

BREMEN2-L

CPU : Intel Arrandale
 Chip Set : Intel Ixex 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

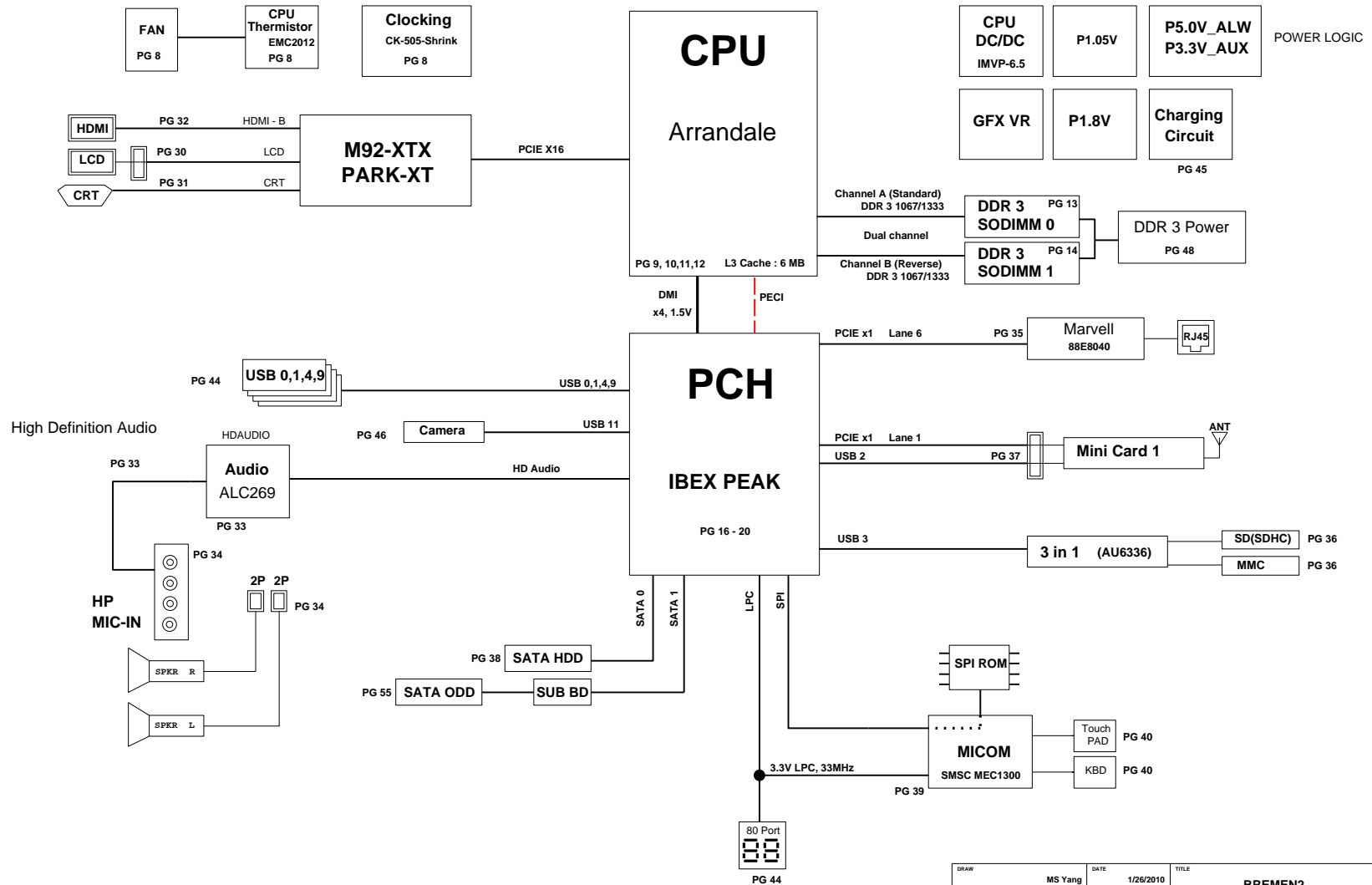
Design	CHECK	APPROVAL
MS Yang	SE Lee	MK Kim

Owner : SEC Mobile R & D Signature : X

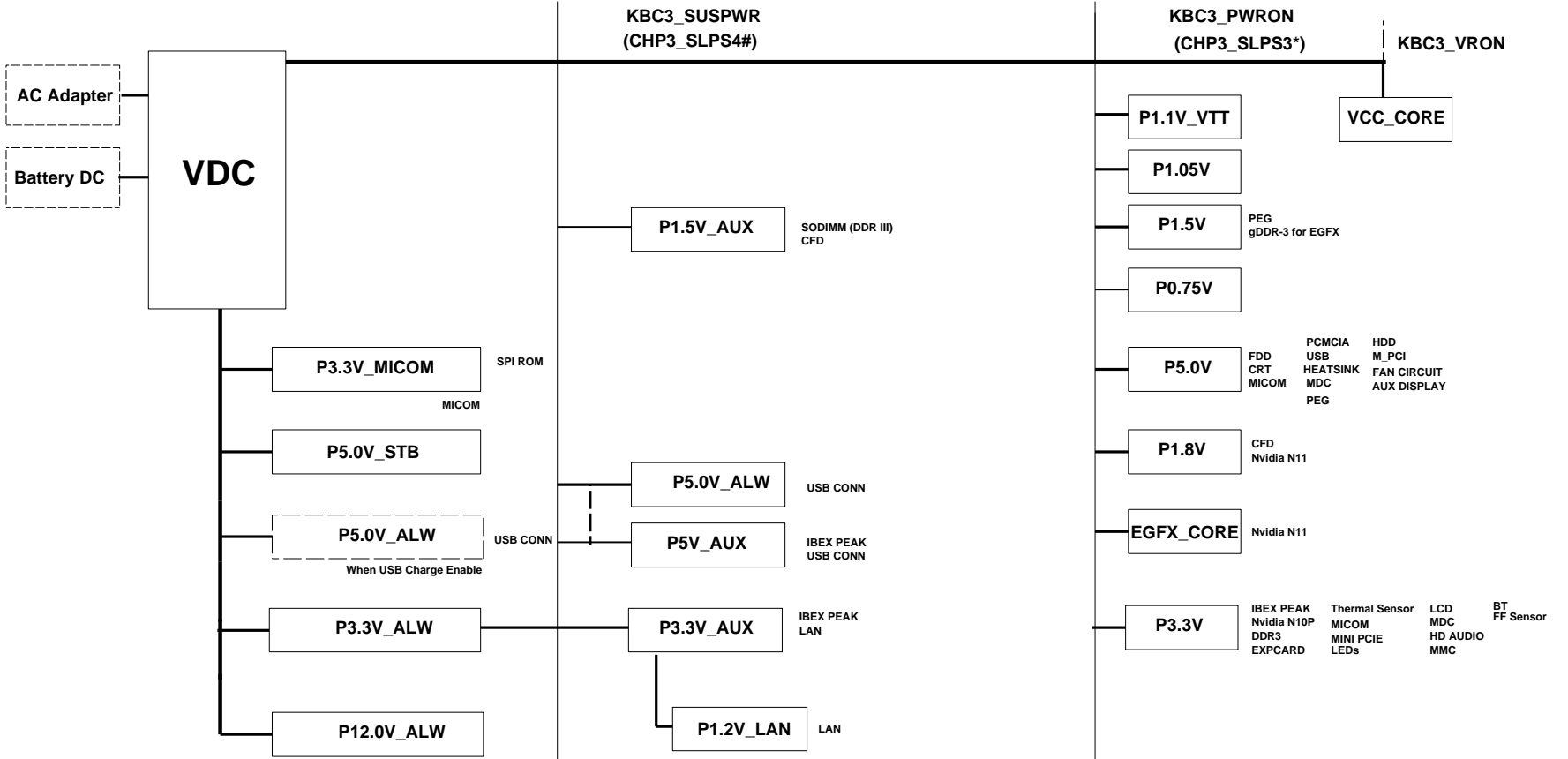
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 Sheet 47. PWR_Memory
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 Sheet 51. PWR_MV_DisCharger
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 Sheet 53. SATA ODD SUB B'D Battery IF B'D
 Sheet 54. EMC Capacitor & ICT Port

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

BLOCK DIAGRAM



DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 MAIN	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1		BLOCK DIAGRAM	PART NO.
MODULE CODE	undefined	LAST EDIT				BA41-
				March 06, 2010 17:48:35 PM	PAGE	2 OF 54



Power On/Off Table by S-state

Rail	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	---	---	---

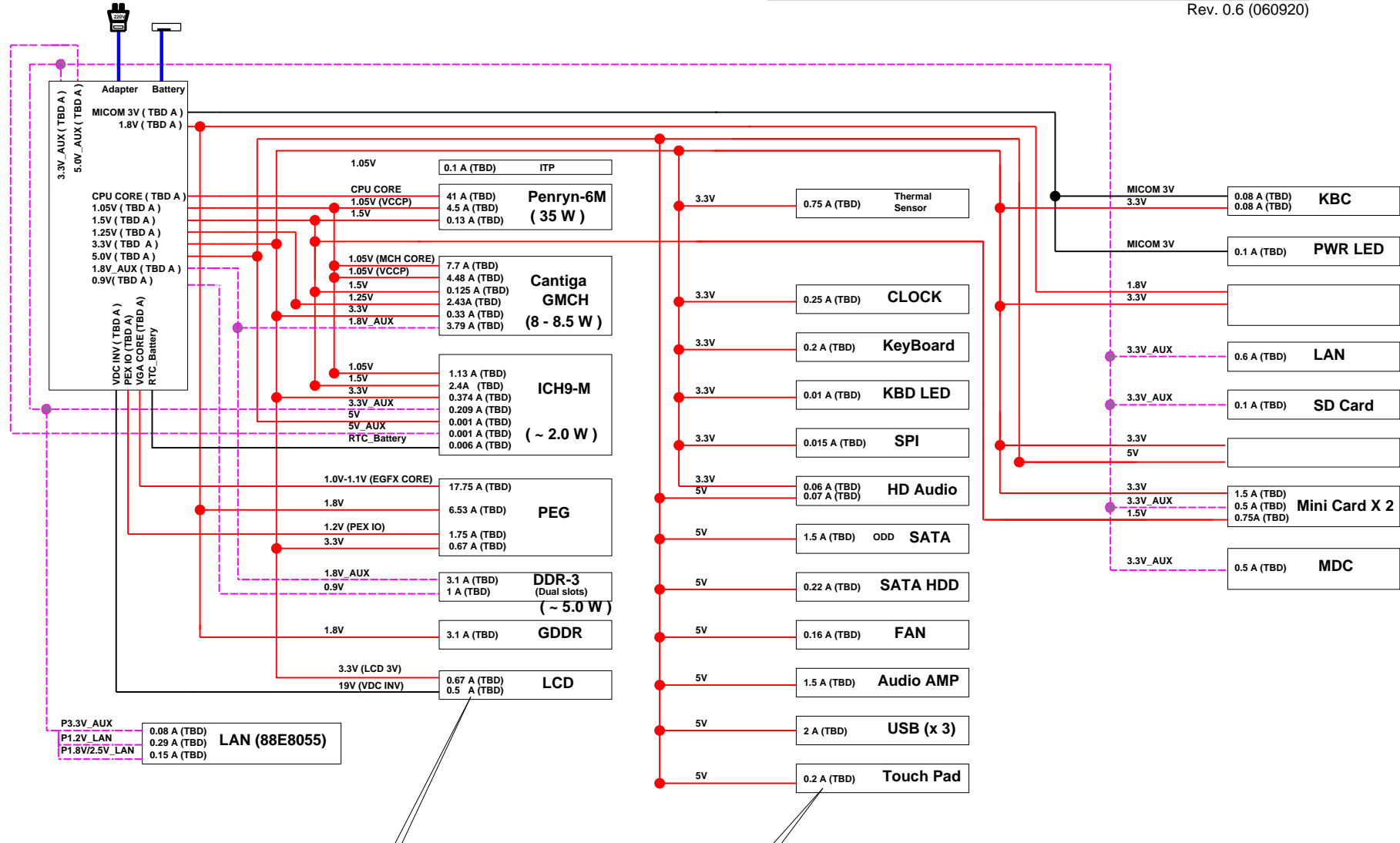


DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 MAIN	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	POWER DIAGRAM		
APPROVAL	MK Kim	REV	REV 0.1	PART NO.		BA41-
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	3	OF 54

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POWER RAILS ANALYSIS

Rev. 0.6 (060920)

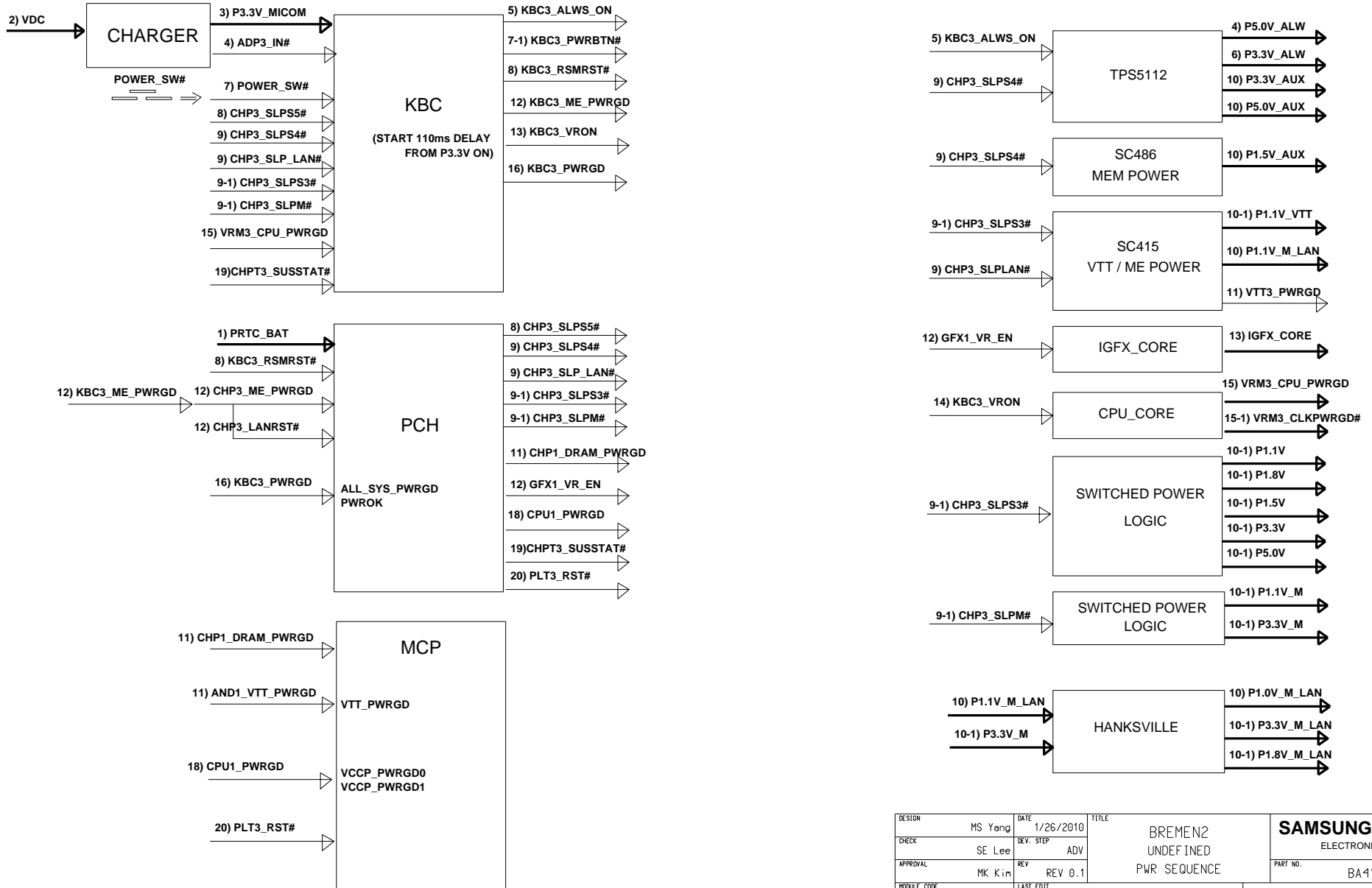


Value by Datasheet/Application notes (Value by measurement)

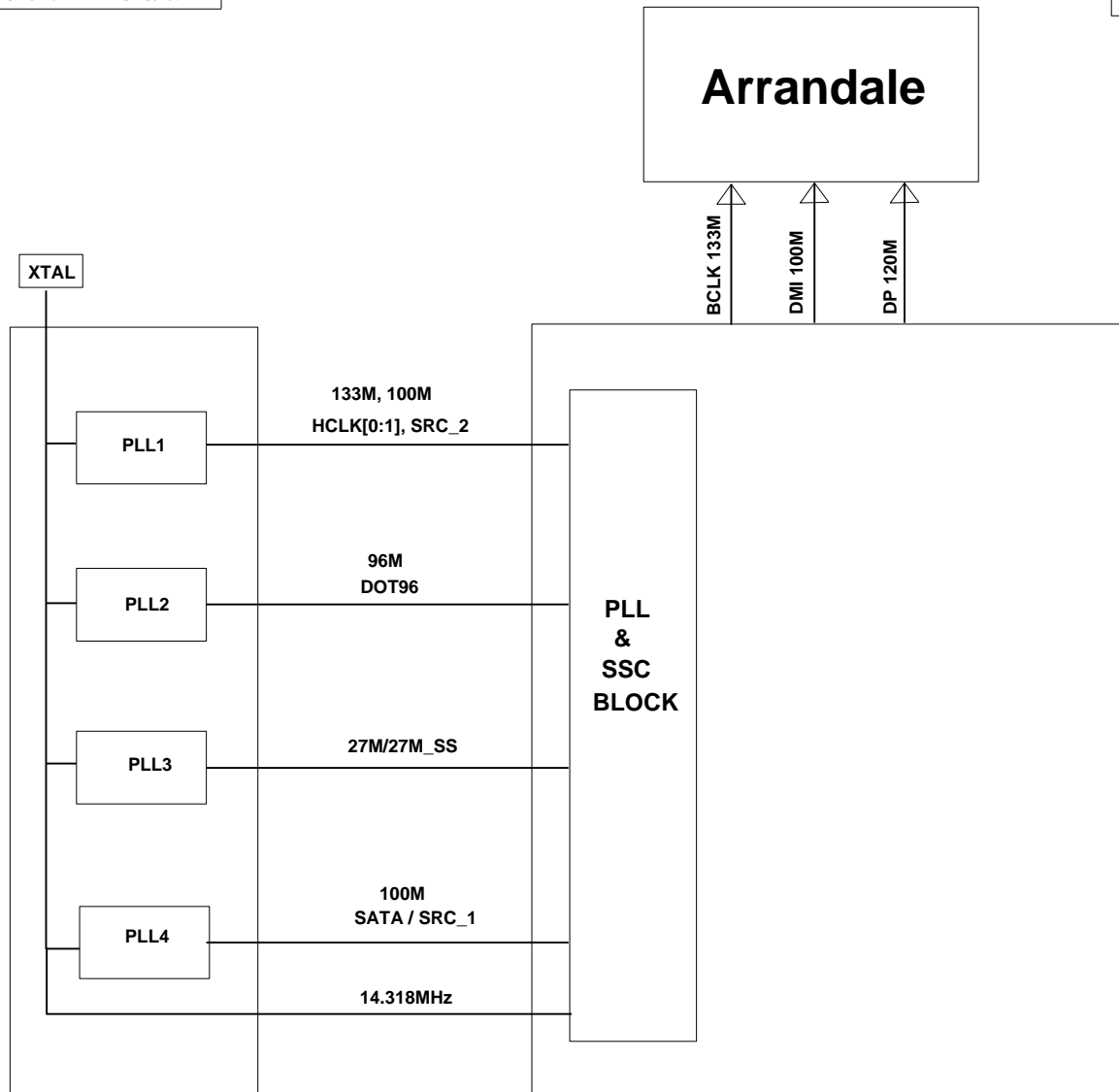
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CHECK	SE Lee	DEV. STEP	ADV	APPROVAL	MK Kim	
REVISION	REV	REV	REV 0.1	MODULE CODE	undefined	LAST EDIT
March 06, 2010 17:48:35 PM				PAGE	4	OF 54

PRELIMINARY

POWER SEQUENCE Rev. 0.5



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 UNDEFINED PWR SEQUENCE	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	PART NO.		
APPROVAL	MK Kin	REV	REV 0.1			
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	5	OF 54

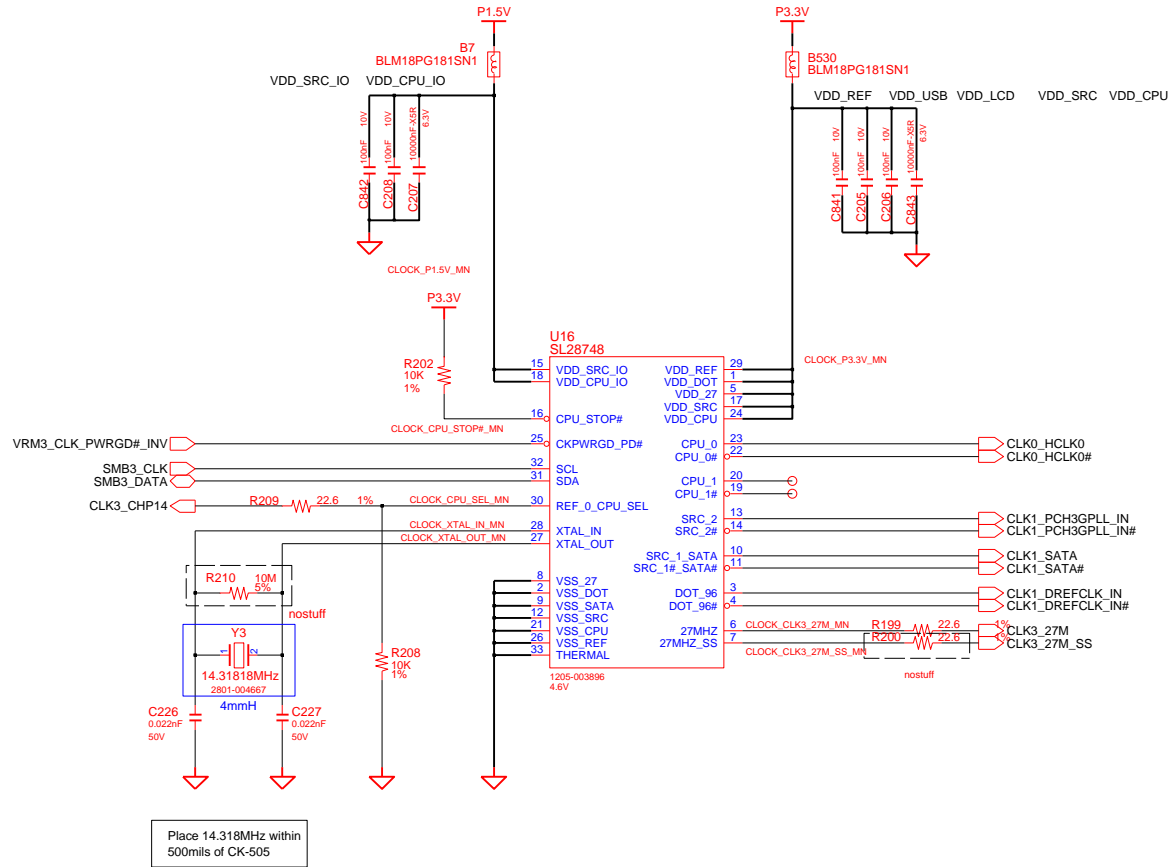


DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 MAIN CLOCK DIAGRAM	SAMSUNG ELECTRONICS <small>PART NO. BA41-</small>
CHECK	SE Lee	DEV STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM			
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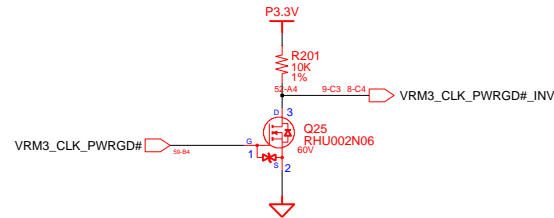
CK505M SHRINK VERSION

