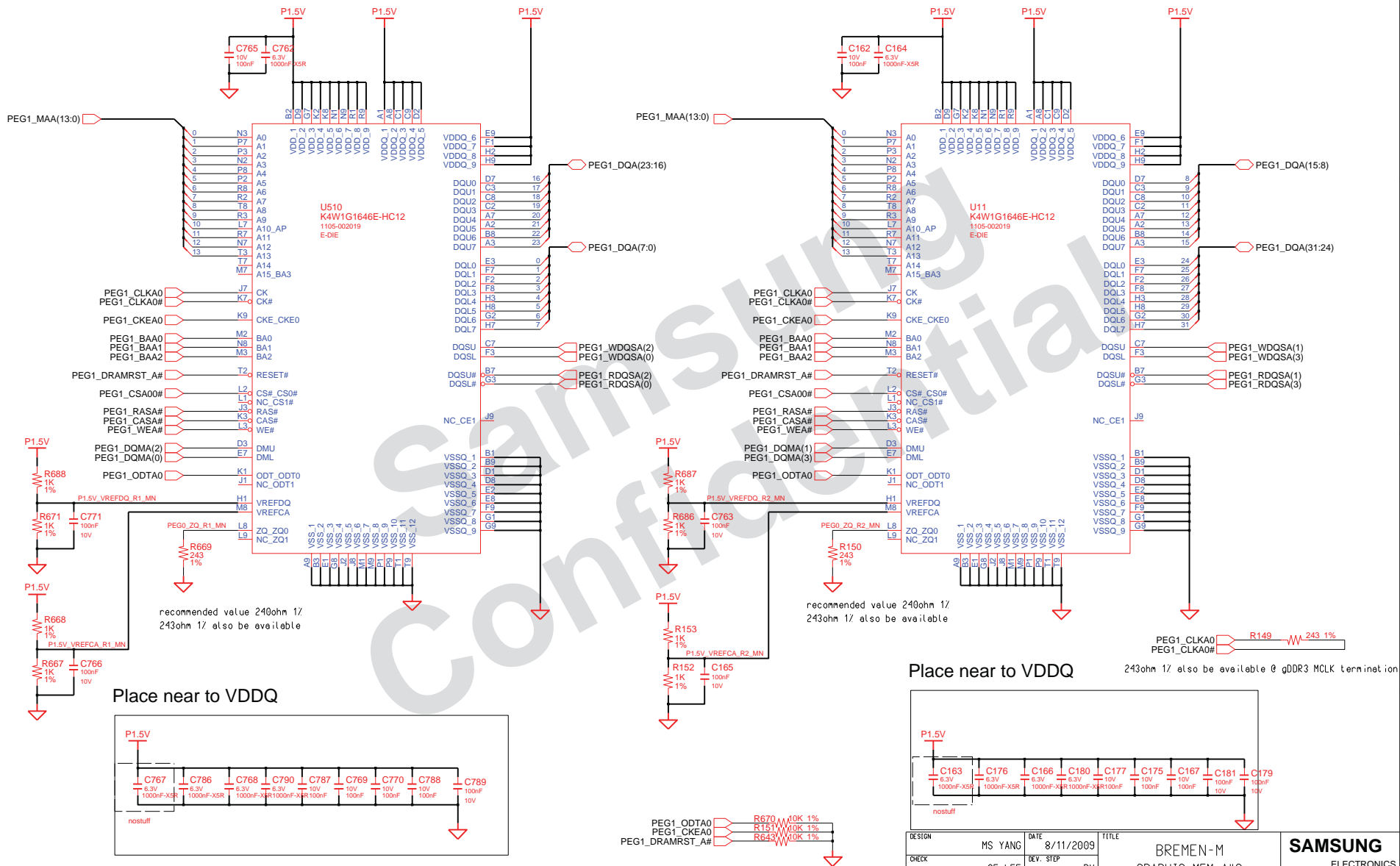
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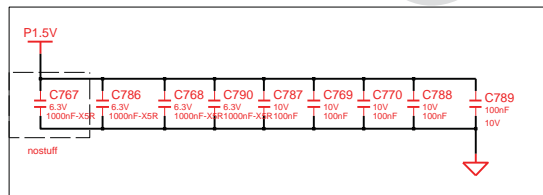
0904-002552

DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M N11X_40NM(5/5) N11X_40NM(5/5)	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV		PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM	PAGE 24 OF 56	

A-Channel #0



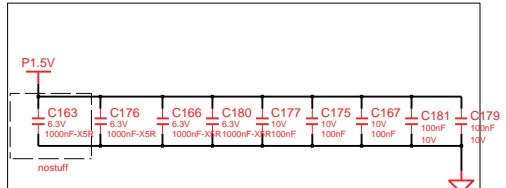
Place near to VDDQ



recommended value 240ohm 1/ 243ohm 1/ also be available

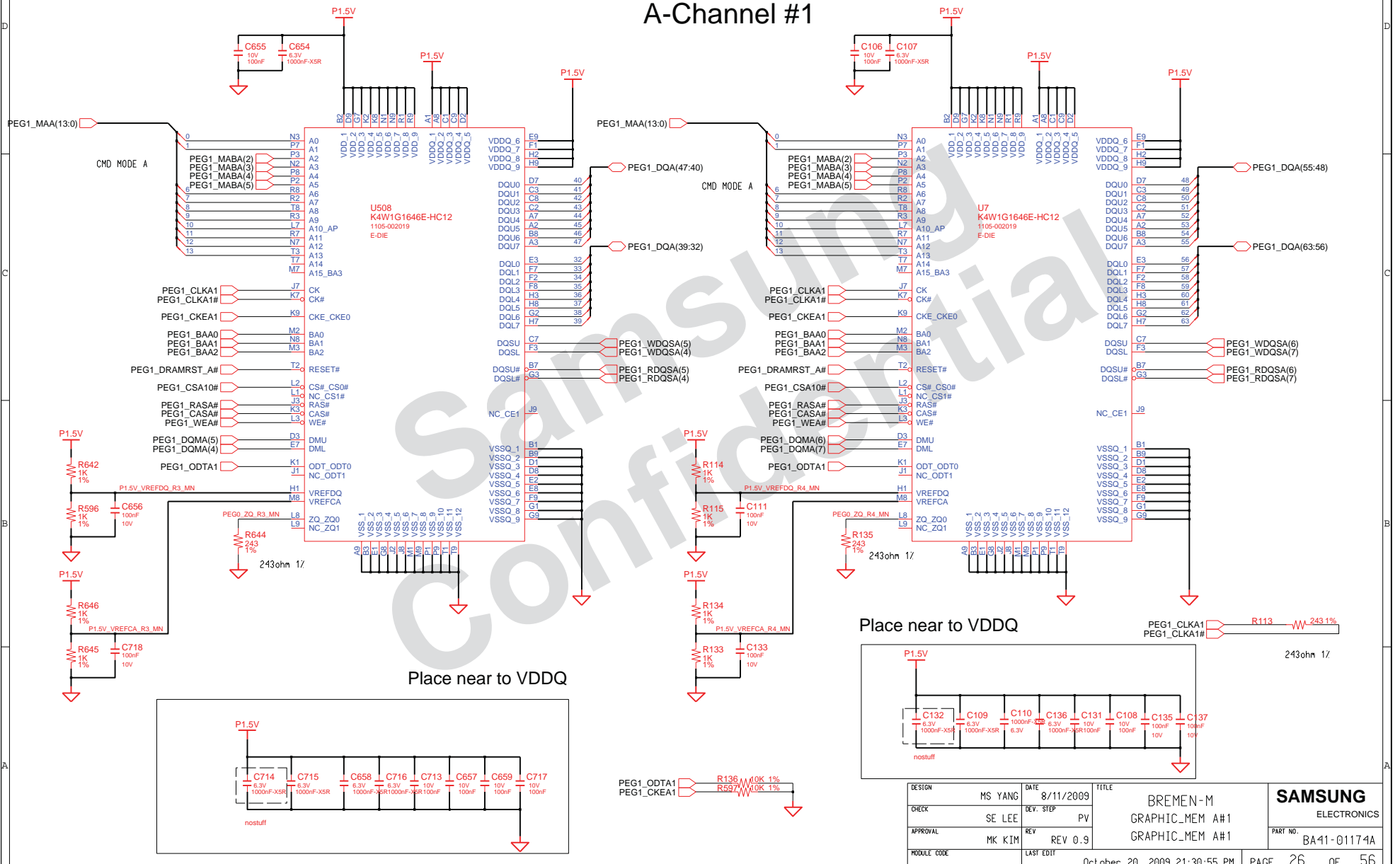
243ohm 1/ also be available @ gDDR3 MCLK termination

Place near to VDDQ



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M GRAPHIC_MEM A#0	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	APPROVAL	REV	
APPROVAL	MK KIM	REV	REV 0.9	MODULE CODE	LAST EDIT	PART NO. BA41-01174A
				October 20, 2009 21:30:55 PM	PAGE 25	OF 56

A-Channel #1



Place near to VDDQ

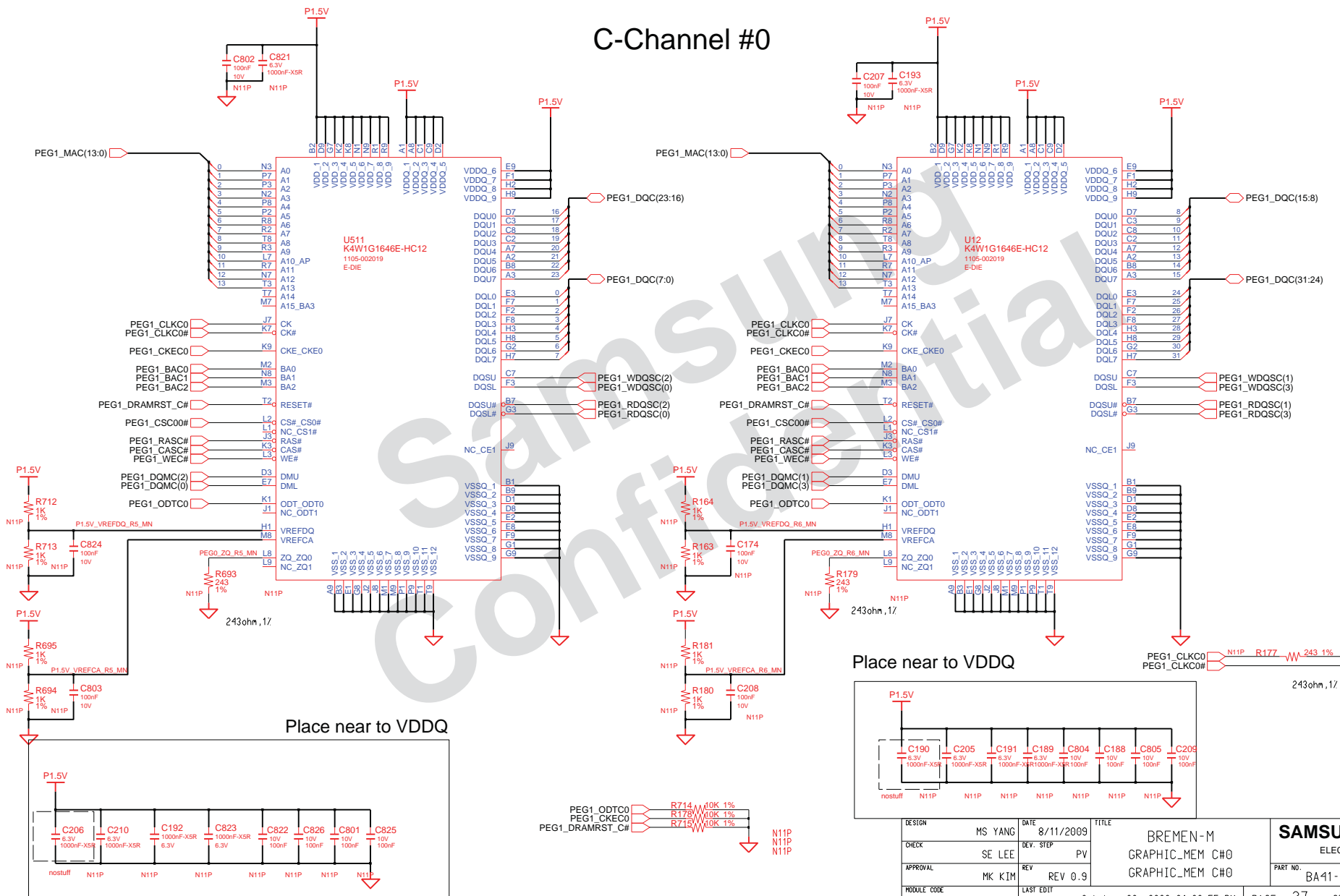
Place near to VDDQ

DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	GRAPHIC_MEM A#1		
APPROVAL	MK KIM	REV	REV 0.9	GRAPHIC_MEM A#1		PART NO. BA41-01174A
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM		PAGE 26 OF 56

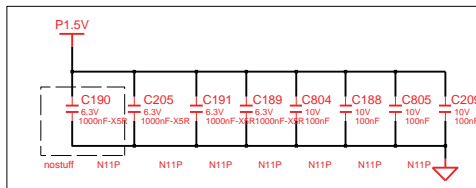
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C-Channel #0

