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SCALA2-EXT

CPU : Arrandale PGA
 Chip Set : Intel Ibex Peak
 GFX : N11M
 Remarks : Calpella Platform

Model Name : SCALA2-EXT
 PBA Name : MAIN
 PCB Code : BA41-01424A (GCE)
 BA41-01423A (NY)
 BA41-01425A (HAN)
 Dev. Step : MP1.1
 Revision : 1.1
 T.R. Date : 2010.12.10

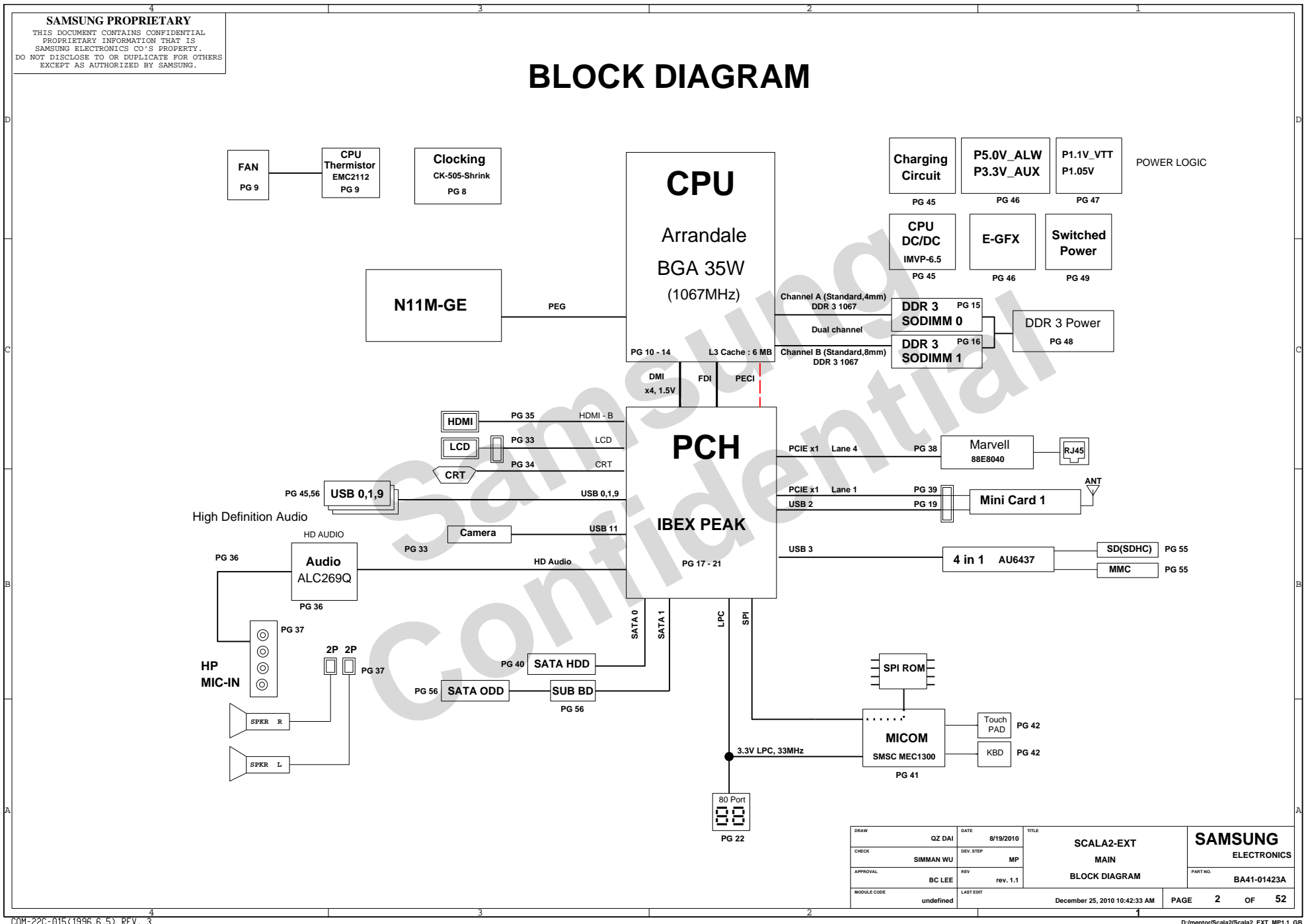
Design	CHECK	APPROVAL
<i>QZ DAI</i>	<i>SIMMAN WU</i>	<i>BC LEE</i>

■ Owner : SEC IT Solution N/P LAB Signature : wannu

sheet01 : Cover
 sheet02 : BLOCK DIAGRAM
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 sheet29 : CRT
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sheet31 : Audio - ALC269
 sheet32 : Audio - HP/MIC WOOFER(2.1CH)
 sheet33 : LAN (Realtek 8111E)
 sheet34 : WLAN
 sheet35 : SATA interface
 sheet36 : MICOM / BIOS
 sheet37 : MICOM Glue Logic (KBD / TP)
 sheet38 : USB connector Bluetooth
 sheet39 : SUB B'D connector
 sheet40 : Power - charger
 sheet41 : Power - P3.3V_AUX / P5.0V_AUX
 sheet42 : Power - P1.05V (Chipset Power)
 sheet43 : Power - DDR3
 sheet44 : Power - CPU VRM
 sheet45 : Power - IGFX_CORE
 sheet46 : Power - EGFX_CORE
 sheet47 : Power - Switched Power 1
 sheet48 : Power - Power Discharge
 sheet49 : USB/POWER SW SUB BD
 sheet50 : 3-in-1 card (GL823) & LED SUB BOARD
 sheet51 : ODD Sub B'd / Battery Sub B'd(for 15")
 sheet52 : Multimedia Sub B'd
 sheet53 : MOUNT HOLE
 sheet54 : Power - Switched Power 2
 sheet55 : Power - VCCSA

DRAW	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP	MAIN		ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1	COVER		PART NO. BA41-01423A
MODULE CODE		LAST EDIT	December 25, 2010 10:42:33 AM	PAGE	1	OF 52



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BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails		Active in
VDC P12.0V_ALW P3.3V_MICOM P5.0V_ALW P5.0V_STB	Primary DC system power supply (7 to 21V) 12.0V always power rail 3.3V always power rail (for Micom) 5.0V always power rail 5.0V always power rail	S4 - S5
P5.0V_AUX P3.3V_AUX P1.5V_AUX	5.0V switched on power rail (off in S4-S5) 3.3V switched on power rail (off in S4-S5) 1.5V power rail for DDR (off in S4-S5)	
P5.0V P3.3V P1.8V P1.5V P1.05V P0.75V	5.0V switched power rail (off in S3-S5) 3.3V switched power rail (off in S3-S5) 1.8V switched power rail (off in S3-S5) 1.5V switched power rail (off in S3-S5) 1.05V power rail for chipset (off in S3-S5) 0.9V power rail for DDR (off in S3-S5)	
VCC_CORE IGFX_CORE EGFX_CORE P1.05V (VCCP)	Core Voltage for CPU Core Voltage for IGFX Core Voltage for GPU VCC for Arrandale & IBEX Peak	

USB PORT Assign		PCI Express Assign	
PORT #	ASSIGNED TO	PORT #	ASSIGNED TO
0	SYSTEM PORT 0	1	Mini Card 1 (WLAN)
1	SYSTEM PORT 1	2	NC
2	Mini PCI Express	3	NC
3	Multi Memory Card Controller	4	LAN CONTROLLER
4	NC	5	NC
5	NC	6	NC
6	NC (N/A WITH HM55)	7	NC (N/A WITH HM55)
7	NC (N/A WITH HM55)	8	NC (N/A WITH HM55)
8	NC		
9	SYSTEM PORT 2 (SUB BOARD)		
10	Bluetooth		
11	Camera		
12	NC		
13	NC		

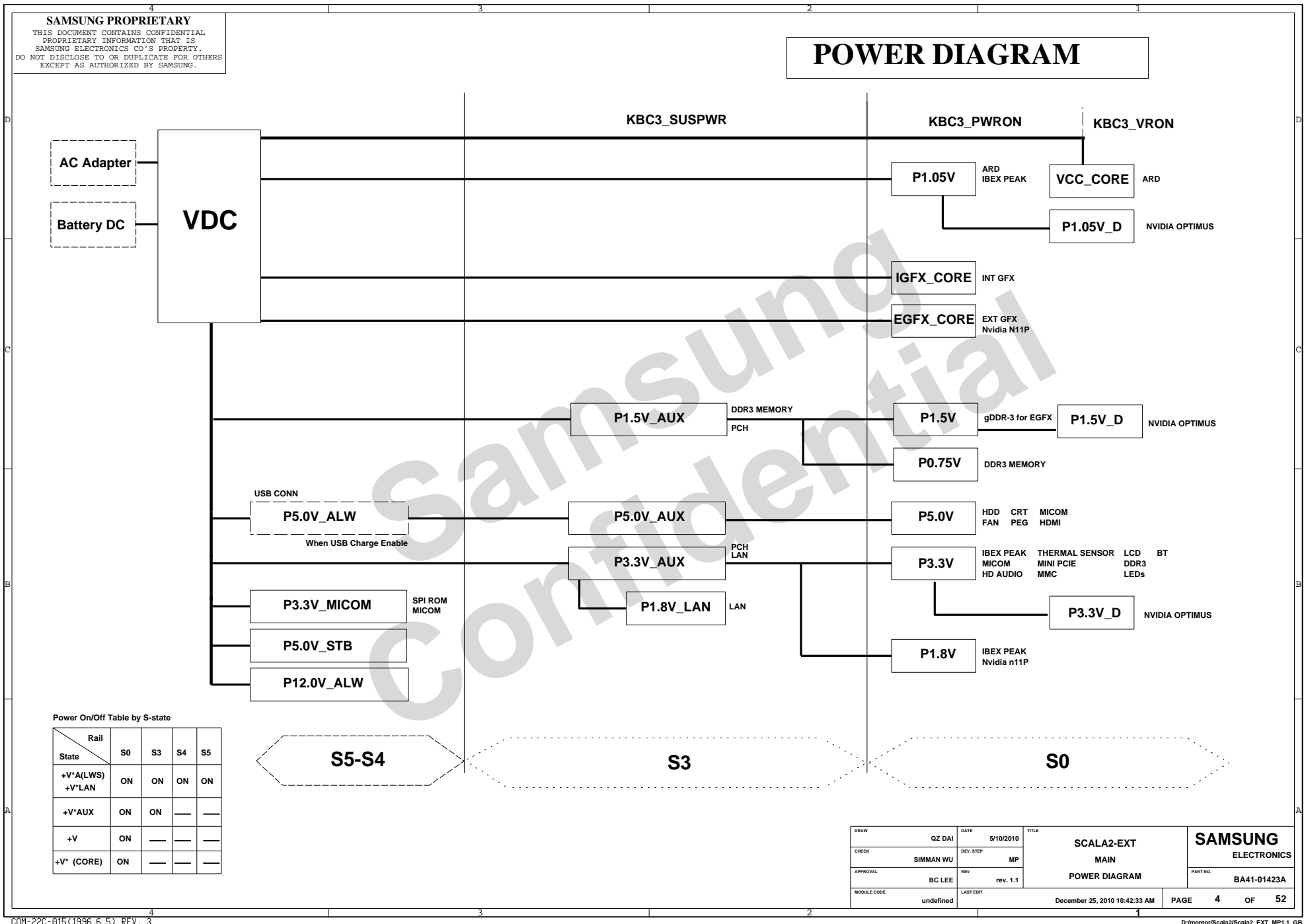
SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD
1	ODD
2	(N/A WITH HM55)
3	(N/A WITH HM55)
4	
5	

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	IBEX-PEAK	Real Time Clock
Crystal	14.318MHz	CLOCK-Generator	CK-505
Crystal	25MHz	LAN	Intel LAN

LCD Pannel Detect		
Devices	Resolution	PANNEL_DETECT_0
LTN140AT17	HD(1366x768)	SEC3250

I ² C / SMB Address			
Devices	Address	Hex	Bus
IBEX PEAK	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	
SODIMM0	1010 000x	A0h	Thermal Sensor
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
CK-505M Shrink(Clock Generator)	1101 001x	D2h	Clock, Unused Clock Output Disable
Thermal Sensor on board	1101 100x	98h	
Power thermal management TS	1101 011x	96h	

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CHECK	SIMMAN WU	DEV. STEP	MP		MAIN	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1		BOARD INFO	PART NO.
MODULE CODE	undefined	LAST EDIT	December 25, 2010 10:42:33 AM			BA41-01423A
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Power Distribution Diagram for N11P-LP

Power Sources:

- Adapter
- Battery

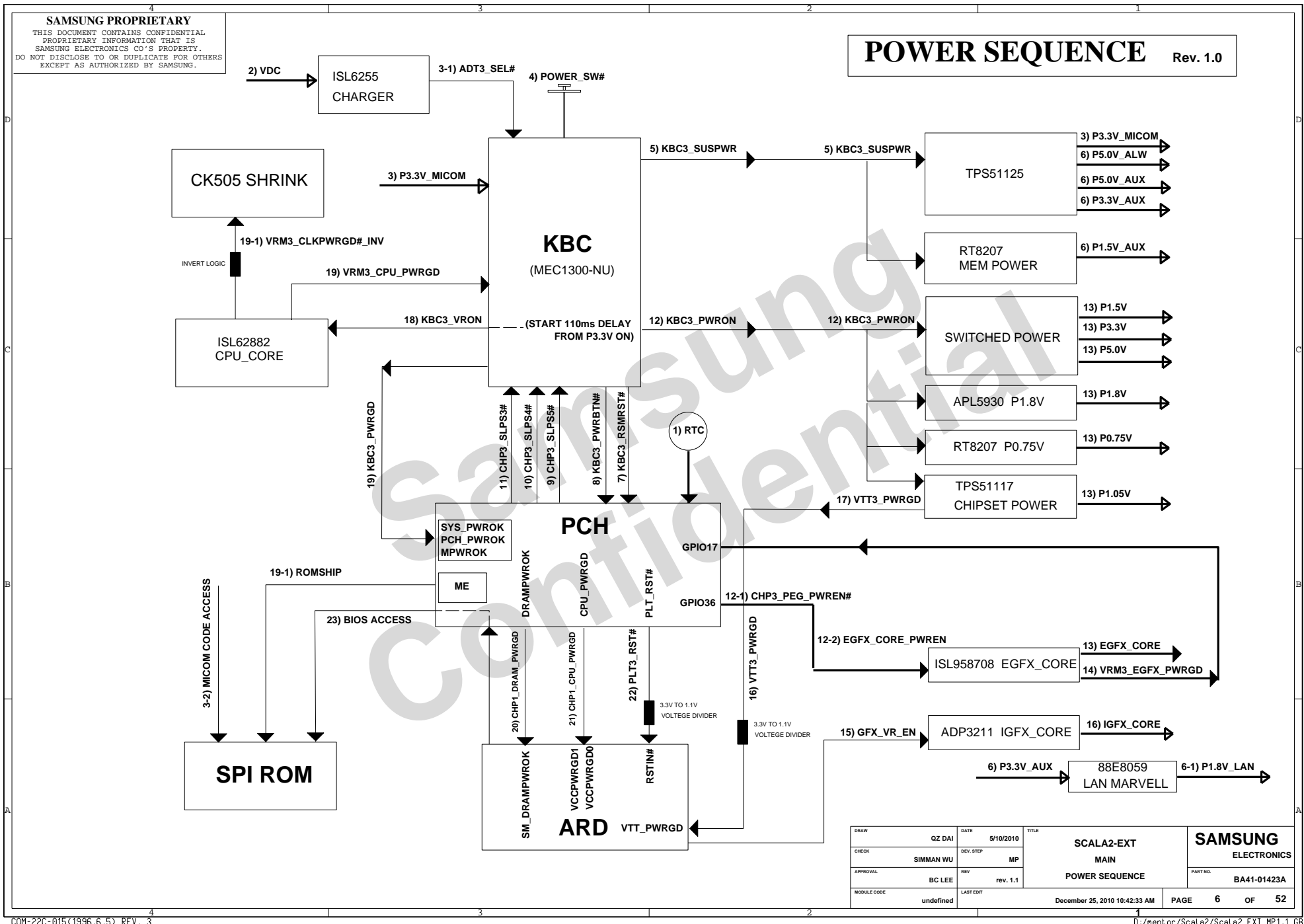
Power Rails and Connections:

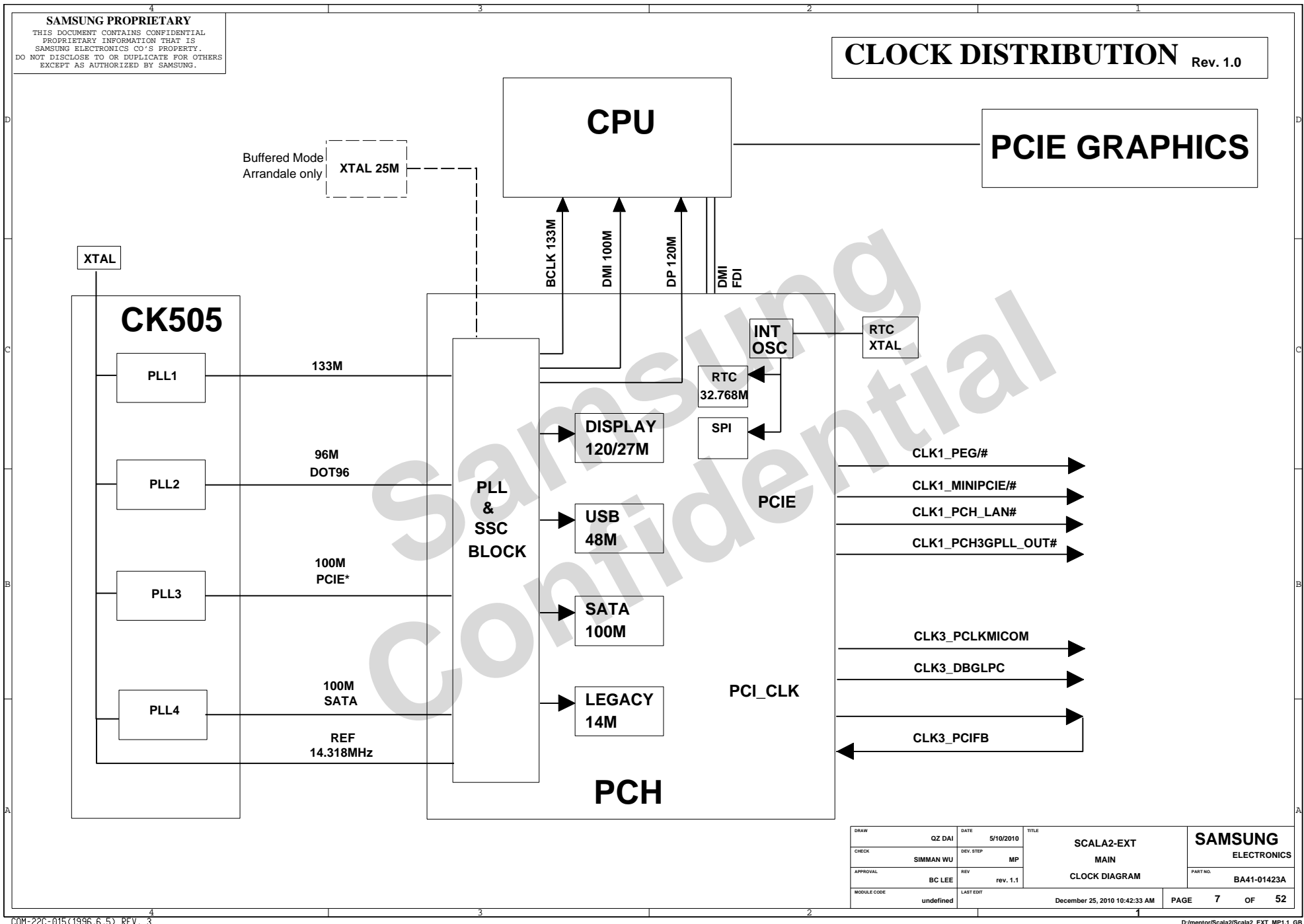
- 3.3V_AUX (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A), VGA CORE (TBD A), RTC Battery
- MICOM 3V (TBD A):** 1.8V (TBD A), 1.8V (TBD A)
- 1.8V (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- 1.05V (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- 1.5V (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- 3.3V (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- 5.0V (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- 1.5V_AUX (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- 0.75V (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- VGA CORE (TBD A):** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)
- RTC Battery:** IGFX CORE (TBD A), CPU CORE (TBD A), 1.05V (TBD A), 1.5V (TBD A), 3.3V (TBD A), 5.0V (TBD A), 1.5V_AUX (TBD A), 0.75V (TBD A)

Components and Power Requirements:

- ARD BGA (~35 W):** 1.3 A (TBD), 22 A (TBD), 48 A (TBD), 20.6 A (TBD), 3.2 A (TBD)
- IBEX PEAK PCH (~3.9 W):** 6.09 A (TBD), 0.227 A (TBD), 0.08 A (TBD), 0.412 A (TBD), 0.008 A (TBD), 0.001 A (TBD), 0.001 A (TBD)
- N11P-LP:** 25.73 A (TBD), 3.82 A (TBD), 1.38 A (TBD), 6.49 A (TBD)
- DDR-3 (Dual slots) (~ 5.0 W):** Total max 2.8 A (TBD)
- gDDR3 (x4):** 1.16 A (TBD)
- LCD:** 0.67 A (TBD)
- LAN (88E8059):** P3.3V_AUX 0.08 A (TBD), P1.8V_LAN 0.29 A (TBD), P1.0V_LAN 0.15 A (TBD)
- Thermal Sensor:** 0.75 A (TBD)
- CLOCK:** 0.25 A (TBD)
- SPI:** 0.015 A (TBD)
- HD Audio:** 0.06 A (TBD), 0.07 A (TBD)
- SATA ODD:** 1.5 A (TBD)
- SATA HDD:** 0.22 A (TBD)
- FAN:** 0.16 A (TBD)
- USB (x 3):** 2 A (TBD)
- Touch Pad:** 0.2 A (TBD)
- KBC:** MICOM 3V 3.3V 0.08 A (TBD), 0.08 A (TBD)
- PWR LED:** MICOM 3V 0.1 A (TBD)
- SD Card:** 3.3V 0.1 A (TBD)
- Mini Card:** 3.3V 1.5 A (TBD)

DRAW	QZ DAI	DATE	5/10/2010	TITLE SCALA2-EXT MAIN POWER RAILS	SAMSUNG ELECTRONICS		
CHECK	SIMMAN WU	DEV. STEP	MP				
APPROVAL	BC LEE	REV	rev. 1.1				
MODULE CODE	undefined	LAST EDIT	December 25, 2010 10:42:33 AM			PAGE	5
				PART NO.	BA41-01423A		





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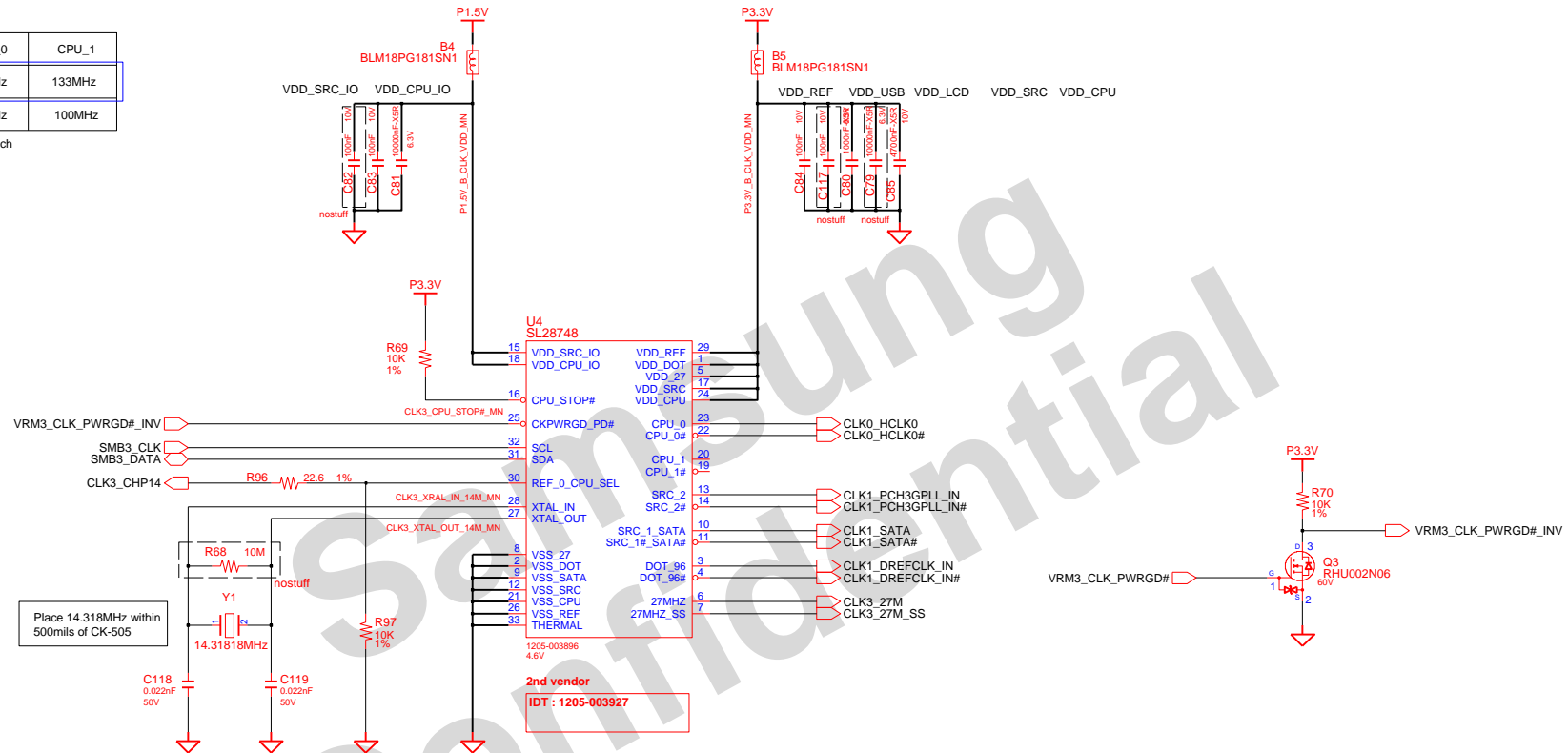
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CK505M SHRINK VERSION

CPU_MODE SEL

Pin 30	CPU_0	CPU_1
CPU_SEL = 0	133MHz	133MHz
CPU_SEL = 1	100MHz	100MHz

*CPU_SEL During CK_PWRGD Latch



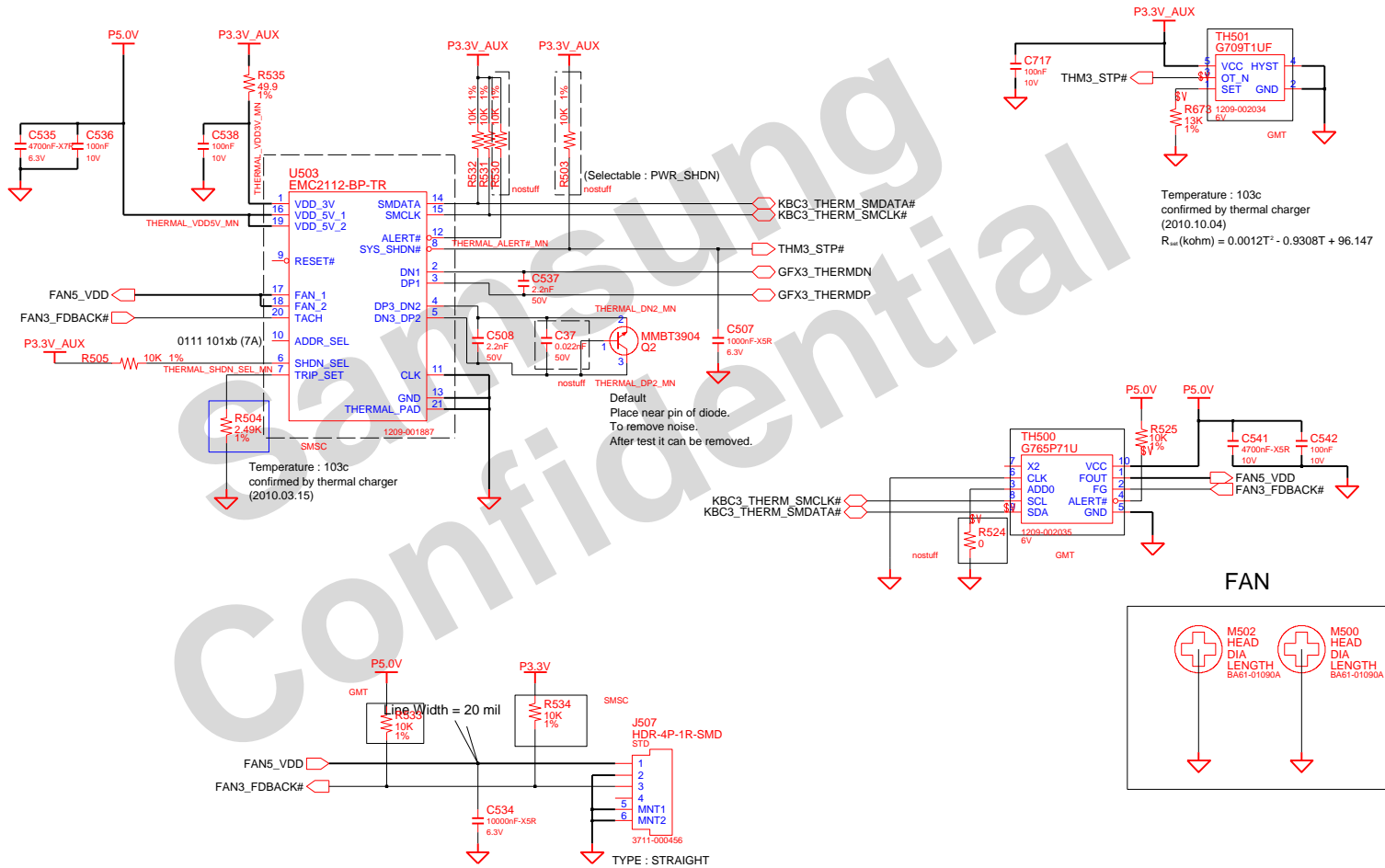
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THERMAL SENSOR & FAN CONTROL

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

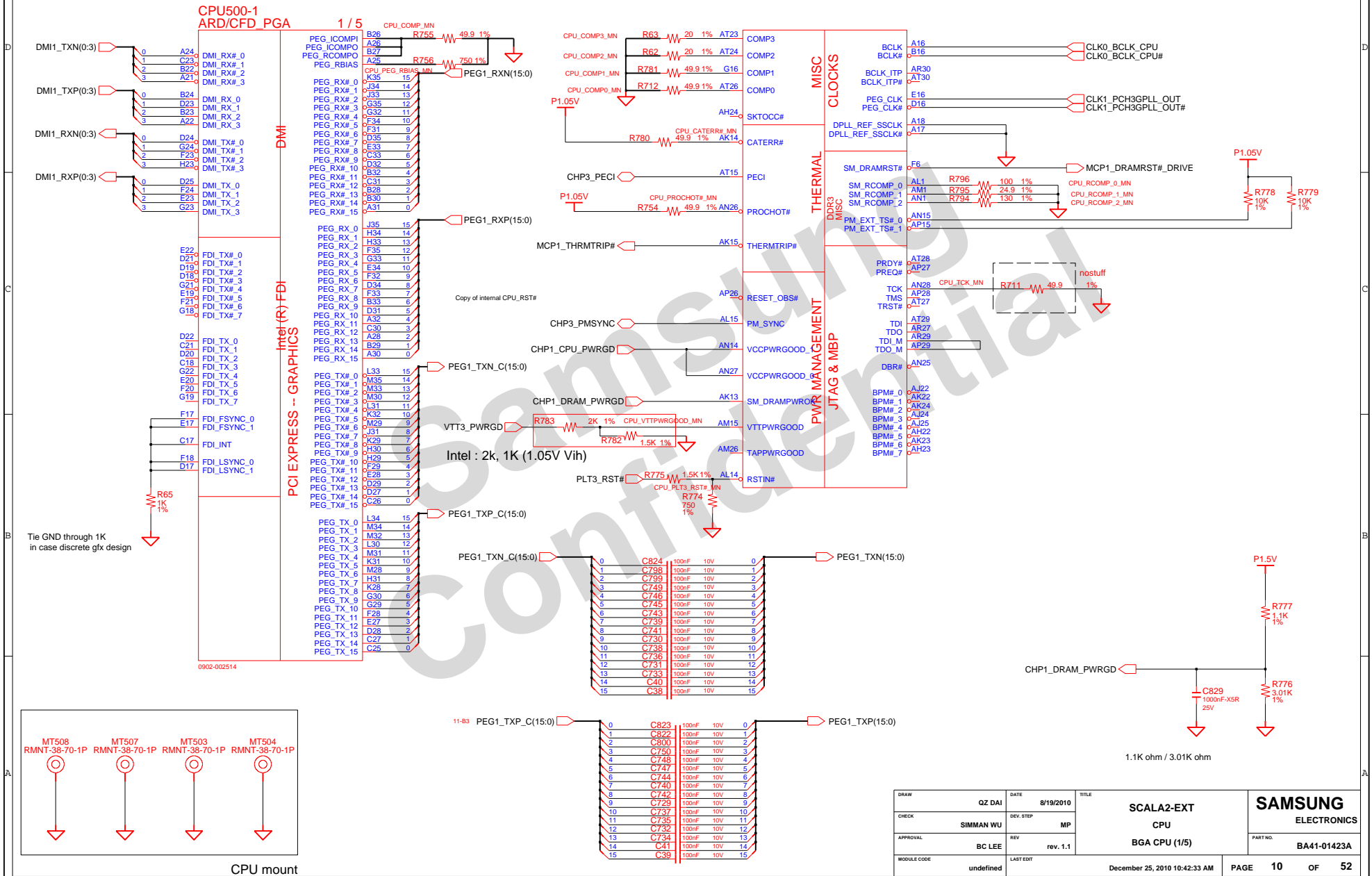


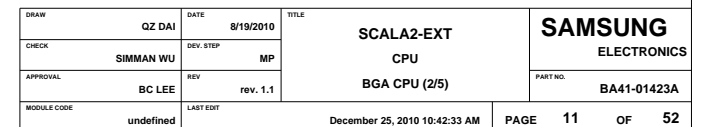
DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT THERMAL SENSOR	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP			
APPROVAL	BC LEE	REV	rev. 1.1		THERMAL SENSOR EMC2112	PART NO. BA41-01423A
MODULE CODE		LAST EDIT		December 25, 2010 10:42:33 AM	PAGE	9 OF 52