CPU_MODE SEL

Pin 30	CPU_0	CPU_1
CPU_SEL = 0	133MHz	133MHz



Place 14.318MHz within
500mils of CK-505

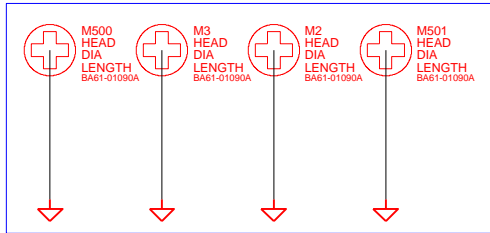
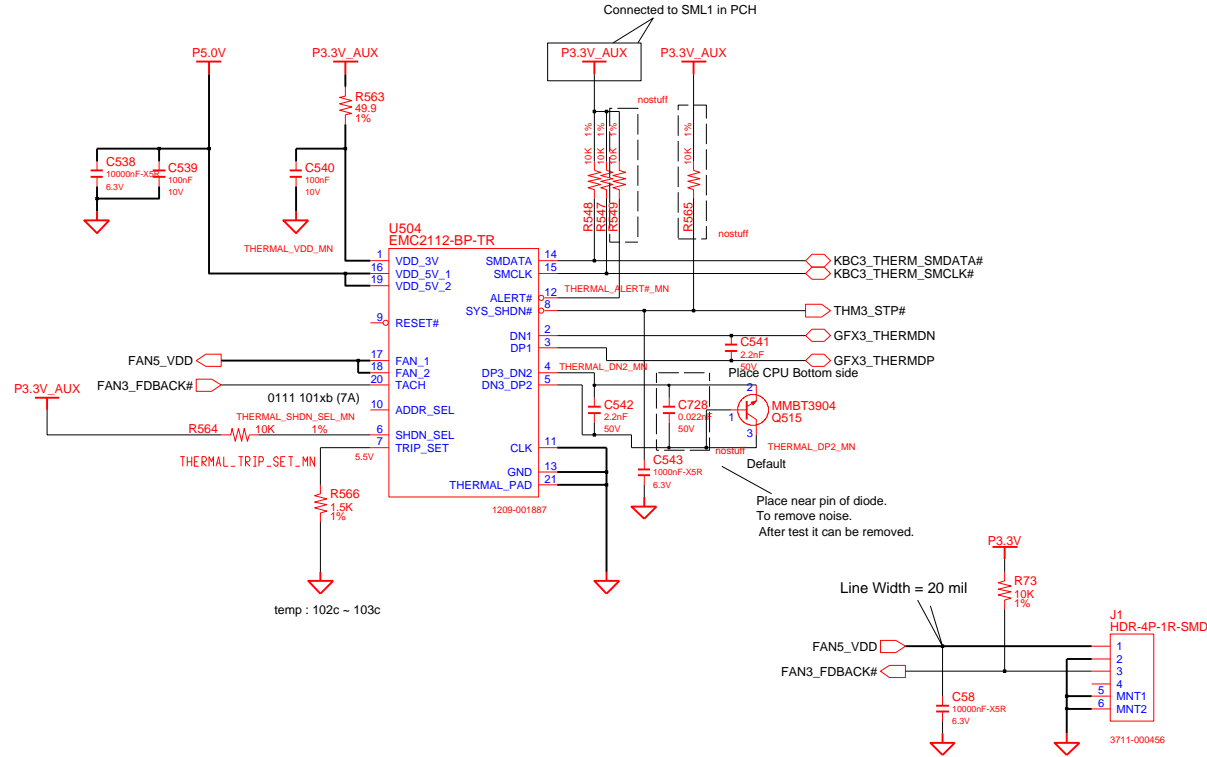


DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 CLOCK	SAMSUNG ELECTRONICS
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APPROVAL	MK Kim	REV	REV 0.1	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE 7 OF 54
MODULE CODE	undefined	PART NO.				BA41-

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



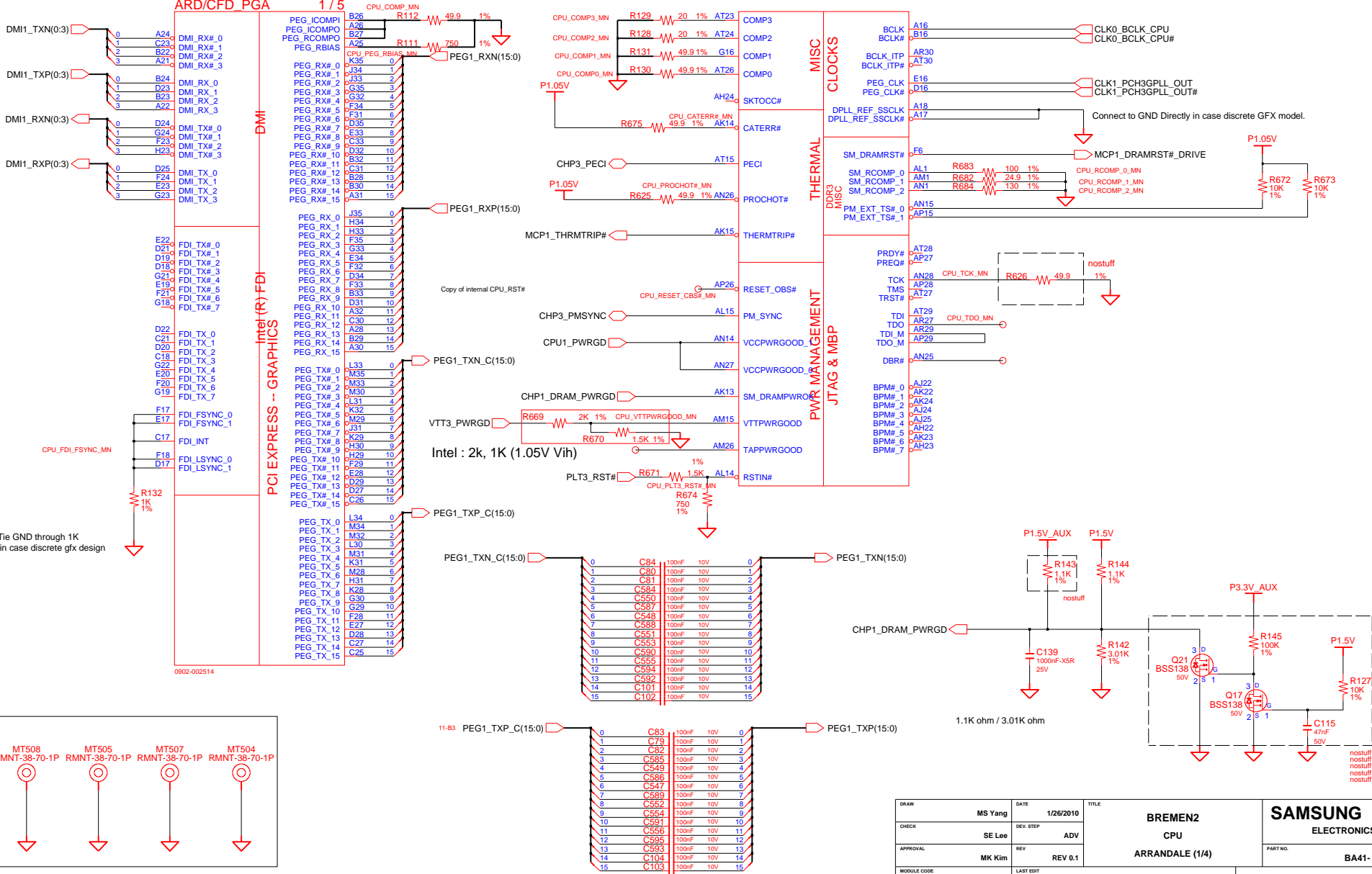
To support heatsink

DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 THERMAL SENSOR		SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV	THERMAL SENSOR G7923		PART NO.	
APPROVAL	MK Kim	REV	REV 0.1			BA41-	
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	8	OF 54

ARRANDALE PROCESSOR (DMI, PEG, FDI)

CPU1-1
ARD/CFD PGA

1 / 5



0902-002514

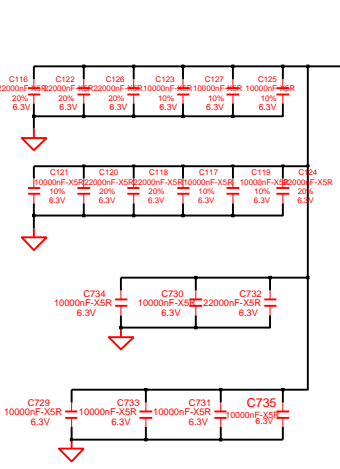
CPU mount

DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 CPU	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	ARRANDALE (1/4)		
APPROVAL	MK Kim	REV	REV 0.1		PART NO.	BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	9 OF 54

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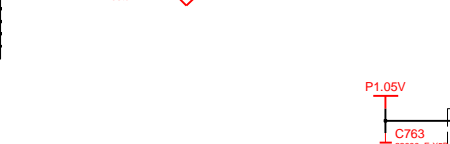
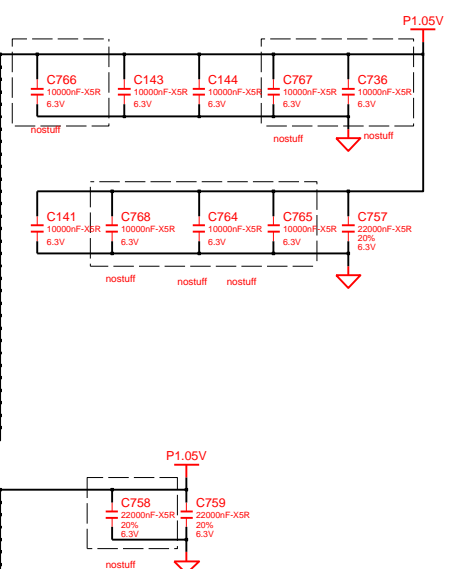
ALL VTT DECAP IS SHARED

4x 470 uF : CPU VR side

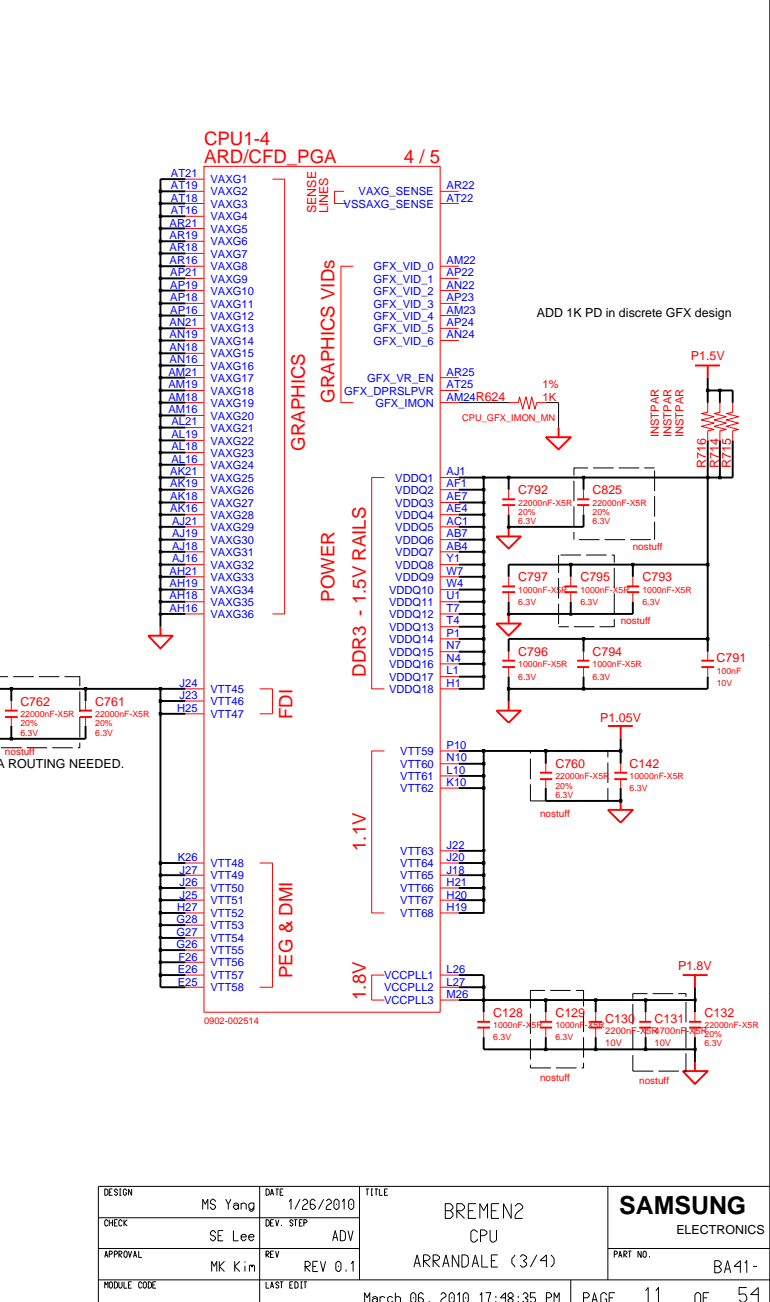
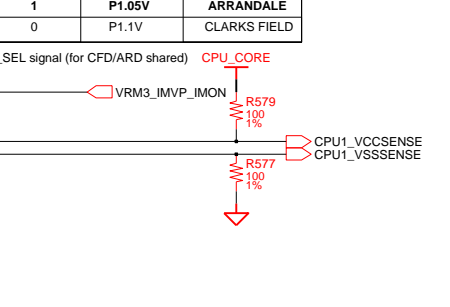


Stuff/NoStuff Check ?
(depends on placement)

AG35	VCC1	AH14
AG34	VCC2	AH12
AG33	VCC3	AH11
AG32	VCC4	AH10
AG31	VCC5	J14
AG30	VCC6	J13
AG29	VCC7	H12
AG28	VCC8	G14
AG27	VCC9	G13
AG26	VCC10	G12
AF35	VCC11	G11
AF34	VCC12	F14
AF33	VCC13	F13
AF32	VCC14	F12
AF31	VCC15	F11
AF30	VCC16	E12
AF29	VCC17	E11
AF28	VCC18	D14
AF27	VCC19	D13
AD34	VCC20	D12
AD33	VCC21	D11
AD32	VCC22	C14
AD31	VCC23	C13
AD30	VCC24	C12
AD29	VCC25	C11
AD28	VCC26	B14
AD27	VCC27	B12
AD26	VCC28	A14
AD25	VCC29	A13
AD24	VCC30	A12
AC34	VCC31	A11
AC33	VCC32	
AC32	VCC33	
AC31	VCC34	
AC30	VCC35	
AC29	VCC36	
AC28	VCC37	
AC27	VCC38	
AC26	VCC39	
AC25	VCC40	
AA35	VCC41	
AA34	VCC42	
AA33	VCC43	
AA32	VCC44	
AA31	VCC45	
AA30	VCC46	
AA29	VCC47	
AA28	VCC48	
AA27	VCC49	
AA26	VCC50	
Y35	VCC51	
Y34	VCC52	
Y33	VCC53	
Y32	VCC54	
Y31	VCC55	
Y30	VCC56	
Y29	VCC57	
Y28	VCC58	
Y27	VCC59	
Y26	VCC60	
V35	VCC61	
V34	VCC62	
V33	VCC63	
V32	VCC64	
V31	VCC65	
V30	VCC66	
V29	VCC67	
V28	VCC68	
V27	VCC69	
V26	VCC70	
U35	VCC71	
U34	VCC72	
U33	VCC73	
U32	VCC74	
U31	VCC75	
U30	VCC76	
U29	VCC77	
U28	VCC78	
U27	VCC79	
U26	VCC80	
R35	VCC81	
R34	VCC82	
R33	VCC83	
R32	VCC84	
R31	VCC85	
R30	VCC86	
R29	VCC87	
R28	VCC88	
R27	VCC89	
R26	VCC90	
P35	VCC91	
P34	VCC92	
P33	VCC93	
P32	VCC94	
P31	VCC95	
P30	VCC96	
P29	VCC97	
P28	VCC98	
P27	VCC99	
P26	VCC100	



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

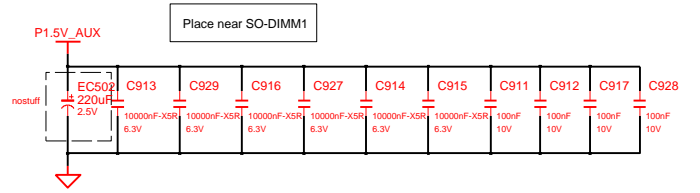
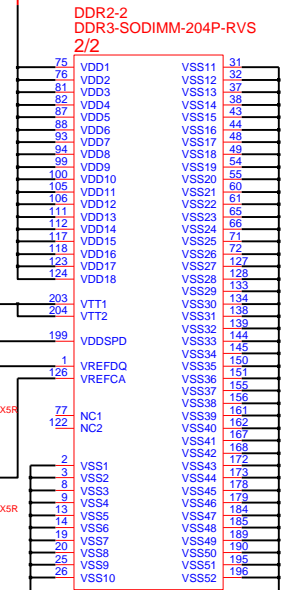
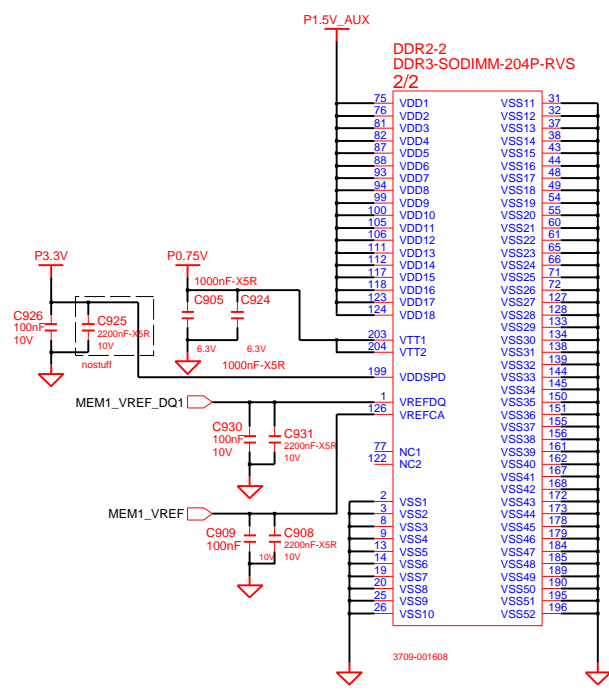
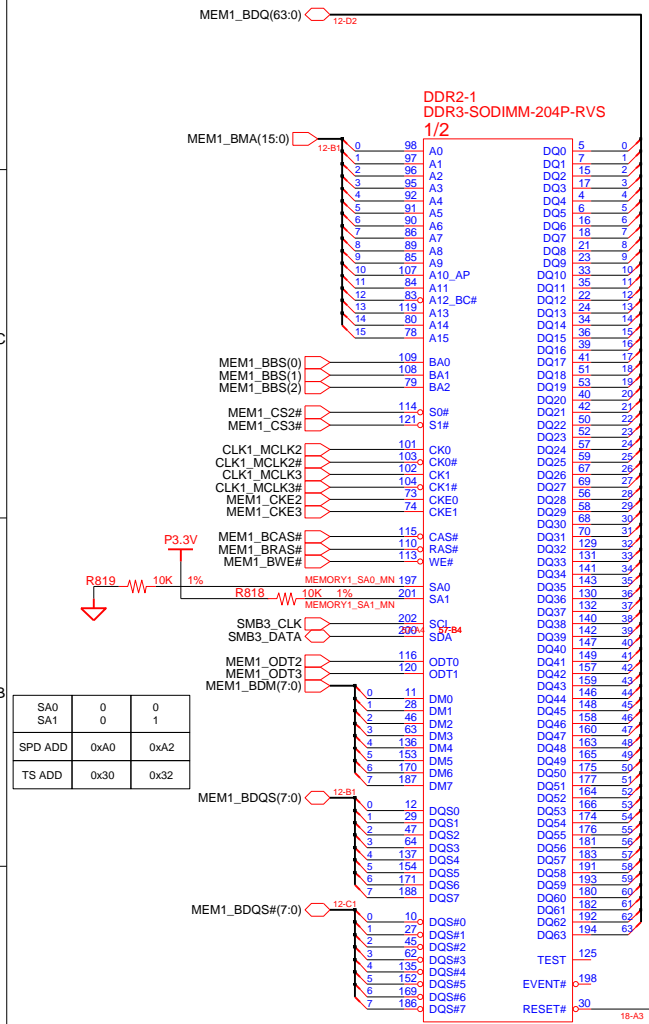


DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 CPU ARRANDALE (3/4)	SAMSUNG ELECTRONICS PART NO. BA41-
CHECK	SE Lee	DEV. STEP	ADV	REV	REV 0.1	
APPROVAL	MK K in	LAST EDIT				
MODULE CODE						