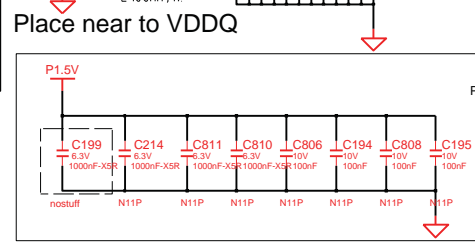
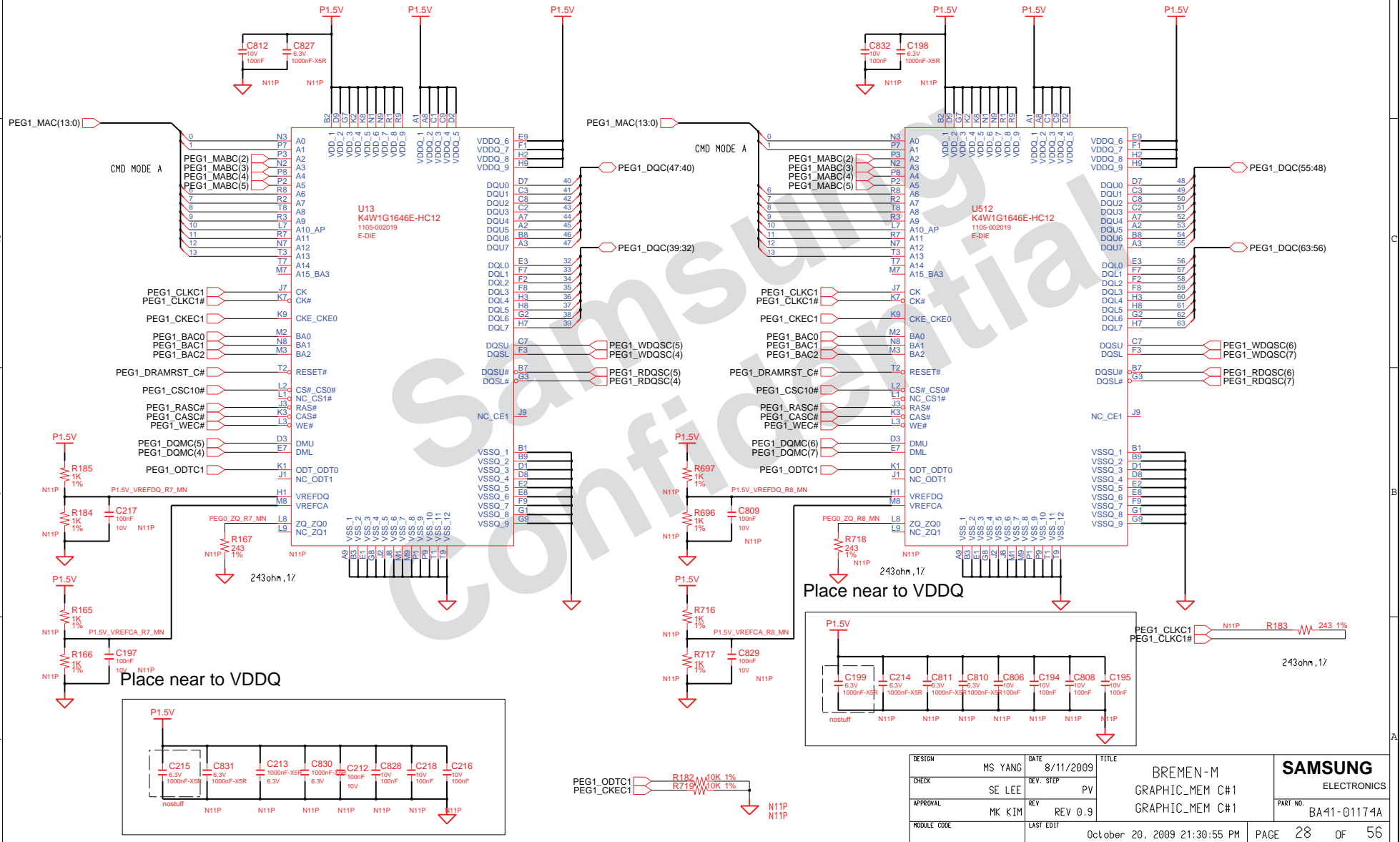


Place near to VDDQ



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS			
CHECK	SE LEE	DEV. STEP	PV	GRAPHIC_MEM C#0					
APPROVAL	MK KIM	REV	REV 0.9	GRAPHIC_MEM C#0		PART NO. BA41-01174A			
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM					
						PAGE	27	OF	56

C-Channel #1

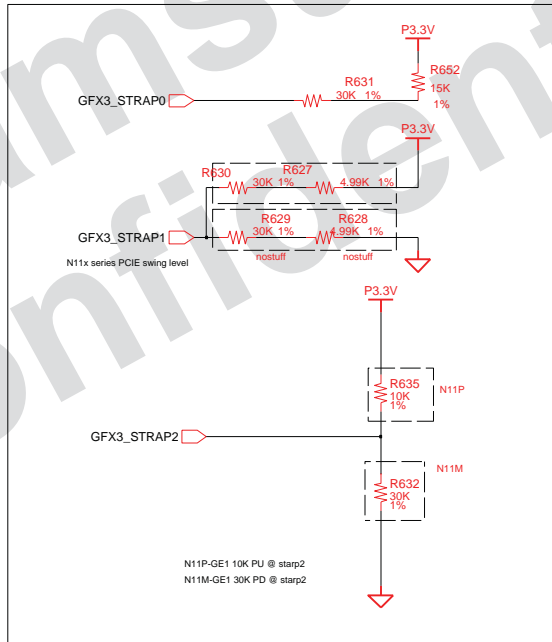
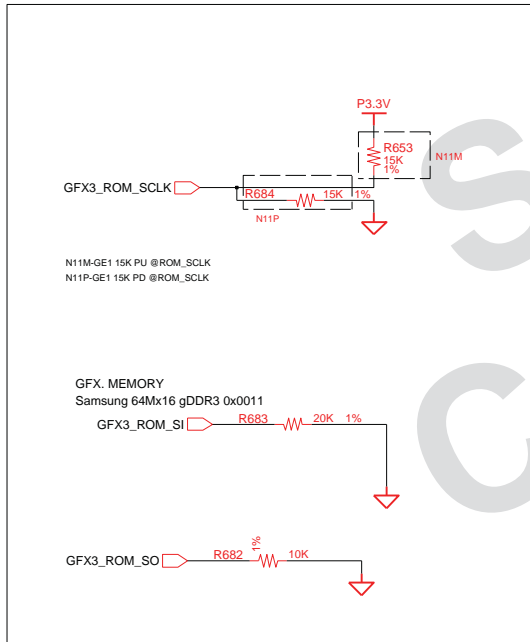


DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	GRAPHIC_MEM CH1	PART NO.	
APPROVAL	MK KIM	REV	REV 0.9	GRAPHIC_MEM CH1	BA41-01174A	
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM	PAGE 28 OF 56	

N11x_40nm STRAP

STRAP PIN	BIT 3	BIT 2	BIT 1	BIT0
ROM_SO	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]

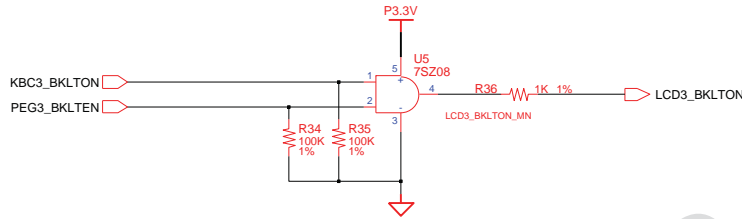
RESISTOR	PULL UP	PULL DOWN
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M N11X_40NM STRAP	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE 29	OF 56

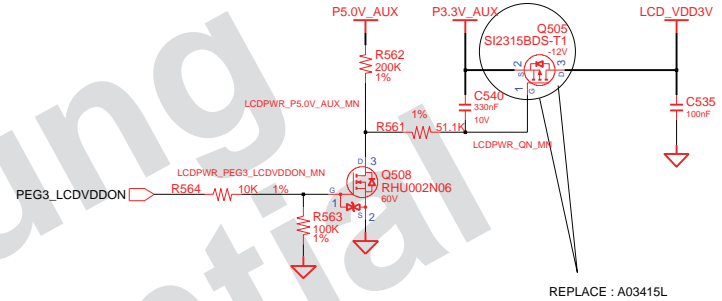
LVDS

Backlight On

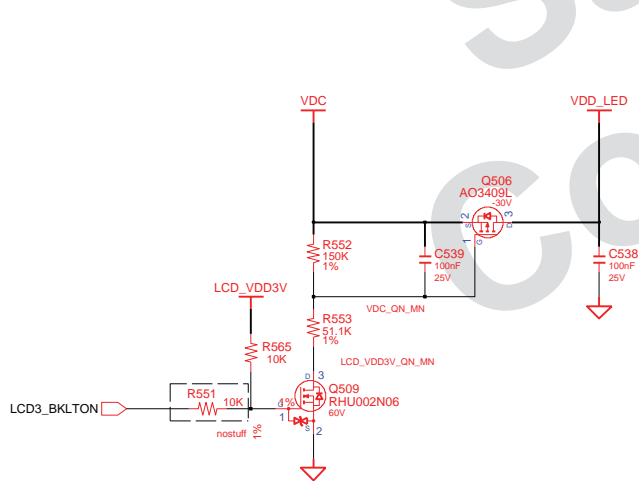


LCD Power

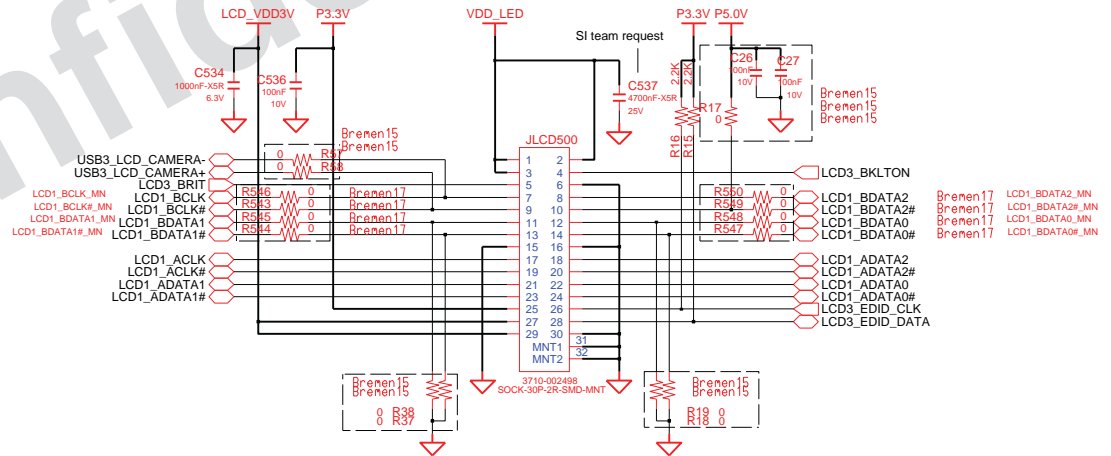
EBL Purpose



LED Power



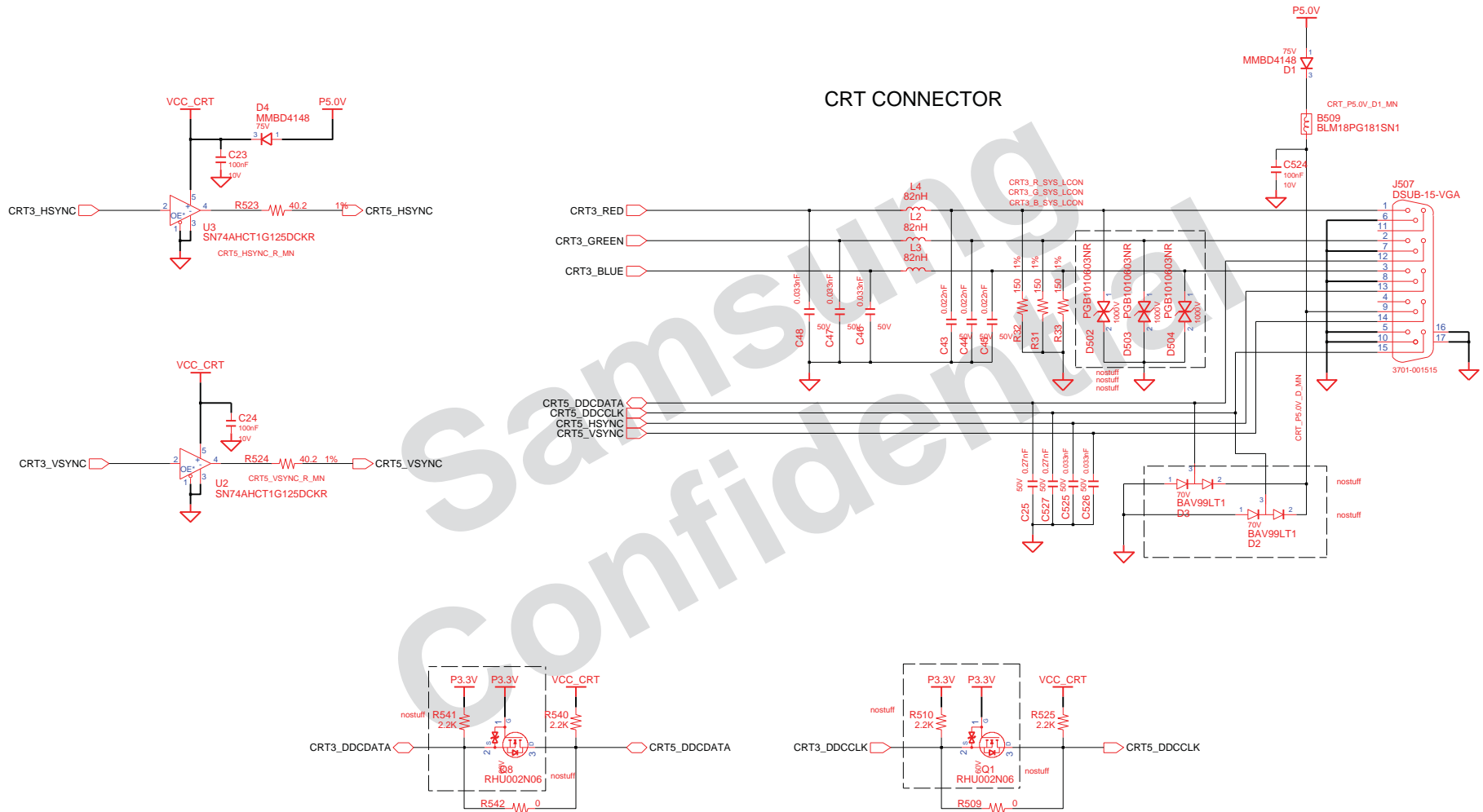
Camera + LCD Connector



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M GRAPHICS_IF	SAMSUNG
CHECK	SE LEE	DEV. STEP	PV			ELECTRONICS
APPROVAL	MK KIM	REV	REV 0.9			PART NO. BA41-01174A
MODULE CODE		LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE 30	OF 56

CRT

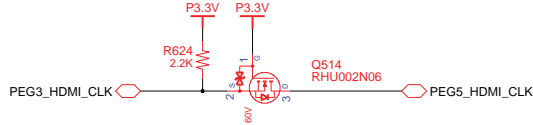
CRT CONNECTOR



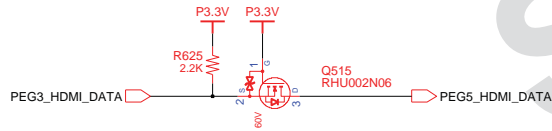
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M GRAPHICS_IF CRT	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				
				October 20, 2009 21:30:55 PM		PAGE 31 OF 56