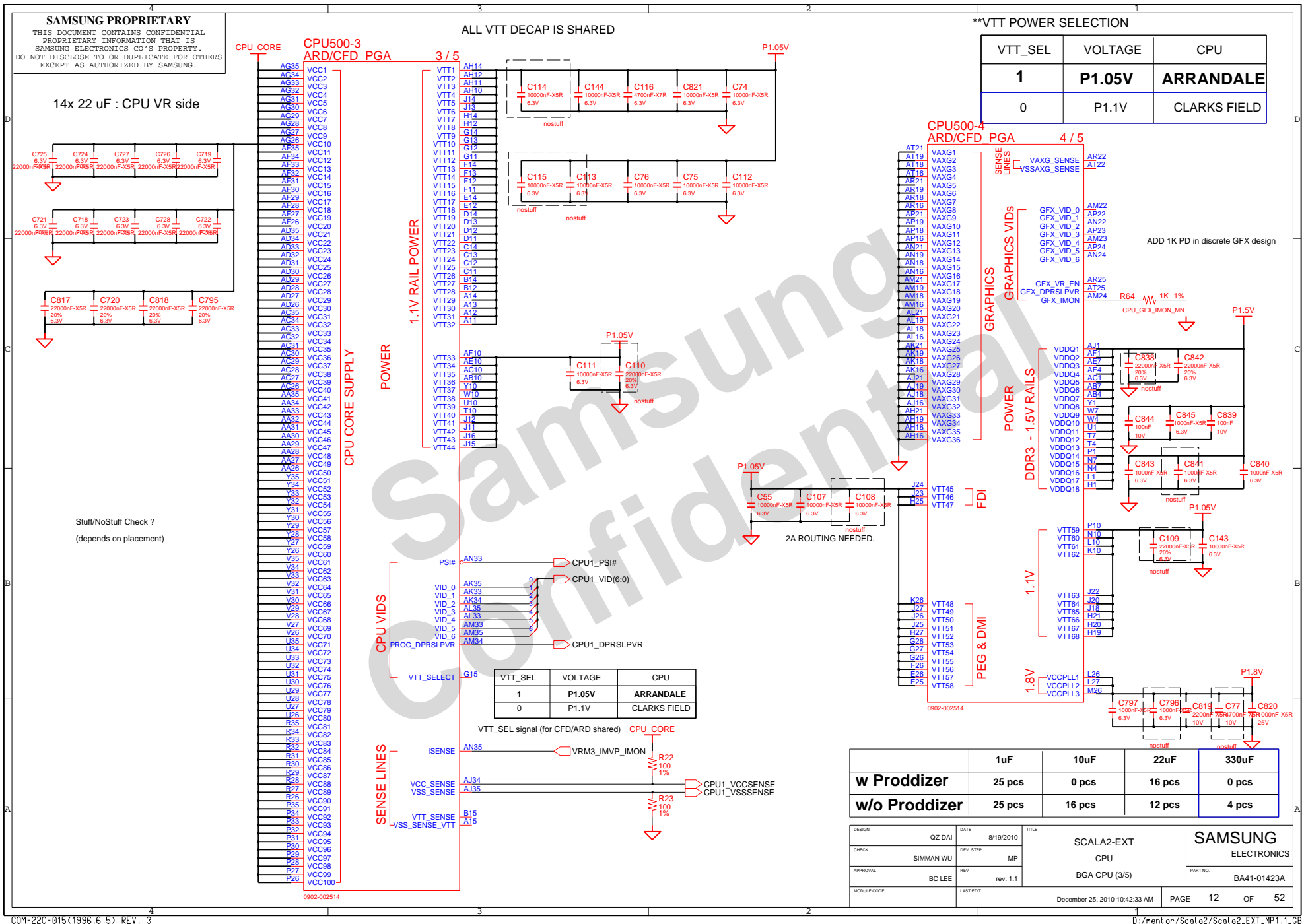
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ARRANDALE PROCESSOR (DMI,PEG, FDI)



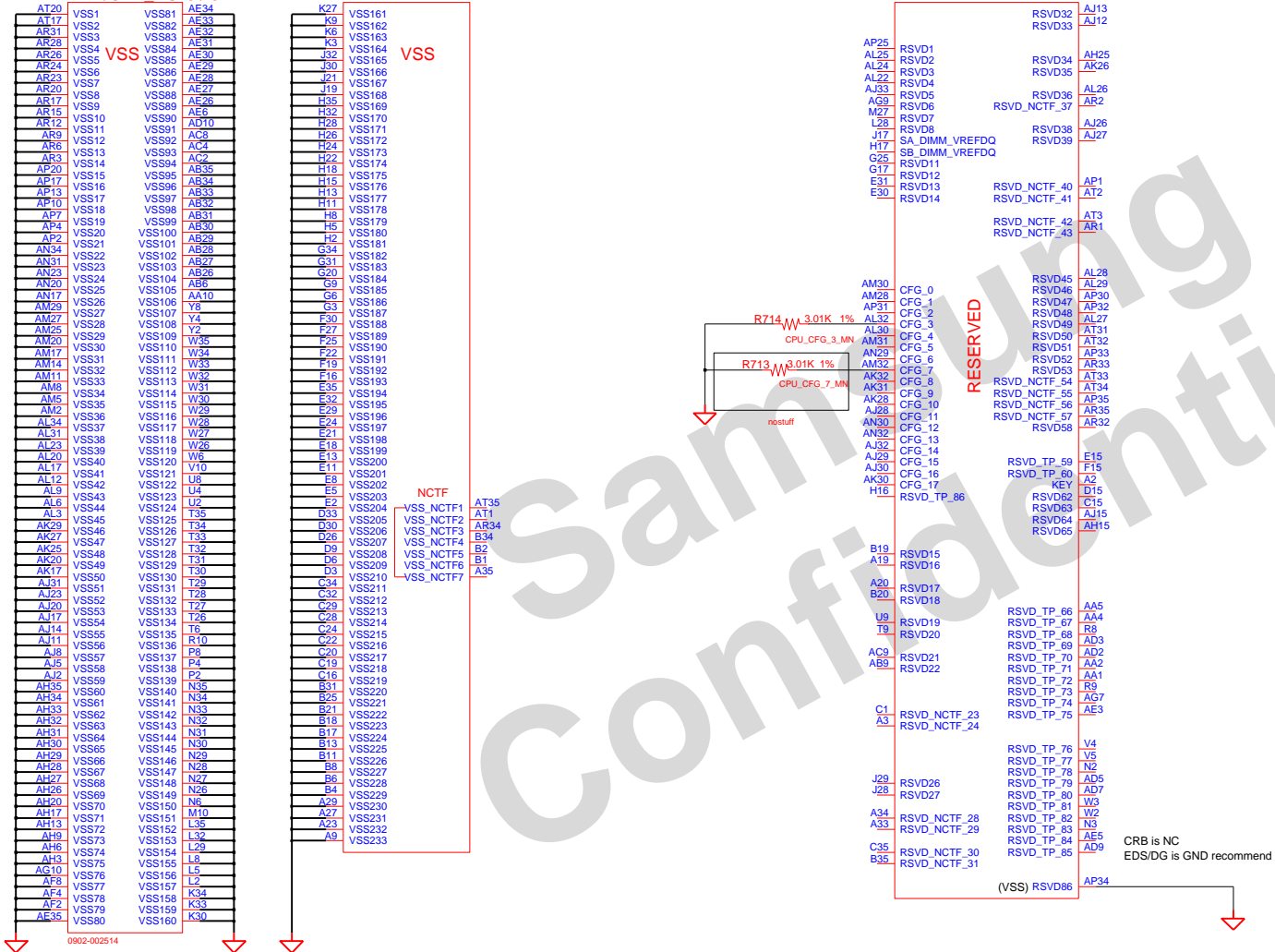




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CPU500-5
ARD/CFD_PGA5 / 5



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

DESIGN	QZ DAI	DATE	8/19/2010	TITLE SCAL2-EXT CPU BGA CPU (4/5)		SAMSUNG ELECTRONICS			
CHECK	SIMMAN WU	DEV. STEP	MP						
APPROVAL	BC LEE	REV	rev. 1.1						
				PART NO.		BA41-01423A			
MODULE CODE		LAST EDIT		December 25, 2010 10:42:33 AM		PAGE	13	OF	52

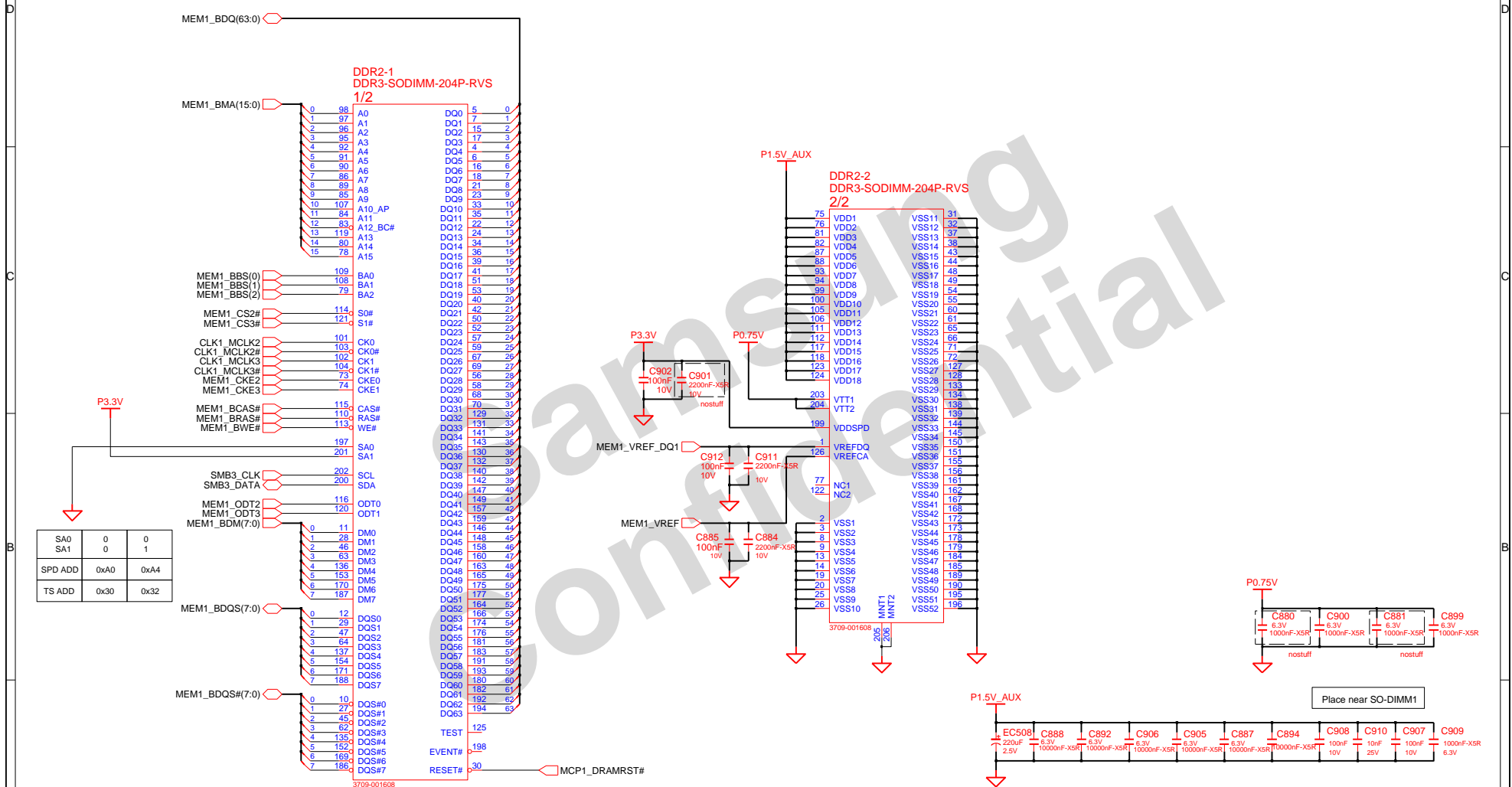
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DDR SO-DIMM #1

Height : 4 mm (STANDARD)

P/N : 3709-001560 (FOXCONN)

P/N : 3709-001607 (CONCRAFT)



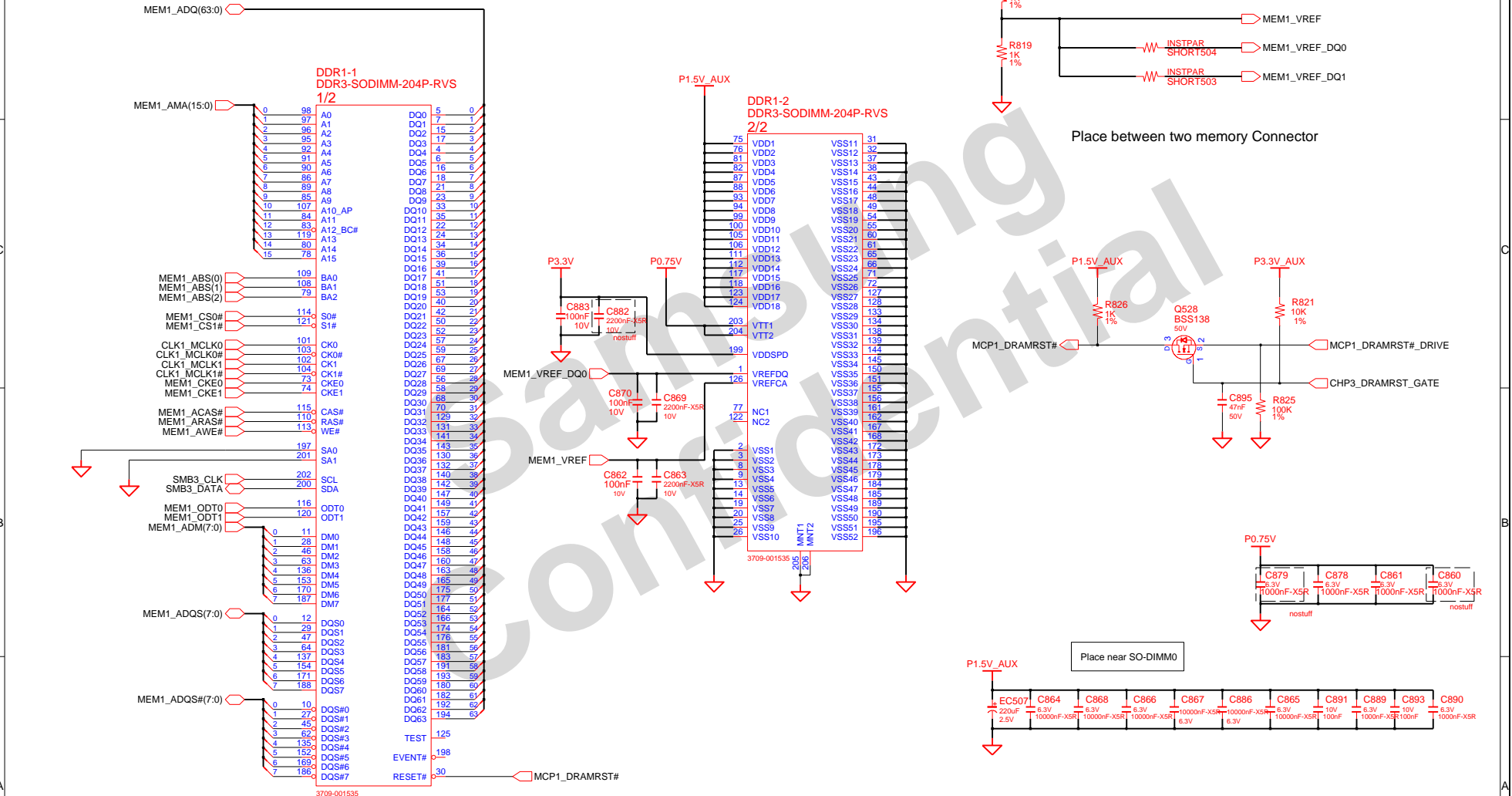
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DDR SO-DIMM #0