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DDR SO-DIMM #1

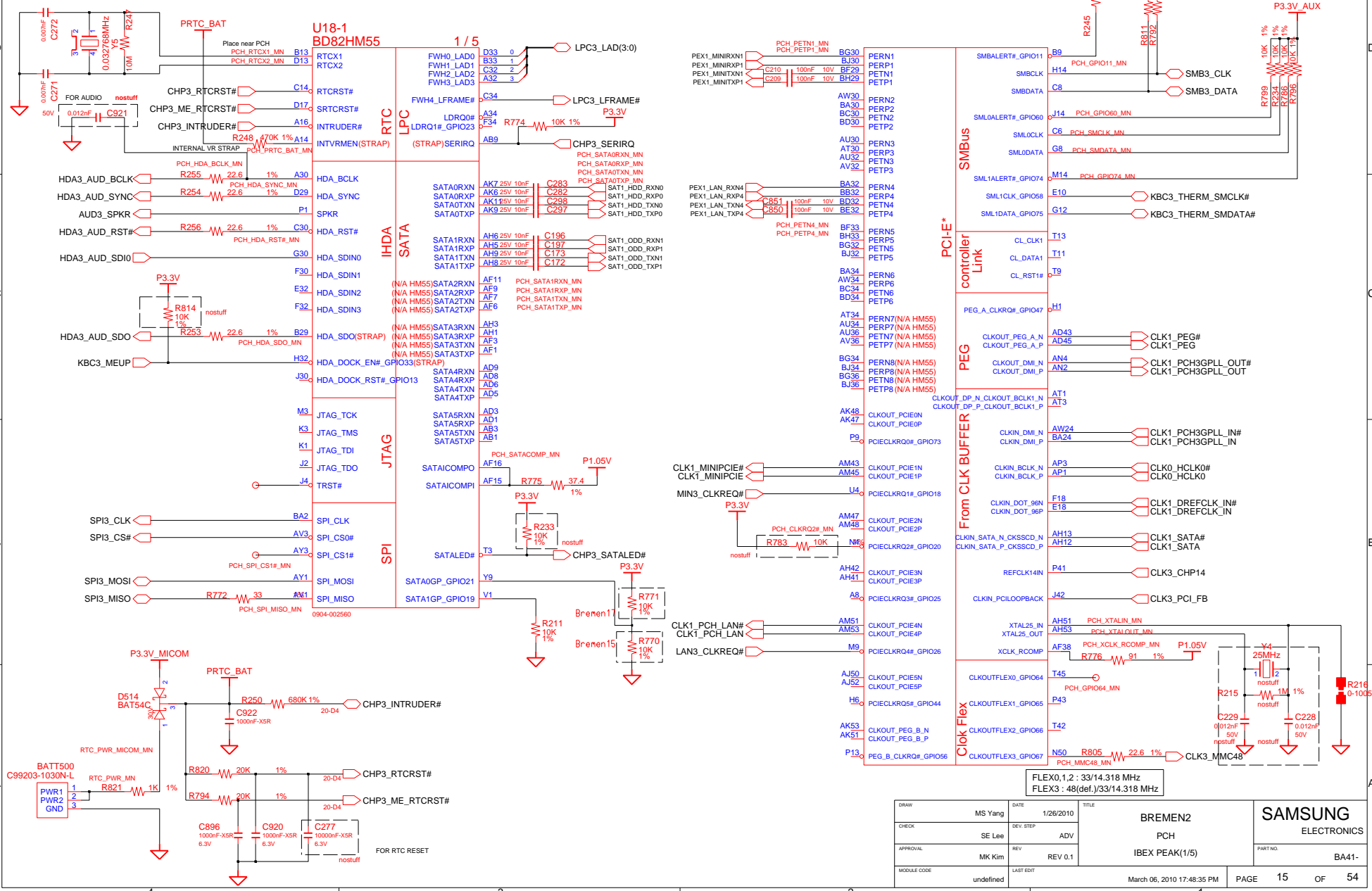
Height : 4 mm (REVERSE)
 P/N : 3709-001533 (Molex)
 P/N : 3709-001559 (Foxconn)



DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 SODIMM B	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1		DDR3	PART NO. BA41-
MODULE CODE	undefined	LAST EDIT				

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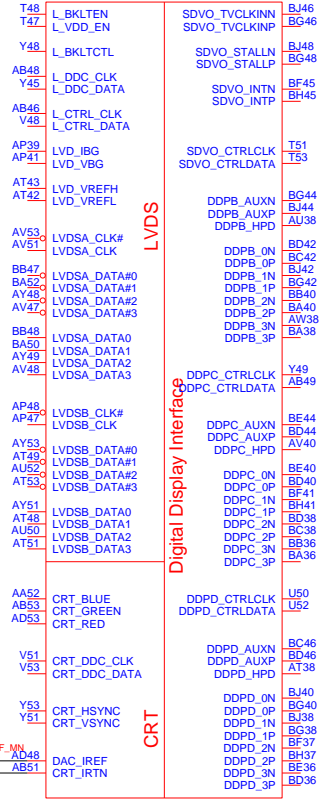
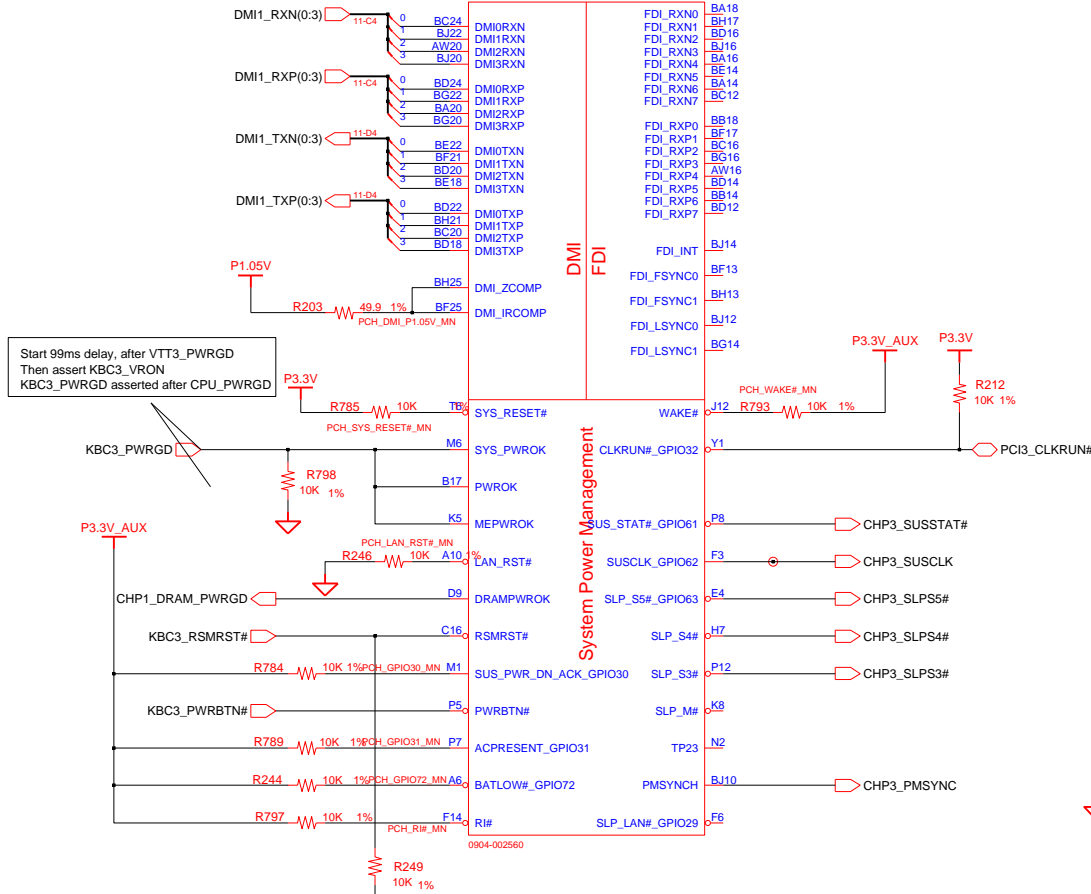
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DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PCH		SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	REV	IBEX PEAK(1/5)		
APPROVAL	MK Kim	REV	REV 0.1	LAST EDIT	PART NO.		BA41-
MODULE CODE	undefined	March 06, 2010 17:48:35 PM		PAGE	15	OF	54

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BD82HM55

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DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PCH	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV	IBEX PEAK(2/5)		
APPROVAL	MK Kim	REV	REV 0.1			PART NO. BA41-
MODULE CODE		LAST EDIT				

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 BD82HM55**

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H40	AD0	NV_CE#0	AY9
N34	AD1	NV_CE#1	BD1
C44	AD2	NV_CE#2	SAP15
A38	AD3	NV_CE#3	BD8
C36	AD4		
J34	AD5	NV_DQS0	AV9
A40	AD6	NV_DQS1	BG8
D45	AD7		
E36	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
M48	AD12	NV_DQ4_NV_I04	BB1
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
J36	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
K46	AD21	NV_DQ13_NV_I013	BL6
M51	AD22	NV_DQ14_NV_I014	BL6
J52	AD23	NV_DQ15_NV_I015	BG6
K51	AD24		
L34	AD25	(STRAP)NV_ALE	AY6
F42	AD26	(STRAP)NV_CLE	AY6
H40	AD27		
G46	AD28	NV_RCOMP	AU2
F44	AD29		
M47	AD30	NV_RB#	AV7
H36	AD31		
J50	C_BE0#		AY8
G42	C_BE1#	NV_WR#_RE#	AY5
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G34	C_BE3#		AV11
		NV_WE#_CK0	BF5
		NV_WE#_CK1	

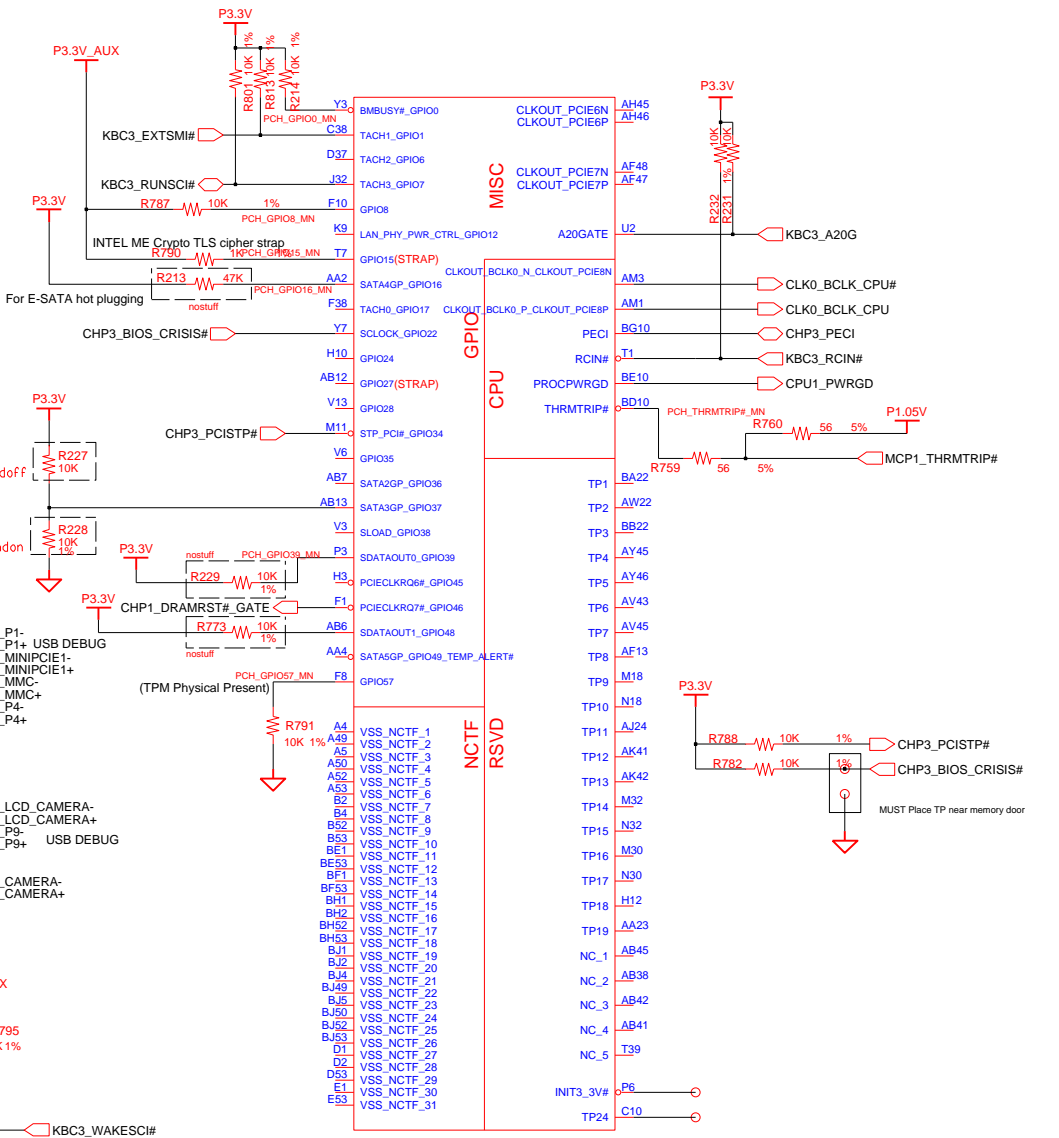
PCI

USB

USB

USB

AY9	AY9	AY9	AY9
BD1	BD1	BD1	BD1
SAP15	SAP15	SAP15	SAP15
BD8	BD8	BD8	BD8
AV9	AV9	AV9	AV9
BG8	BG8	BG8	BG8
AP7	AP7	AP7	AP7
AP6	AP6	AP6	AP6
AT6	AT6	AT6	AT6
AT9	AT9	AT9	AT9
BB1	BB1	BB1	BB1
AV6	AV6	AV6	AV6
BB3	BB3	BB3	BB3
BA4	BA4	BA4	BA4
BE4	BE4	BE4	BE4
BB6	BB6	BB6	BB6
BD6	BD6	BD6	BD6
BB7	BB7	BB7	BB7
BC8	BC8	BC8	BC8
BL6	BL6	BL6	BL6
BL6	BL6	BL6	BL6
BG6	BG6	BG6	BG6
AY6	AY6	AY6	AY6
AY6	AY6	AY6	AY6
AU2	AU2	AU2	AU2
AV7	AV7	AV7	AV7
AY8	AY8	AY8	AY8
AY5	AY5	AY5	AY5
AY5	AY5	AY5	AY5
AV11	AV11	AV11	AV11
BF5	BF5	BF5	BF5
H18	H18	H18	H18
J18	J18	J18	J18
A18	A18	A18	A18
C18	C18	C18	C18
N20	N20	N20	N20
P20	P20	P20	P20
J20	J20	J20	J20
L20	L20	L20	L20
F20	F20	F20	F20
G20	G20	G20	G20
C20	C20	C20	C20
A20	A20	A20	A20
N22	N22	N22	N22
B21	B21	B21	B21
D21	D21	D21	D21
H22	H22	H22	H22
E22	E22	E22	E22
F22	F22	F22	F22
A22	A22	A22	A22
G22	G22	G22	G22
L24	L24	L24	L24
M24	M24	M24	M24
A24	A24	A24	A24
C24	C24	C24	C24
G24	G24	G24	G24
H24	H24	H24	H24
BH1	BH1	BH1	BH1
BH2	BH2	BH2	BH2
BH52	BH52	BH52	BH52
BH53	BH53	BH53	BH53
BJ1	BJ1	BJ1	BJ1
BJ2	BJ2	BJ2	BJ2
BJ4	BJ4	BJ4	BJ4
BJ49	BJ49	BJ49	BJ49
BJ5	BJ5	BJ5	BJ5
BJ50	BJ50	BJ50	BJ50
BJ52	BJ52	BJ52	BJ52
BJ53	BJ53	BJ53	BJ53
D1	D1	D1	D1
D2	D2	D2	D2
D53	D53	D53	D53
E1	E1	E1	E1
E53	E53	E53	E53



MISC

GPIO

CPU

NC/TF

RSVD

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

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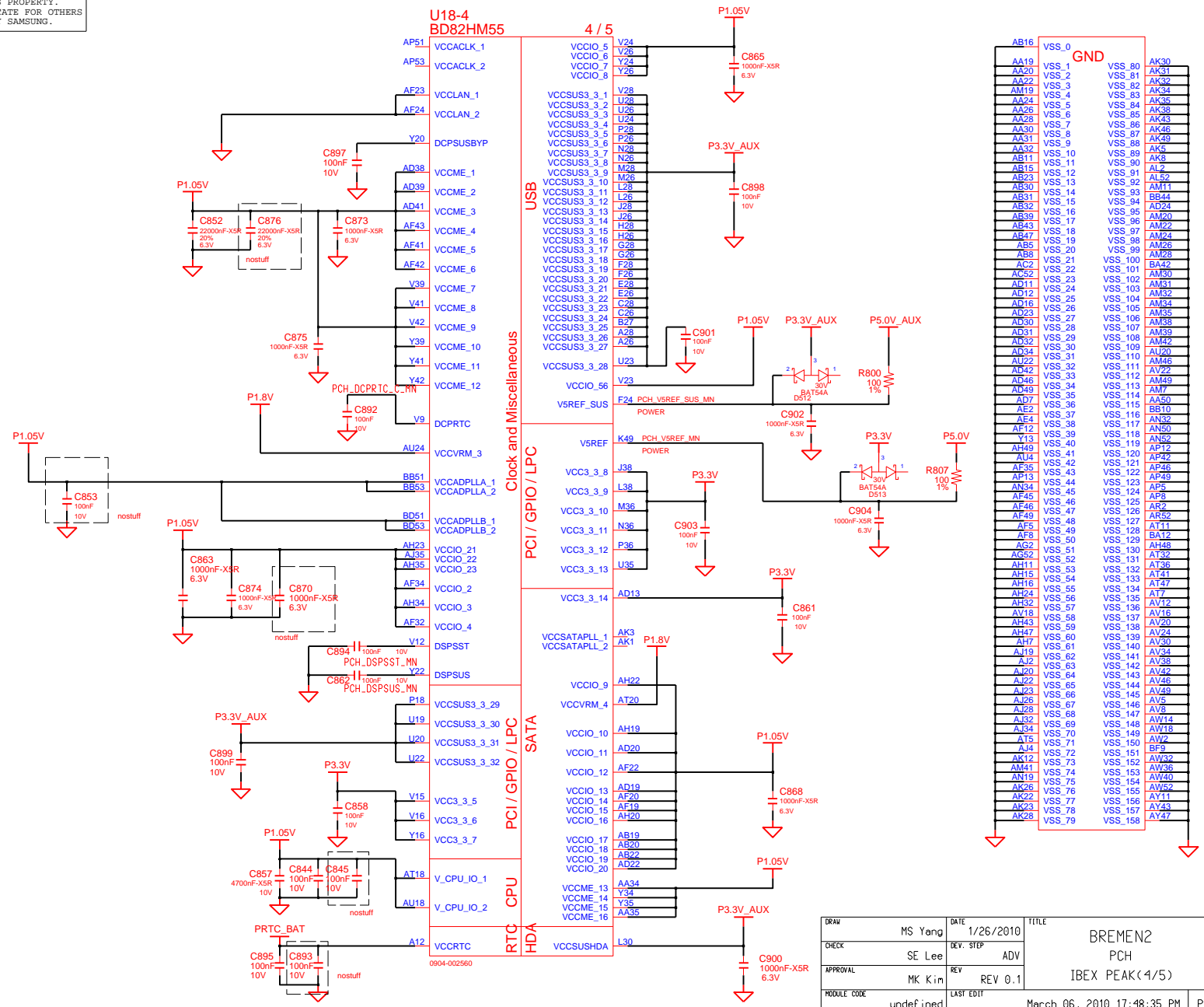
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1

**U18-4
BD82HM55**

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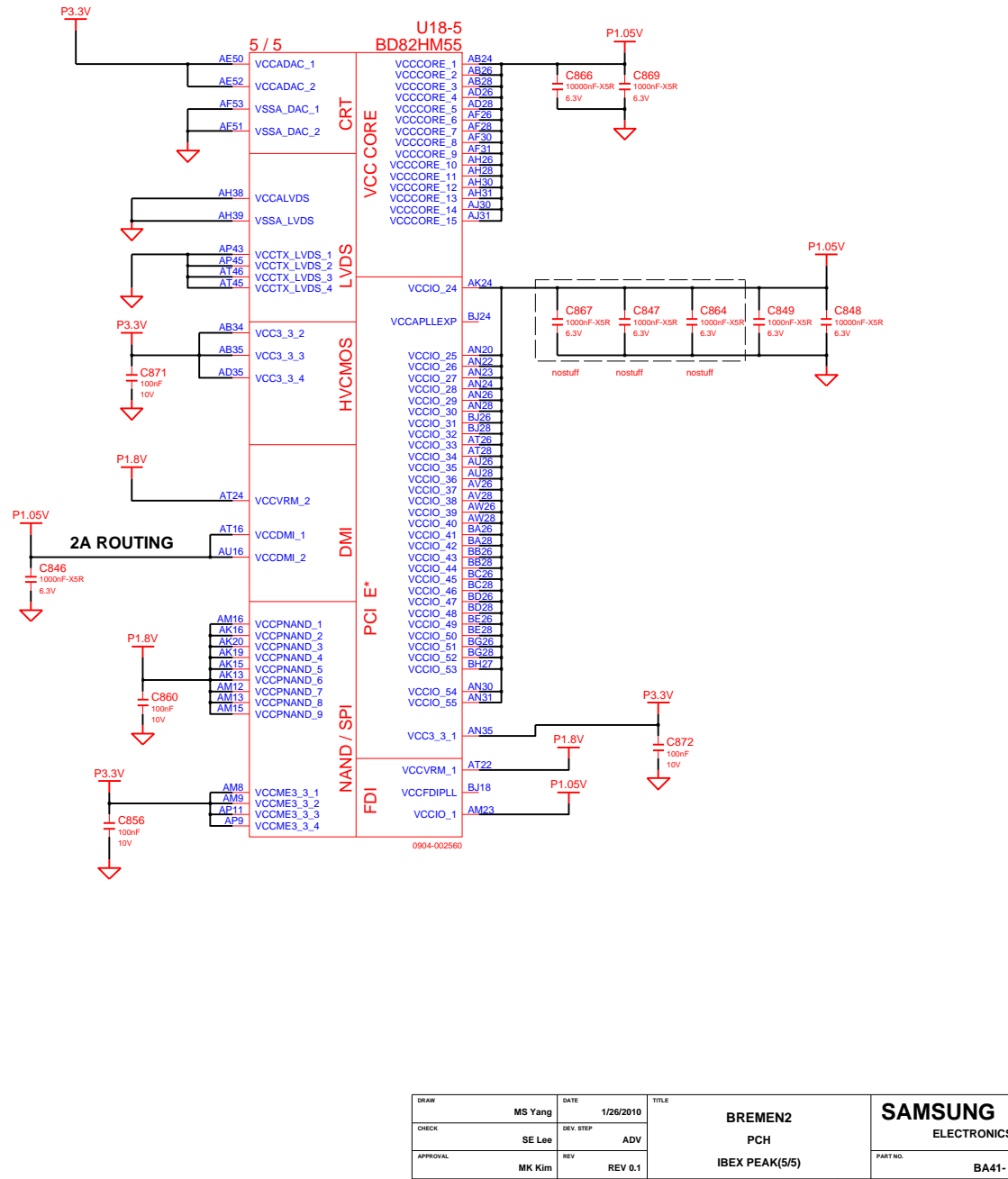
USB
 Clock and Miscellaneous
 PCI / GPIO / LPC
 SATA
 PCI / GPIO / LPC
 CPU
 RTC
 HDA