HDMI

FOR HDMI VERIFICATION TEST

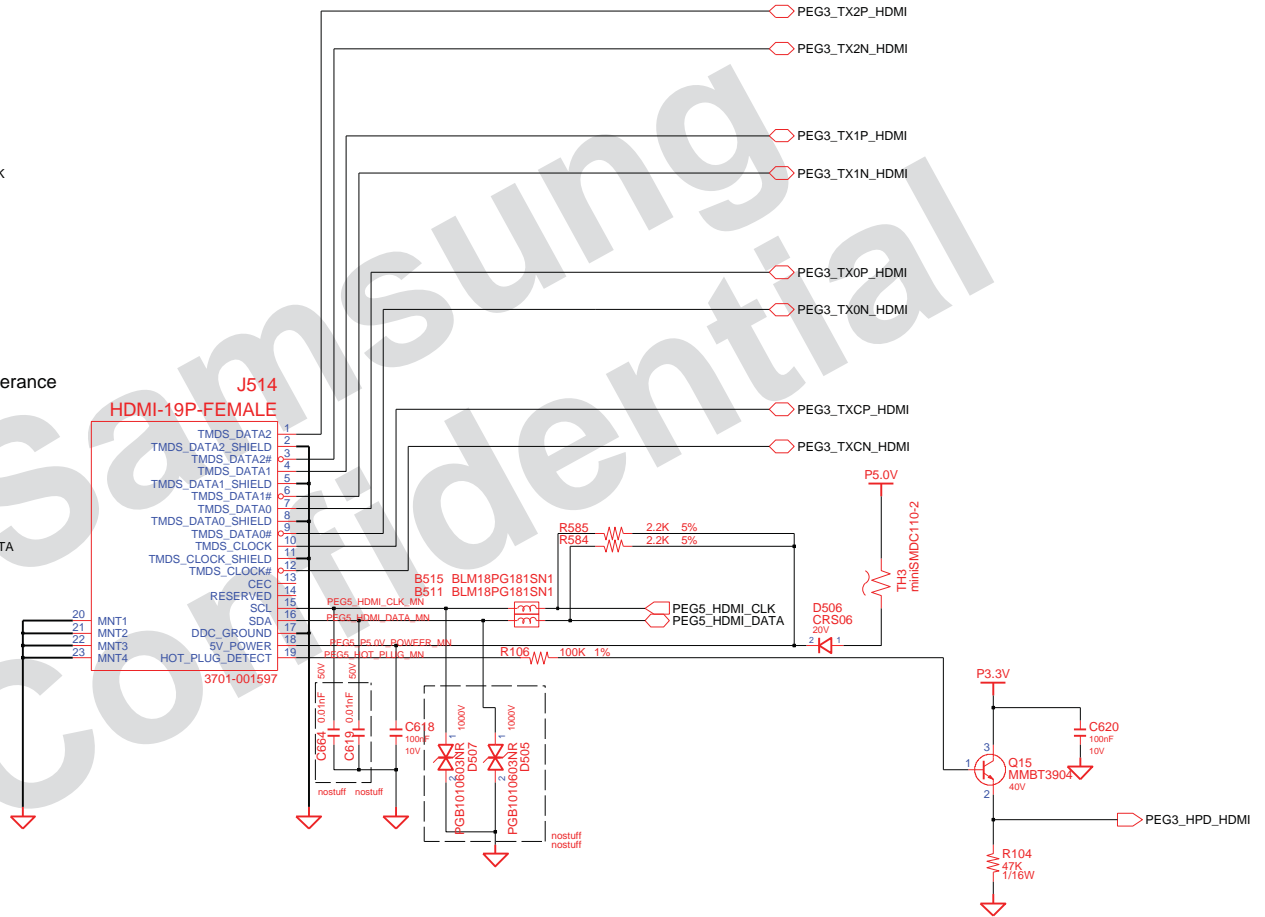


N10x/N11x_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance



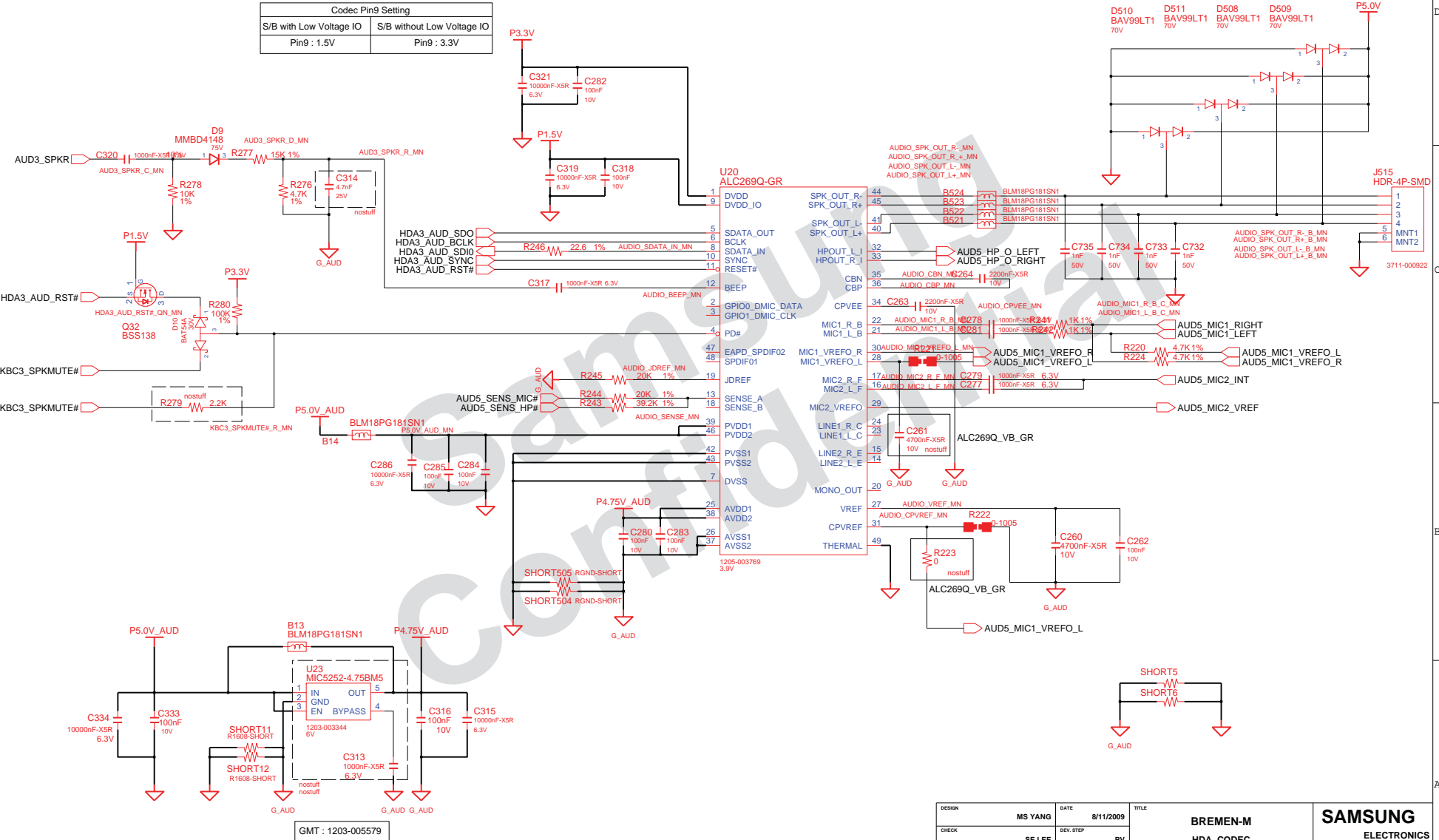
J514
HDMI-19P-FEMALE

- 1 TMS_DATA2
- 2 TMS_DATA2_SHIELD
- 3 TMS_DATA2#
- 4 TMS_DATA1
- 5 TMS_DATA1#
- 6 TMS_DATA1#
- 7 TMS_DATA0
- 8 TMS_DATA0_SHIELD
- 9 TMS_DATA0#
- 10 TMS_CLOCK
- 11 TMS_CLOCK_SHIELD
- 12 TMS_CLOCK#
- 13 RESERVED
- 14 CEC
- 15 SCL
- 16 SDA
- 17 MNT1
- 18 DDC_GROUND
- 19 MNT2
- 20 SV_POWER
- 21 MNT3
- 22 MNT4
- 23 HOT_PLUG_DETECT



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	GRAPHICS_IF	BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9	HDMI	PART NO.	BA41-01174A
MODULE CODE		LAST EDIT				

HD AUDIO

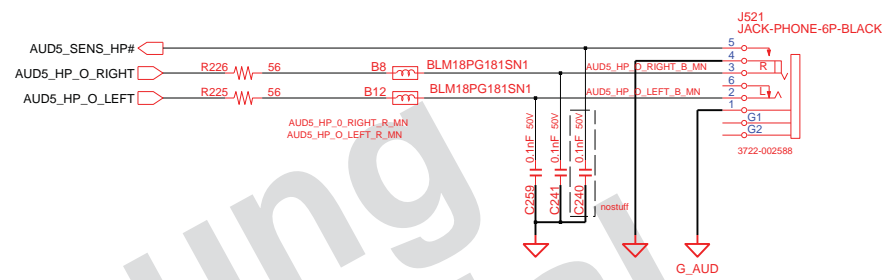


Codec Pin9 Setting	
S/B with Low Voltage IO	S/B without Low Voltage IO
Pin9 : 1.5V	Pin9 : 3.3V

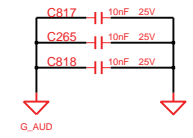
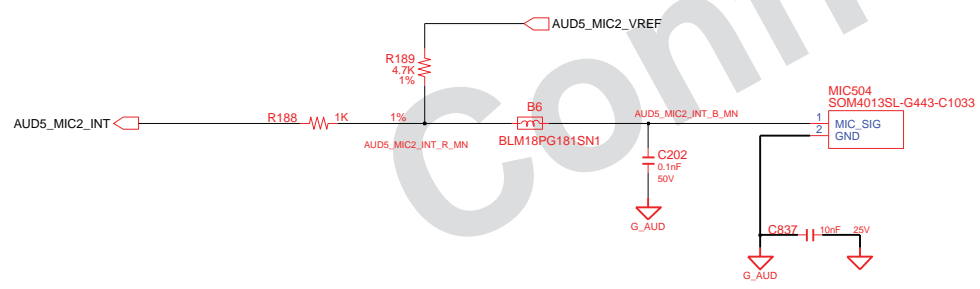
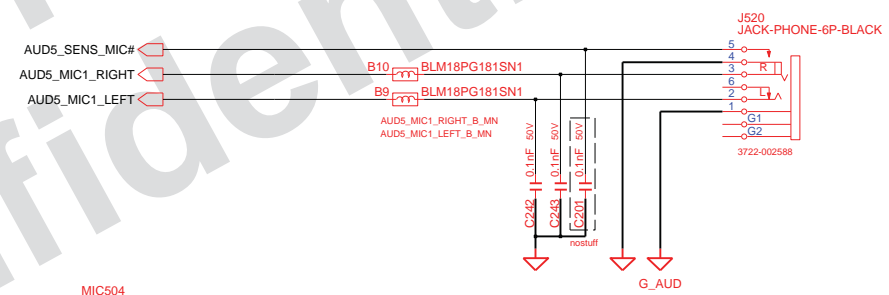
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG
CHECK	SE LEE	DEV. STEP	PV		HDA_CODEC	ELECTRONICS
APPROVAL	MK KIM	REV	REV 0.9		AUDIO CODEC ALC269	PART NO. BA41-01174A
MODULE CODE		LAST EDIT				

October 20, 2009 21:30:55 PM PAGE 33 OF 56

HEADPHONE(BLACK)

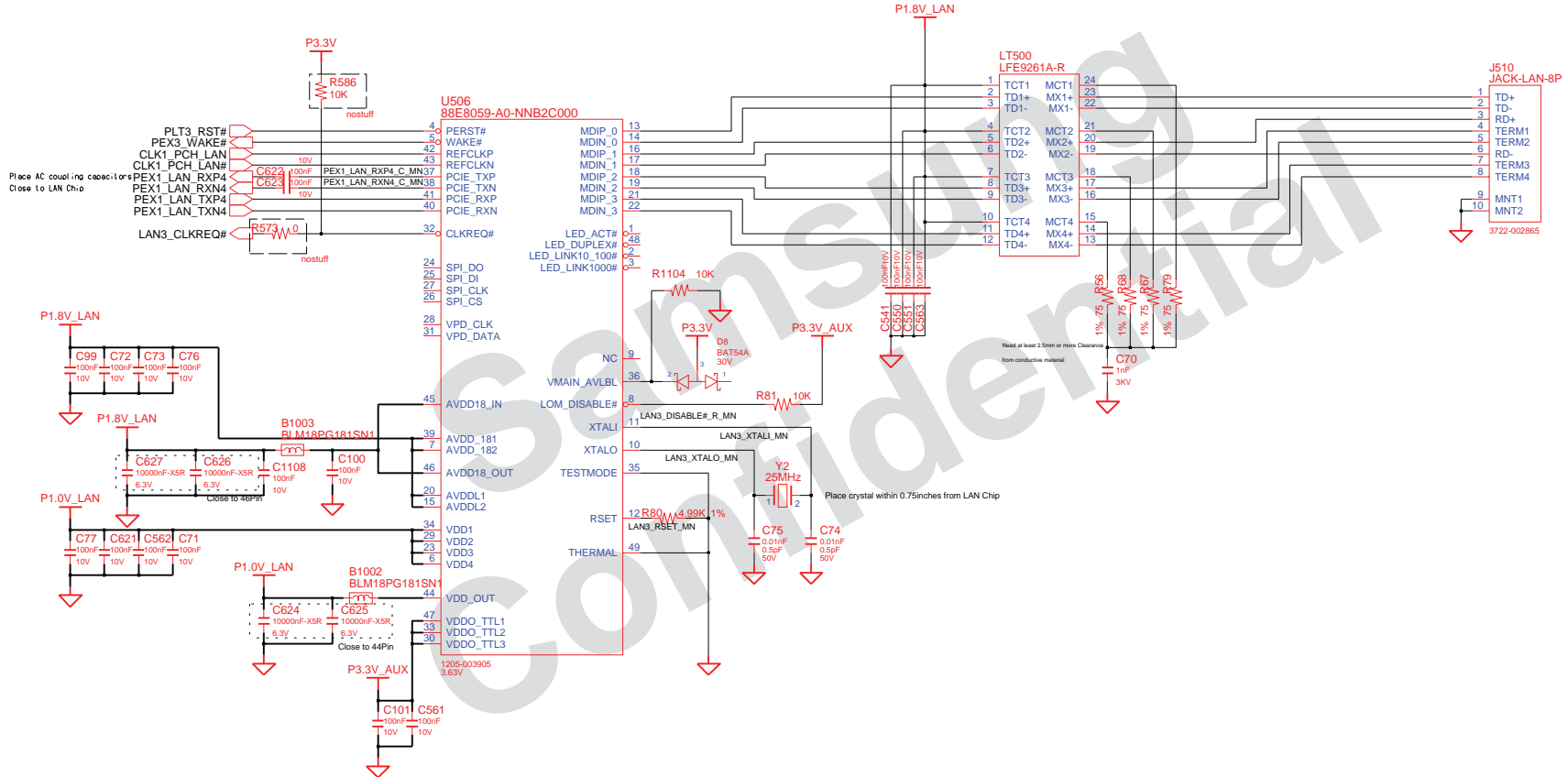


MIC JACK(BLACK)



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M HDA_CODEC	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	APPROVAL	MK KIM	
APPROVAL	MK KIM	REV	REV 0.9	MODULE CODE		PART NO. BA41-01174A
				October 20, 2009 21:30:55 PM		PAGE 34 OF 56