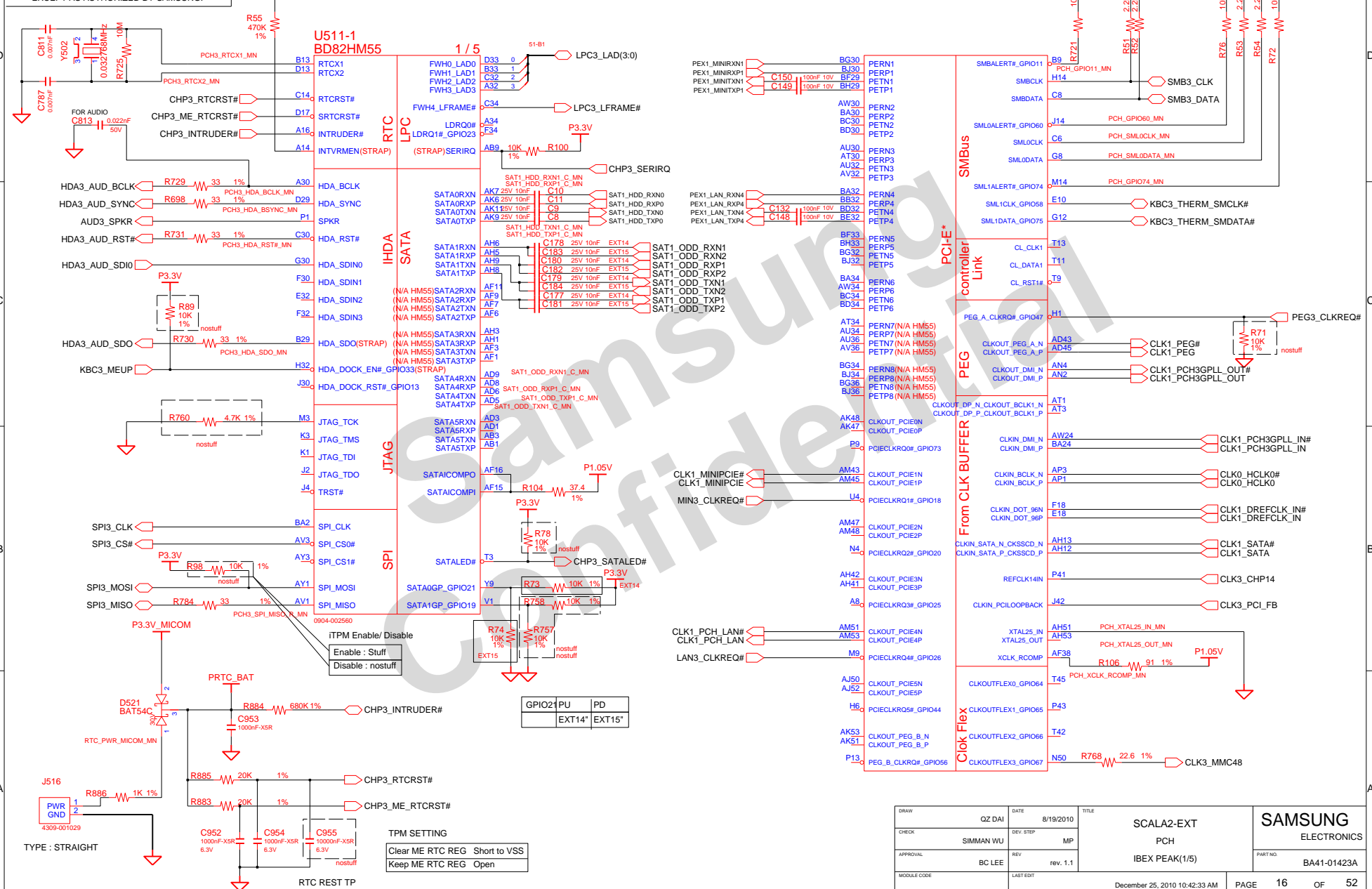
Height : 8 mm (STANDARD)

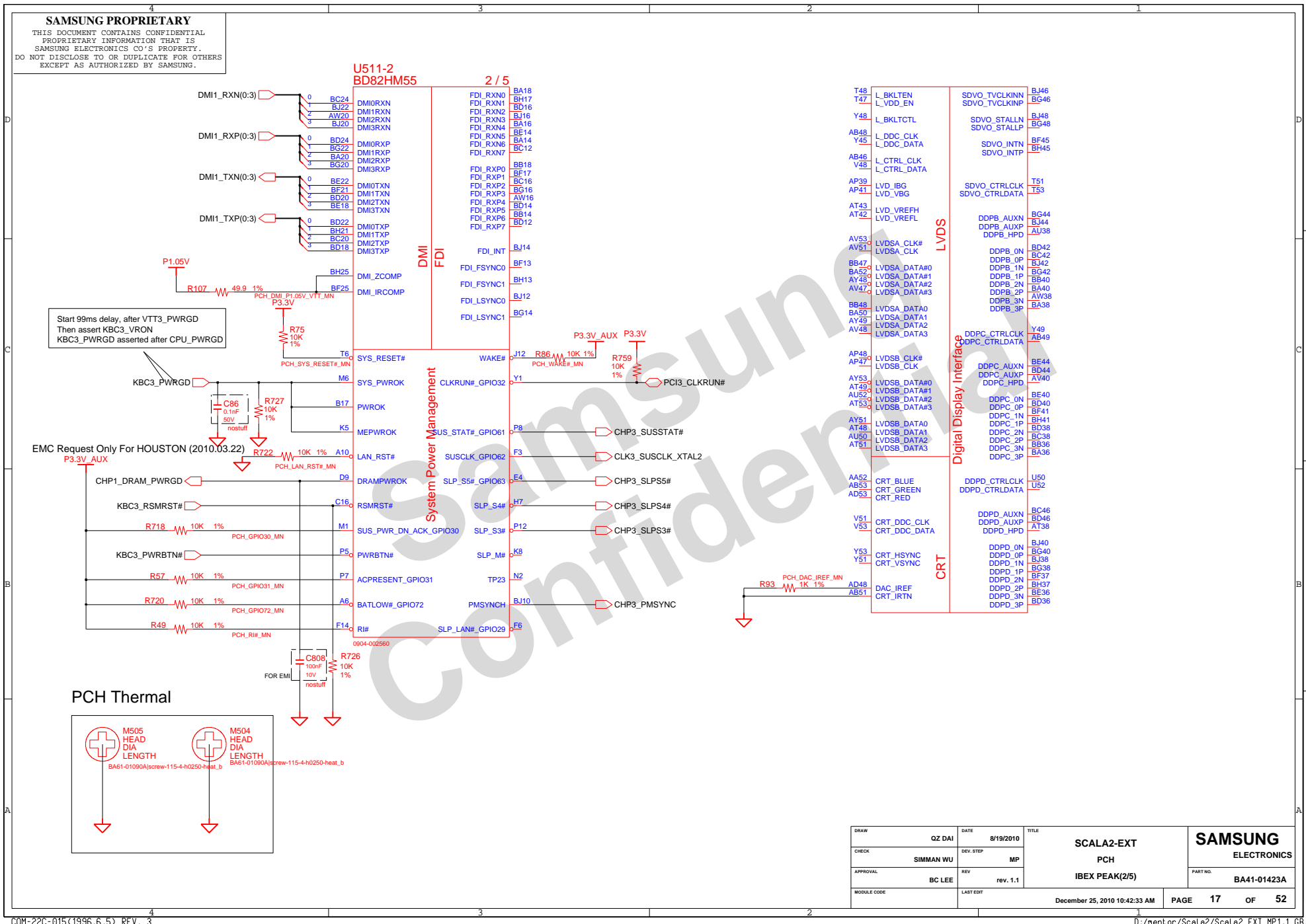
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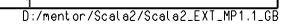
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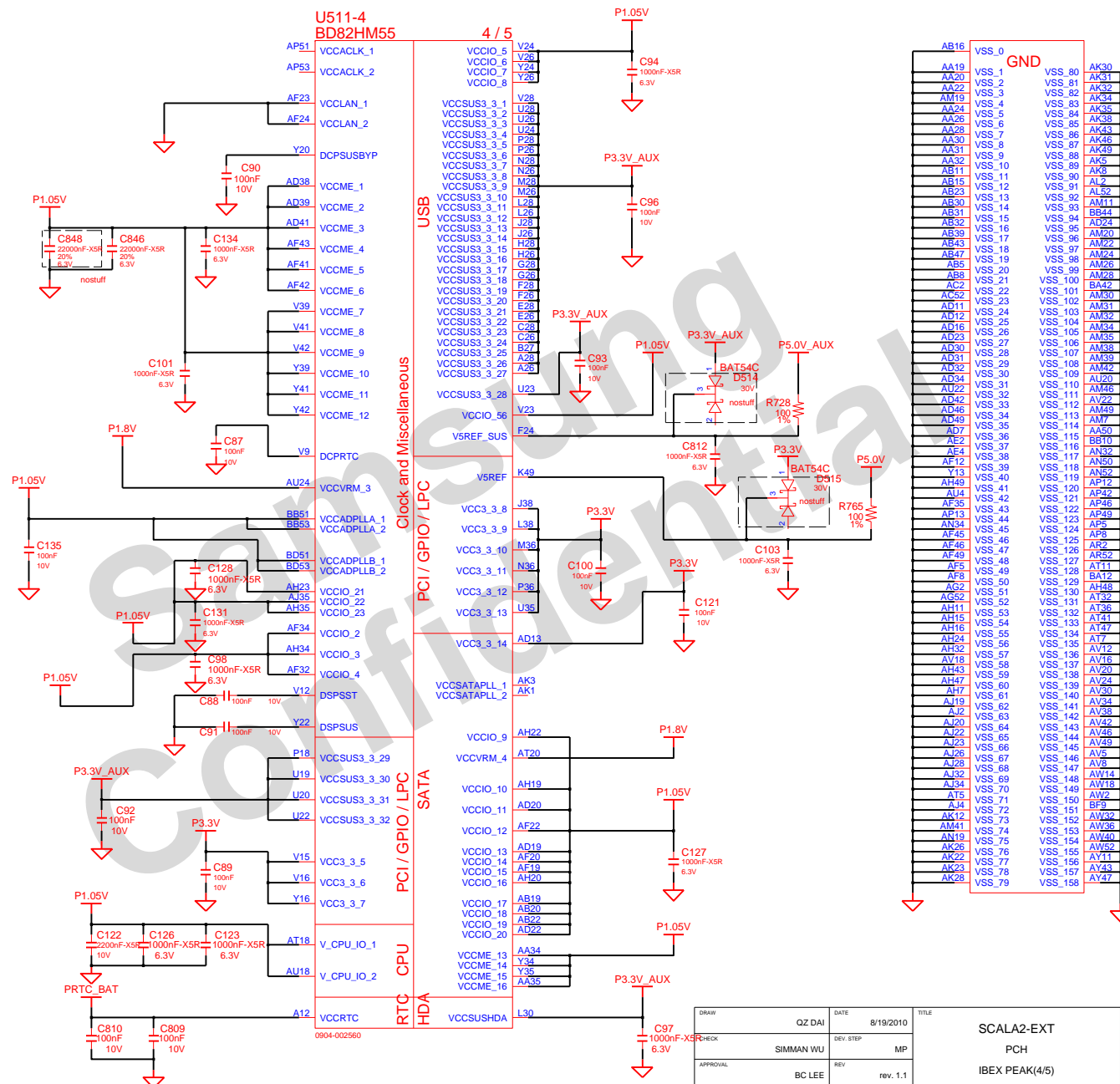
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CHECK	SIMMAN WU	DEV. STEP	MP		SODIMM B	ELECTRONICS
APPROVAL	BC LEE	REV	REV. 1.1		DDR3	PART NO.
MODULE CODE		LAST ENT				BA41-01423A
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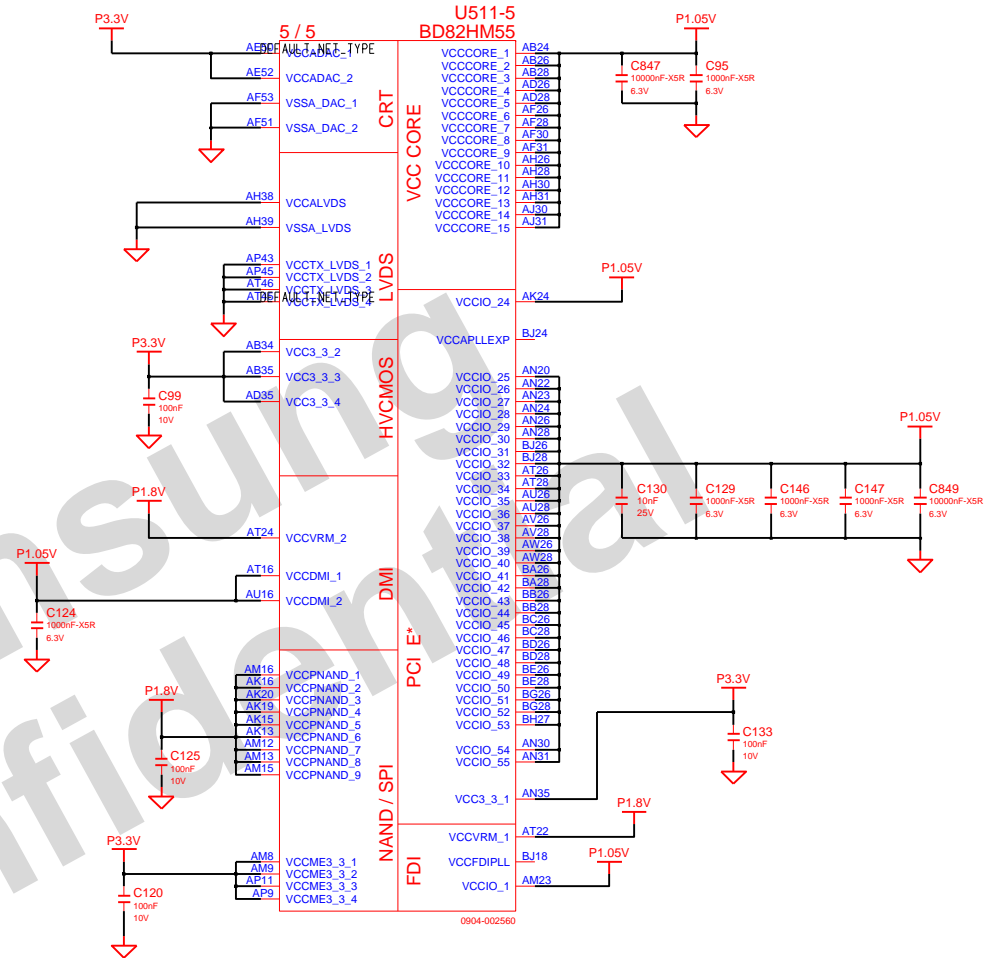
VTT_SEL	VOLTAGE	CPU
1	P1.05V	ARRANDALE
0	P1.1V	CLARKS FIELD