AB16	VSS_0		
AA19	VSS_1	VSS_80	AK30
AA20	VSS_2	VSS_81	AK31
AA22	VSS_3	VSS_82	AK32
AM19	VSS_4	VSS_83	AK34
AA24	VSS_5	VSS_84	AK35
AA26	VSS_6	VSS_85	AK38
AA28	VSS_7	VSS_86	AK43
AA30	VSS_8	VSS_87	AK46
AA31	VSS_9	VSS_88	AK49
AA32	VSS_10	VSS_89	AK5
AB11	VSS_11	VSS_90	AK8
AB15	VSS_12	VSS_91	AL2
AB23	VSS_13	VSS_92	AL52
AB30	VSS_14	VSS_93	AM1
AB31	VSS_15	VSS_94	AM24
AB39	VSS_16	VSS_95	AM20
AB43	VSS_17	VSS_96	AM22
AB47	VSS_18	VSS_97	AM26
AB5	VSS_19	VSS_98	AM28
AB8	VSS_20	VSS_99	AM28
AB8	VSS_21	VSS_100	BA42
AC2	VSS_22	VSS_101	AM30
AC52	VSS_23	VSS_102	AM31
AD11	VSS_24	VSS_103	AM32
AD16	VSS_25	VSS_104	AM34
AD17	VSS_26	VSS_105	AM35
AD23	VSS_27	VSS_106	AM38
AD30	VSS_28	VSS_107	AM39
AD31	VSS_29	VSS_108	AM42
AD32	VSS_30	VSS_109	AM40
AD34	VSS_31	VSS_110	AM46
AJ22	VSS_32	VSS_111	AV22
AD46	VSS_33	VSS_112	AM49
AD49	VSS_34	VSS_113	AM7
AE4	VSS_35	VSS_114	AM7
AD7	VSS_36	VSS_115	AA50
AE2	VSS_37	VSS_116	BB10
AE4	VSS_38	VSS_117	AN32
AF12	VSS_39	VSS_118	AN52
Y13	VSS_40	VSS_119	AP12
AH49	VSS_41	VSS_120	AP12
AJ14	VSS_42	VSS_121	AP49
AF5	VSS_43	VSS_122	AP49
AP13	VSS_44	VSS_123	AP5
AN34	VSS_45	VSS_124	AP8
AF45	VSS_46	VSS_125	AR2
AF46	VSS_47	VSS_126	AT11
AF49	VSS_48	VSS_127	AR52
AF5	VSS_49	VSS_128	BA12
AF8	VSS_50	VSS_129	AH48
AG2	VSS_51	VSS_130	AT32
AG52	VSS_52	VSS_131	AT36
AH11	VSS_53	VSS_132	AT41
AH15	VSS_54	VSS_133	AV12
AH16	VSS_55	VSS_134	AT47
AH24	VSS_56	VSS_135	AT7
AH32	VSS_57	VSS_136	AV16
AV18	VSS_58	VSS_137	AV20
AH43	VSS_59	VSS_138	AV24
AH47	VSS_60	VSS_139	AV24
AH7	VSS_61	VSS_140	AV24
AH9	VSS_62	VSS_141	AV38
AJ2	VSS_63	VSS_142	AV32
AJ20	VSS_64	VSS_143	AV42
AJ22	VSS_65	VSS_144	AV46
AJ26	VSS_66	VSS_145	AV49
AJ28	VSS_67	VSS_146	AV8
AJ32	VSS_68	VSS_147	AV8
AJ34	VSS_69	VSS_148	AW14
AJ5	VSS_70	VSS_149	AW18
AJ6	VSS_71	VSS_150	AW2
AK12	VSS_72	VSS_151	AW32
AM41	VSS_73	VSS_152	AW2
AN19	VSS_74	VSS_153	AW36
AK26	VSS_75	VSS_154	AW40
AK27	VSS_76	VSS_155	AW52
AK28	VSS_77	VSS_156	AY11
	VSS_78	VSS_157	AY43
	VSS_79	VSS_158	AY47

DRN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	REV	IBEX PEAK(4/5)	
APPROVAL	MK Kin	REV	REV 0.1			PART NO.
MODULE CODE	undefined	LAST EDIT				BA41-
			March 06, 2010 17:48:35 PM	PAGE	18	OF 601

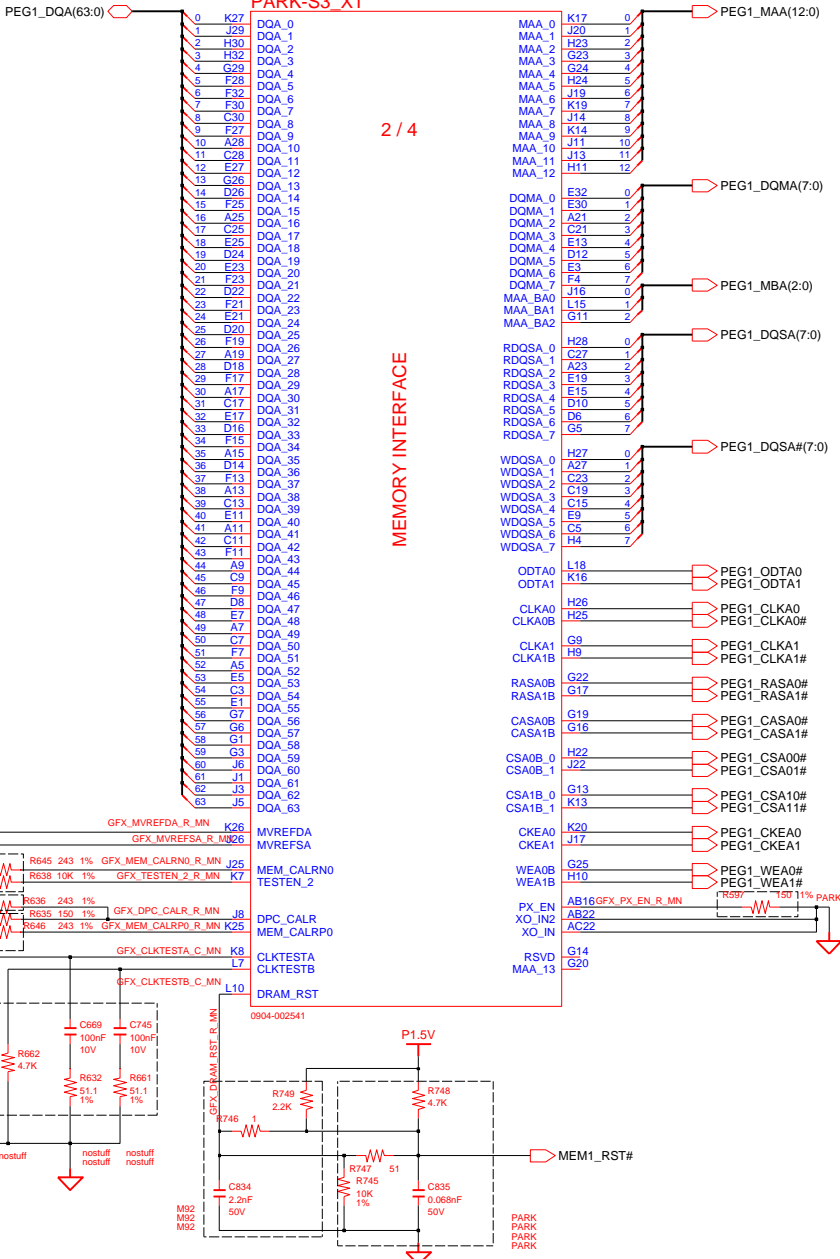
This power share with thermal sensor

H49	VSS 259	VSS 159	AY7
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	BH12
L40	VSS 272	VSS 172	BH16
L52	VSS 273	VSS 173	BB24
M12	VSS 274	VSS 174	BB28
M16	VSS 275	VSS 175	BB30
M20	VSS 276	VSS 176	BB34
M30	VSS 277	VSS 177	BB42
M34	VSS 278	VSS 178	BB48
M38	VSS 279	VSS 179	BB54
M42	VSS 280	VSS 180	BB58
M46	VSS 281	VSS 181	BC10
M49	VSS 282	VSS 182	BC14
M5	VSS 283	VSS 183	BC18
M8	VSS 284	VSS 184	BC22
N24	VSS 285	VSS 185	BC26
P11	VSS 286	VSS 186	BC30
AD15	VSS 287	VSS 187	BC34
P22	VSS 288	VSS 188	BC38
P30	VSS 289	VSS 189	BC40
P32	VSS 290	VSS 190	BC44
P34	VSS 291	VSS 191	BC48
P42	VSS 292	VSS 192	BC52
P45	VSS 293	VSS 193	BC56
P47	VSS 294	VSS 194	BD08
R2	VSS 295	VSS 195	BD12
R52	VSS 296	VSS 196	BD16
T12	VSS 297	VSS 197	BD20
T41	VSS 298	VSS 198	BD24
T46	VSS 299	VSS 199	BD28
T49	VSS 300	VSS 200	BD32
T5	VSS 301	VSS 201	BD36
T8	VSS 302	VSS 202	BD40
U30	VSS 303	VSS 203	BD44
U31	VSS 304	VSS 204	BD48
U32	VSS 305	VSS 205	BE08
U34	VSS 306	VSS 206	BE12
P38	VSS 307	VSS 207	BE16
V11	VSS 308	VSS 208	BE20
P16	VSS 309	VSS 209	BE24
V19	VSS 310	VSS 210	BE28
V20	VSS 311	VSS 211	BE32
V22	VSS 312	VSS 212	BE36
V30	VSS 313	VSS 213	BE40
V31	VSS 314	VSS 214	BE44
V32	VSS 315	VSS 215	BE48
V34	VSS 316	VSS 216	BH16
V35	VSS 317	VSS 217	BH20
V38	VSS 318	VSS 218	BH24
V43	VSS 319	VSS 219	BH28
V45	VSS 320	VSS 220	BH32
V46	VSS 321	VSS 221	BH36
V47	VSS 322	VSS 222	BH40
V49	VSS 323	VSS 223	BH44
V5	VSS 324	VSS 224	BH48
V5	VSS 325	VSS 225	BF7
V7	VSS 326	VSS 226	BF11
V8	VSS 327	VSS 227	BF15
W2	VSS 328	VSS 228	BF19
W52	VSS 329	VSS 229	BF23
Y11	VSS 330	VSS 230	BF27
Y12	VSS 331	VSS 231	BF31
Y15	VSS 332	VSS 232	BF35
Y19	VSS 333	VSS 233	BF39
Y23	VSS 334	VSS 234	BF43
Y28	VSS 335	VSS 235	BF47
Y30	VSS 336	VSS 236	BF51
Y31	VSS 337	VSS 237	BF55
Y32	VSS 338	VSS 238	BF59
Y38	VSS 339	VSS 239	BF63
Y43	VSS 340	VSS 240	BF67
Y46	VSS 341	VSS 241	BF71
P49	VSS 342	VSS 242	BF75
Y5	VSS 343	VSS 243	BF79
Y5	VSS 344	VSS 244	BF83
Y8	VSS 345	VSS 245	BF87
P24	VSS 346	VSS 246	BF91
T43	VSS 347	VSS 247	BF95
AD51	VSS 348	VSS 248	BF99
AT9	VSS 349	VSS 249	BF103
AD47	VSS 350	VSS 250	BF107
Y47	VSS 351	VSS 251	BF111
AM6	VSS 352	VSS 252	BF115
AT13	VSS 353	VSS 253	BF119
AM5	VSS 354	VSS 254	BF123
AK45	VSS 355	VSS 255	BF127
AK39	VSS 356	VSS 256	BF131
AV14	VSS 356	VSS 257	BF135
	VSS 356	VSS 258	BF139

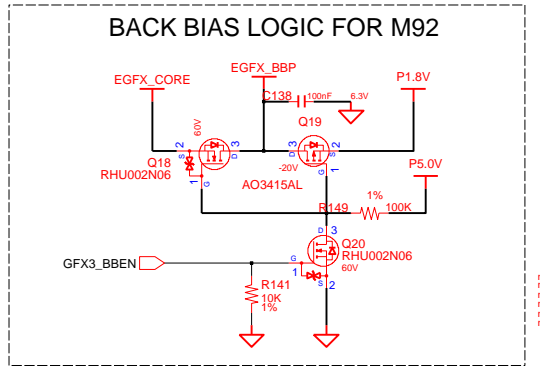
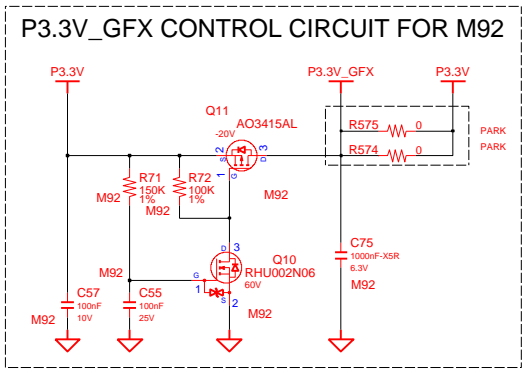


DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PCH		SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV	IBEX PEAK(5/5)		PART NO.	
APPROVAL	MK Kim	REV	REV 0.1			BA41-	
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM		PAGE	19 OF 54

**U10-2
 PARK-S3_XT**

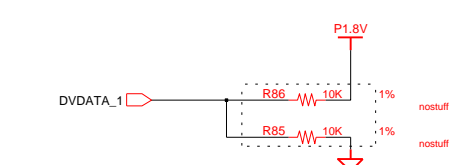
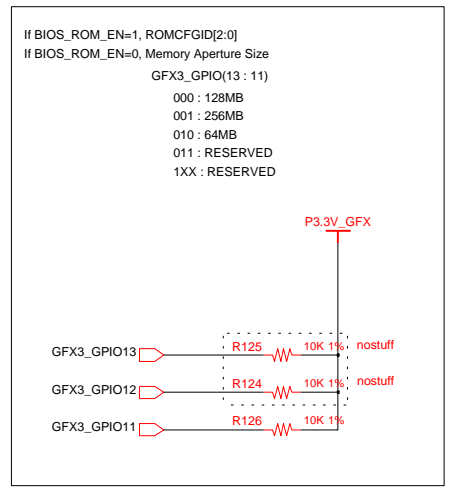
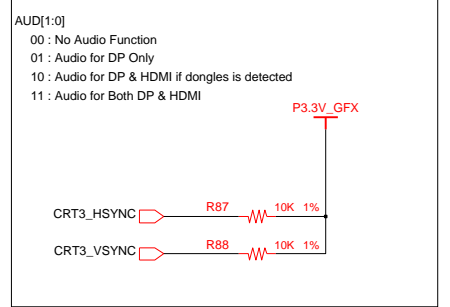
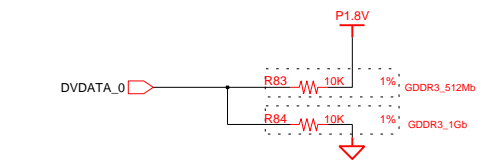
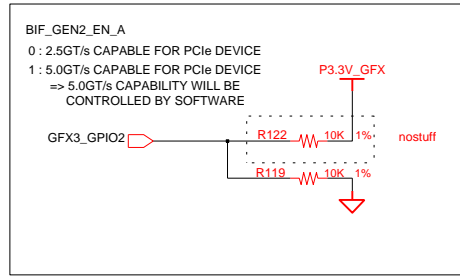
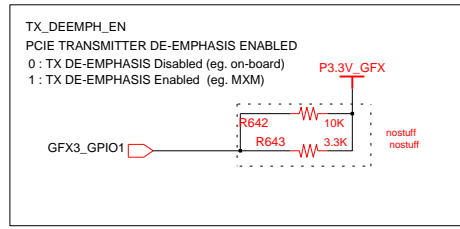
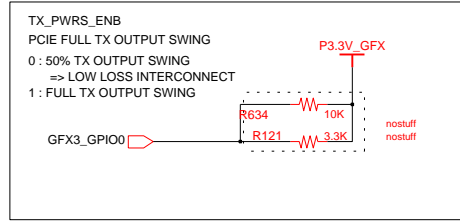
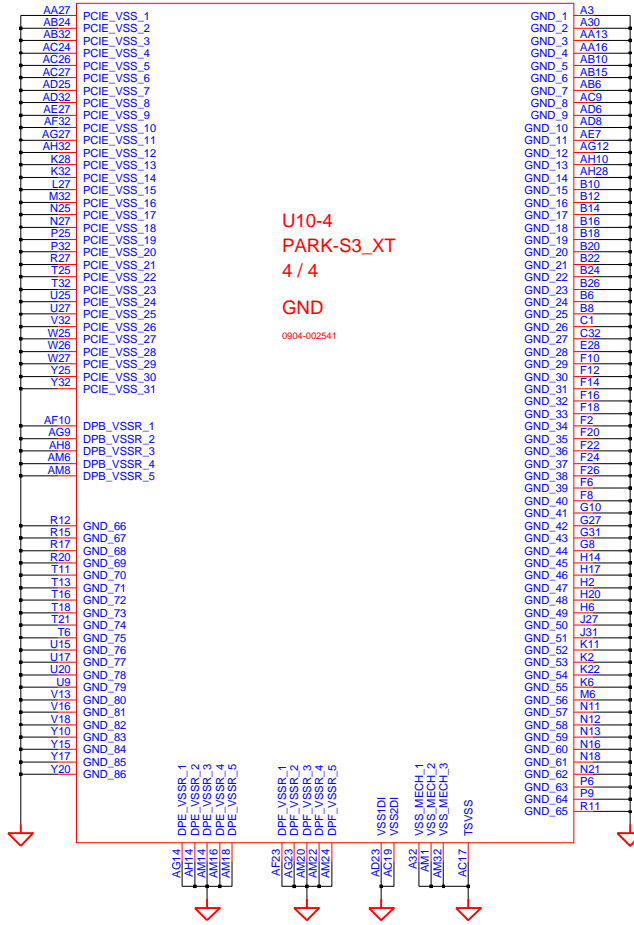


2 / 4
 MEMORY INTERFACE



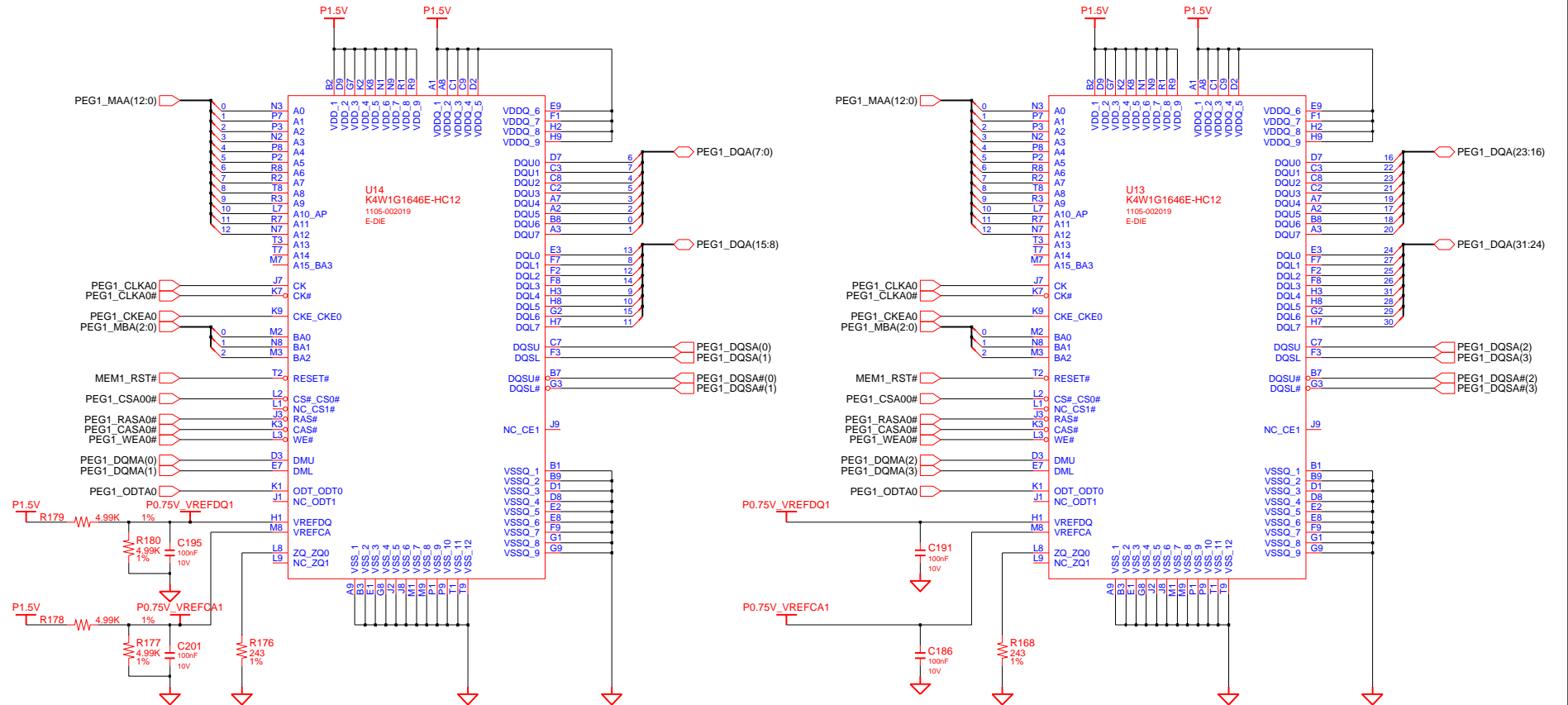
DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 GFX	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV STEP	ADV	M92-S3-XTX (2/4)		
APPROVAL	MK Kim	REV	REV 0.1		PART NO.	BA41-
MODULE CODE		LAST EDIT			March 06, 2010 17:48:35 PM	PAGE 21 OF 54