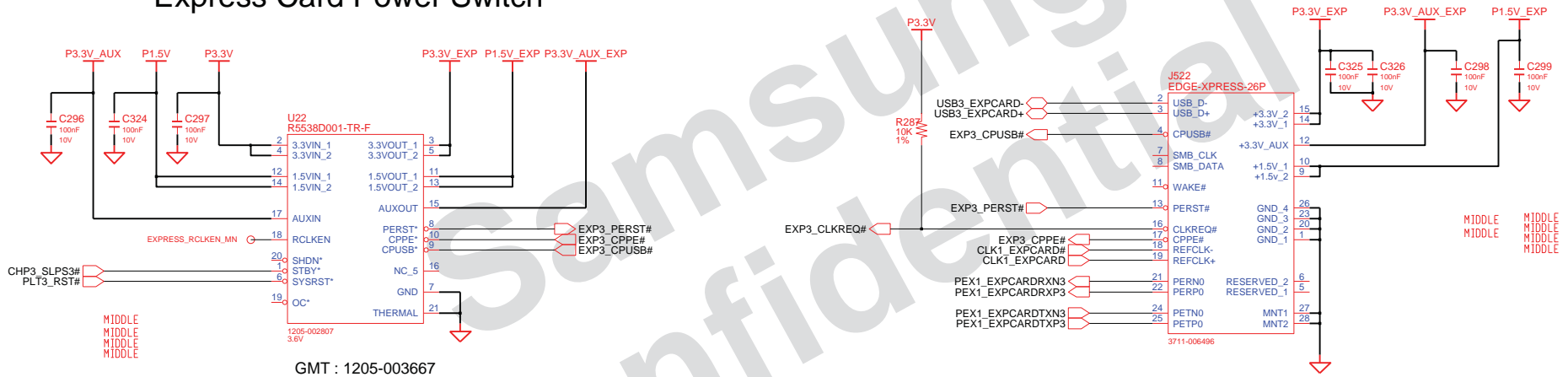
Marvell 88E8059(48pin, QFN,no LED)



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	LAN		
APPROVAL	MK KIM	REV	REV 0.9	LAN_Realtek_RTL8103EL		PART NO. BA41-01174A
MODULE CODE	LAST EDIT		October 20, 2009 21:30:55 PM		PAGE	35 OF 56

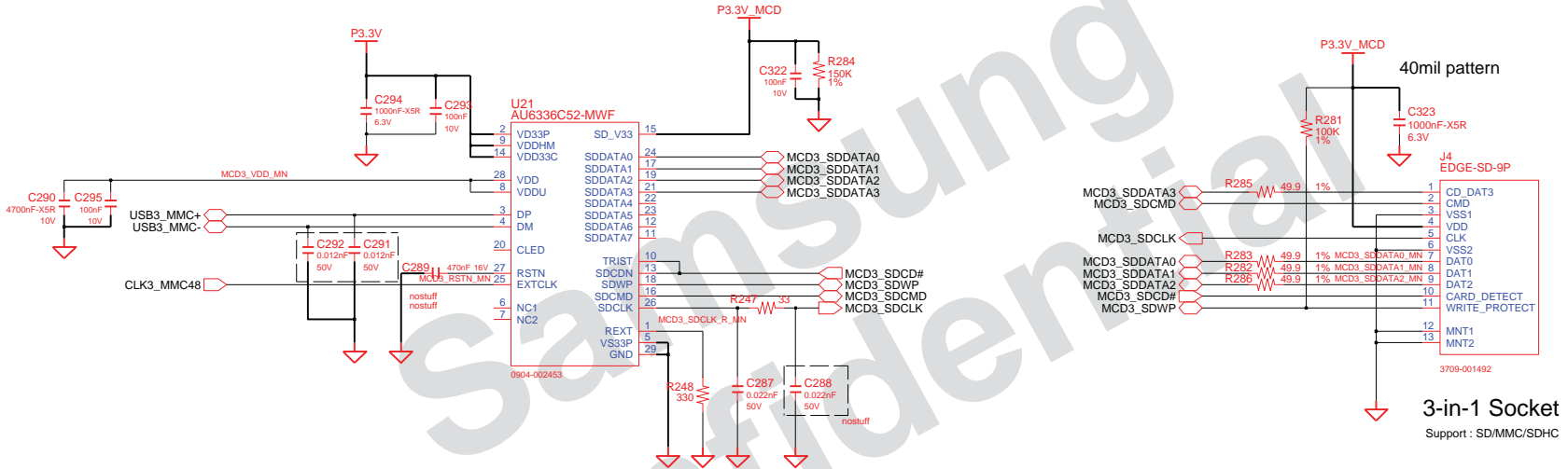
Express Card

Express Card Power Switch



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M EXPRESS CARD EXPRESS CARD	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				PART NO. BA41-01174A
					October 20, 2009 21:30:55 PM	PAGE 36 OF 56

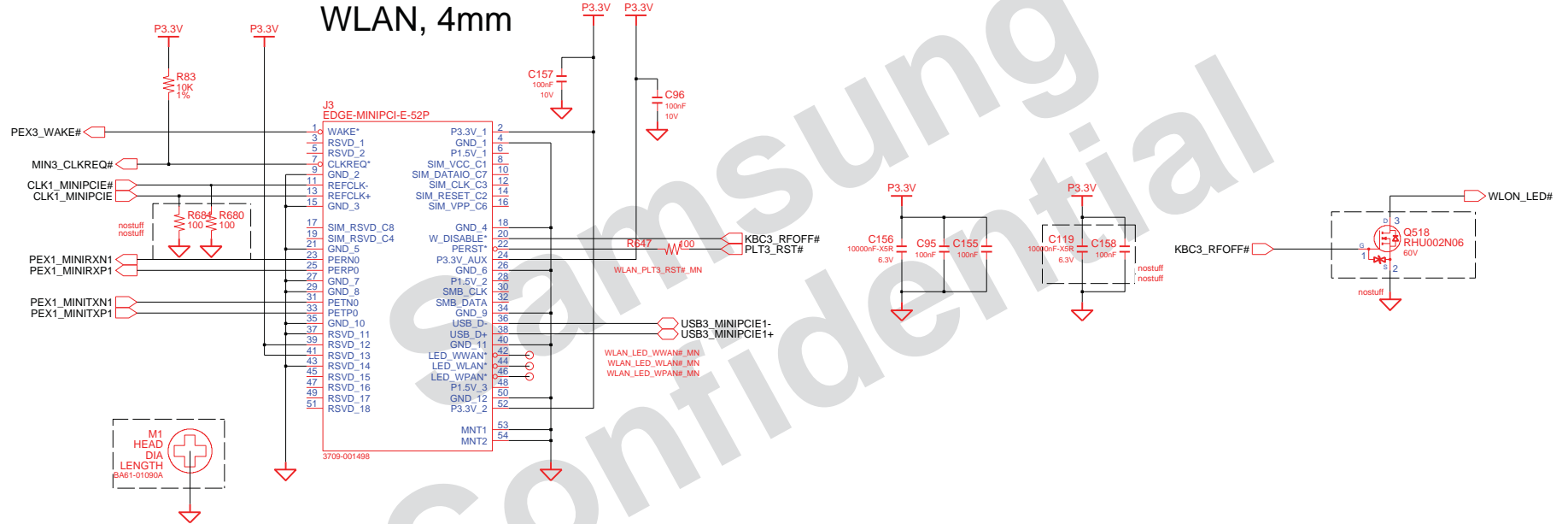
3 IN 1 CARD (AU6336)



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MULTICARD	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	3 IN 1 CARD(GL8275)	PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				

WLAN, 4mm

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

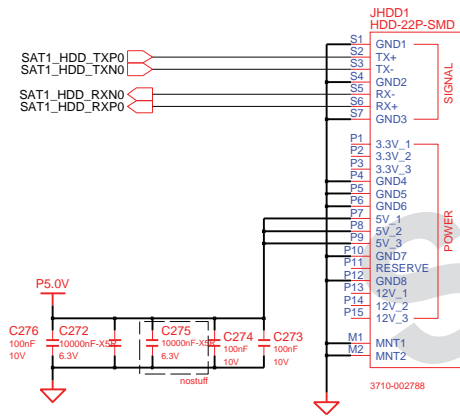


PEM : WLAN minicard (half type only)

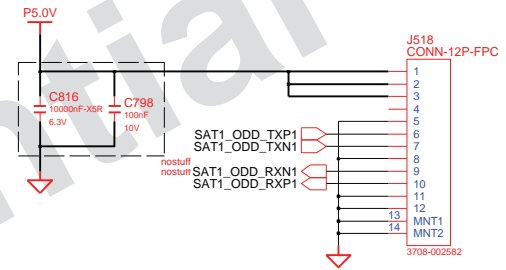
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MINI_PCIE_CONN WLAN
CHECK	SE LEE	DEV. STEP	PV	SAMSUNG ELECTRONICS PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9		
MODULE CODE	LAST EDIT			October 20, 2009 21:30:55 PM	PAGE 38 OF 56

SATA I/F CONN

SATA HDD CONN



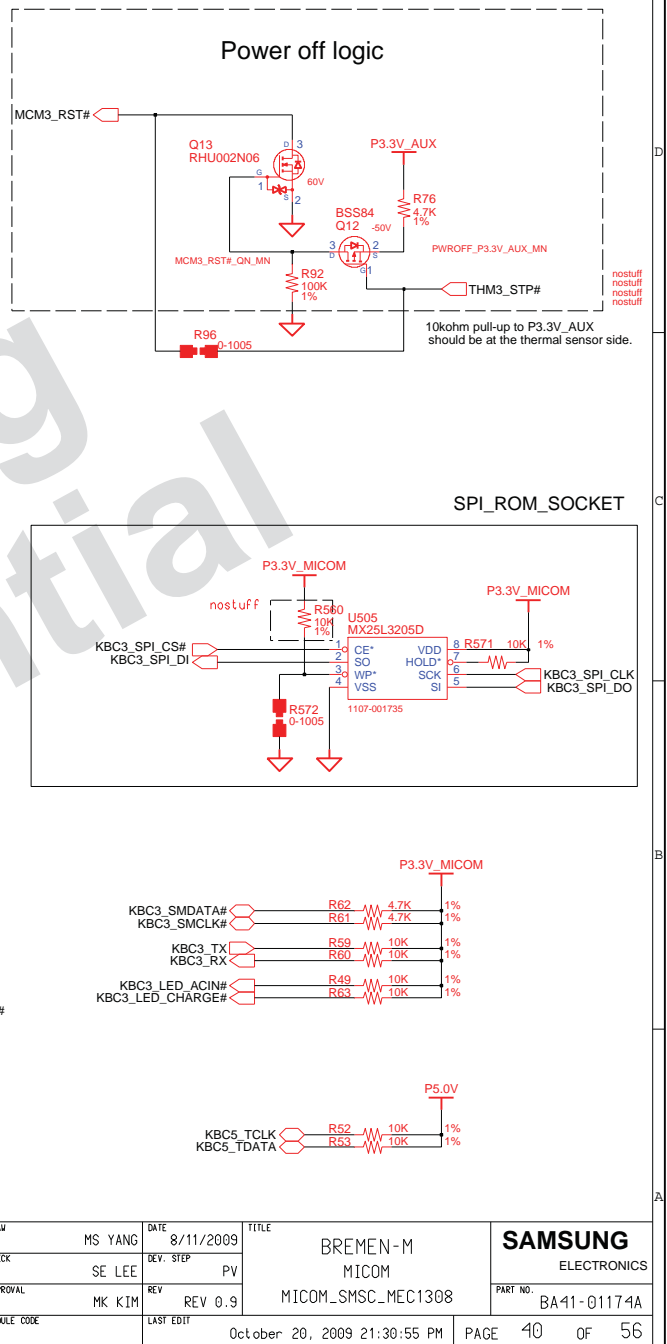
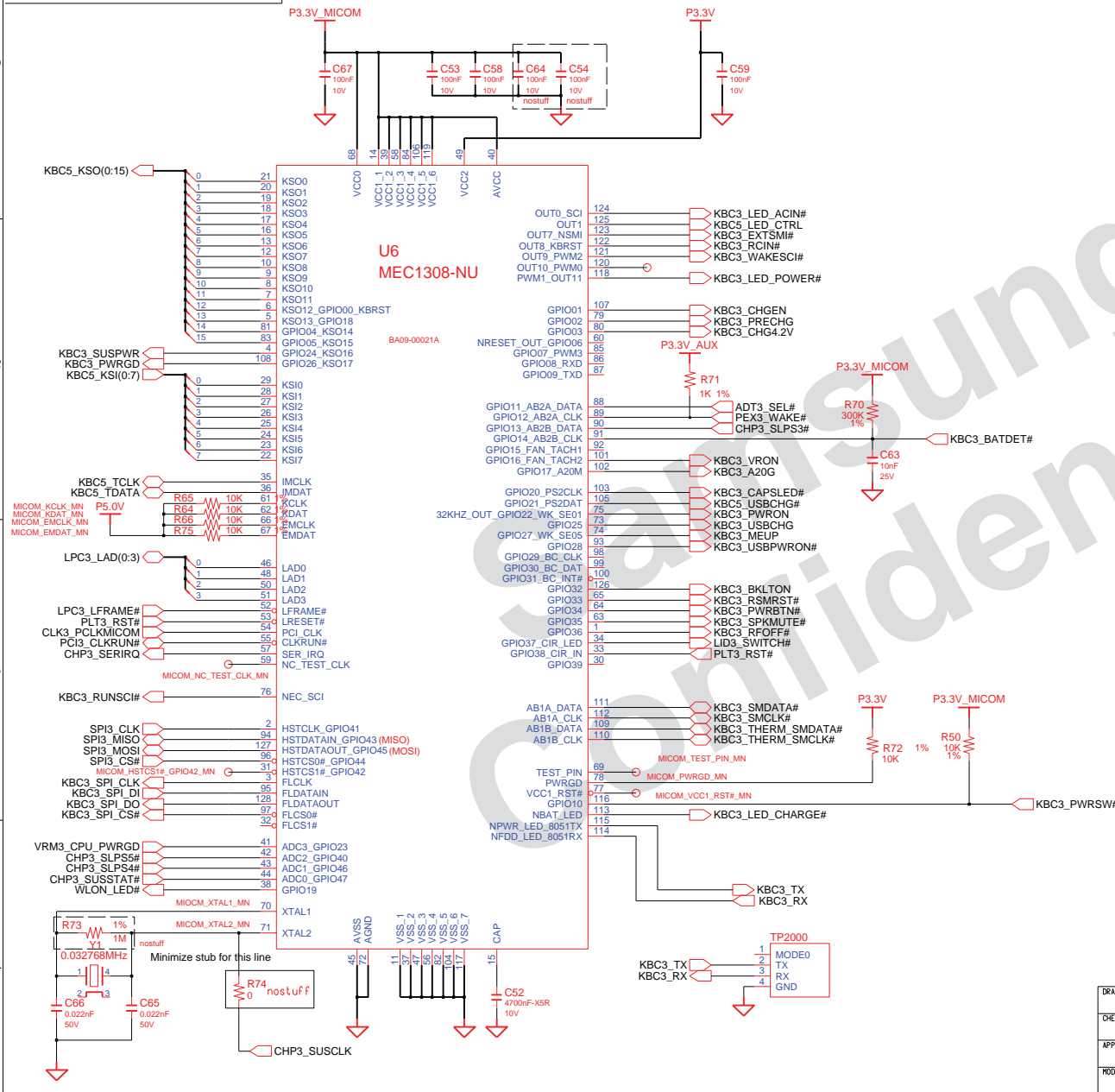
MAIN TO SUB SATA ODD CONN



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M SATA_DEVICES	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	HDD & ODD SUB CONNECTOR	PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				