DRAW	QZ DAI	DATE	8/19/2010	SCALA2-EXT PCH		SAMSUNG ELECTRONICS	
CHECK	SIMMAN WU	DEV. STEP	MP				
APPROVAL	BC LEE	REV	REV. 1.1	IBEX PEAK(4/5)		PART NO.	BA41-01423A
MODULE CODE		LAST EDIT		December 25, 2010 10:42:33 AM		PAGE	19 OF 60
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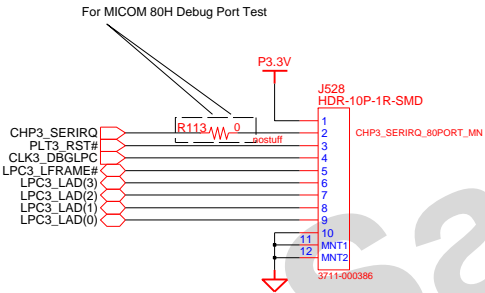
H49	VSS_255	VSS_159	AV7
H5	VSS_261	VSS_160	B11
J24	VSS_261	VSS_161	B15
K11	VSS_262	VSS_162	B19
K43	VSS_263	VSS_163	B23
K47	VSS_263	VSS_163	B31
K7	VSS_264	VSS_164	B35
L14	VSS_265	VSS_165	B39
L18	VSS_266	VSS_166	B43
L2	VSS_267	VSS_167	B47
L22	VSS_268	VSS_168	B51
L32	VSS_269	VSS_169	B55
L36	VSS_270	VSS_170	B59
L40	VSS_271	VSS_171	B63
L52	VSS_272	VSS_172	B67
M12	VSS_273	VSS_173	B71
M16	VSS_274	VSS_174	B75
M20	VSS_275	VSS_175	B79
N38	VSS_276	VSS_176	B83
M34	VSS_277	VSS_177	B87
M38	VSS_278	VSS_178	B91
M42	VSS_279	VSS_179	B95
M46	VSS_280	VSS_180	BC10
M49	VSS_281	VSS_181	BC14
M5	VSS_282	VSS_182	BC18
M8	VSS_283	VSS_183	BC22
N24	VSS_284	VSS_184	BC26
P11	VSS_285	VSS_185	BC30
AD15	VSS_286	VSS_186	BC34
P22	VSS_287	VSS_187	BC38
P30	VSS_288	VSS_188	BC42
P32	VSS_289	VSS_189	BC46
P34	VSS_290	VSS_190	BC50
P42	VSS_291	VSS_191	BC54
P45	VSS_292	VSS_192	BC58
P47	VSS_293	VSS_193	BC62
P52	VSS_294	VSS_194	BC66
P52	VSS_295	VSS_195	BC70
P52	VSS_296	VSS_196	BC74
P52	VSS_297	VSS_197	BC78
T41	VSS_298	VSS_198	BC82
T46	VSS_299	VSS_199	BC86
T49	VSS_300	VSS_200	BC90
T5	VSS_301	VSS_201	BC94
T8	VSS_302	VSS_202	BC98
U30	VSS_303	VSS_203	BC102
U31	VSS_304	VSS_204	BC106
U32	VSS_305	VSS_205	BC110
U34	VSS_306	VSS_206	BC114
P38	VSS_307	VSS_207	BC118
V11	VSS_308	VSS_208	BC122
P16	VSS_309	VSS_209	BC126
V19	VSS_310	VSS_210	BC130
V20	VSS_311	VSS_211	BC134
V22	VSS_312	VSS_212	BC138
V30	VSS_313	VSS_213	BC142
V31	VSS_314	VSS_214	BC146
V32	VSS_315	VSS_215	BC150
V34	VSS_316	VSS_216	BC154
V35	VSS_317	VSS_217	BC158
V38	VSS_318	VSS_218	BC162
V43	VSS_319	VSS_219	BC166
V45	VSS_320	VSS_220	BC170
V46	VSS_321	VSS_221	BC174
V47	VSS_322	VSS_222	BC178
V49	VSS_323	VSS_223	BC182
V5	VSS_324	VSS_224	BC186
V7	VSS_325	VSS_225	BC190
V8	VSS_326	VSS_226	BC194
W2	VSS_327	VSS_227	BC198
W52	VSS_328	VSS_228	BC202
Y11	VSS_329	VSS_229	BC206
Y12	VSS_330	VSS_230	BC210
Y15	VSS_331	VSS_231	BC214
Y19	VSS_332	VSS_232	BC218
Y23	VSS_333	VSS_233	BC222
Y28	VSS_334	VSS_234	BC226
Y30	VSS_335	VSS_235	BC230
Y31	VSS_336	VSS_236	BC234
Y32	VSS_337	VSS_237	BC238
Y38	VSS_338	VSS_238	BC242
Y43	VSS_339	VSS_239	BC246
Y46	VSS_340	VSS_240	BC250
P49	VSS_341	VSS_241	BC254
Y5	VSS_342	VSS_242	BC258
Y6	VSS_343	VSS_243	BC262
Y8	VSS_344	VSS_244	BC266
P24	VSS_345	VSS_245	BC270
T43	VSS_346	VSS_246	BC274
AD51	VSS_347	VSS_247	BC278
AT8	VSS_348	VSS_248	BC282
AD47	VSS_349	VSS_249	BC286
Y47	VSS_350	VSS_250	BC290
AT12	VSS_351	VSS_251	BC294
AM6	VSS_352	VSS_252	BC298
AT13	VSS_353	VSS_253	BC302
AM5	VSS_354	VSS_254	BC306
AK45	VSS_355	VSS_255	BC310
AK39	VSS_356	VSS_256	BC314
AV14	VSS_357	VSS_257	BC318
	VSS_358	VSS_258	BC322



DRAW	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP		PCH	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1		IBEX PEAK(5/5)	PART NO.
MODULE CODE	undefined	LAST EDIT	December 25, 2010 10:42:33 AM	PAGE	20	BA41-01423A
				OF	52	

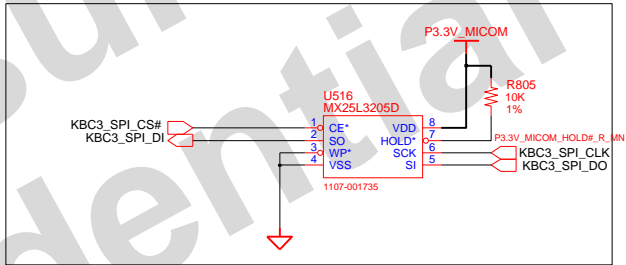
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80H PORT DEBUG

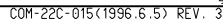


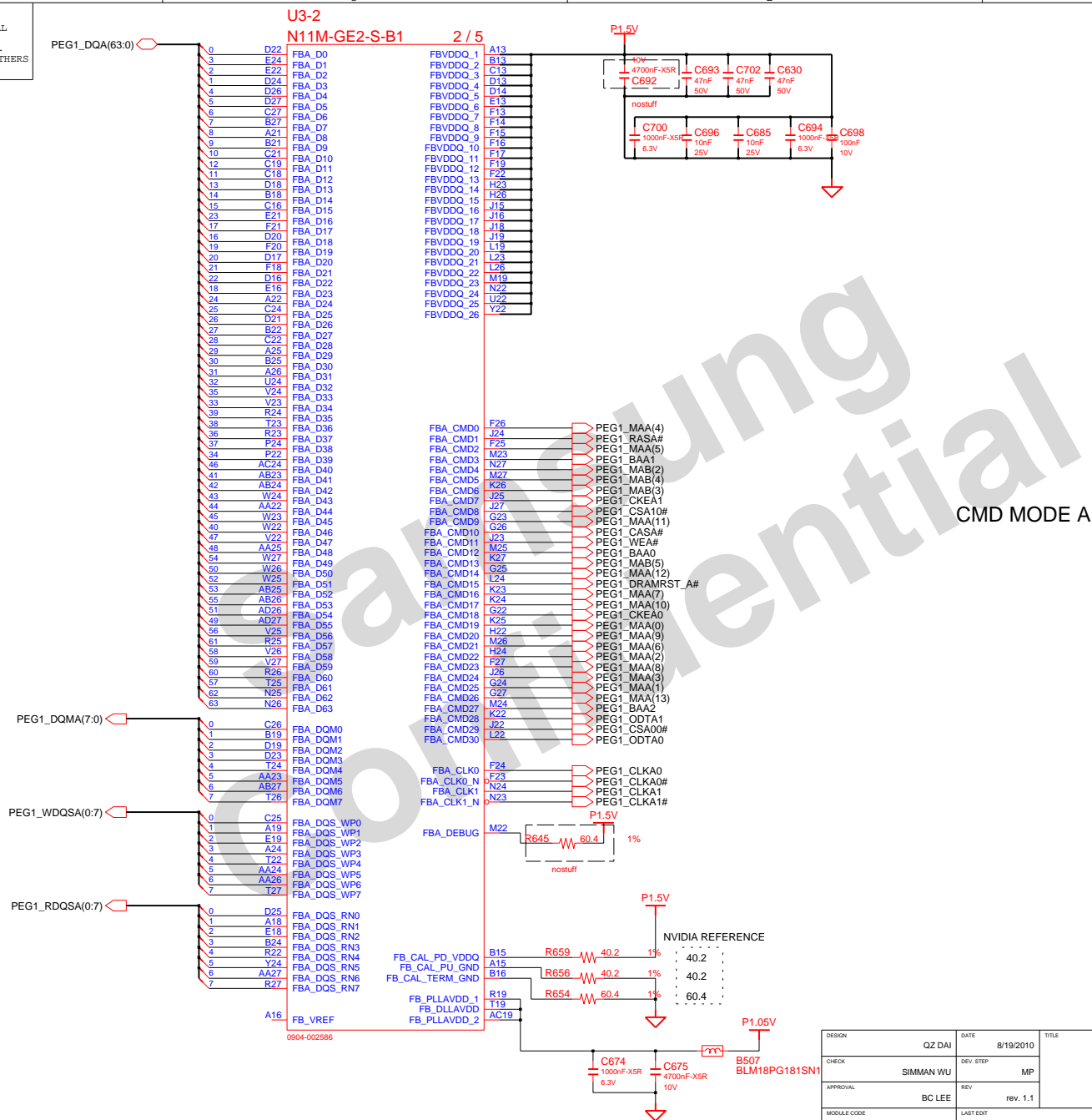
BE CAUTION SPI ROM SIZE!!


SPI_ROM_SOCKET

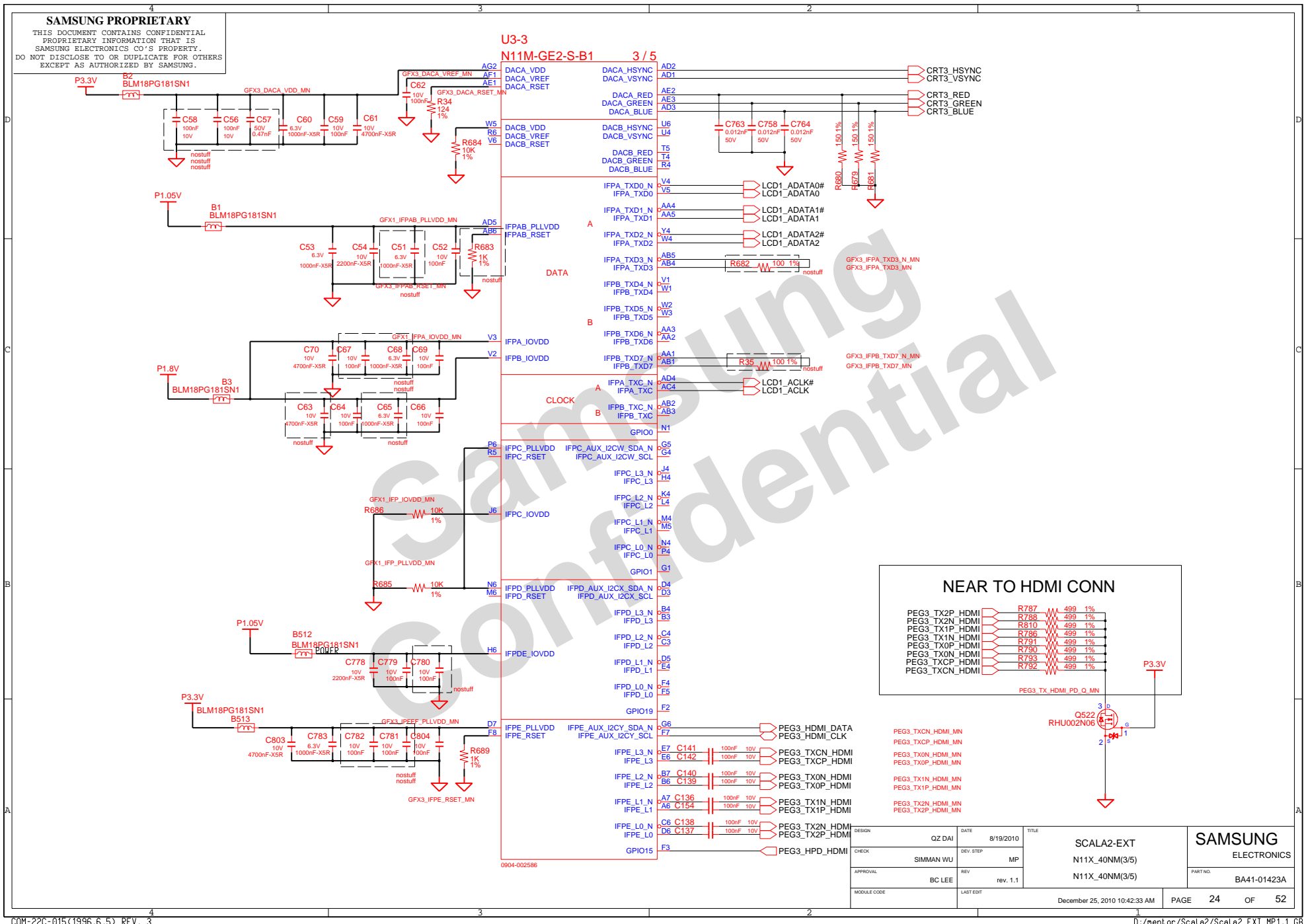


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT DEBUG PORT 80H DECODER	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP			PART NO. BA41-01423A
APPROVAL	BC LEE	REV	rev. 1.1			
MODULE CODE		LAST EDIT	December 25, 2010 10:42:33 AM	PAGE	21	OF 52





DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT			
CHECK	SIMMAN WU	DEV. STEP	MP		N11X_40NM(2/5)			
APPROVAL	BC LEE	REV	REV. 1.1		N11X_40NM(2/5)	PART NO. BA41-01423A		
MODULE CODE	LAST EDIT		December 25, 2010 10:42:33 AM			PAGE	23	OF 52



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Pin	Description	Activate
GPIO(0)	General Purpose	NC
GPIO(1)	HPD-C	NC
GPIO(2)	LCD0_BL_PWM	High
GPIO(3)	LCD0_VDD	High
GPIO(4)	LCD0_BL_EN	High
GPIO(5)	GPU_VID0	00 0.8V 10 0.95V
GPIO(6)	GPU_VID1	01 0.85V 11 1.03V
GPIO(7)	GPU_VID2	NC
GPIO(8)	OVERT	LOW
GPIO(9)	ALERT	NC
GPIO(10)	MEM_VREF	NC
GPIO(11)	SLI_SYNC	NC
GPIO(12)	PWR_LEVEL	NC
GPIO(13)	MEM_VID	NC
GPIO(14)	PWR_CTRL1	NC
GPIO(15)	HPD-E	High
GPIO(16)	FAN_PWM	NC
GPIO(17)	Reserved	NC
GPIO(18)	Reserved	NC
GPIO(19)	HPD-D	NC

Strap option	Bit 3	Bit 2	Bit 1	Bit 0
ROM_SO	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE
ROM_SCLK	DEVID[4]	VENID	CLK_CFG	PLL_TERM
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	DEVID[3]	DEVID[2]	DEVID[1]	DEVID[0]
STRAP1	PADCFG[3]	PADCFG[2]	PADCFG[1]	PADCFG[0]
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]
Resistor value	PU to VDD	PD to GND	XCLK417 = 0 27MHz	
5K ohm	1000	0000	RAM CFG (SEC)	
10 Kohm	1001	0001	0011 gDDR3 1Gb	
15K ohm	1010	0010	USER[3:0]=1111 for EDID	
20K ohm	1011	0011	PADCFG[3:0]=0110 for NB	
25K ohm	1100	0100		
30K ohm	1101	0101		
35K ohm	1110	0110		
45K ohm	1111	0111		

	Bit3	Bit2	Bit1	Bit0	
ROMSO	0	0	0	0	27M
SCLK	1	0	1	0	N11M-GE GFX TPYE
	0	0	1	0	N11M-LP1
SI	0	0	1	1	gDDR3 1Gb
SI	0	1	1	1	gDDR3 2Gb
Strap2	0	0	0	0	N11M-GE2
Strap2	0	1	0	1	N11M-GE1 DEVICE ID
Strap1	1	1	1	0	PEG PCIe swing level
Strap0	1	1	1	1	EDID_EN