PARK-S3 Straps

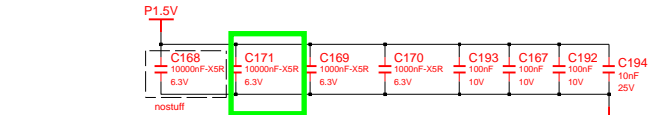


DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 GFX M92-S3-XTX (4/4)	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE		LAST EDIT			PART NO.	BA41-
				March 06, 2010 17:48:35 PM	PAGE	23 OF 54

RANK0 Lower Data

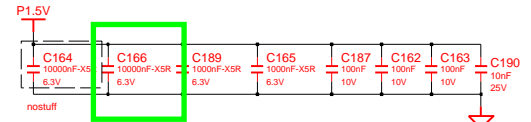
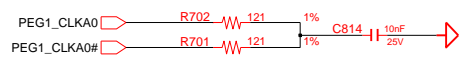


C166 - - > 1000nF, 1608 2203 - 006348



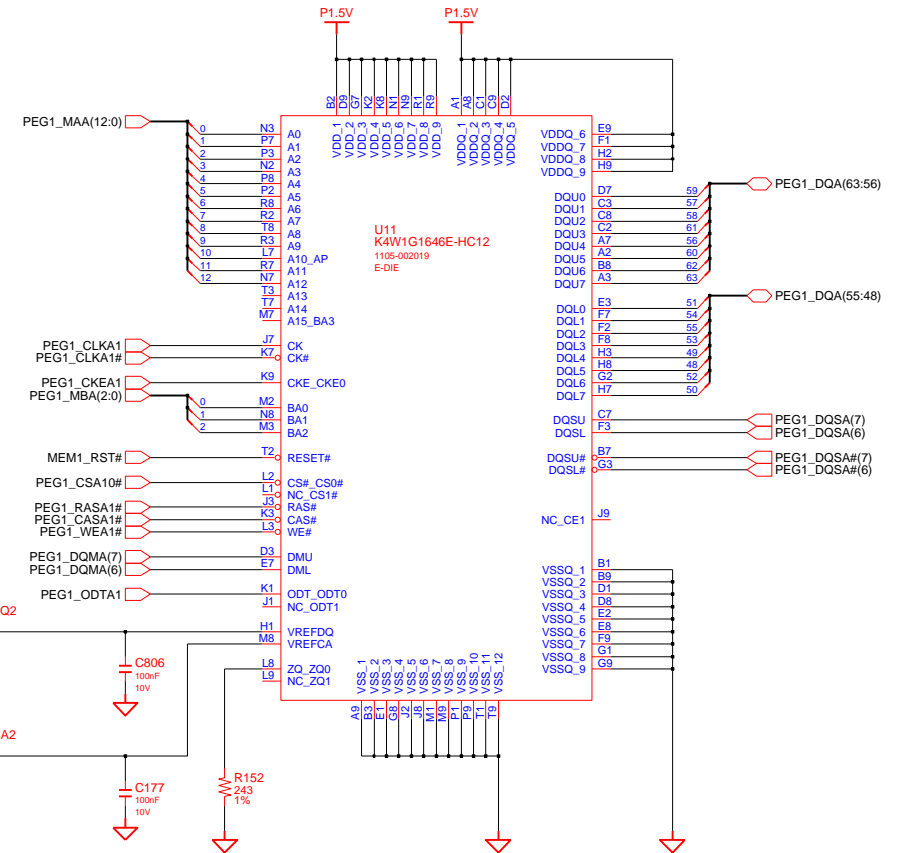
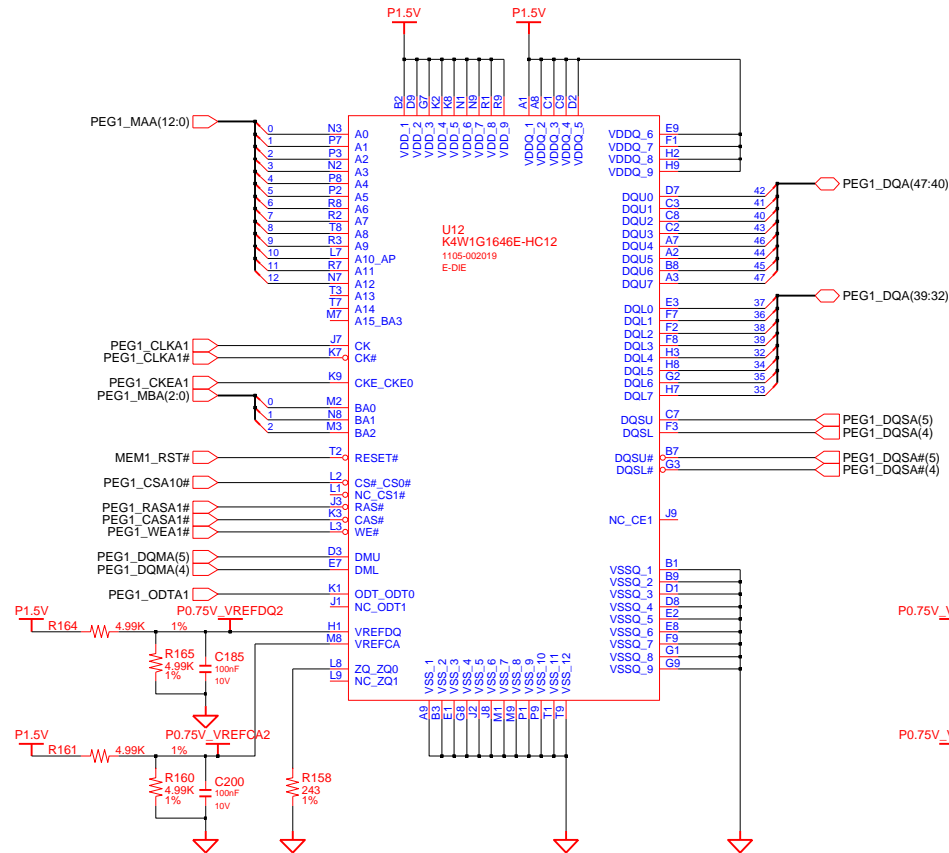
C171 - - > 1000nF, 1608 2203 - 006348

Place near memory component



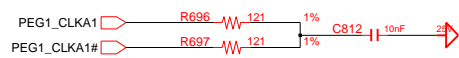
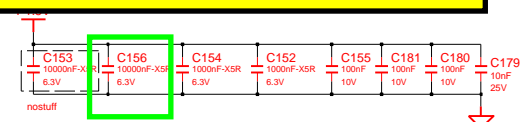
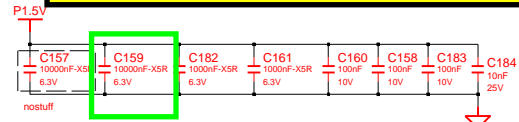
DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 EXT_GFX	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	REV	GDDR3 (1/14)	
APPROVAL	MK Kin	REV	0.1	LAST EDIT		PART NO. BA41-
MODULE CODE						

RANK0 Upper Data



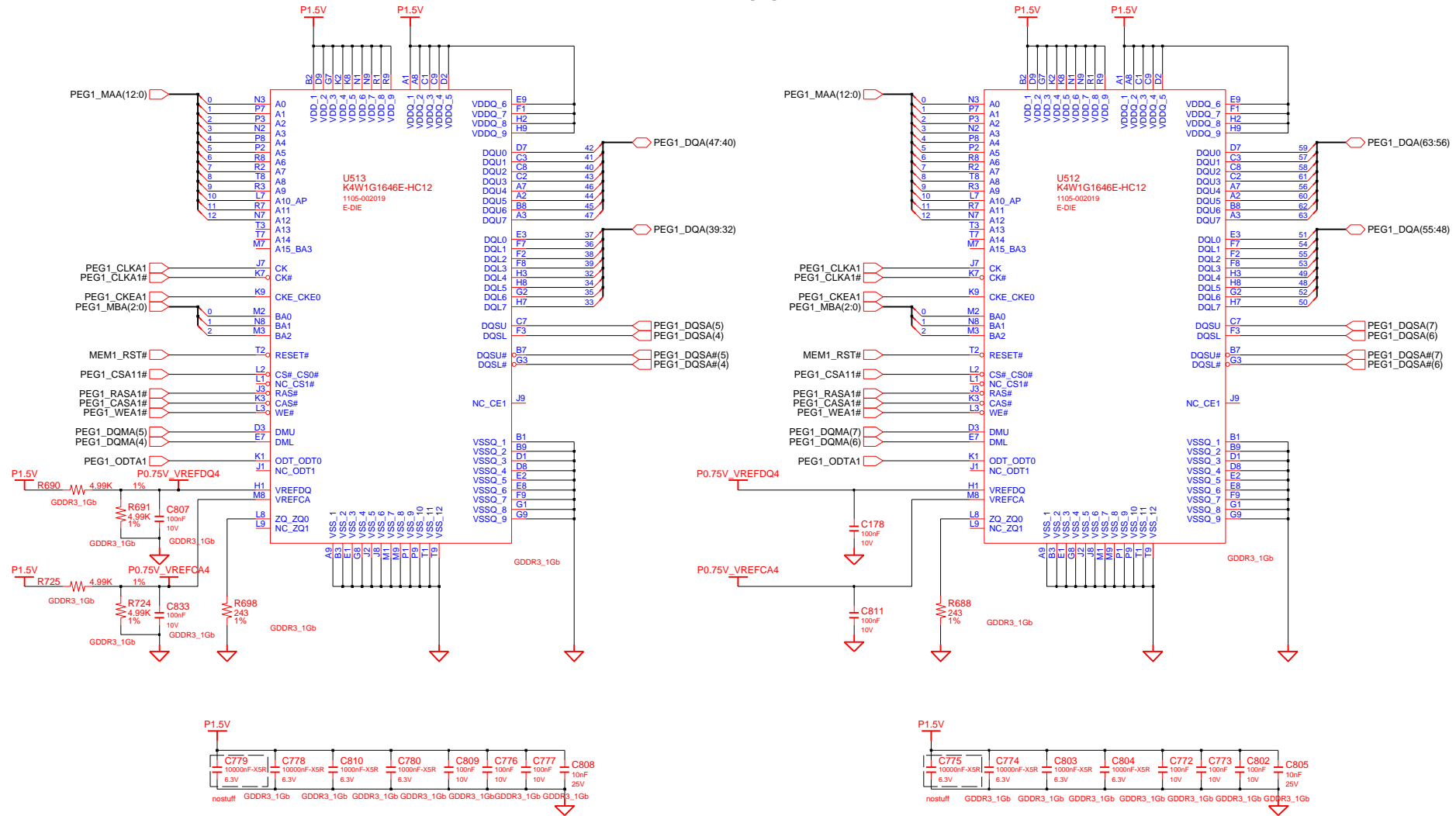
C159 - - > 1000nF, 1608 2203 - 006348

C156 - - > 1000nF, 1608 2203 - 006348



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 EXT_GFX	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	REV	GDDR3 (2/4)	
APPROVAL	MK Kin	REV	REV 0.1	LAST EDIT		PART NO. BA41-
MODULE CODE						
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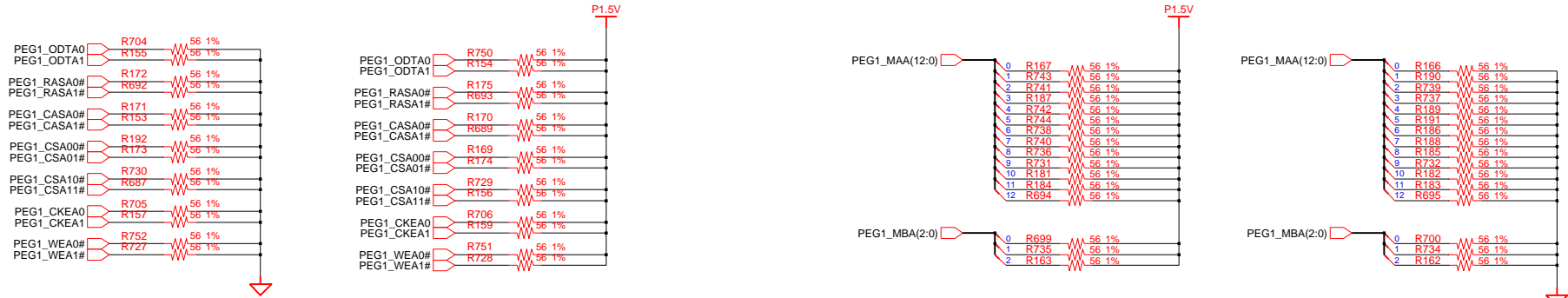
RANK1 Upper Data



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 EXT_GFX	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	REV	GDDR3 (4/4)	
APPROVAL	MK Kin	REV	REV 0.1	LAST EDIT		PART NO. BA41-
MODULE CODE						

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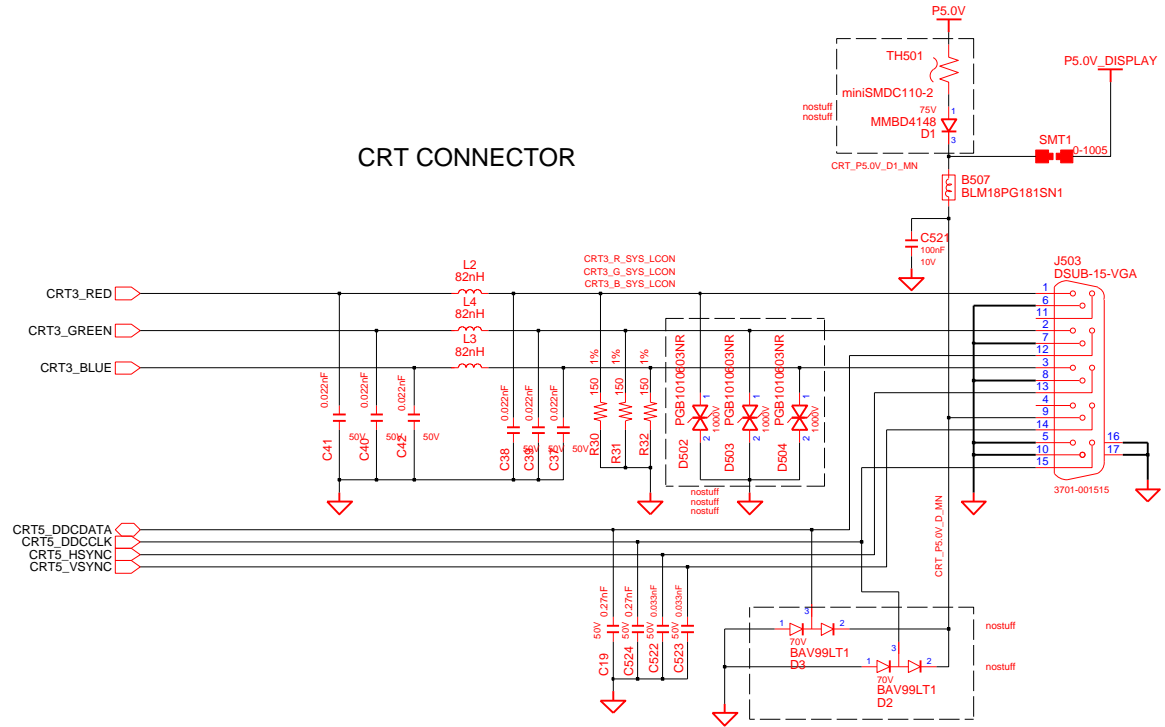
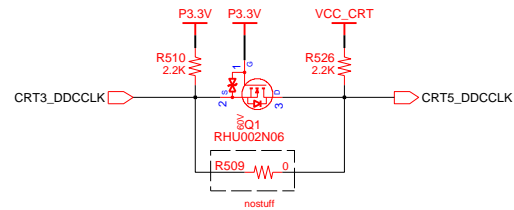
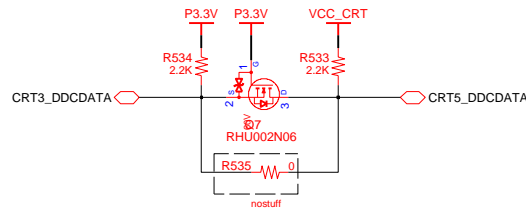
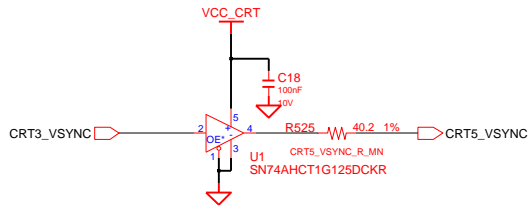
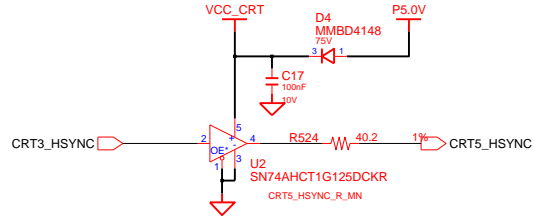
DUAL RANK Terminations



DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 GFX Dual Strap		SAMSUNG ELECTRONICS PART NO. BA41-
CHECK	SE Lee	DEV. STEP	ADV				
APPROVAL	MK Kim	REV	REV 0.1				
MODULE CODE		LAST EDIT					
				March 06, 2010 17:48:35 PM		PAGE	28 OF 54

CRT

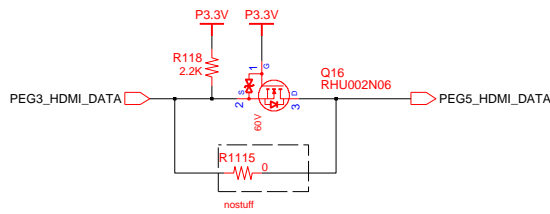
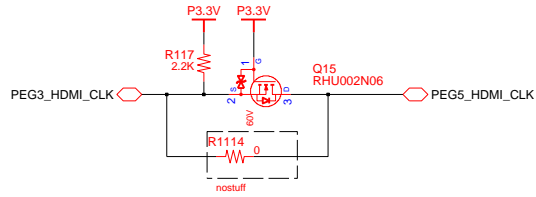
CRT CONNECTOR



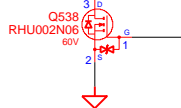
DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 GRAPHICS_IF	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1		CRT	PART NO. BA41-
MODULE CODE		LAST EDIT				

HDMI

FOR HDMI VERIFICATION TEST

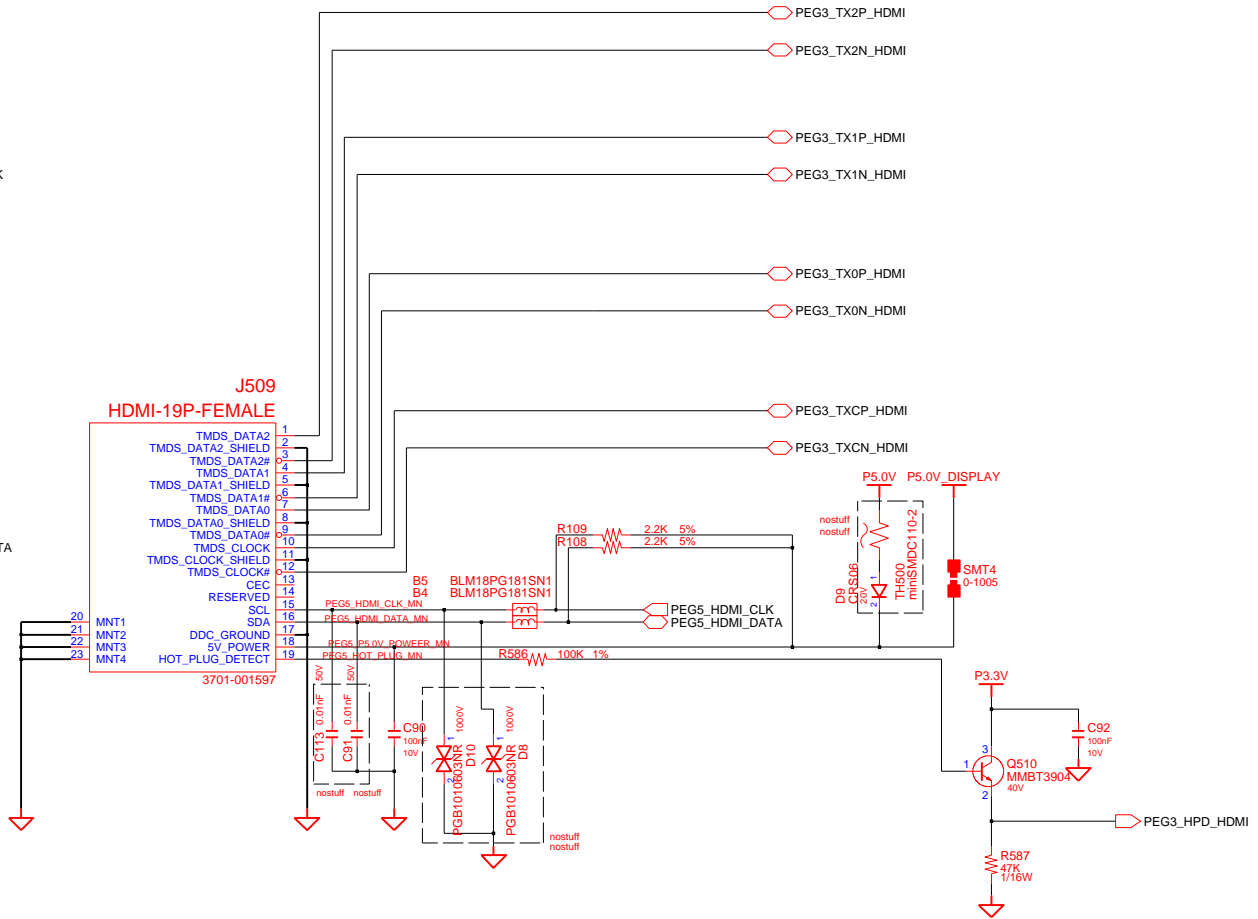


- PEG3_TX2P_HDMI R1101 499 1%
- PEG3_TX2N_HDMI R1102 499 1%
- PEG3_TX1P_HDMI R1103 499 1%
- PEG3_TX1N_HDMI R1104 499 1%
- PEG3_TX0P_HDMI R1105 499 1%
- PEG3_TX0N_HDMI R1106 499 1%
- PEG3_TXCP_HDMI R1107 499 1%
- PEG3_TXCN_HDMI R1108 499 1%