October 20, 2009 21:30:55 PM PAGE 39 OF 56

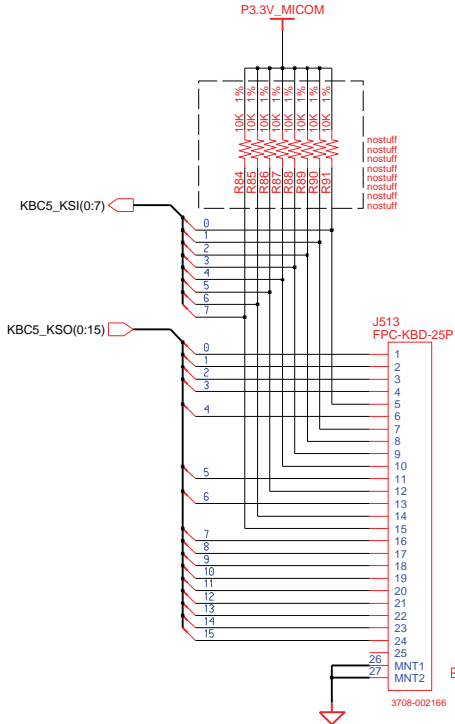
MAIN BOARD (MICOM)



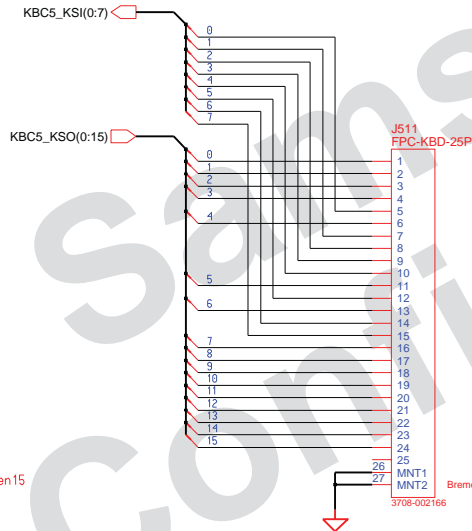
DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MICOM	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	APPROVAL	MK KIM	
MODULE CODE		LAST EDIT	REV 0.9	MICOM_SMSC_MEC1308		PART NO. BA41-01174A
October 20, 2009 21:30:55 PM						PAGE 40 OF 56

Micom Glue Logic

KEYBOARD

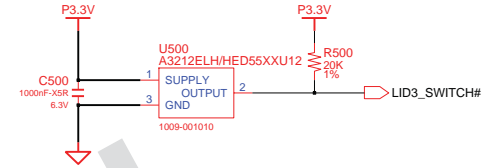


Keyboard Mount

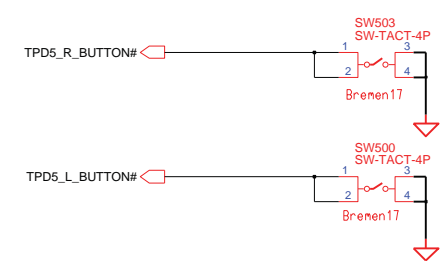
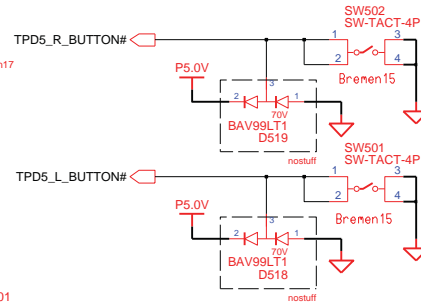
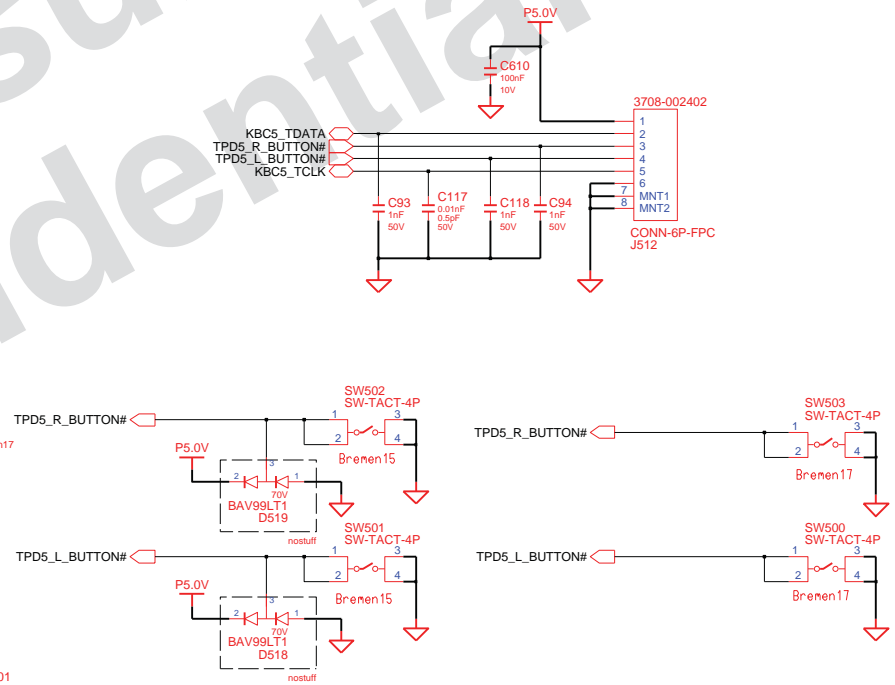


Bremen17 Bremen15

LID_SWITCH

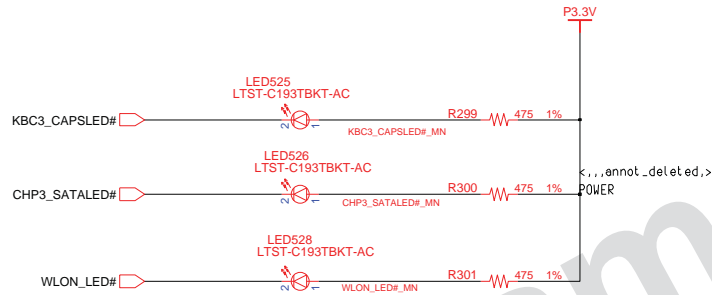


TOUCHPAD

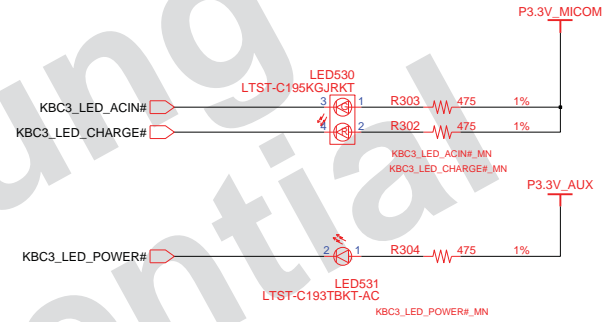


DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M MICOM GLUE LOGIC KEYBOARD & TOUCHPAD	SAMSUNG
CHECK	SE LEE	DEV. STEP	PV			ELECTRONICS
APPROVAL	MK KIM	REV	REV 0.9			PART NO. BA41-01174A
MODULE CODE		LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE 41	OF 56

FUNCTION KEY LED



ADAPTERIN/CHARGING LED

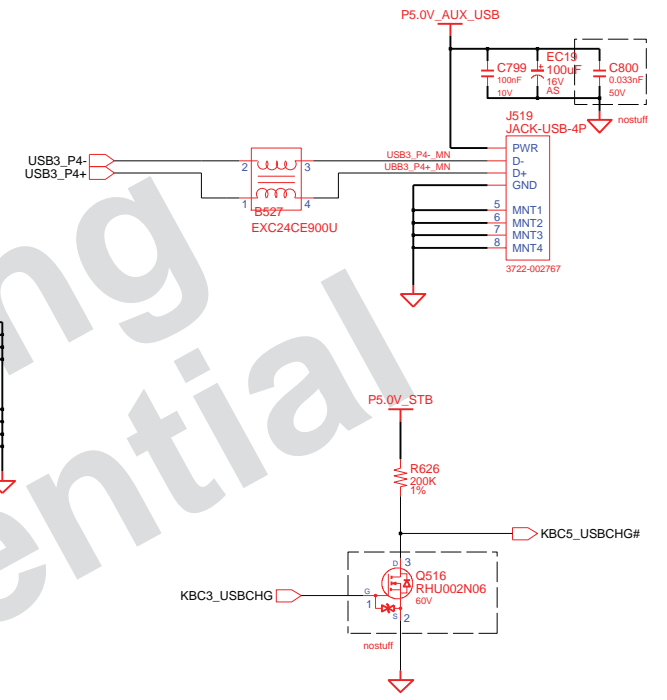
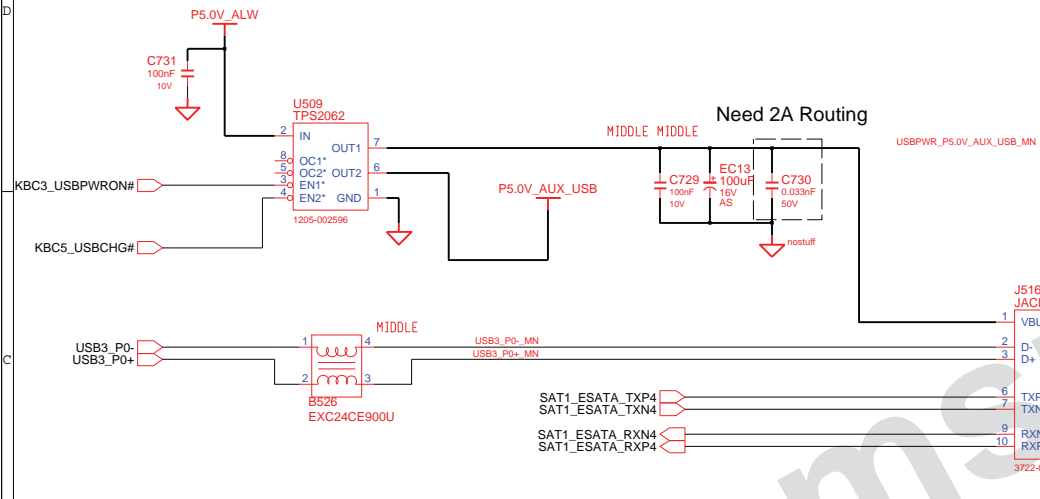


Samsung
Confidential

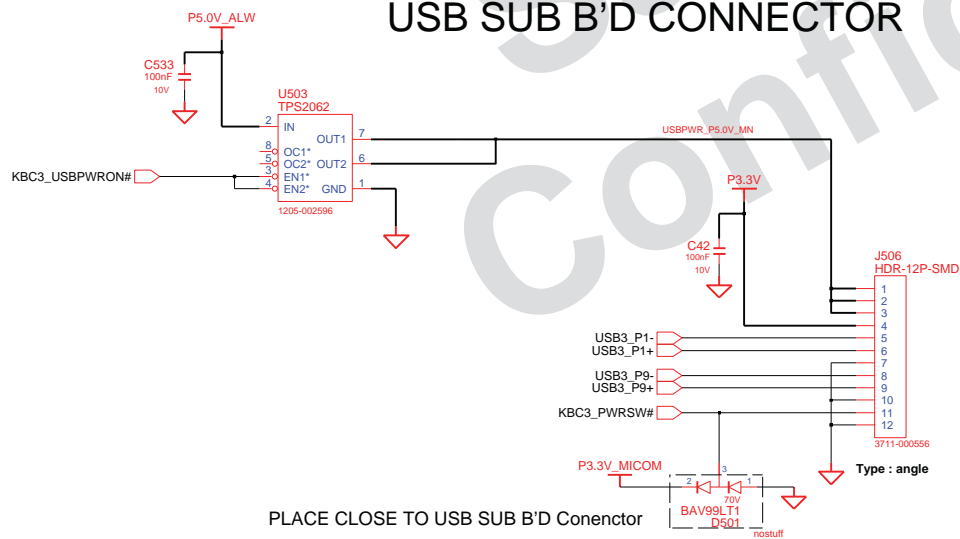
DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M LED_SWITCH	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9		LED_SWITCH	PART NO. BA41-01174A
MODULE CODE		LAST EDIT				October 20, 2009 21:30:55 PM
						PAGE 42 OF 56

USB + eSATA CONNECTOR

USB Single connector



USB SUB B'D CONNECTOR

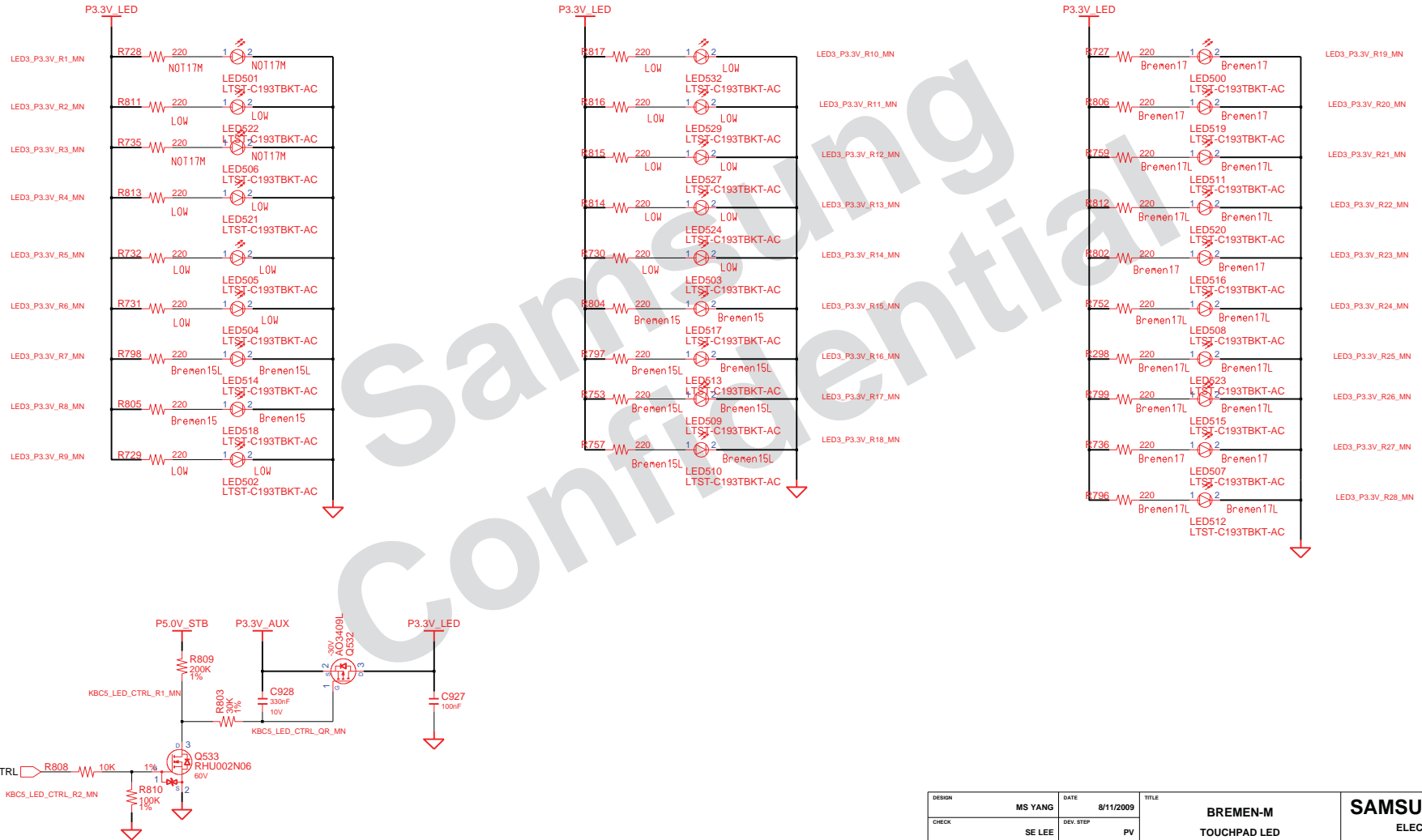


PLACE CLOSE TO USB SUB B'D Conenctor

for sleep in charge

DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M USB_CONN	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	APPROVAL	USB & eSATA	
APPROVAL	MK KIM	REV	REV 0.9	MODULE CODE		PART NO. BA41-01174A
		LAST EDIT				