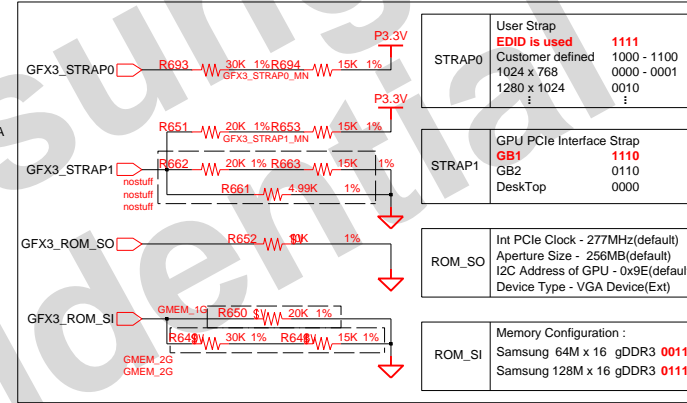
U3-5

N11M-GE2-S-B1

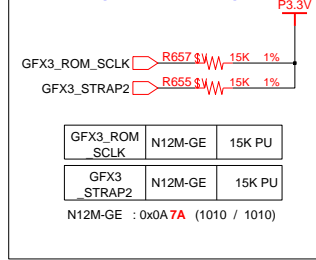
5 / 5

B2	GND.1	NC.1	C15
B5	GND.2	NC.2	D15
B8	GND.3	NC.3	J5
B11	GND.4		
B14	GND.5		
B17	GND.6		
B20	GND.7		
B23	GND.8		
B26	GND.9		
E2	GND.10		
E5	GND.11		
E8	GND.12		
E11	GND.13		
E14	GND.14		
E17	GND.15		
E20	GND.16		
E23	GND.17		
E26	GND.18		
H2	GND.19		
H5	GND.20		
J14	GND.21		
J17	GND.22		
K9	GND.23		
K19	GND.24		
L2	GND.25		
L5	GND.26		
L11	GND.27		
L14	GND.28		
L17	GND.29		
L19	GND.30		
M12	GND.31		
M13	GND.32		
M14	GND.33		
M15	GND.34		
P2	GND.35		
P2	GND.36		
P5	GND.37		
P9	GND.38		
P19	GND.39		
P23	GND.40		
P26	GND.41		
T12	GND.42		
T13	GND.43		
T14	GND.44		
T15	GND.45		
T16	GND.46		
U2	GND.47		
U5	GND.48		
U11	GND.49		
U12	GND.50		
U13	GND.51		
U14	GND.52		
U15	GND.53		
U16	GND.54		
U17	GND.55		
U23	GND.56		
U26	GND.57		
V9	GND.58		
V19	GND.59		
W11	GND.60		
W14	GND.61		
W17	GND.62		
Y2	GND.63		
Y5	GND.64		
Y23	GND.65		
Y26	GND.66		
AC2	GND.67		
AC5	GND.68		
AC8	GND.69		
AC11	GND.70		
AC14	GND.71		
AC17	GND.72		
AC20	GND.73		
AC23	GND.74		
AC26	GND.75		
AF2	GND.76		
AF5	GND.77		
AF8	GND.78		
AF11	GND.79		
AF14	GND.80		
AF17	GND.81		
AF20	GND.82		
AF23	GND.83		
AF26	GND.84		
	GND.85		
	GND.86		
	GND.87		
	GND.88		
	GND.89		

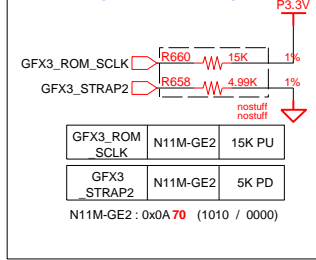
Function Straps



Chip Select Straps (N12M-GB1)



Chip Select Straps (N11M-GB1)

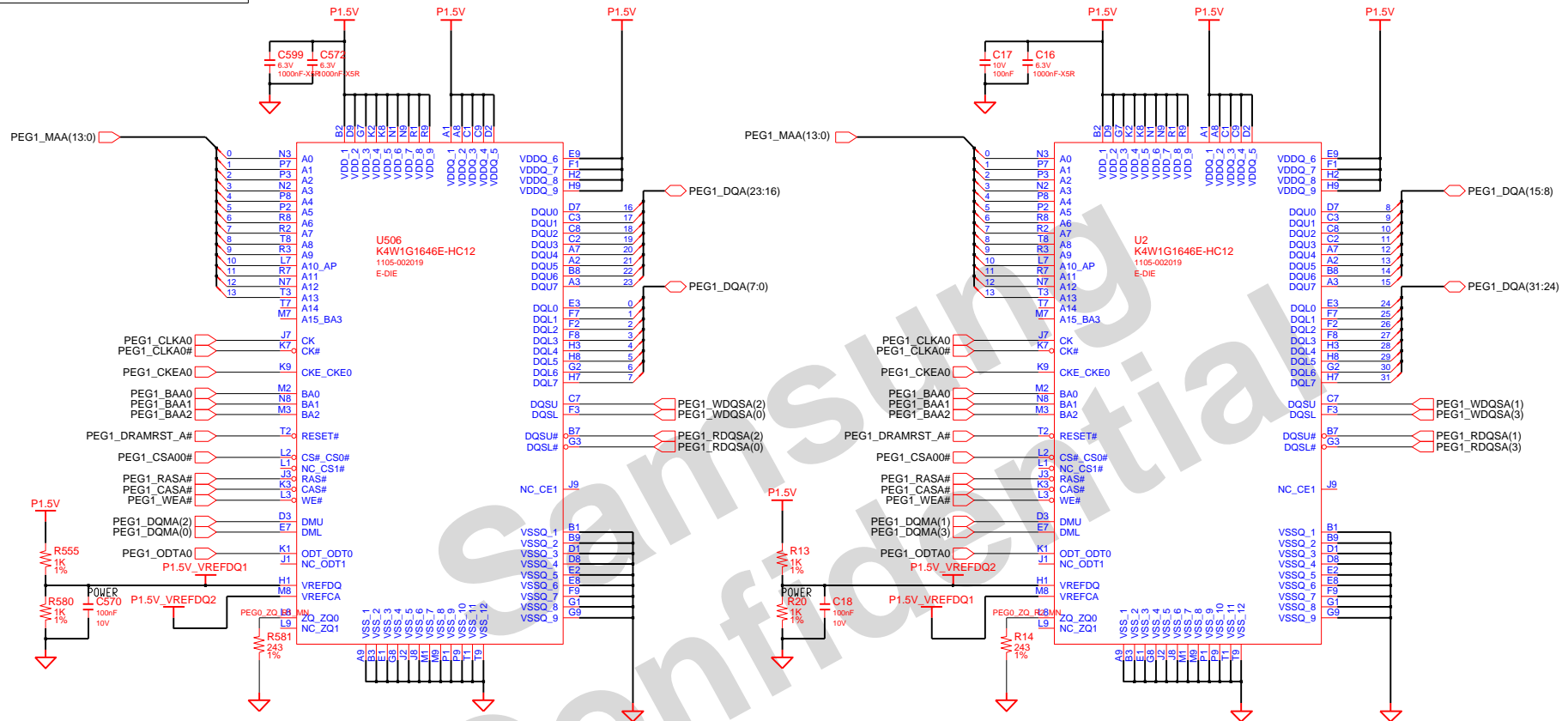


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP		N11X_40NM(4/5)	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1		N11X_40NM(4/5)	PART NO.
MODULE CODE		LAST EDIT				BA41-01423A
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A-Channel #0

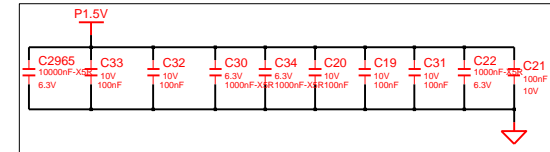
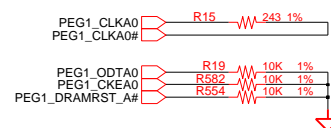
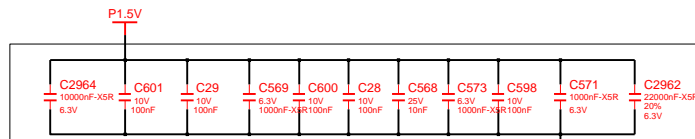
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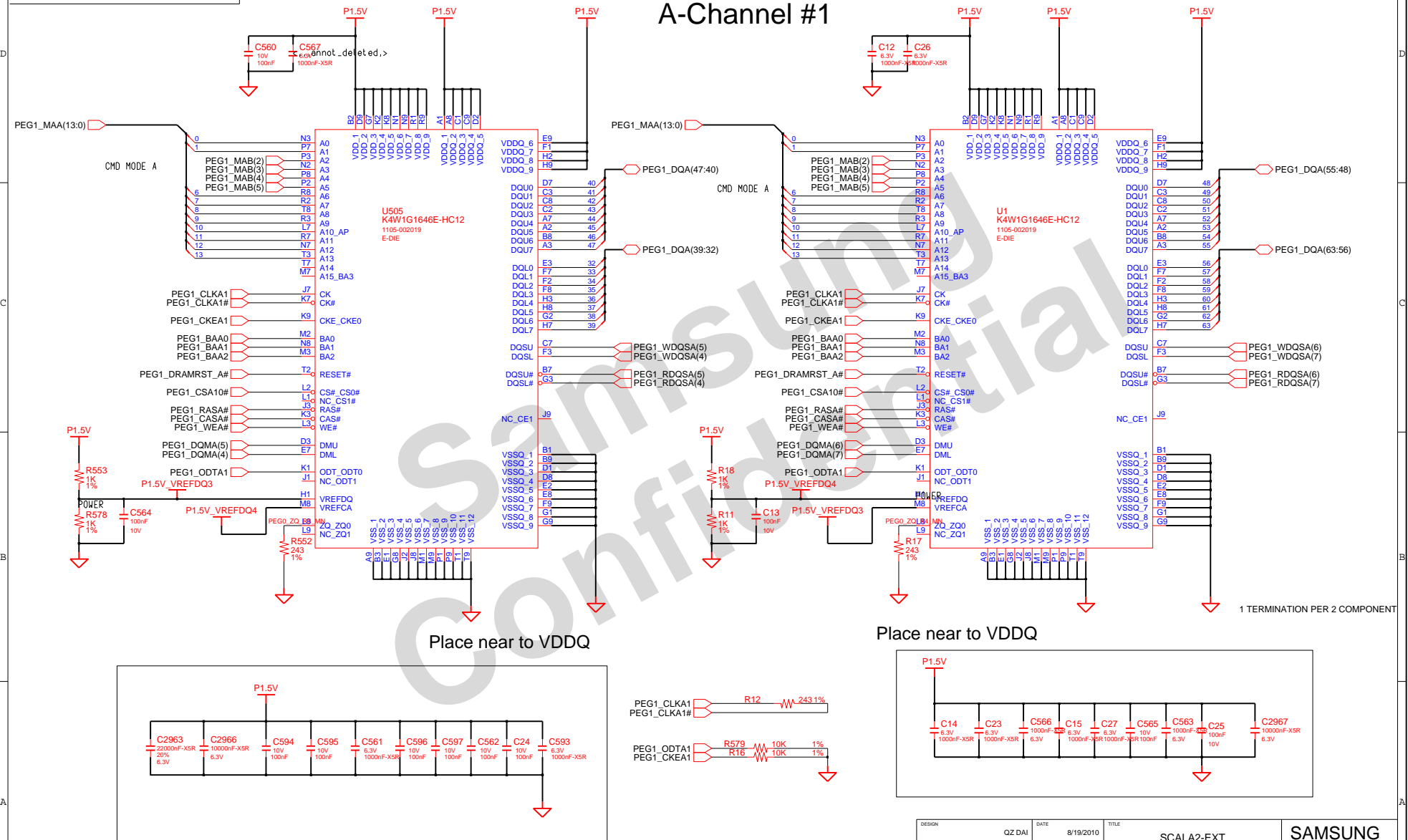


Place near to VDDQ

Place near to VDDQ



DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP		N11X_40NM(5/5)	
APPROVAL	BC LEE	REV	rev. 1.1		N11X_40NM(5/5)	
MODULE CODE		LAST EDIT				
December 25, 2010 10:42:33 AM						PAGE 26 OF 52



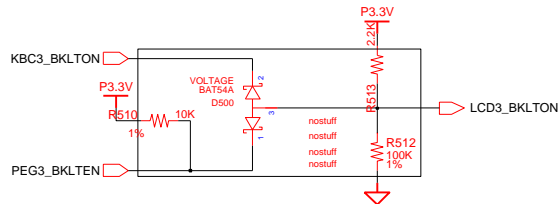
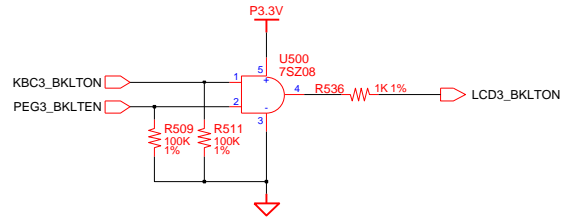
D:/mentor/Scala2/Scala2_EXT_MP1.1_GB

LVDS LOGIC

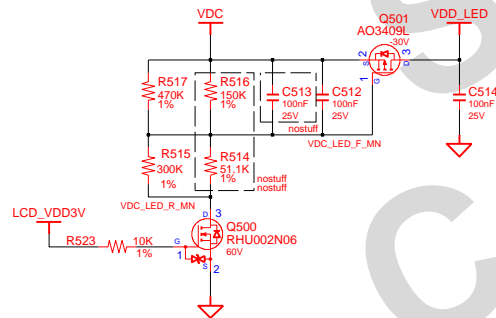
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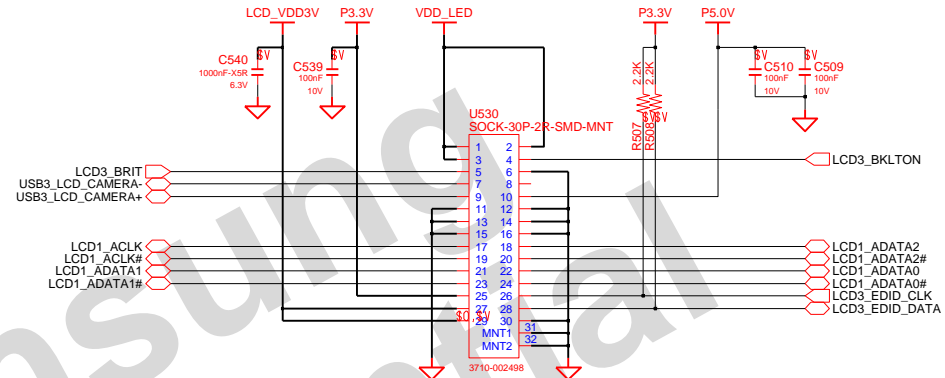
Backlight On



LED Power

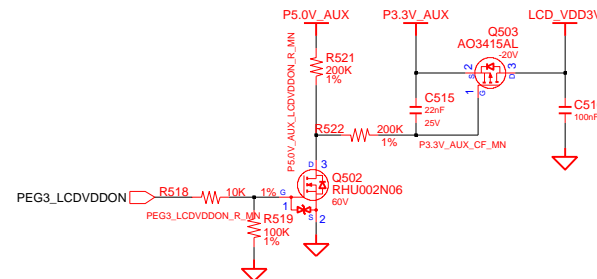


LCD Connector + CAMERA



TYPE: ANGLE

LCD Power

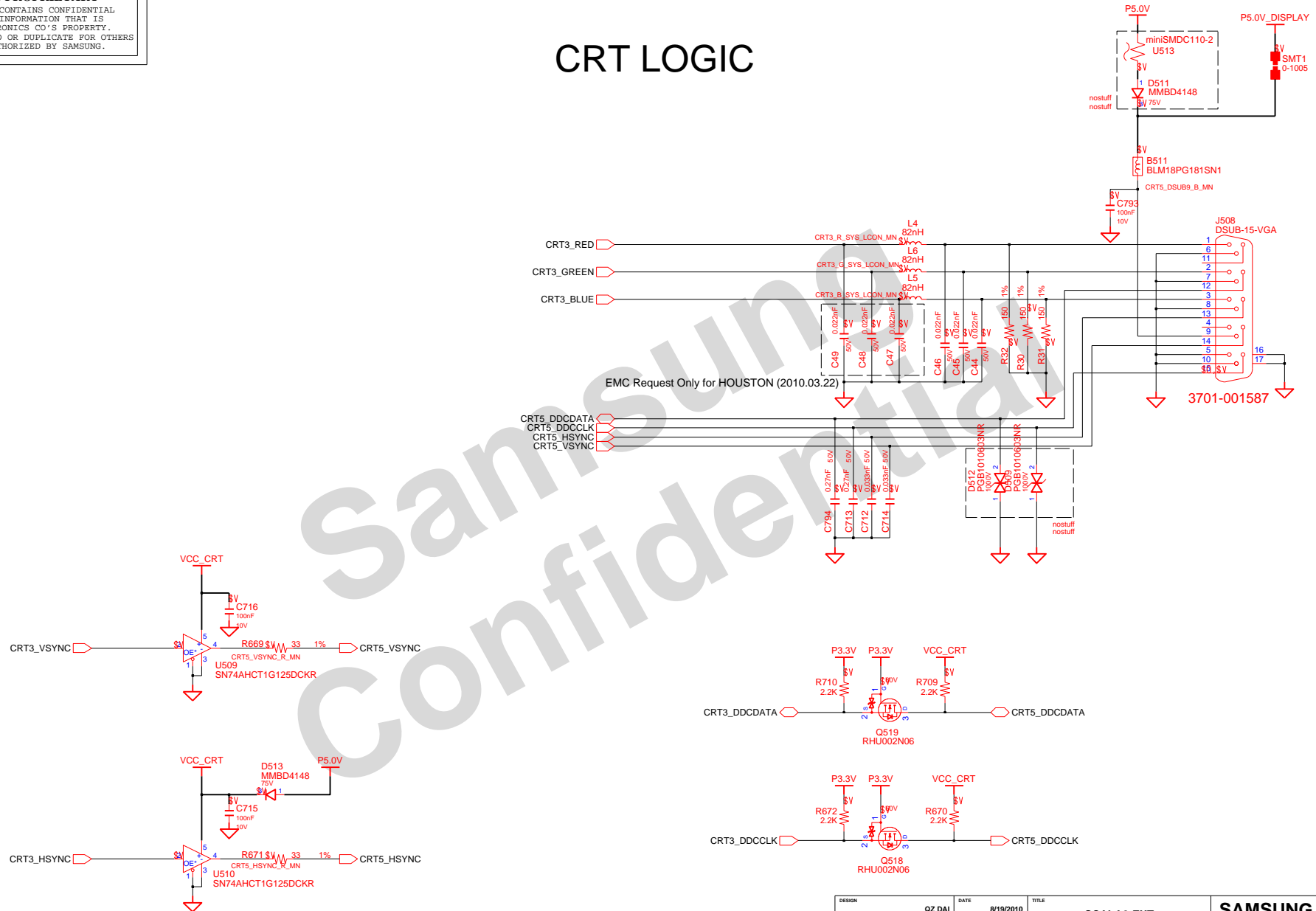


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP	GRAPHICS_IF	GRAPHICS_IF	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1	LVDS	LVDS	PART NO.
MODULE CODE		LAST EDIT				BA41-01423A
				December 25, 2010 10:42:33 AM	PAGE	28 OF 52