J509
HDMI-19P-FEMALE

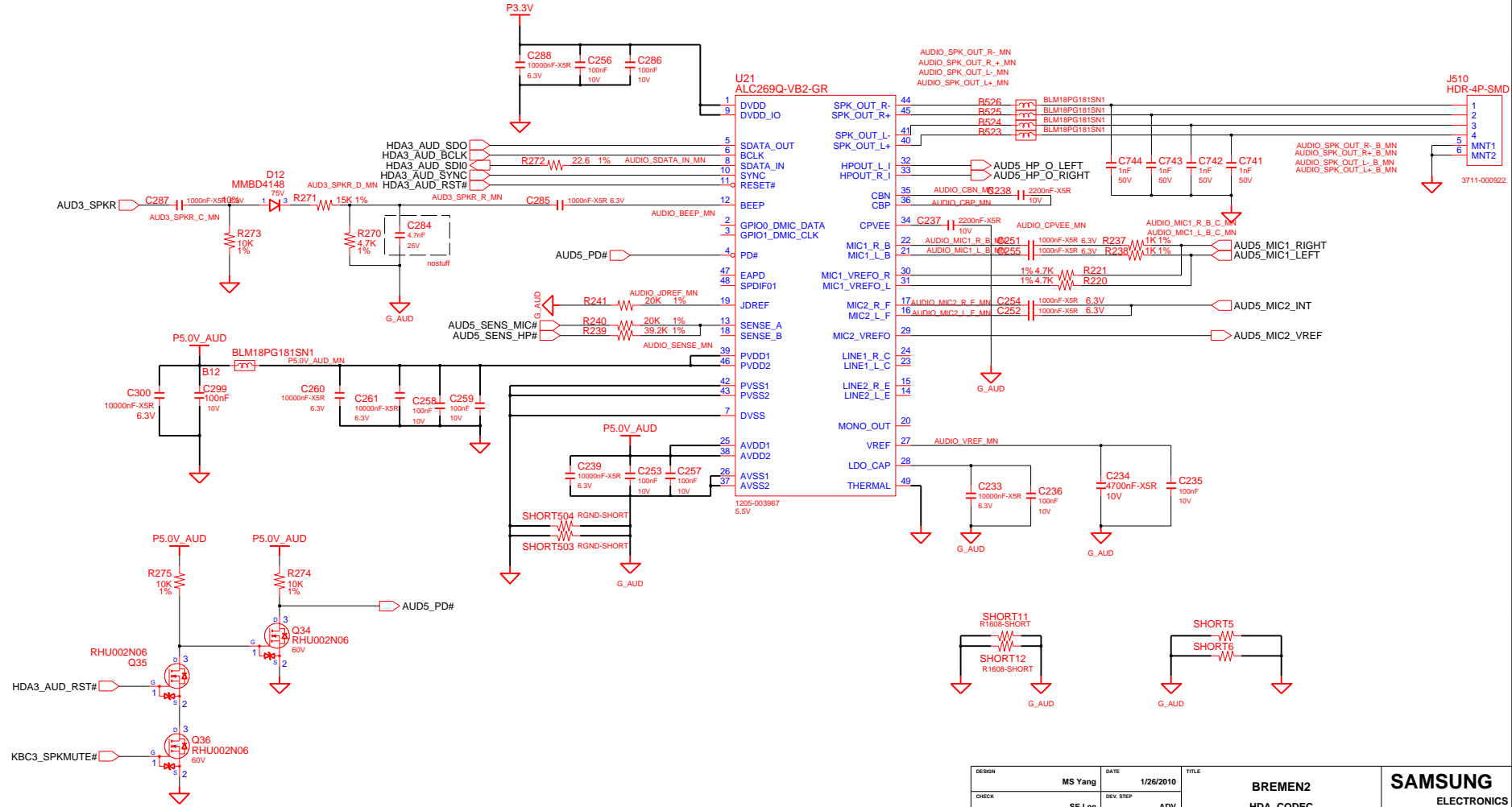
- 1 TMDS_DATA2
- 2 TMDS_DATA2_SHIELD
- 3 TMDS_DATA2#
- 4 TMDS_DATA1
- 5 TMDS_DATA1_SHIELD
- 6 TMDS_DATA1#
- 7 TMDS_DATA0
- 8 TMDS_DATA0_SHIELD
- 9 TMDS_DATA0#
- 10 TMDS_CLOCK
- 11 TMDS_CLOCK_SHIELD
- 12 TMDS_CLOCK#
- 13 RESERVED
- 14 CEC
- 15 SCL
- 16 SDA
- 17 MNT1
- 18 MNT2
- 19 MNT3
- 20 MNT4



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 GRAPHICS_IF HDMI	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1		PART NO.	BA41-
MODULE CODE		LAST EDIT			March 06, 2010 17:48:35 PM	PAGE 31 OF 54

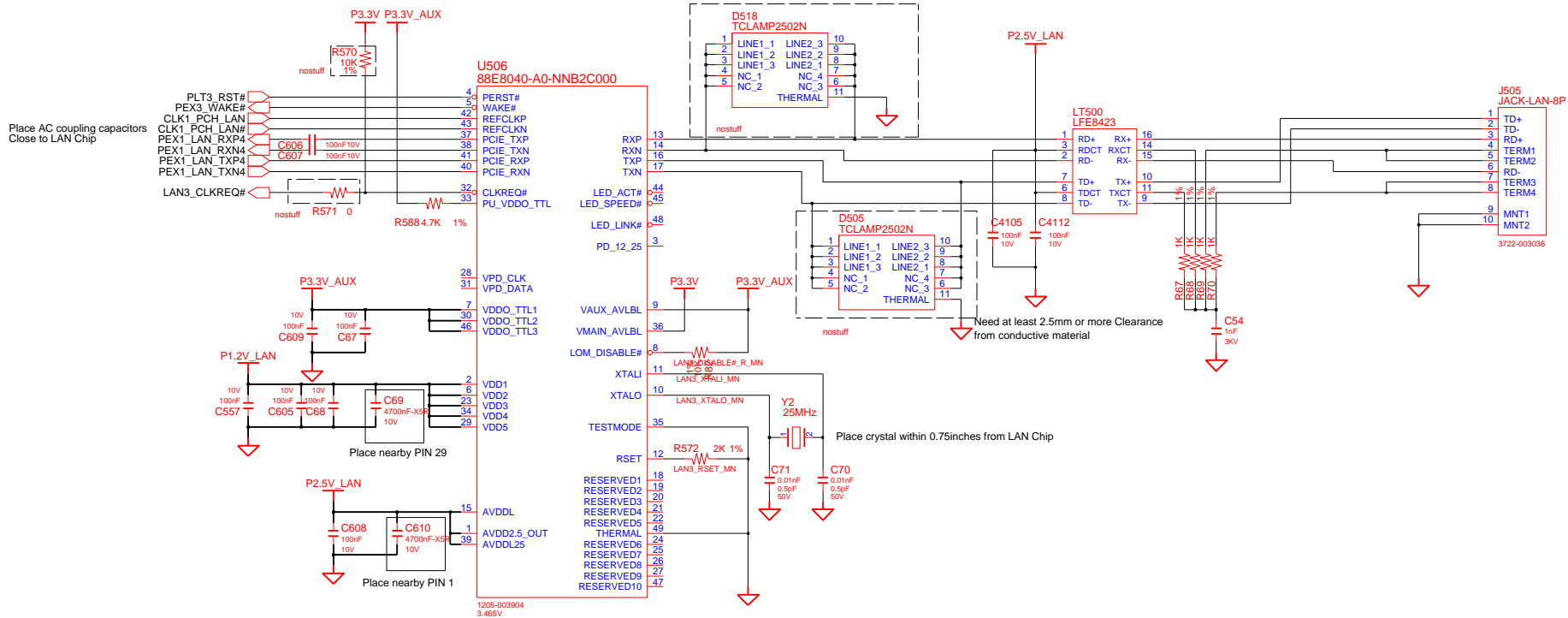
HD AUDIO

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



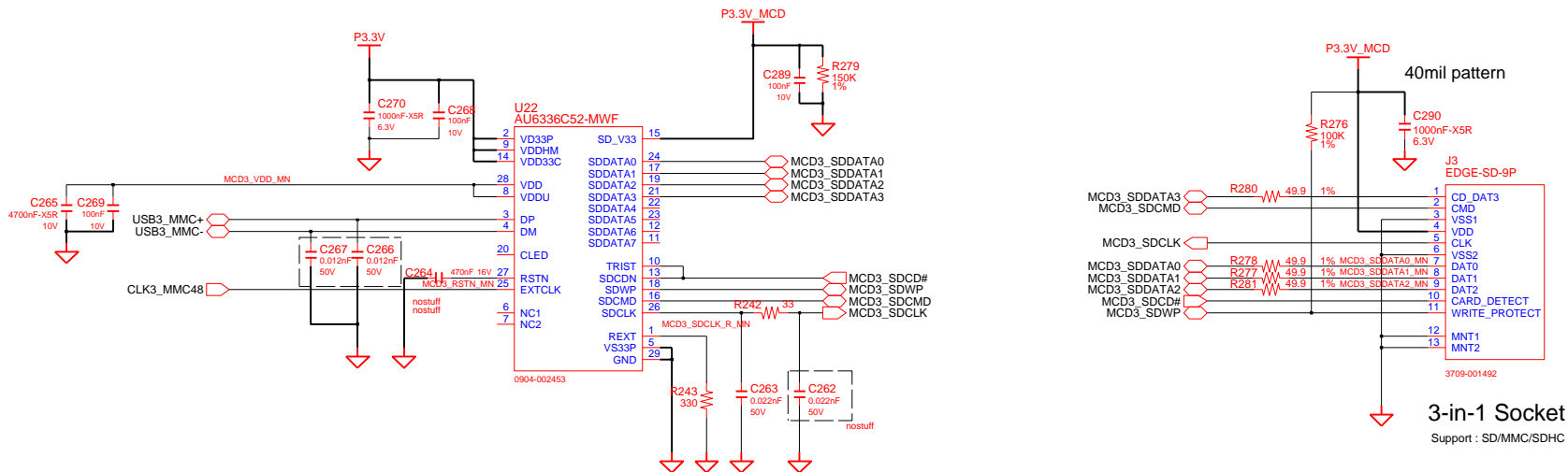
DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 HDA_CODEC	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	REV	AUDIO CODEC ALC269	
APPROVAL	MK Kim	REV	REV 0.1	LAST EDIT		PART NO. BA41-
MODULE CODE	undefined				March 06, 2010 17:48:35 PM	PAGE 32 OF 54

LAN Controller (88E8040)



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 LAN	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	LAN_Marvell_88E8040		
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

3 IN 1 CARD (AU6336)



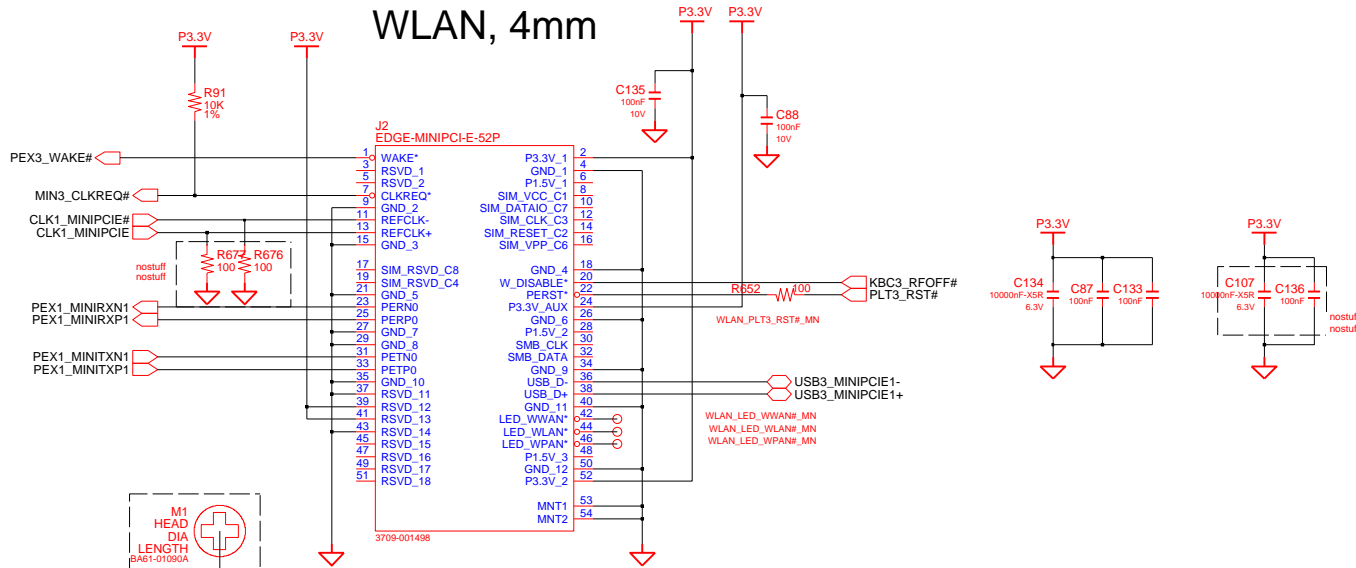
DESIGN	MS Yang	DATE	8/11/2009	TITLE	BREMEN2 MULTICARD 3 IN 1 CARD(GL827S)	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			PART NO. BA41-
MODULE CODE		LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	35 OF 54

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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

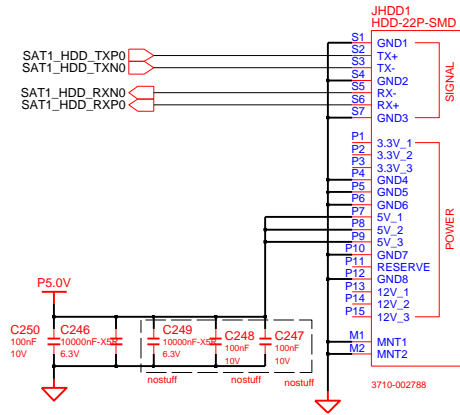


PEM : WLAN minicard (half type only)

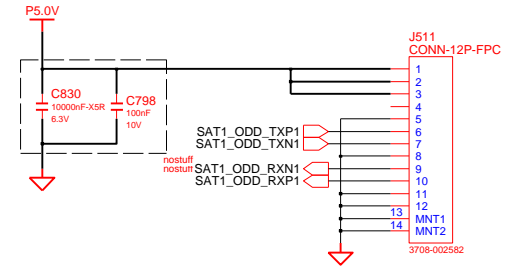
DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 MINI_PCIE_CONN	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1		WLAN	PART NO. BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	36 OF 54

SATA I/F CONN

SATA HDD CONN



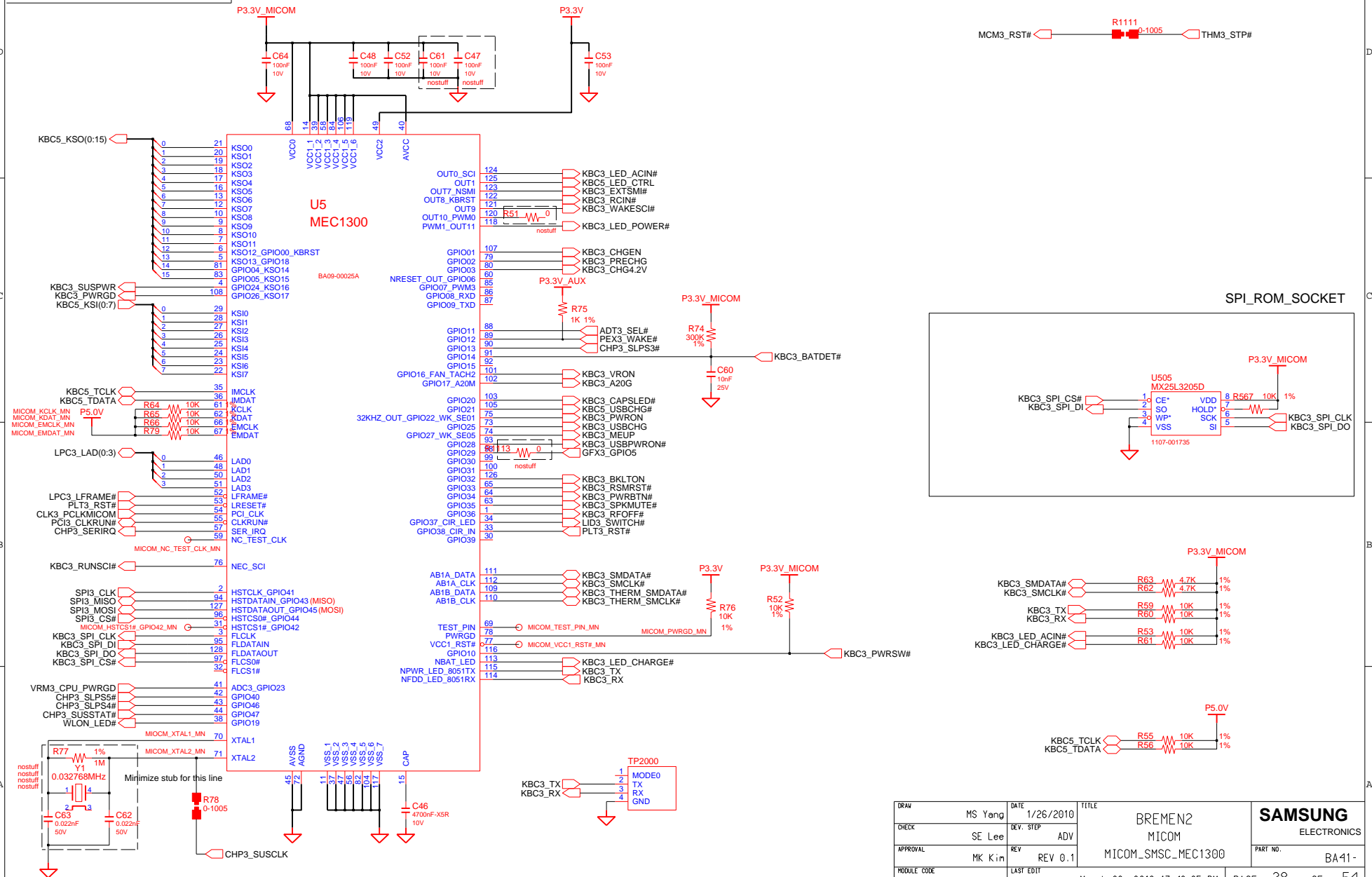
MAIN TO SUB SATA ODD CONN



DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 SATA_DEVICES	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	HDD & ODD SUB CONNECTOR		
APPROVAL	MK Kim	REV	REV 0.1	MODULE CODE	undefined	PART NO. BA41-
				LAST EDIT	March 06, 2010 17:48:35 PM	PAGE 37 OF 54

MAIN BOARD (MICOM)

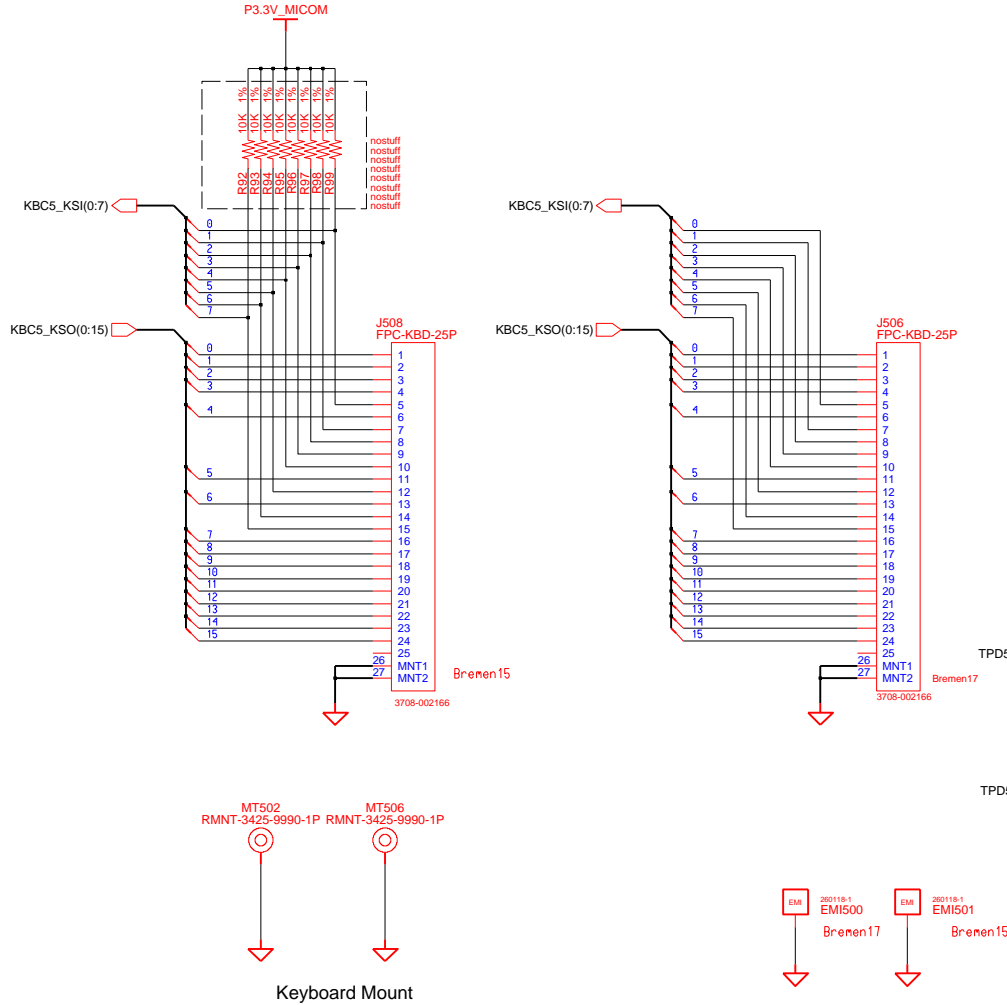
Power off logic



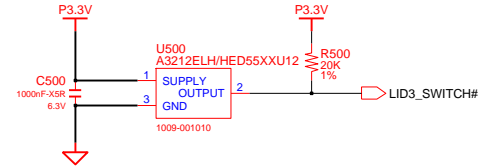
DRW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 MICOM	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	MICOM_SMSC_MEC1300		
APPROVAL	MK Ki n	REV	REV 0.1	PART NO.		BA41-
MODULE CODE		LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	38 OF 54