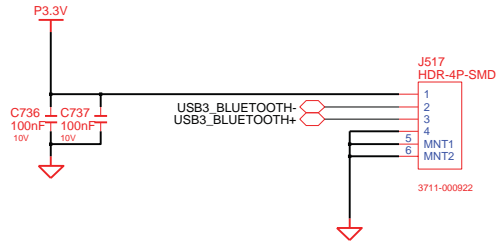
Touchpad LED



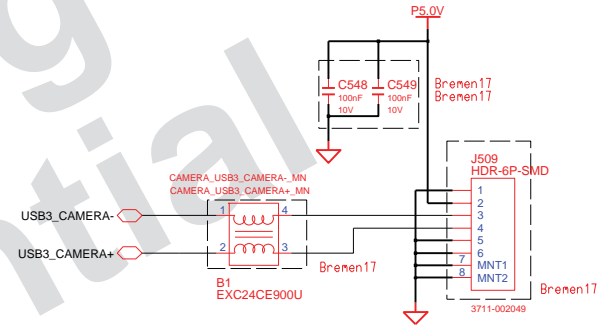
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M TOUCHPAD LED		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	TOUCHPAD LED		PART NO.	
APPROVAL	MK KIM	REV	REV 0.9			BA41-01174A	
MODULE CODE	LAST EDIT				October 20, 2009 21:30:55 PM	PAGE 44	OF 56

USB I/F Devices

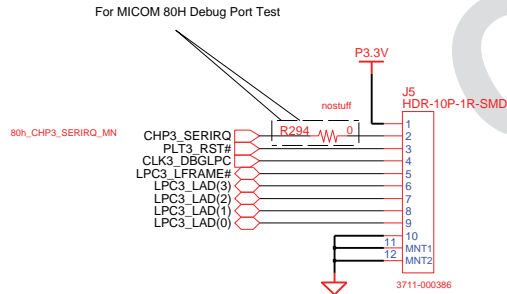
Bluetooth Interface



CAMERA (17Inch)



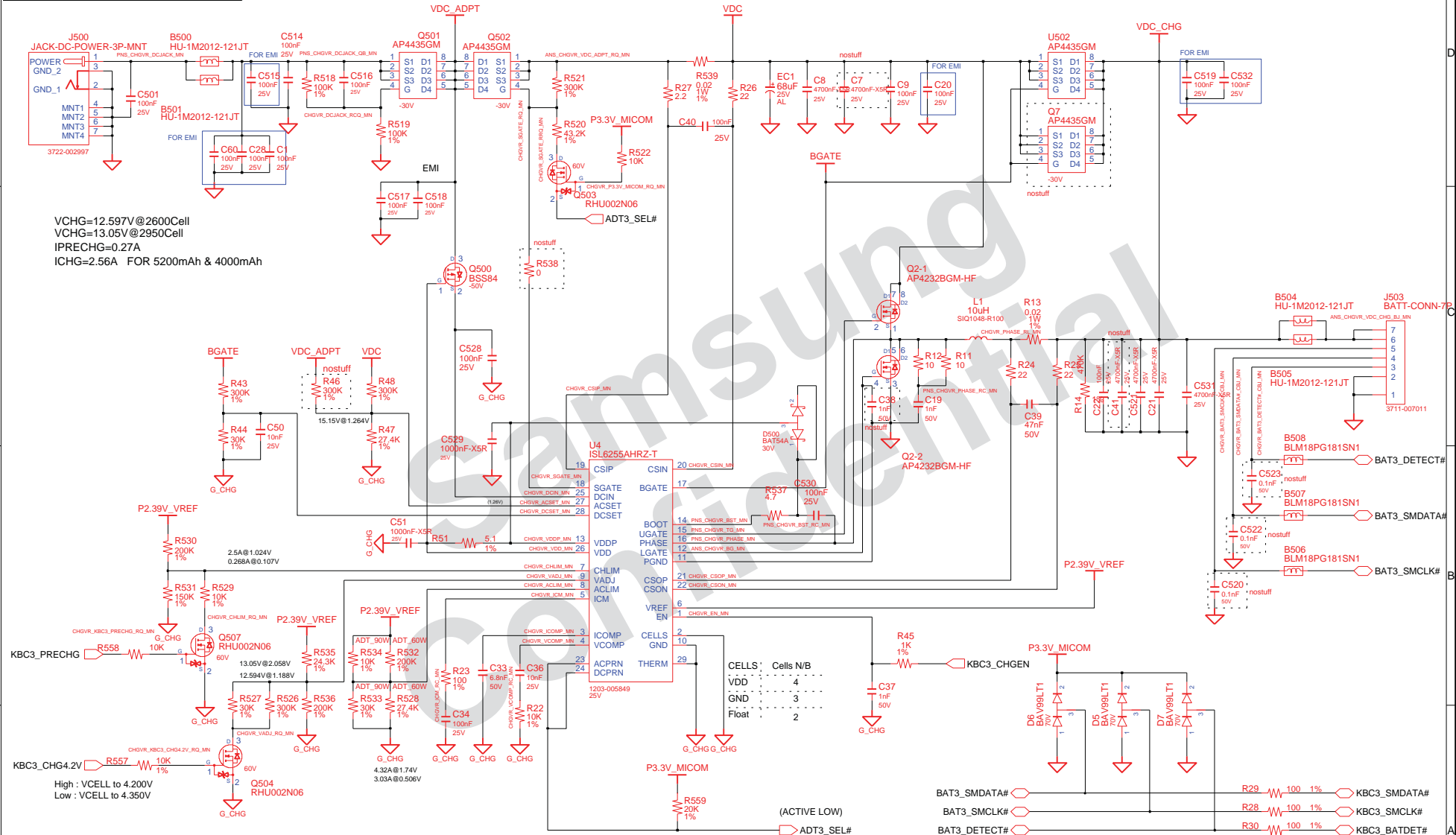
80h PORT DEBUG



DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M USB_DEVICES		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	BLUETOOTH & CAMERA		PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9	October 20, 2009 21:30:55 PM		PAGE	45 OF 56
MODULE CODE	LAST EDIT						

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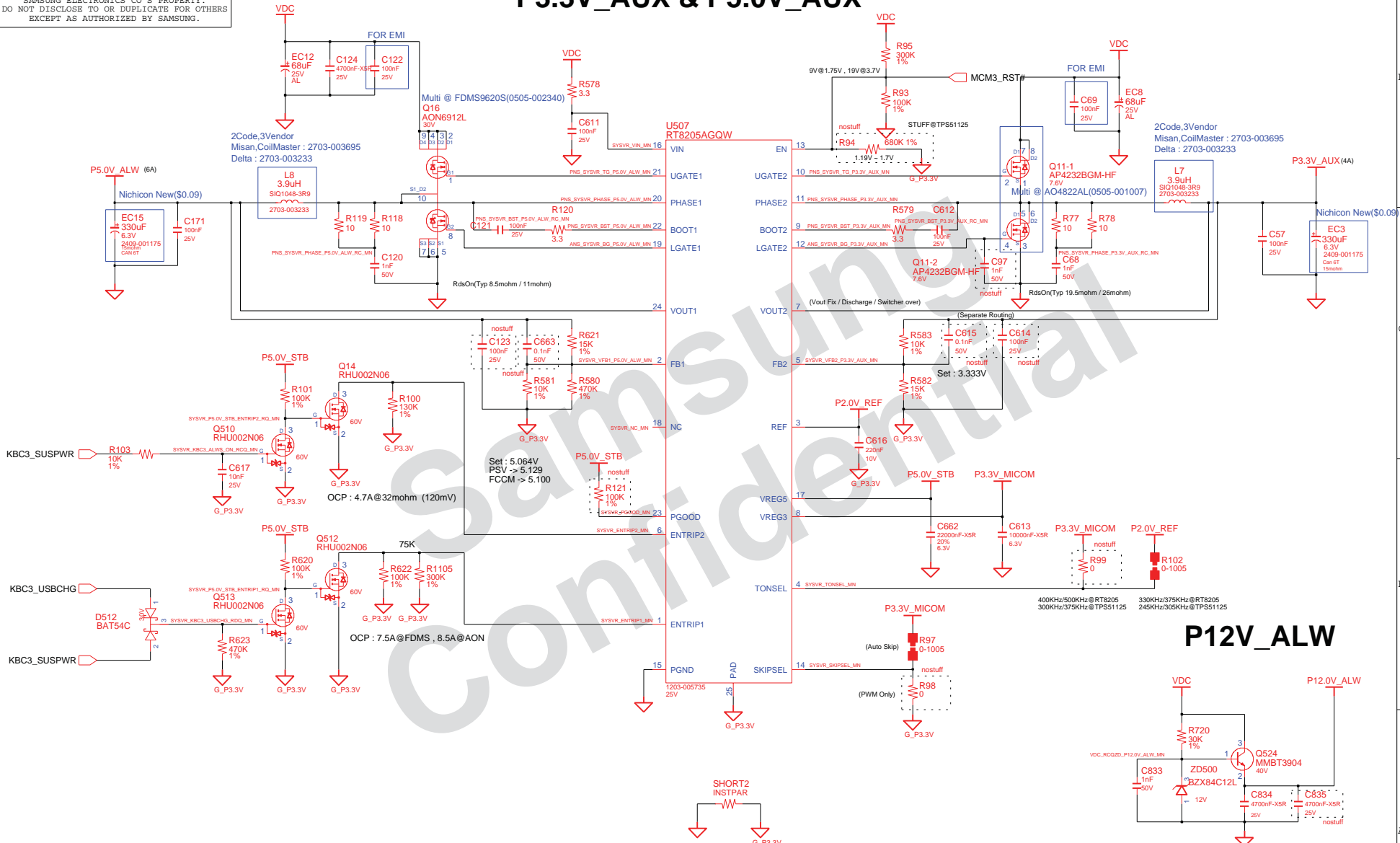
CHARGER & POWER MANAGEMENT



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M CHARGER	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	Part No.	BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9	MODULE CODE	undefined	LAST EDIT
				October 20, 2009 21:30:55 PM	PAGE 46	OF 56

P3.3V_AUX & P5.0V_AUX

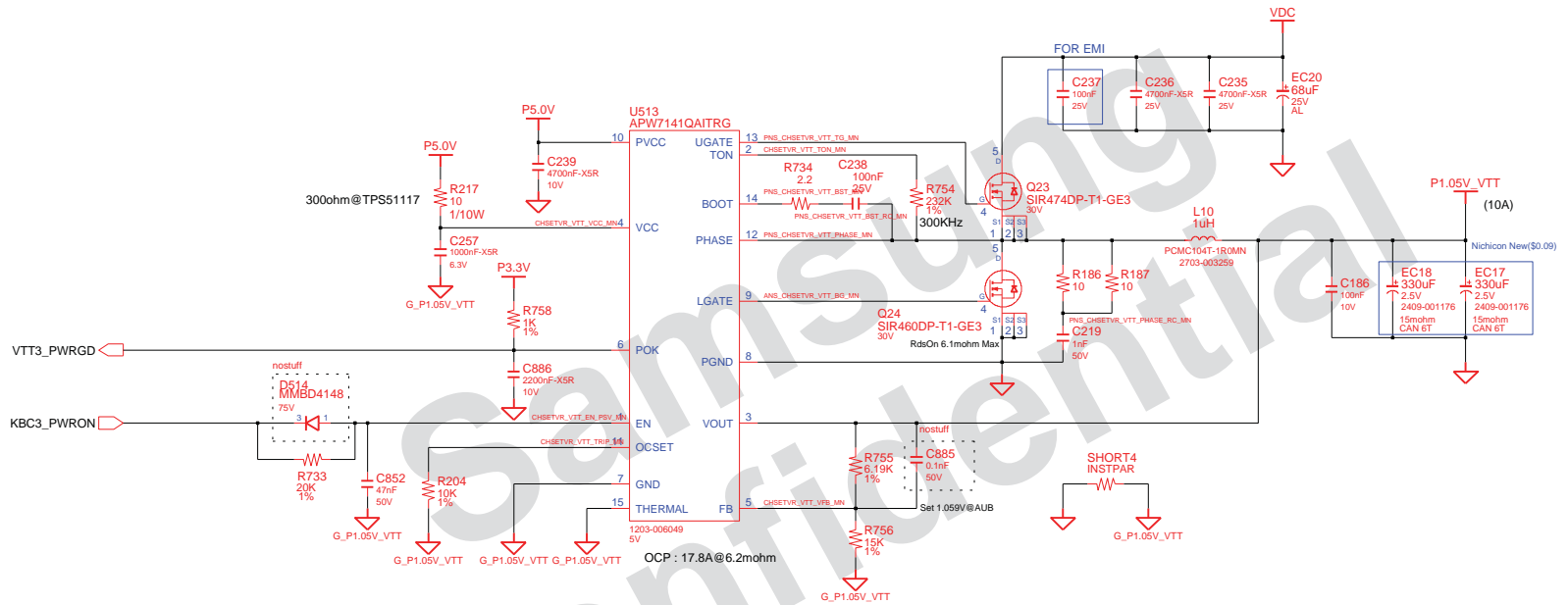
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P12V_ALW