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CRT LOGIC



DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP		GRAPHICS_IF	
APPROVAL	BC LEE	REV	rev. 1.1		CRT	
MODULE CODE		LAST EDIT				
December 25, 2010 10:42:33 AM						PAGE 29 OF 52

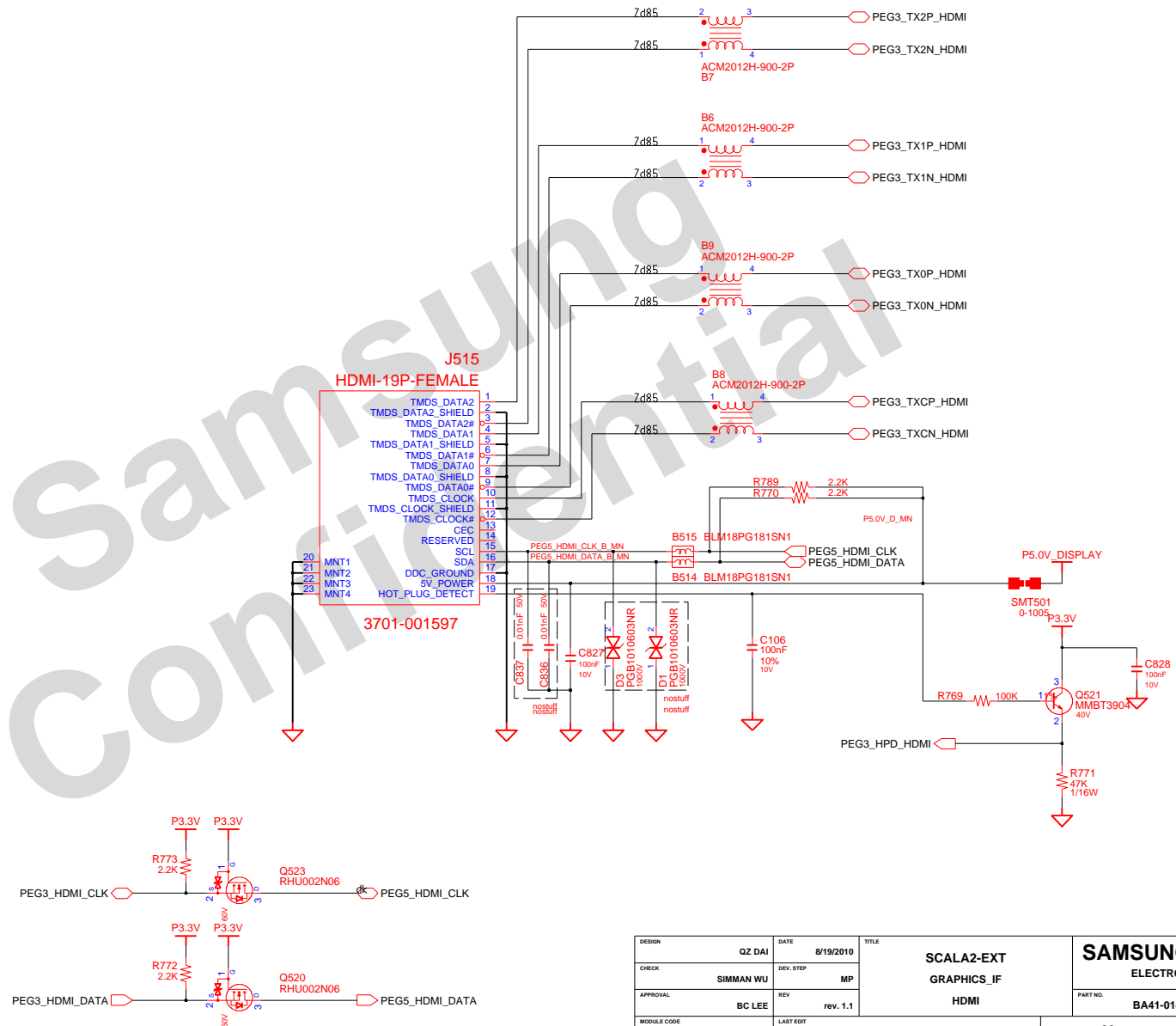
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After checking, Houston need to use CMC for each signal.

(EMC request at 2010.04.15)

HDMI Graphic

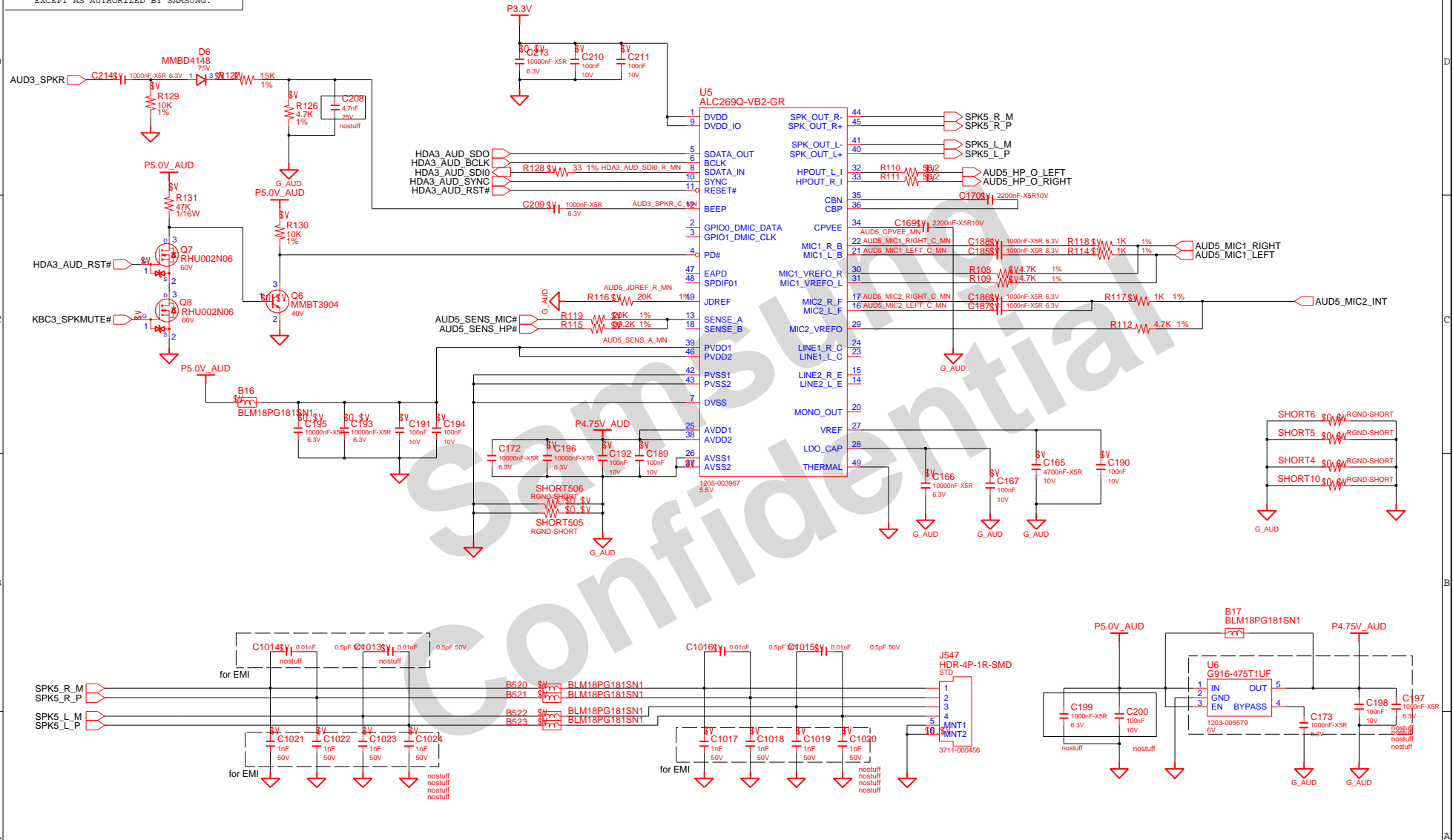


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT GRAPHICS_IF HDMI	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP			PART NO. BA41-01423A
APPROVAL	BC LEE	REV	rev. 1.1			
MODULE CODE		LAST EDIT	December 25, 2010 10:42:33 AM	PAGE	30	OF 52

HD AUDIO

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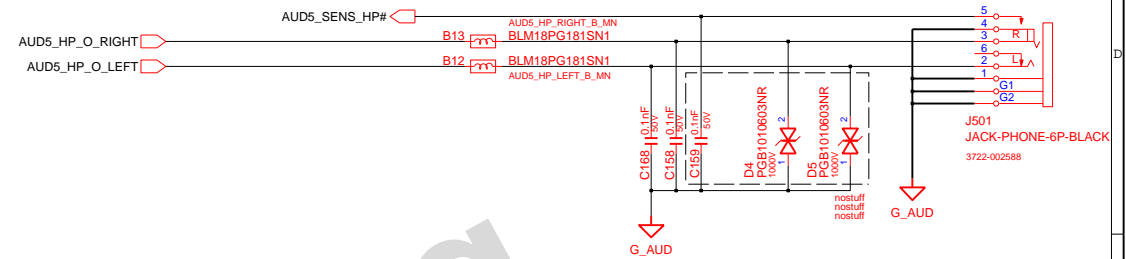


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP		HDA_CODEC SUB	
APPROVAL	BC LEE	REV	rev. 1.1		AUDIO CODEC ALC269 SUB	
MODULE CODE		LAST EDIT				
				December 25, 2010 10:42:33 AM	PAGE 31 OF 52	PART NO. BA41-01423A

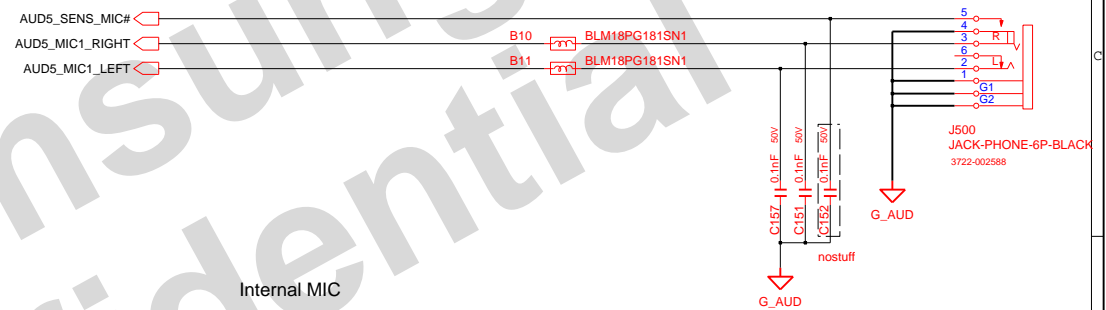
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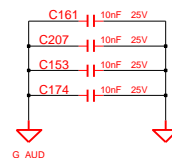
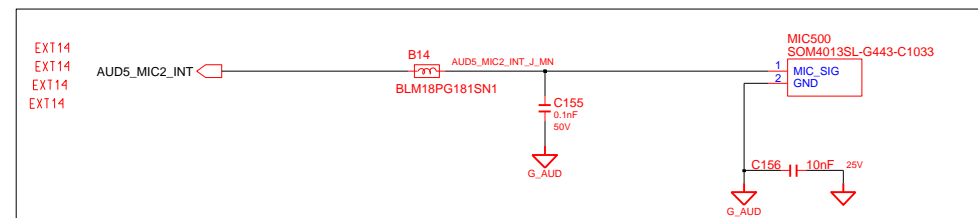
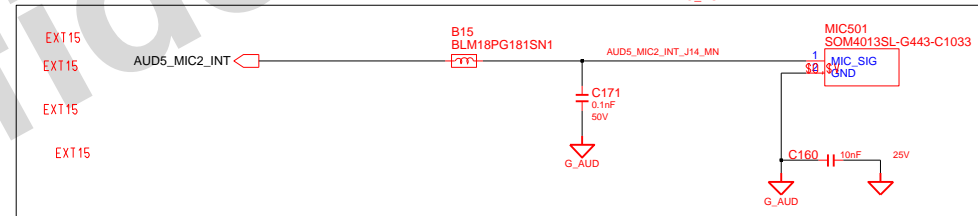
HEADPHONE



MIC JACK



Internal MIC

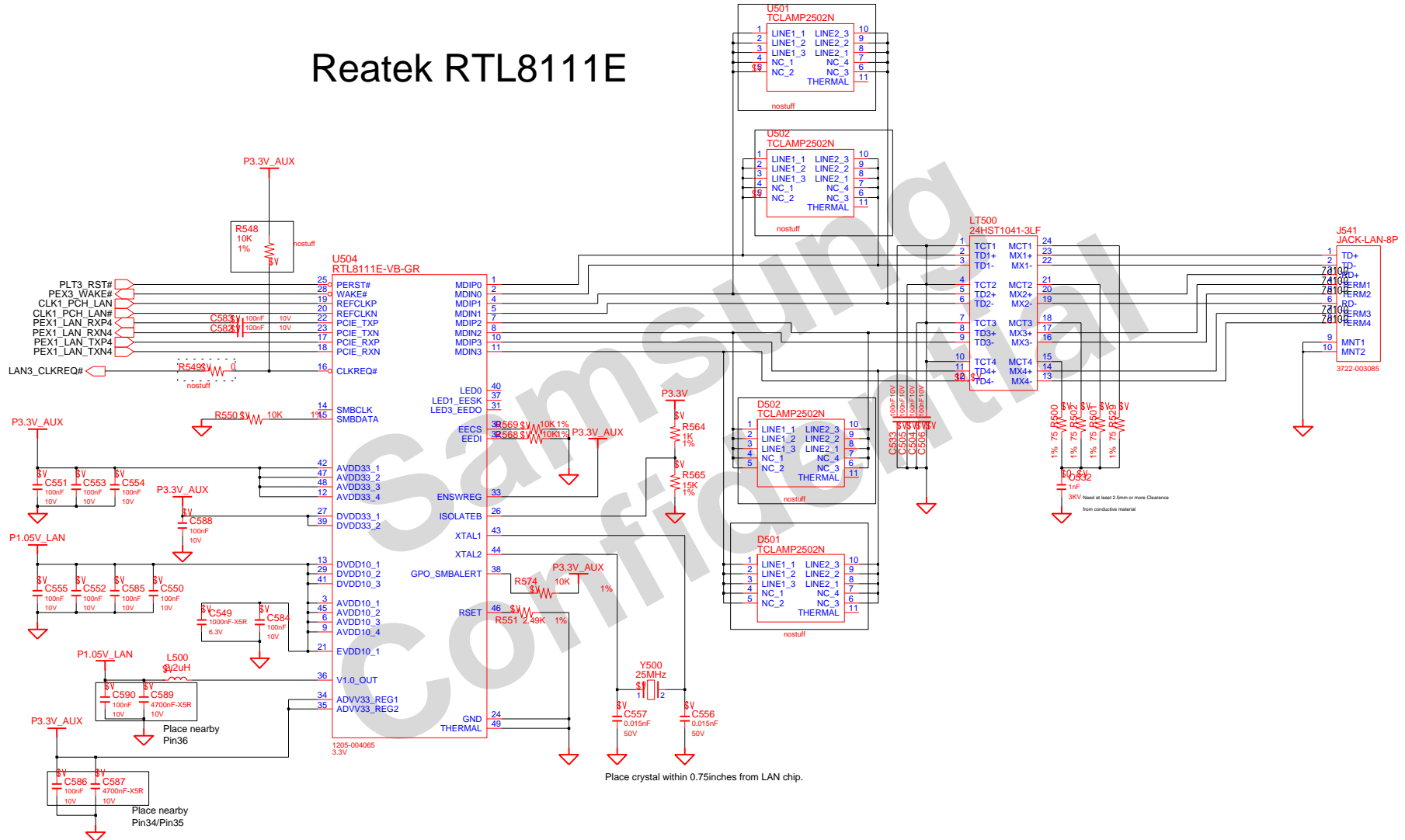


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP		HDA_CODEC & LED SUB	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1		AUDIO JACK & LED SUB	PART NO. BA41-01423A
MODULE CODE		LAST EDIT	December 25, 2010 10:42:33 AM	PAGE	32	OF 52