Micom Glue Logic

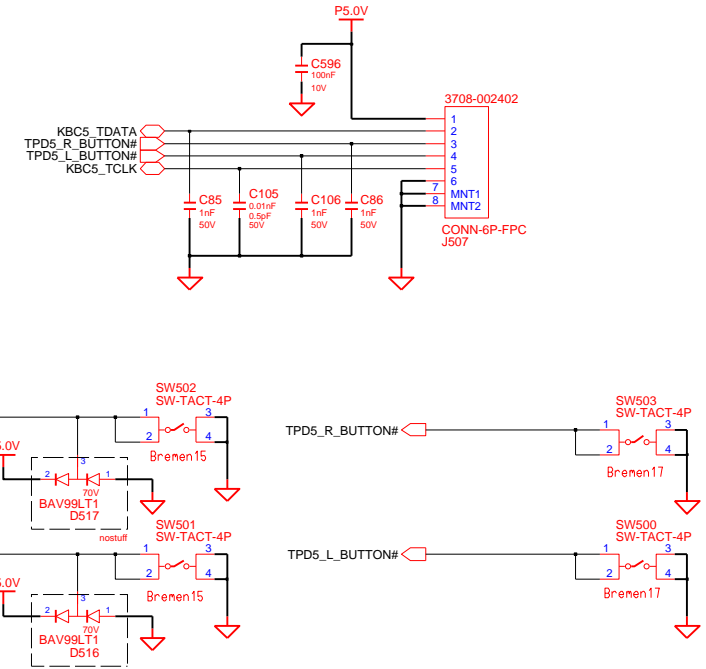
KEYBOARD



LID_SWITCH

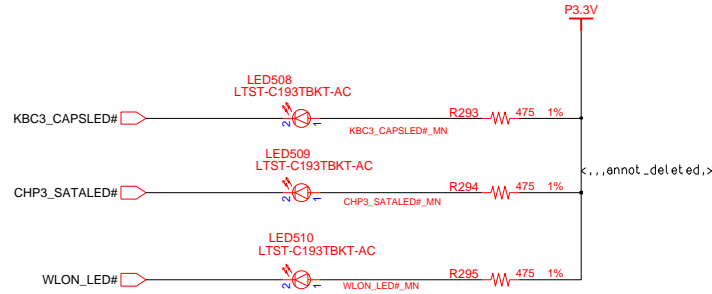


TOUCHPAD

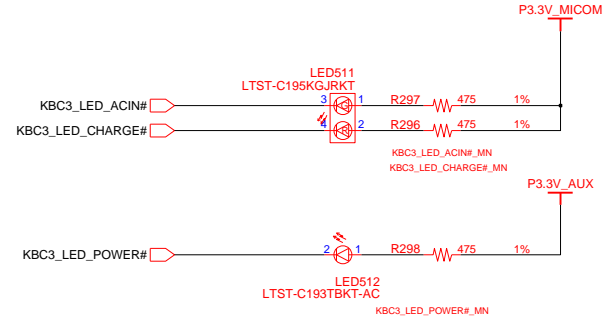


DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 MICOM GLUE LOGIC	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV	REV		
APPROVAL	MK Kim	REV	REV 0.1	REV	KETBOARD & TOUCHPAD	PART NO. BA41-
MODULE CODE	undefined	LAST EDIT			March 06, 2010 17:48:35 PM	PAGE 39 OF 54

FUNCTION KEY LED



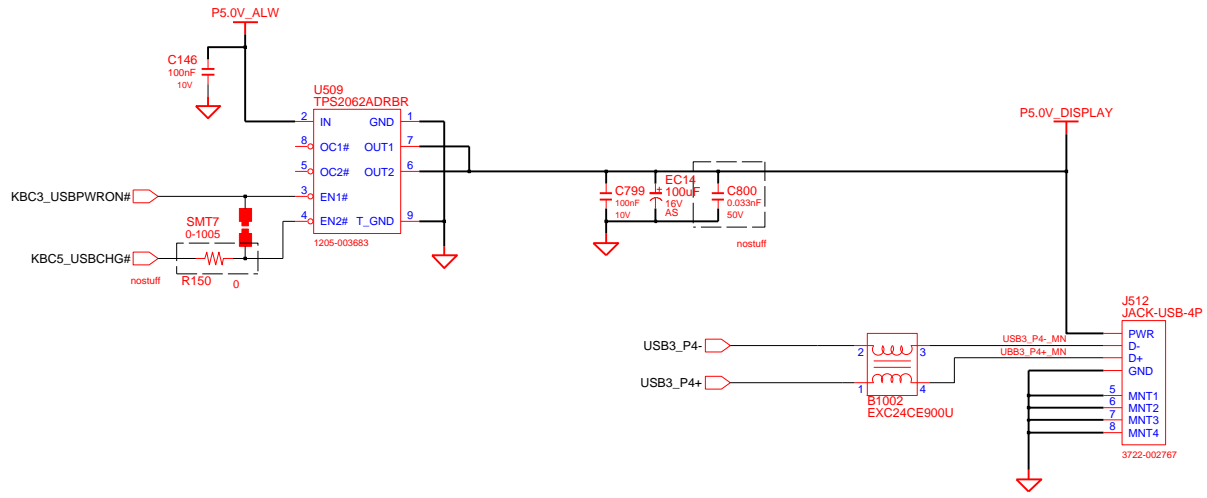
ADAPTERIN/CHARGING LED



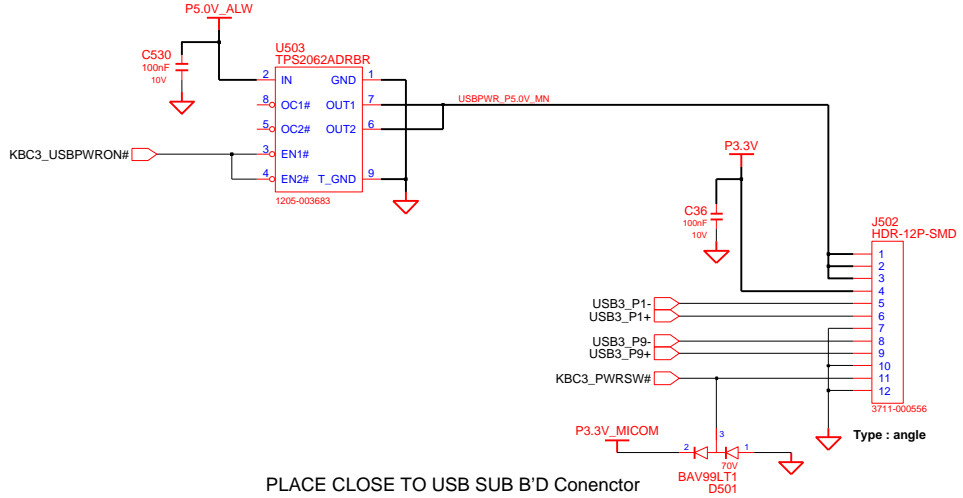
DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 LED_SWITCH LED_SWITCH	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE		LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	40 OF 54
					PART NO. BA41-	

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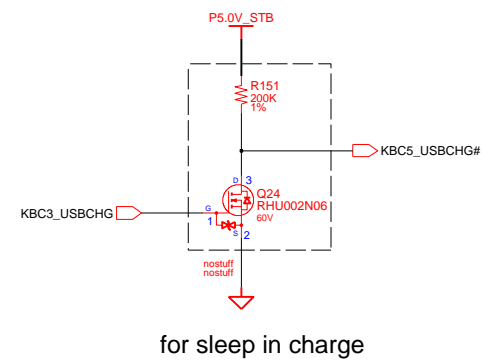
USB Single connector



USB SUB B'D CONNECTOR



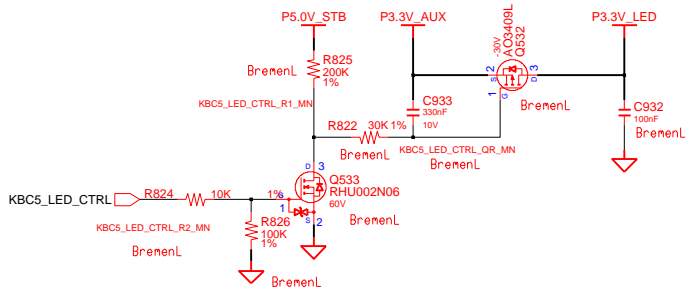
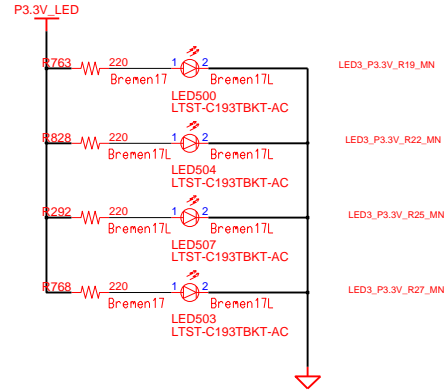
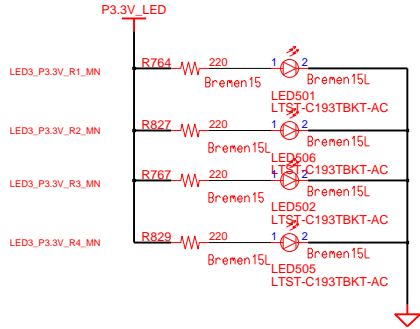
PLACE CLOSE TO USB SUB B'D Conenctor



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

Touchpad LED

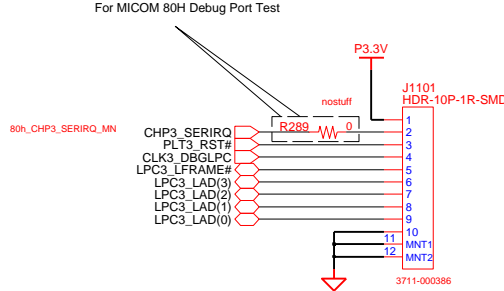
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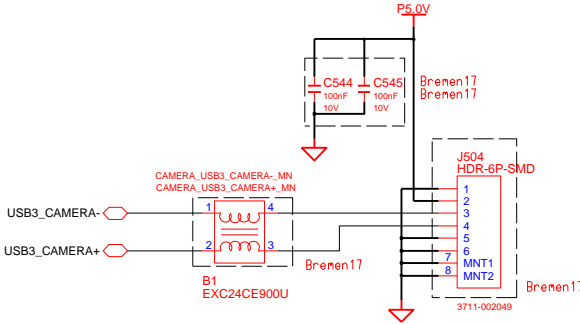
DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 TOUCHPAD LED TOUCHPAD LED	SAMSUNG ELECTRONICS PART NO. BA41-
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE		LAST EDIT	March 06, 2010 17:48:35 PM		PAGE 42 OF 54	

USB I/F Devices

80h PORT DEBUG



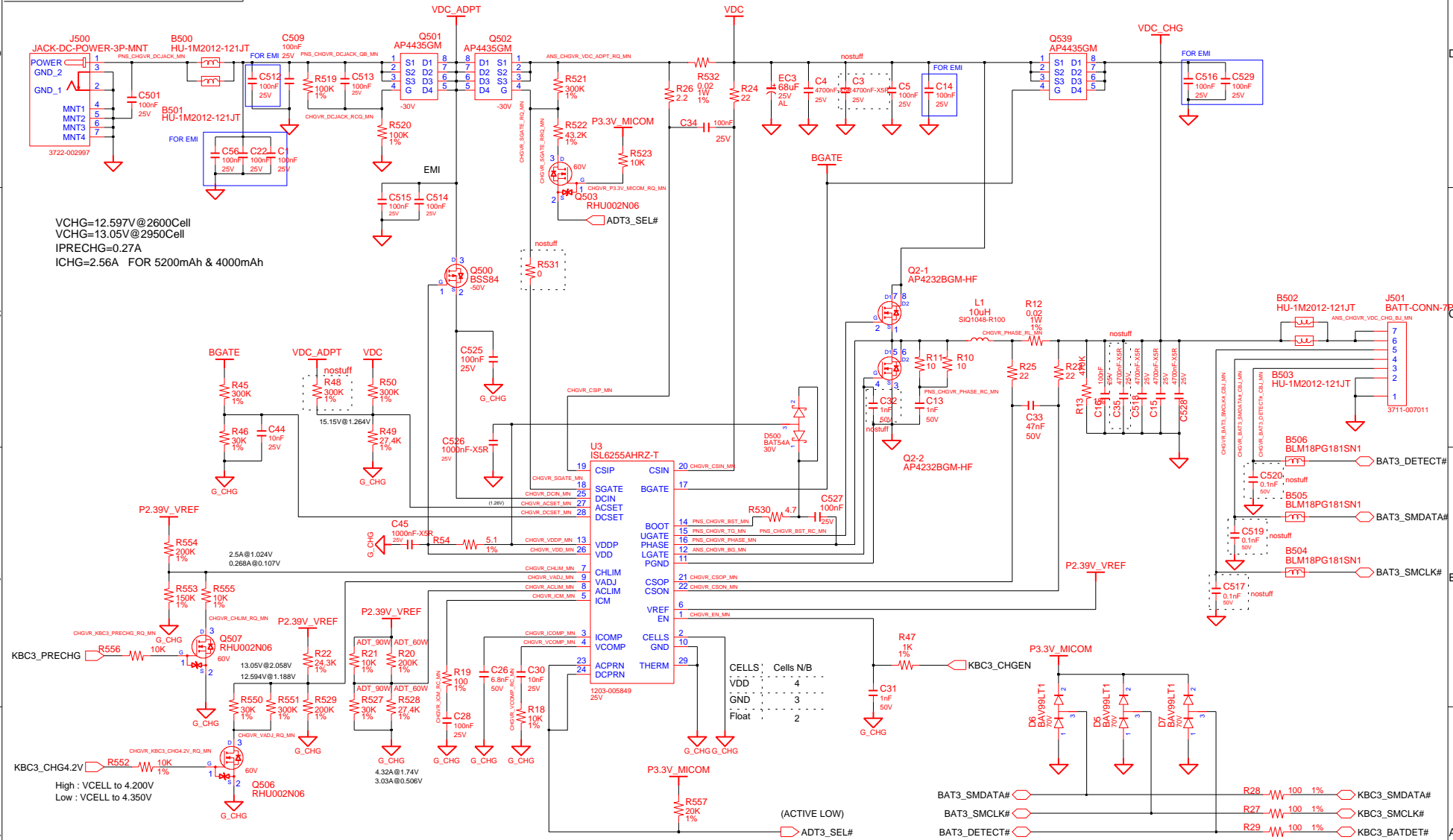
CAMERA (17Inch)



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

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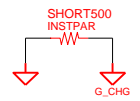
CHARGER & POWER MANAGEMENT



VCHG=12.597V@2600Cell
 VCHG=13.05V@2950Cell
 IPRECHG=0.27A
 ICHG=2.56A FOR 5200mAh & 4000mAh

KBC3_PRECHG
 High : VCELL to 4.200V
 Low : VCELL to 4.350V

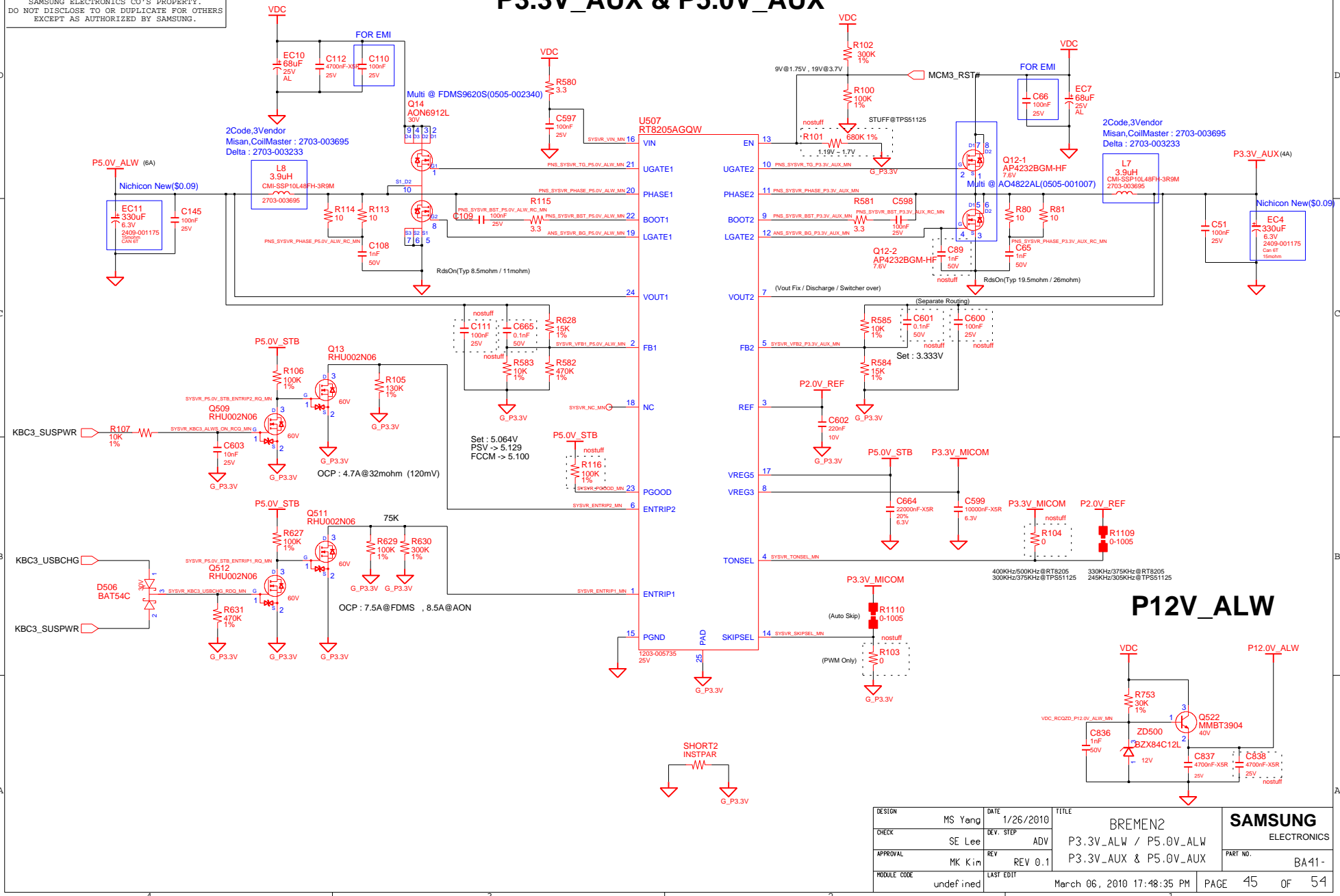
Adapter configuration				
60W / 3.03A / 96%		90W / 4.32A / 91.2%		
Value	SEC Code	Value	SEC Code	Value
Rtop	200K	2007-007334	10K	2007-007142
Rbot	27.4K	2007-007274	30K	2007-008275



DRAW	DATE	TITLE	BREMEN2		SAMSUNG ELECTRONICS
MS Yang	1/26/2010	Charger	Charger		
CHECK	DEV. STEP	ADV	Charger		PART NO. BA41-
APPROVAL	REV	REV 0.1	Charger		
MODULE CODE	LAST EDIT	undefined	March 06, 2010 17:48:35 PM		PAGE 44 OF 54

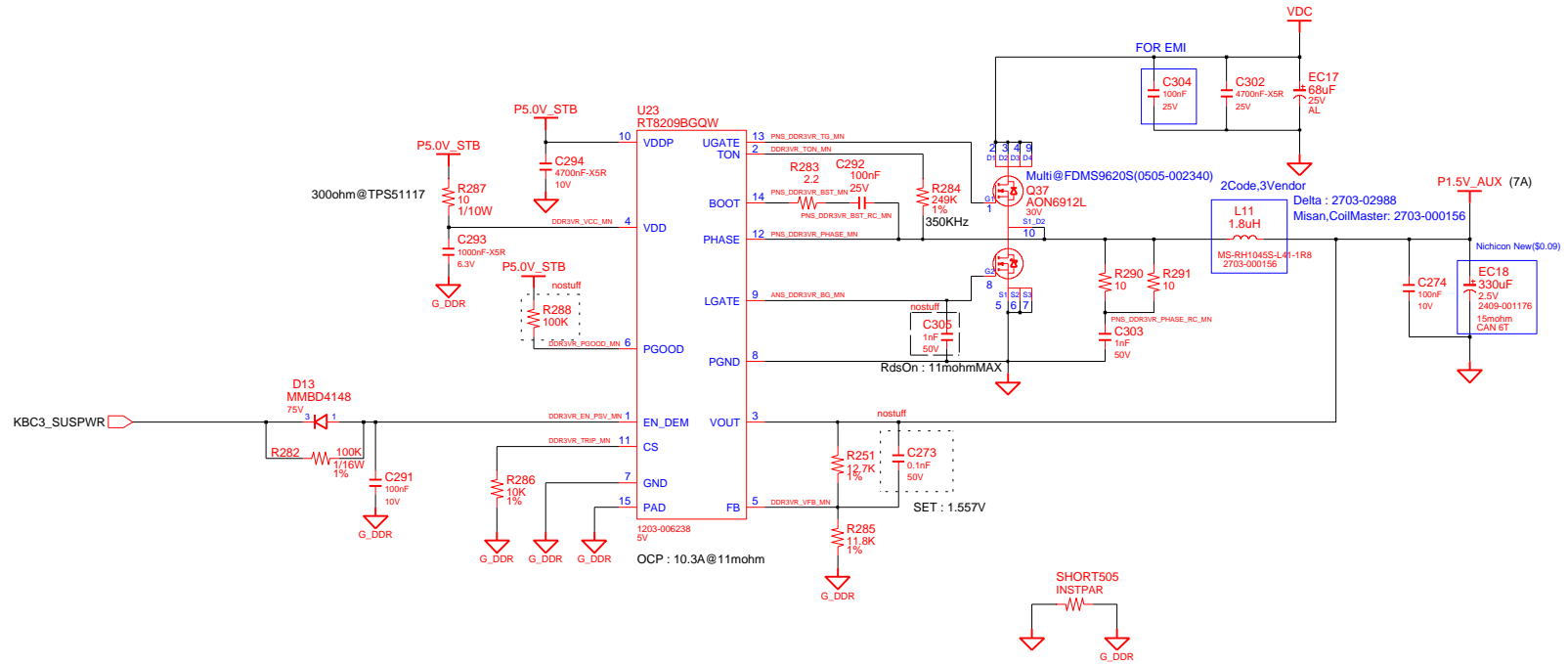
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P3.3V_AUX & P5.0V_AUX