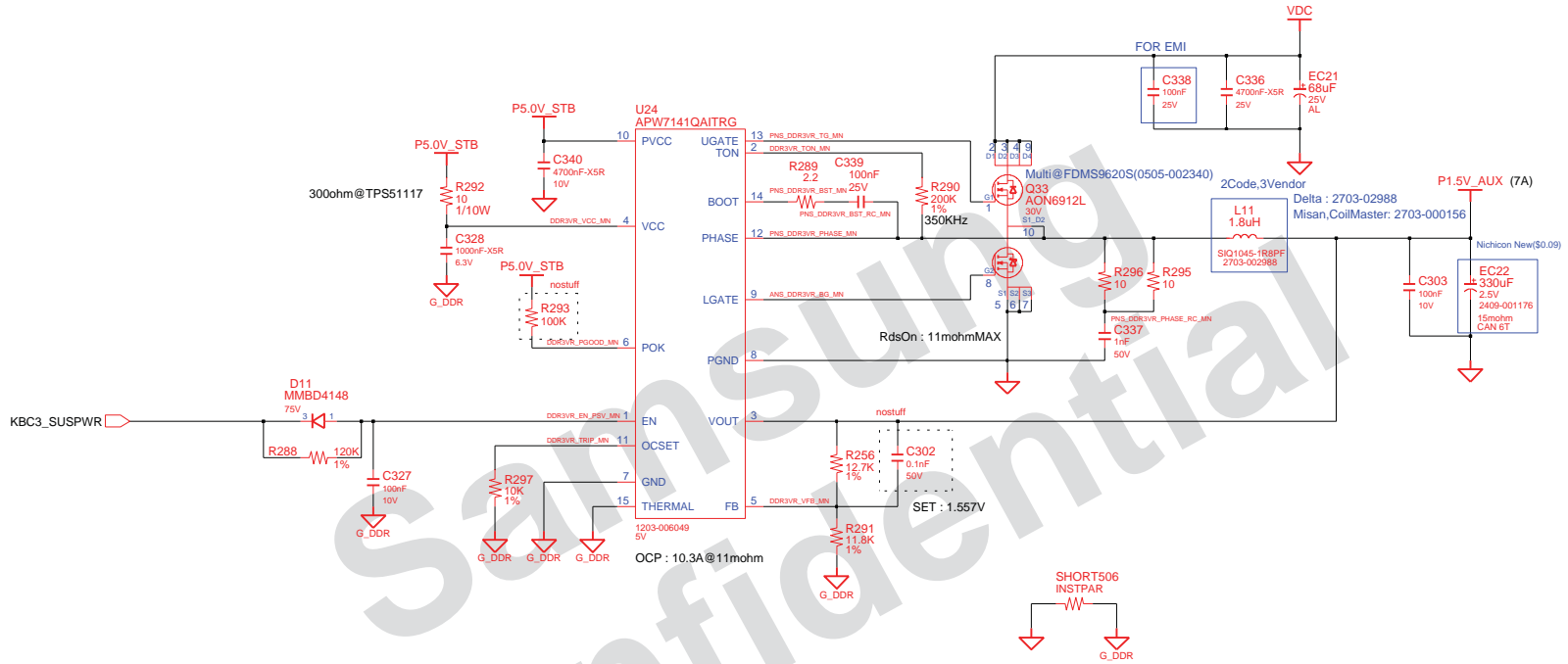
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	P3.3V_ALW / P5.0V_ALW		
APPROVAL	MK KIM	REV	REV 0.9	P3.3V_AUX & P5.0V_AUX		PART NO. BA41-01174A
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM	PAGE 47 OF 56	

CHIPSET POWER(P1.05V_VTT)

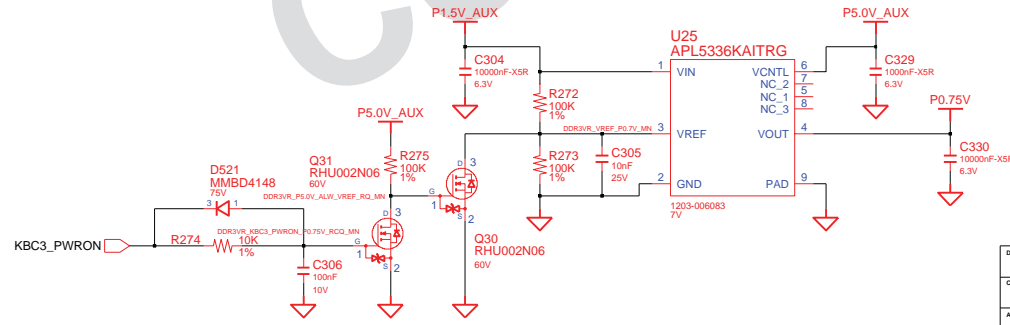


DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M Chipset Power	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	REV	Chipset Power (P1.05VTT)	
APPROVAL	MK KIM	REV	0.9	LAST EDIT	October 20, 2009 21:30:55 PM	PART NO. BA41-01174A
MODULE CODE	undefined					PAGE 48 OF 56

DDR3 Power

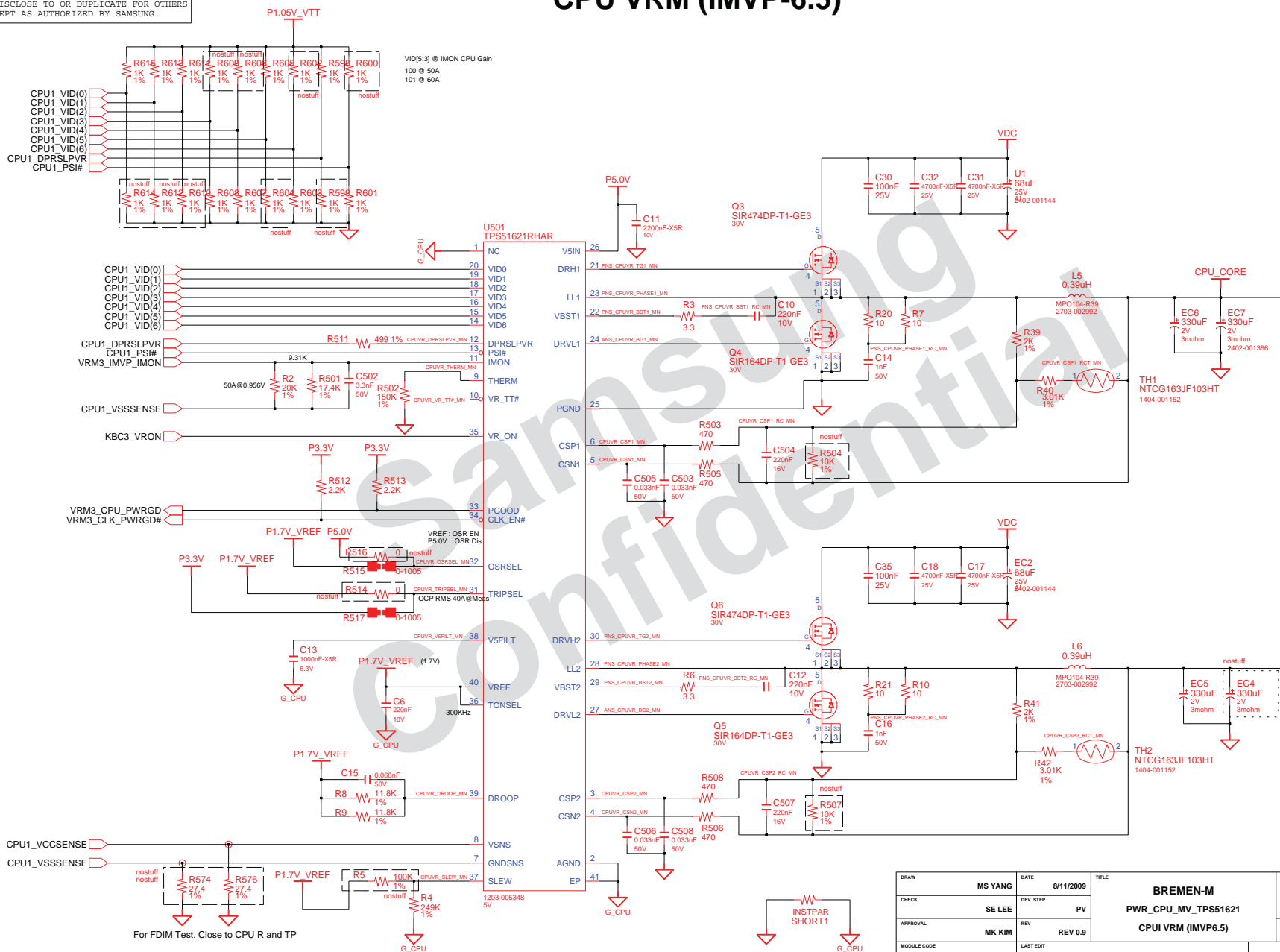


DDR3 VTT(0.75V)



DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M PWR_MEMORY		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	DDR3 POWER		PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9				
MODULE CODE	undefined	LAST EDIT					
				October 20, 2009 21:30:55 PM	PAGE	49	OF 56

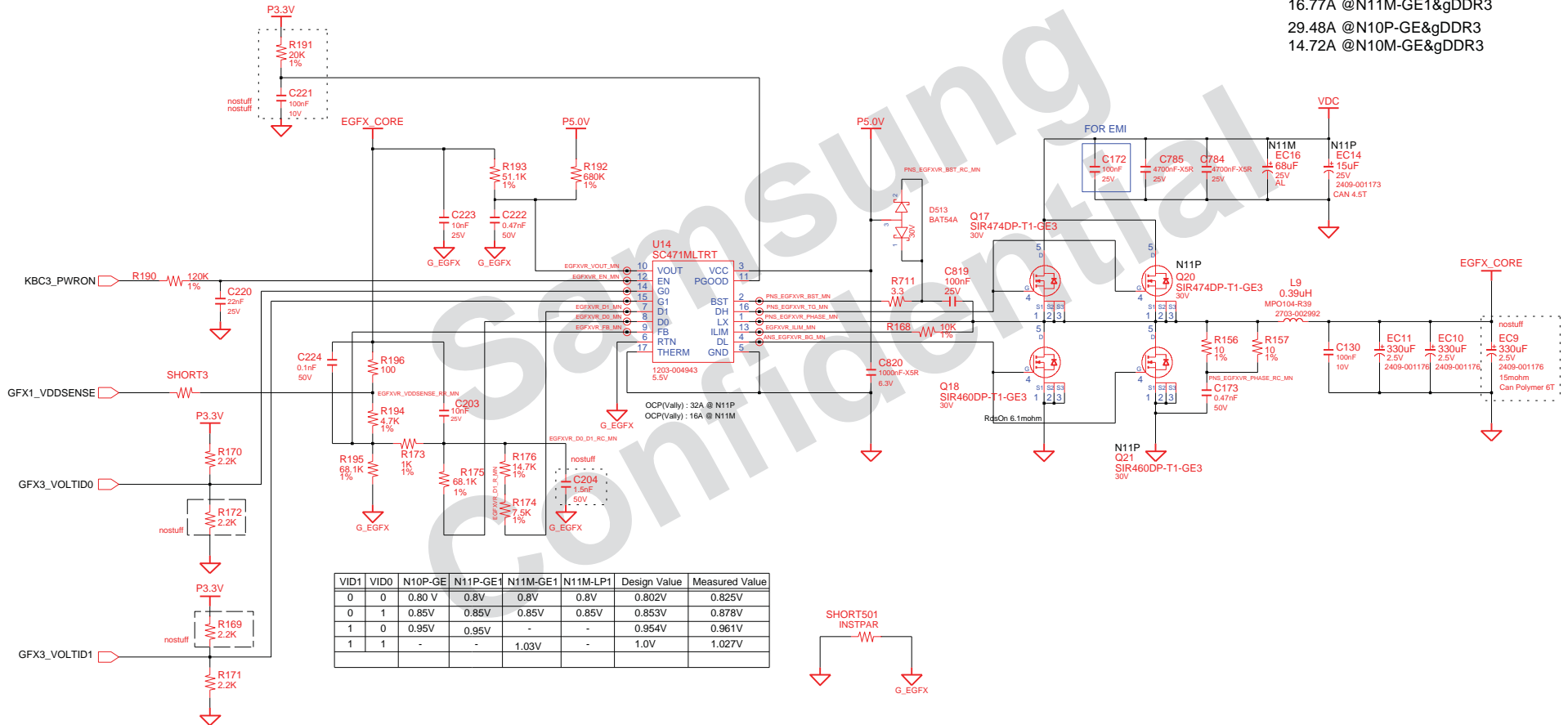
CPU VRM (IMVP-6.5)



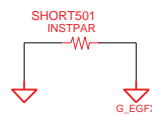
DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	PWR_CPU_MV_TPS51621		
APPROVAL	MK KIM	REV	REV 0.9	CPU1 VRM (IMVP6.5)		PART NO. BA41-01174A
MODULE CODE	undefined	LAST EDIT		October 20, 2009 21:30:55 PM		PAGE 50 OF 56

External Graphic Core Power

31.66A @N11P-GE1&gDDR3
 16.77A @N11M-GE1&gDDR3
 29.48A @N10P-GE&gDDR3
 14.72A @N10M-GE&gDDR3



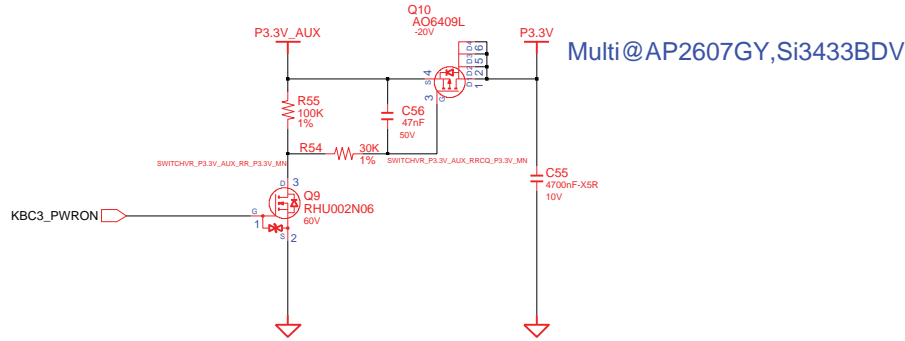
VID1	VID0	N10P-GE	N11P-GE1	N11M-GE1	N11M-LP1	Design Value	Measured Value
0	0	0.80 V	0.8V	0.8V	0.8V	0.802V	0.825V
0	1	0.85V	0.85V	0.85V	0.85V	0.853V	0.878V
1	0	0.95V	0.95V	-	-	0.954V	0.961V
1	1	-	-	1.03V	-	1.0V	1.027V



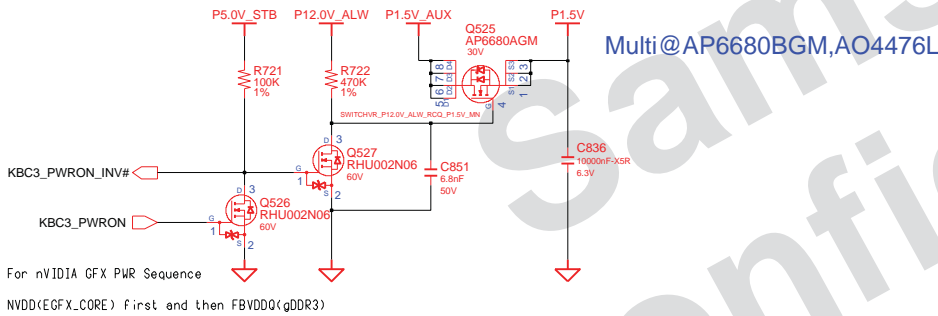
DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M PWR_GFX_MW_EXT	SAMSUNG ELECTRONICS PART NO. BA41-01174A
CHECK	SE LEE	DEV. STEP	PV	APPROVAL	External Graphic Power	
APPROVAL	MK KIM	REV	REV 0.9	MODULE CODE		
		LAST EDIT				

Switched Power

Switched Power On (P3.3V)



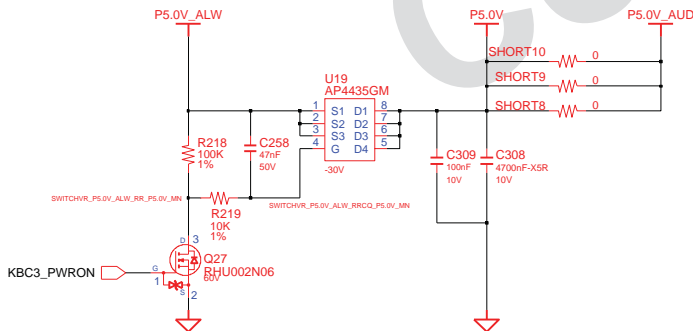
Switched Power On (P1.5V)



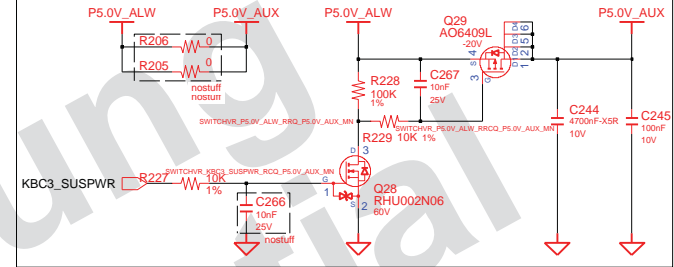
For nVIDIA GFX PWR Sequence

NVDD(EGFX_CORE) First and then FBVDD0(gDDR3)

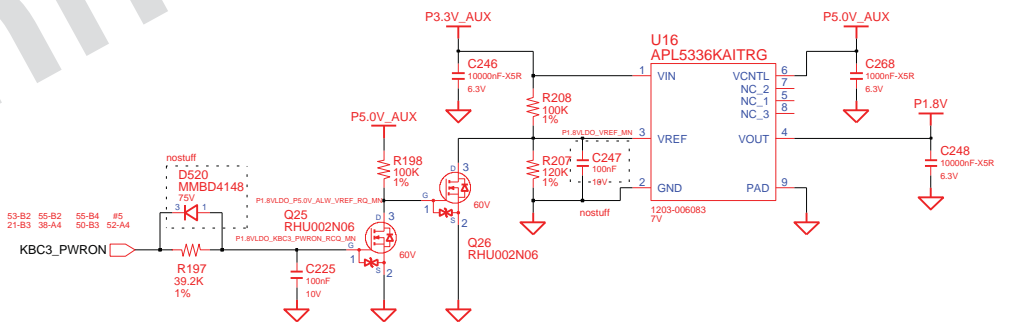
Switched Power On (P5.0V) Multi@Si443DDY



Sleep'n Charger

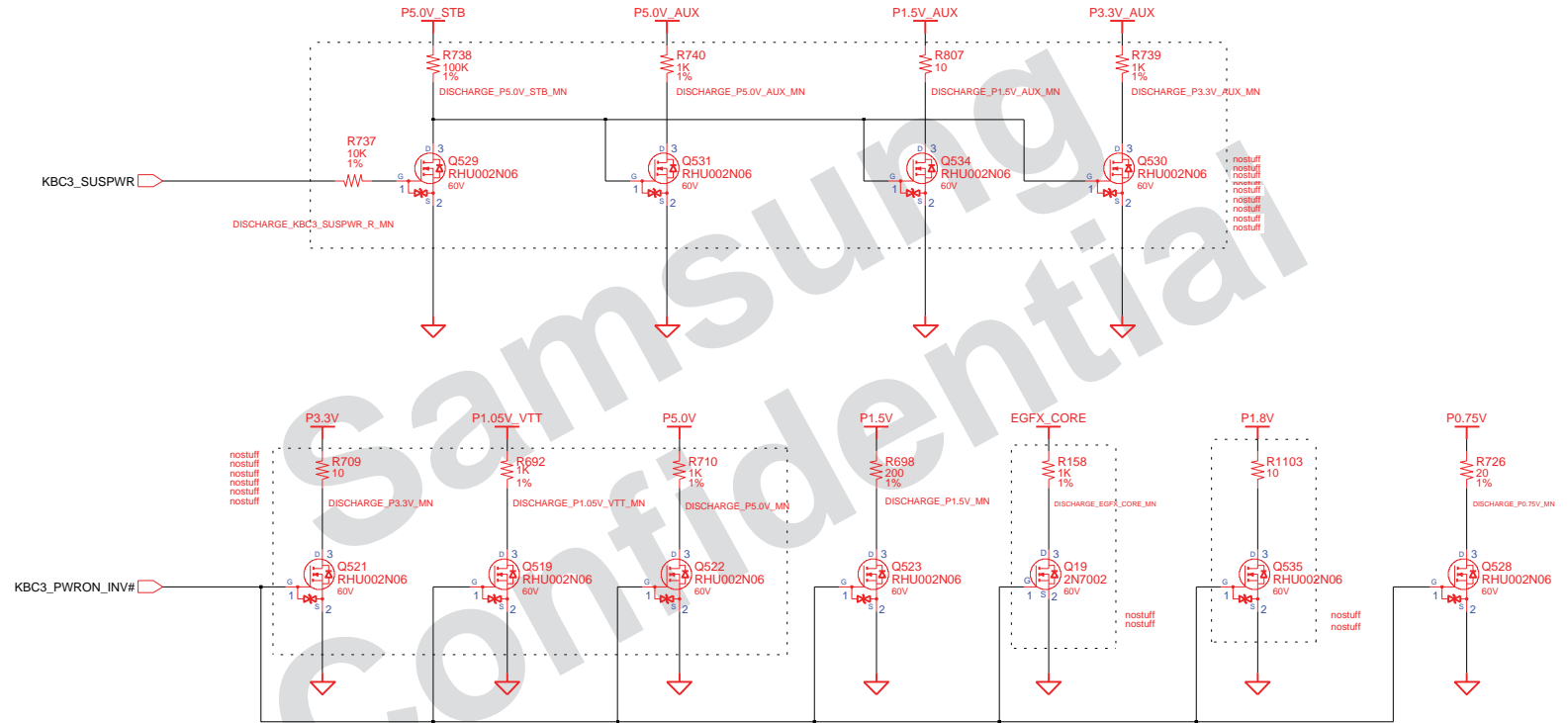


P1.8V(LDO)



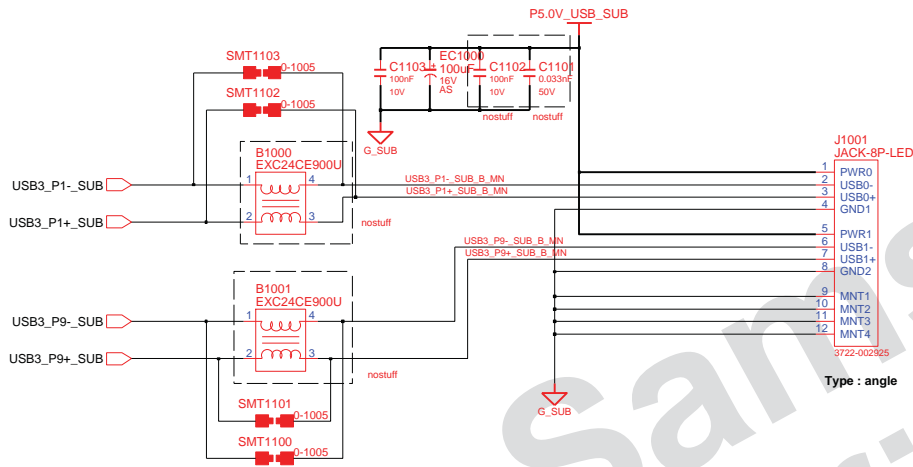
DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M PWR_MV_SWITCHED		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	APPROVAL	MK KIM	REV 0.9	
MODULE CODE		LAST EDIT		October 20, 2009 21:30:55 PM			PAGE 52 OF 56

POWER DISCHARGER

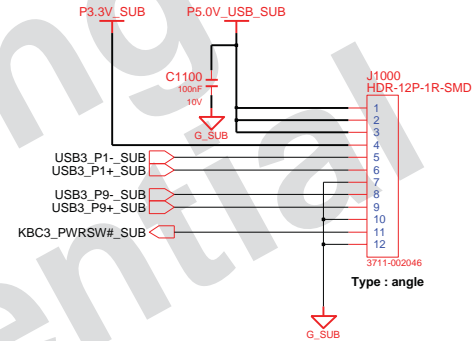


DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M PWR_MV_DISCHARGER DISCHARGING LOGIC	SAMSUNG ELECTRONICS <small>PART NO.</small> BA41-01174A
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE	undefined	LAST EDIT				
				October 20, 2009 21:30:55 PM	PAGE	53 OF 56

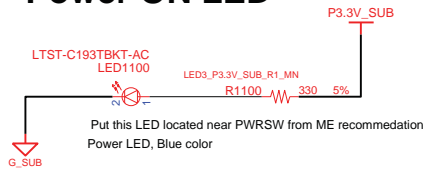
2 USB PORT & POWER S/W SUB B'D



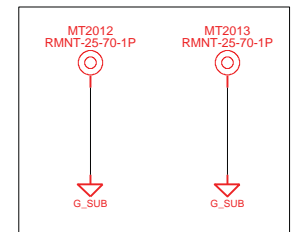
SUB TO MAIN USB CONN



Power ON LED



Power Button



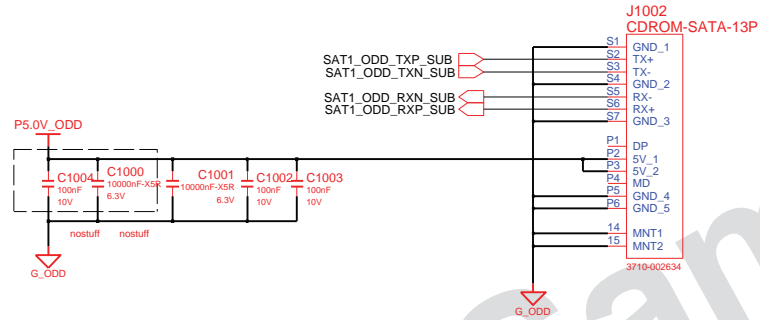
USB sub board mount hole

DESIGN	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M SUB BOARD1	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	2 USB & POWER SW		
APPROVAL	MK KIM	REV	REV 0.9		PART NO.	BA41-01174A
MODULE CODE		LAST EDIT			October 20, 2009 21:30:55 PM	PAGE 54 OF 56

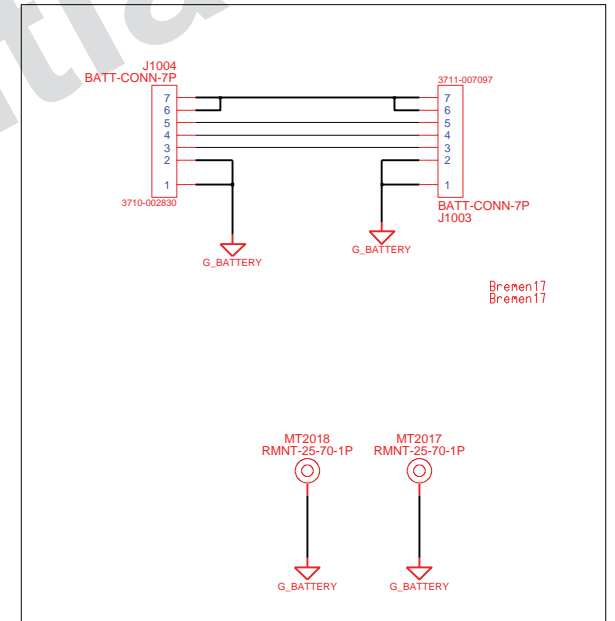
SATA ODD SUB BOARD

SATA ODD SUB BOARD

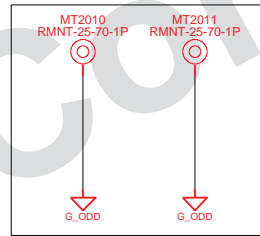
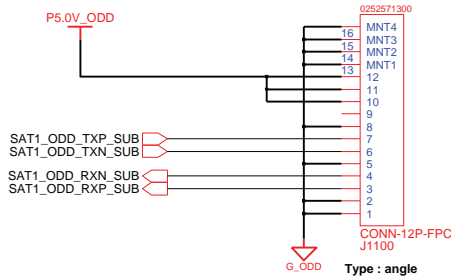
SATA ODD CONN



17" BATTERY SUBBOARD



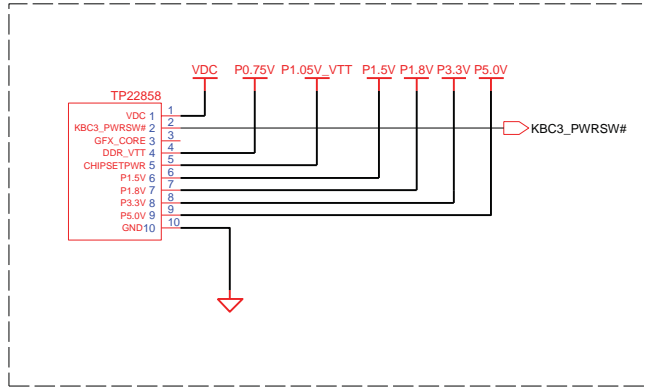
SUB TO MAIN SATA ODD CONN



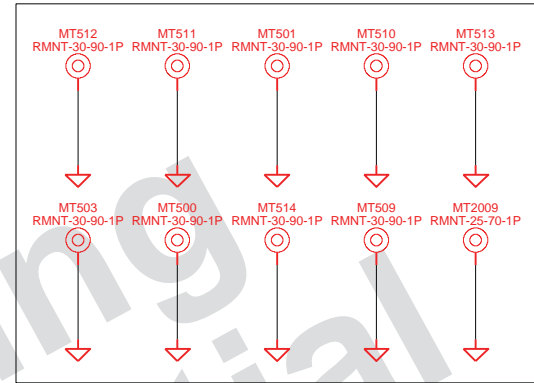
ODD sub board mount hole

DRAW	MS YANG	DATE	8/11/2009	TITLE	BREMEN-M SUB BOARD2		SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV	SATA ODD SUB BOARD		PART NO. BA41-01174A	
APPROVAL	MK KIM	REV	REV 0.9				
MODULE CODE	undefined	LAST EDIT		October 20, 2009 21:30:55 PM	PAGE	55	OF 56

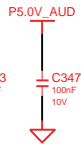
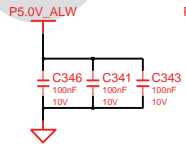
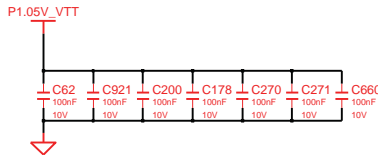
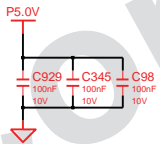
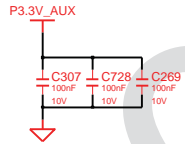
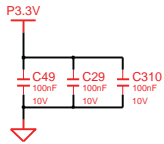
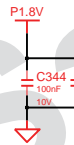
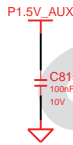
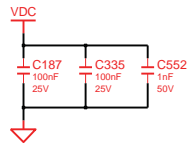
ICT PORT



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	8/11/2009	TITLE	BREMEN-M ICT PORT ICT PORT	SAMSUNG ELECTRONICS
CHECK	SE LEE	DEV. STEP	PV			
APPROVAL	MK KIM	REV	REV 0.9			
MODULE CODE		LAST EDIT				PART NO. BA41-01174A
				October 20, 2009 21:30:55 PM	PAGE	56 OF 56