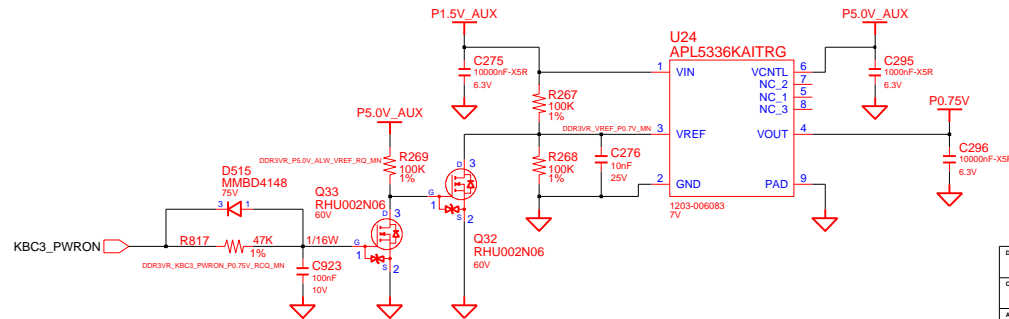


DESIGN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	P3.3V_ALW / P5.0V_ALW		
APPROVAL	MK Kin	REV	REV 0.1	P3.3V_AUX & P5.0V_AUX		PART NO.
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	45 OF 54

DDR3 Power



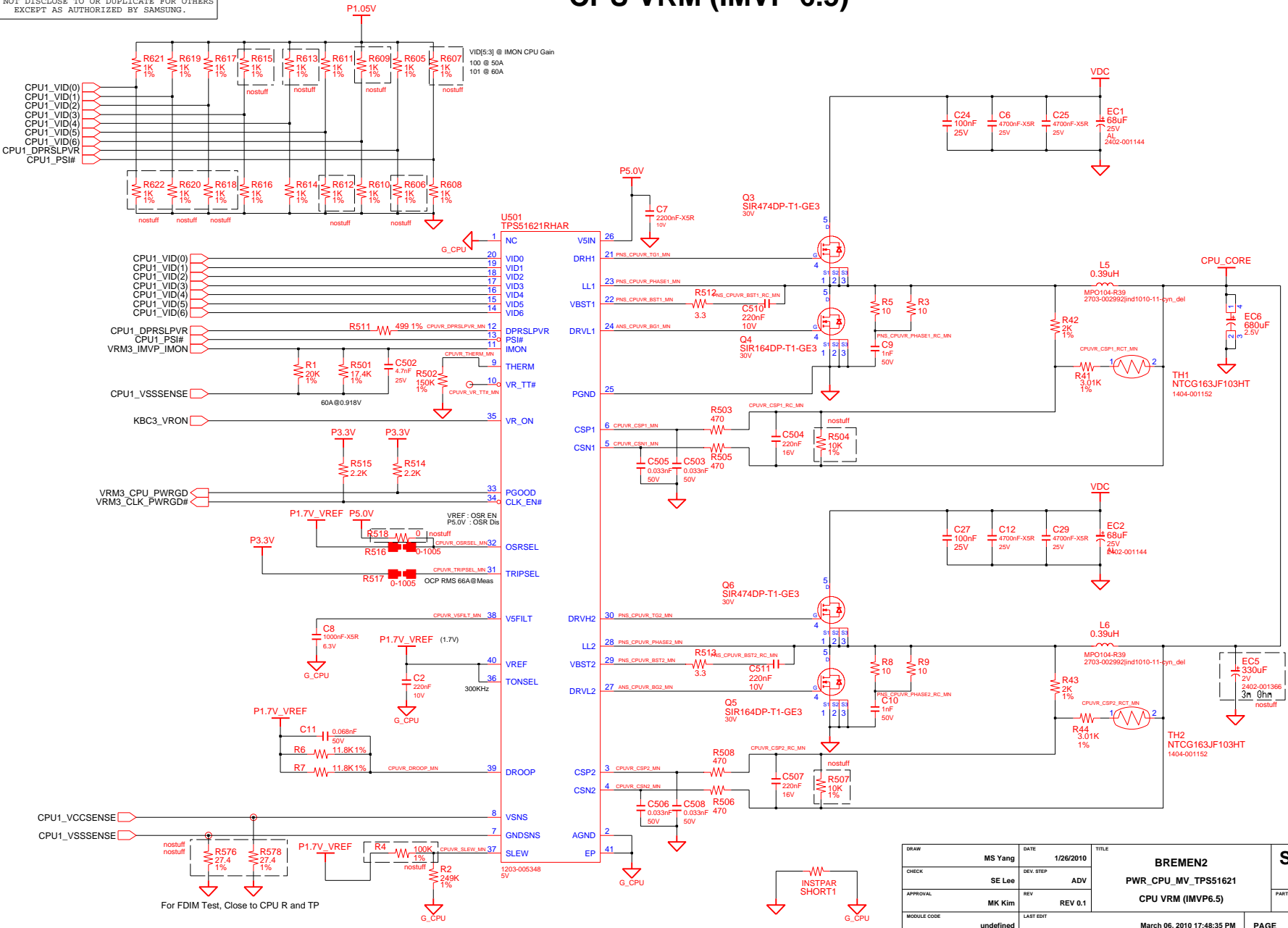
DDR3 VTT(0.75V)



DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PWR_MEMORY DDR3 POWER	SAMSUNG ELECTRONICS
CHECK	SE Lee	REV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE	undefined	LAST EDIT				PART NO. BA41-
				March 06, 2010 17:48:35 PM	PAGE	47 OF 54

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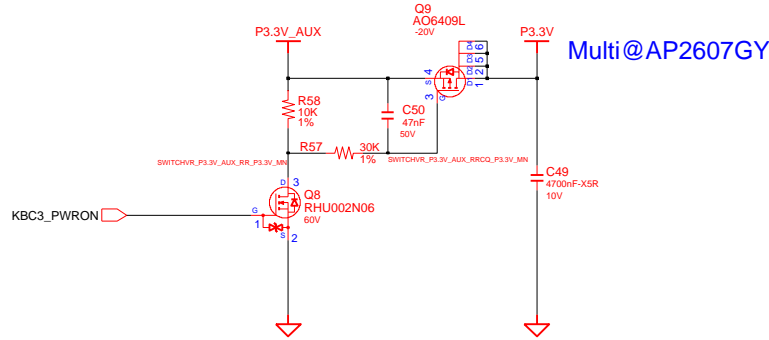
CPU VRM (IMVP-6.5)



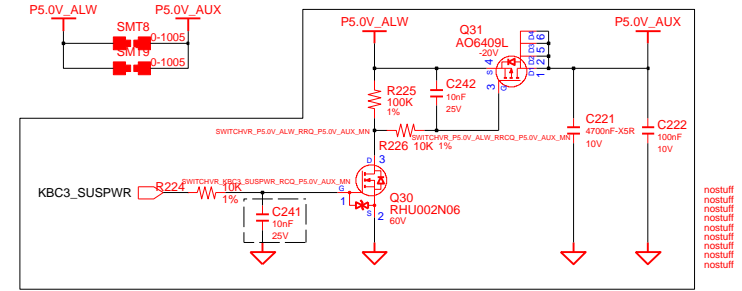
DRAWN	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PWR_CPU_MV_TPS51621		SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV	CPU VRM (IMVP6.5)		PART NO.	
APPROVAL	MK Kim	REV	REV 0.1			BA41-	
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	48	OF	54

Switched Power

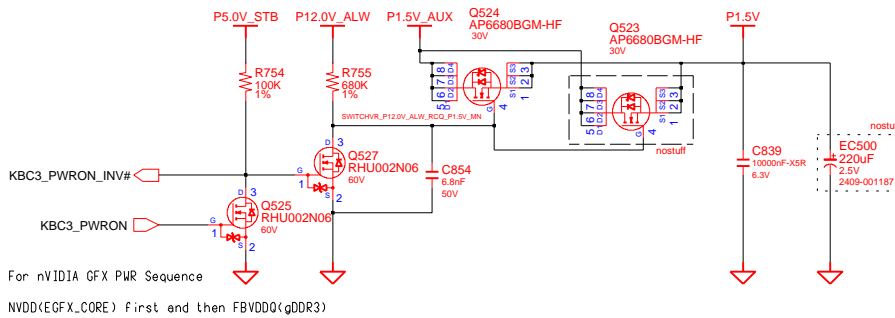
Switched Power On (P3.3V)



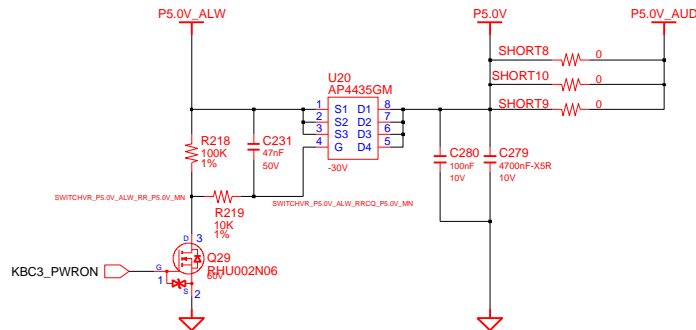
Sleep'n Charger



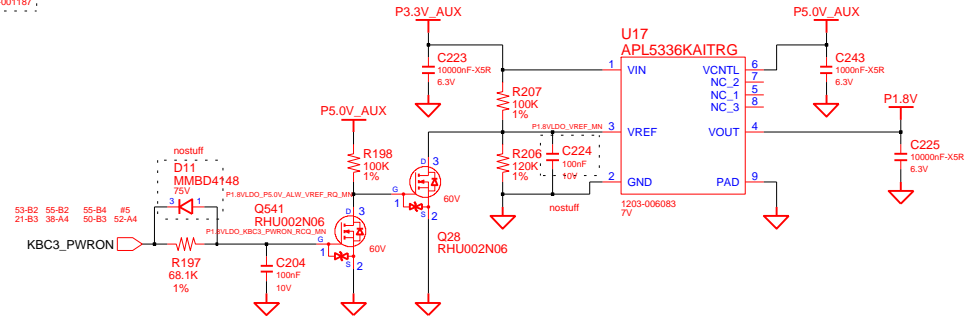
Switched Power On (P1.5V) Multi@AO4476L



Switched Power On (P5.0V) Multi@Si4435DDY

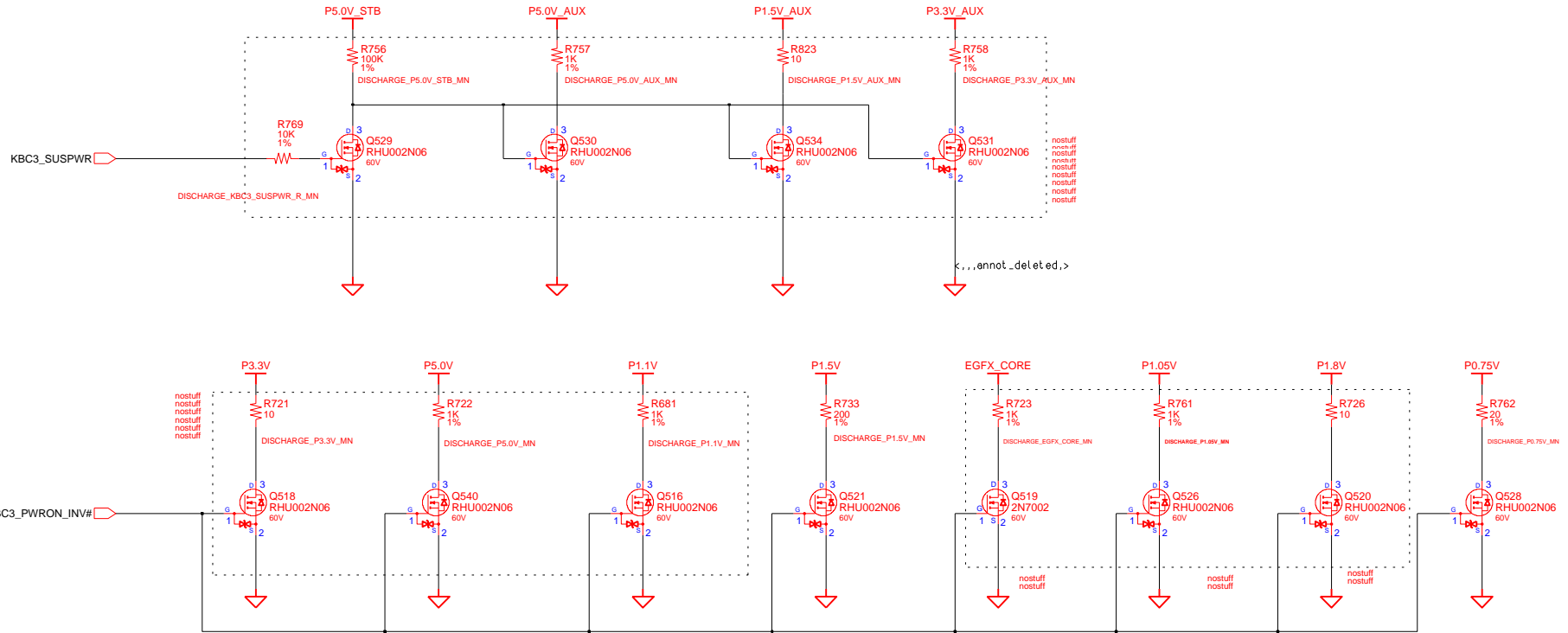


P1.8V(LDO)



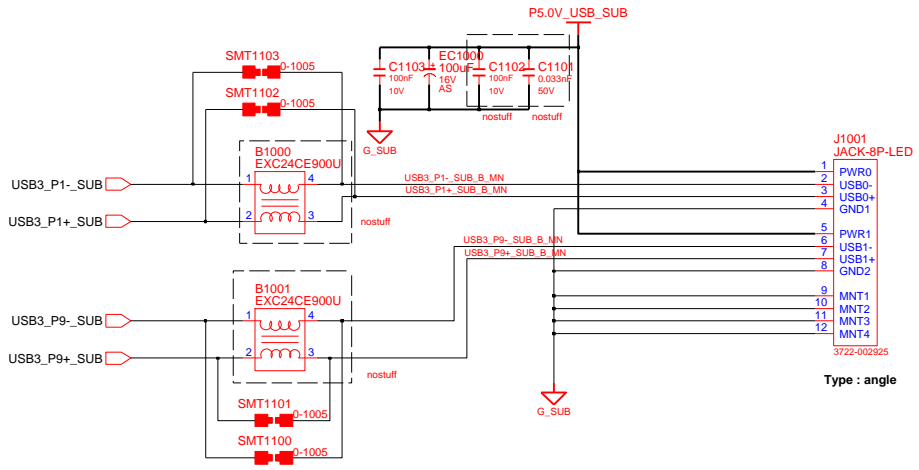
DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PWR_MV_SWITCHED	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV_STEP	ADV	SWITCHED POWER		
APPROVAL	MK Kim	REV	REV 0.1		PART NO.	BA41-
MODULE CODE	undefined	LAST EDIT		March 06, 2010 17:48:35 PM	PAGE	50 OF 54

POWER DISCHARGER

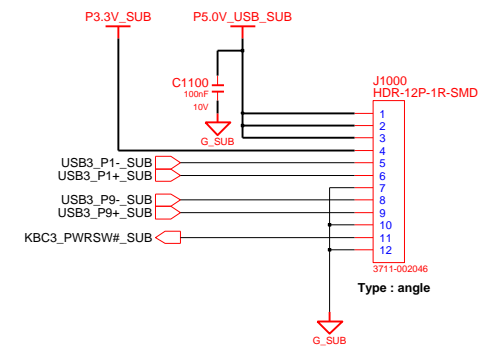


DRAW	MS Yang	DATE	1/26/2010	TITLE	BREMEN2 PWR_MV_DISCHARGER DISCHARGING LOGIC	SAMSUNG ELECTRONICS	
CHECK	SE Lee	DEV. STEP	ADV	PART NO.			
APPROVAL	MK Kim	REV	REV 0.1	BA41-			
MODULE CODE	undefined	LAST EDIT	March 06, 2010 17:48:35 PM	PAGE	51	OF	54

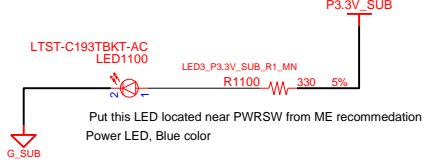
2 USB PORT & POWER S/W SUB B'D



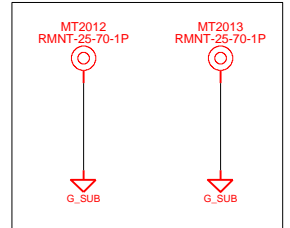
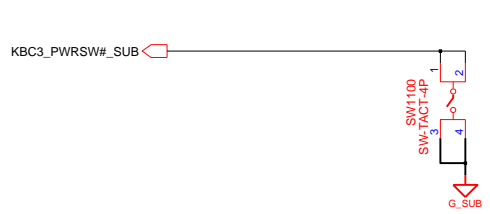
SUB TO MAIN USB CONN



Power ON LED



Power Button



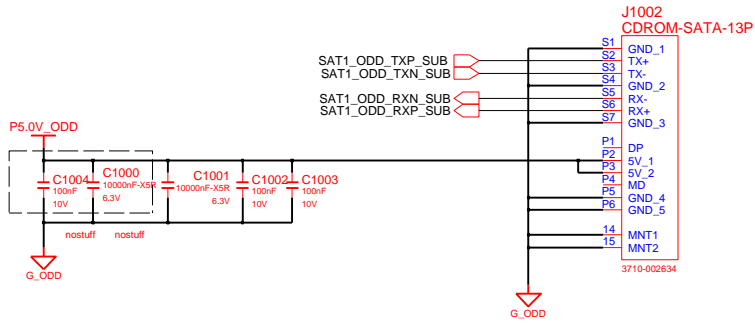
USB sub board mount hole

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

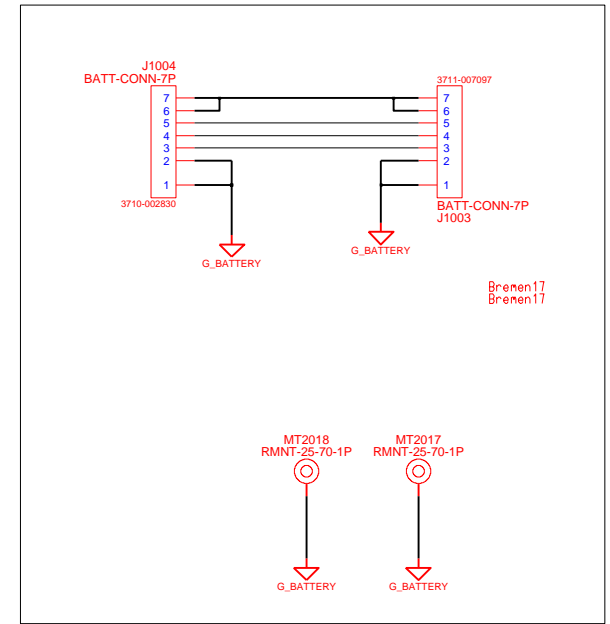
SATA ODD SUB BOARD

SATA ODD SUB BOARD

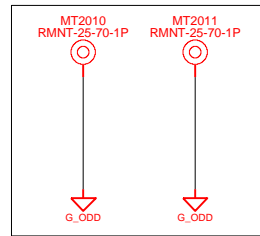
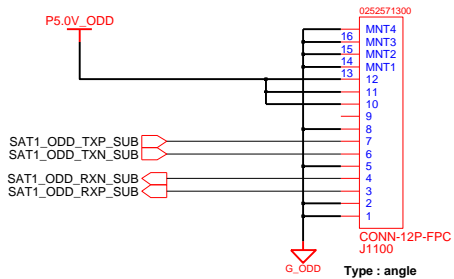
SATA ODD CONN



17" BATTERY SUBBOARD



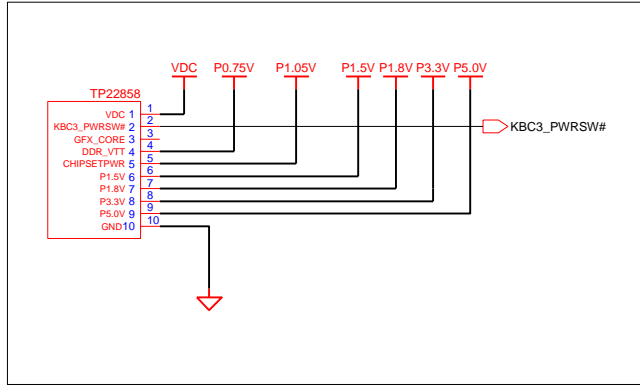
SUB TO MAIN SATA ODD CONN



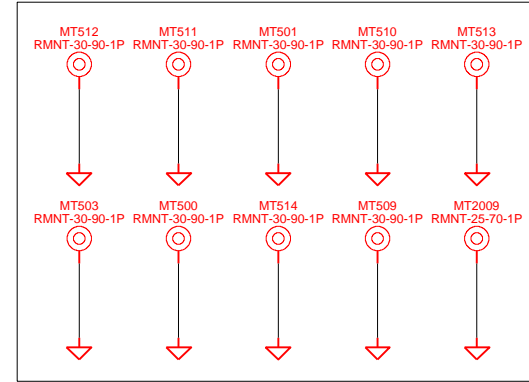
ODD sub board mount hole

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

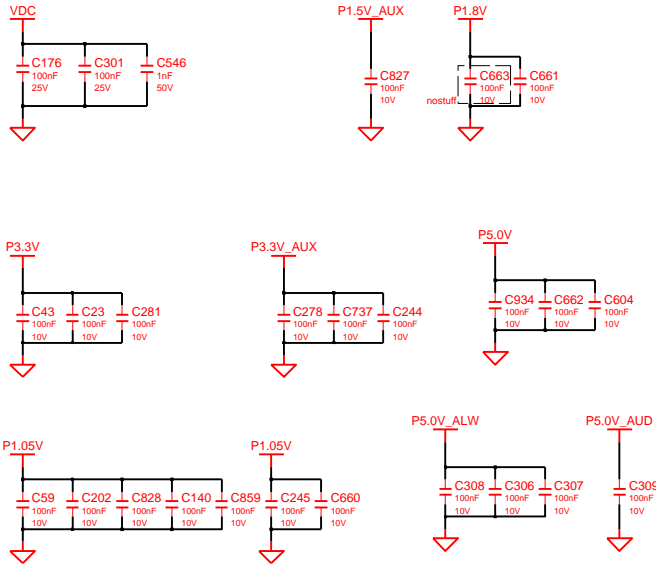
ICT PORT



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 ICT PORT ICT PORT	SAMSUNG ELECTRONICS
CHECK	SE Lee	DEV. STEP	ADV			
APPROVAL	MK Kim	REV	REV 0.1			
MODULE CODE		LAST EDIT		March 06, 2010 17:48:35 PM	PAGE 54 OF 54	PART NO. BA41-