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Reatek RTL8111E



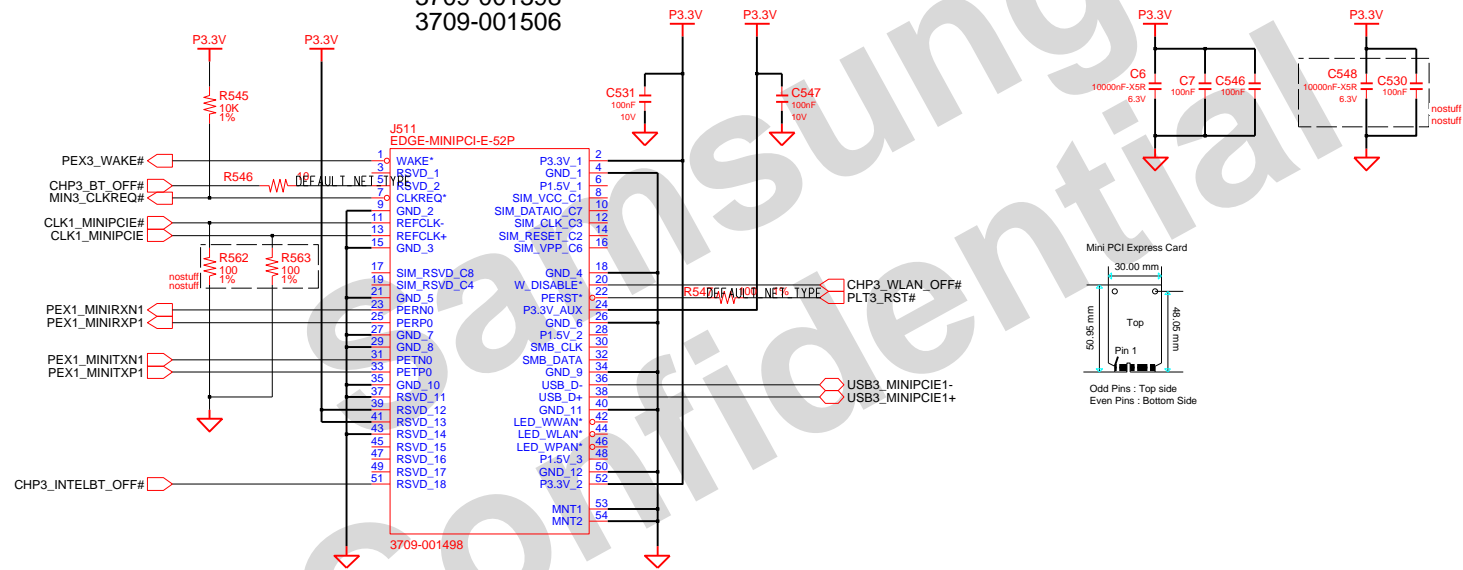
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CHECK	SIMMAN WU	DEV. STEP	MP			PART NO. BA41-01423A
APPROVAL	BC LEE	REV	rev. 1.1		LAN_Reatek_RTL8111	
MODULE CODE		LAST EDIT		December 25, 2010 10:42:33 AM	PAGE 33 OF 52	

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WLAN
Height : 7.0mm

3709-001398
3709-001506



DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT MULTICARD 3 IN 1 CARD(GL827S)	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP			PART NO. BA41-01423A
APPROVAL	BC LEE	REV	rev. 1.1			
MODULE CODE		LAST EDIT	December 25, 2010 10:42:33 AM	PAGE	34	OF 52

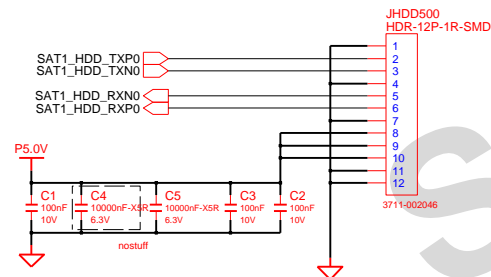
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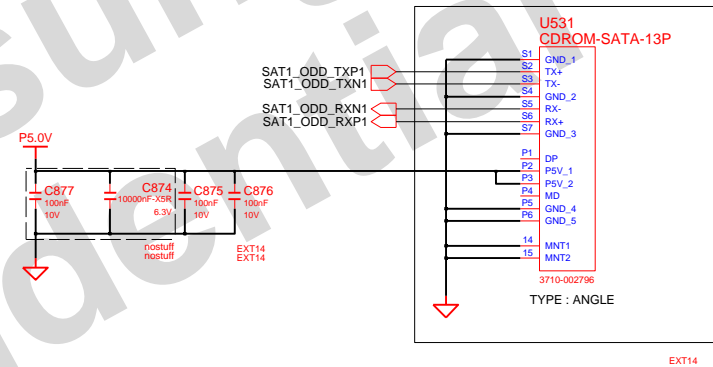
SATA I/F CONN

SATA HDD CONN

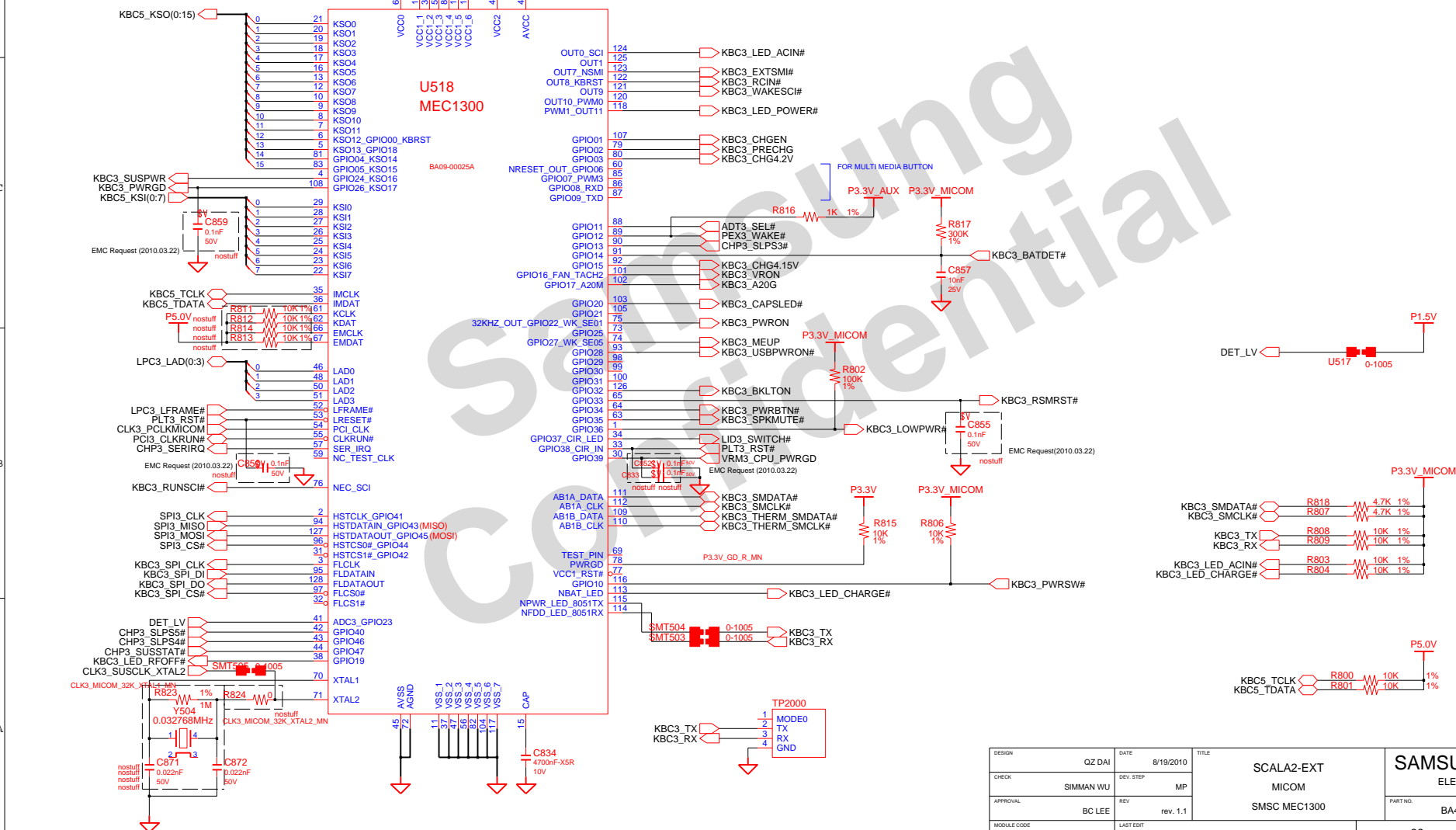
Cable Connector Type



SATA ODD CONN



DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG ELECTRONICS
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APPROVAL	BC LEE	REV	rev. 1.1	SATA I/F	BA41-01423A	
MODULE CODE	LAST EDIT				December 25, 2010 10:42:33 AM	PAGE 35 OF 52



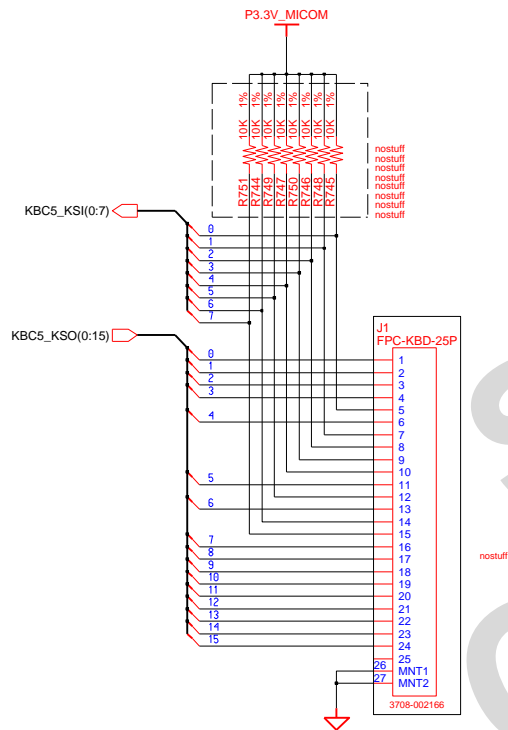
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CHECK	SIMMAN WU	DEV. STEP	MP						
APPROVAL	BC LEE	REV	rev. 1.1	SMSC MEC1300		PART NO.		BA41-01423A	
MODULE CODE		LAST EDIT		December 25, 2010 10:42:33 AM		PAGE	36	OF	52

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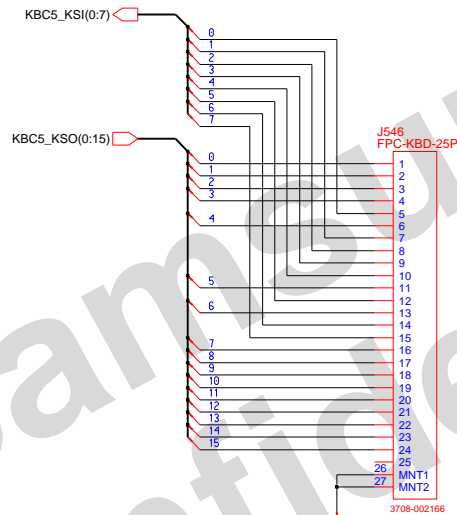
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Micom Glue Logic

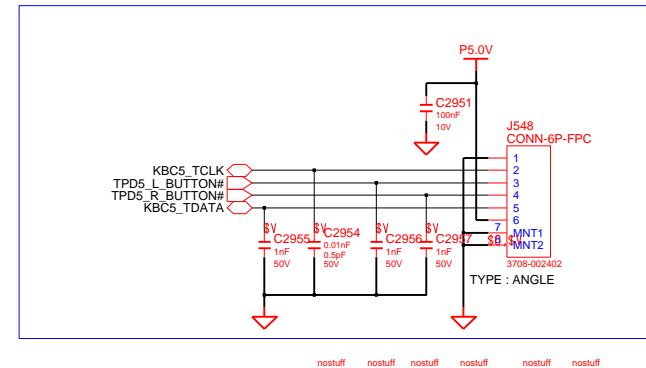
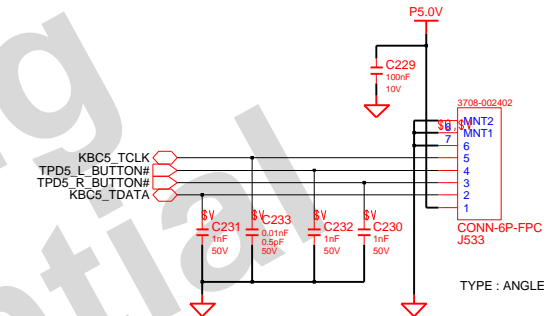
KEYBOARD on TOP



KEYBOARD on Bottom



TOUCHPAD



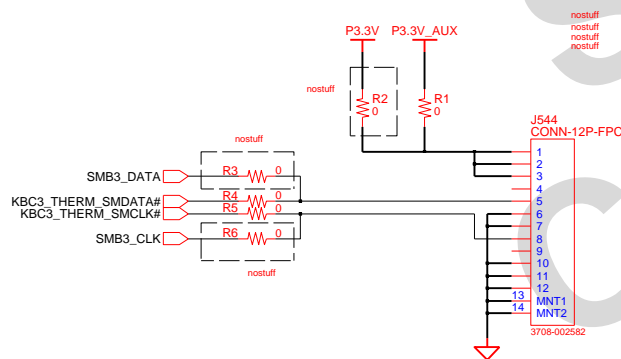
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CHECK	SIMMAN WU	DEV. STEP	MP		MICOM GLUE LOGIC	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1		MICOM GLUE LOGIC	PART NO.
MODULE CODE		LAST EDIT				BA41-01423A
				December 25, 2010 10:42:33 AM	PAGE	37 OF 52

USB Single connector *2

Need 2A Routing

FOR IR

FOR IR



TYPE : STRAIGHT

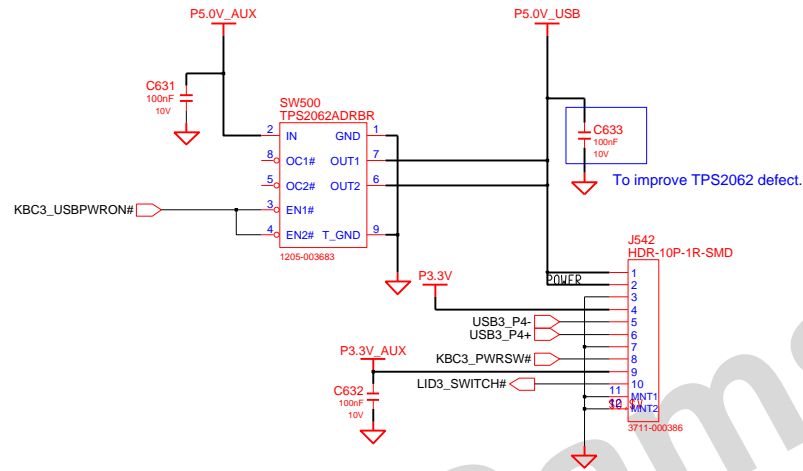
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CHECK	SIMMAN WU	DEV. STEP	MP				
APPROVAL	BC LEE	REV	rev. 1.1	USC		PART NO.	BA41-01423A
MODULE CODE	LAST EDIT			December 25, 2010 10:42:33 AM		PAGE	38 OF 52

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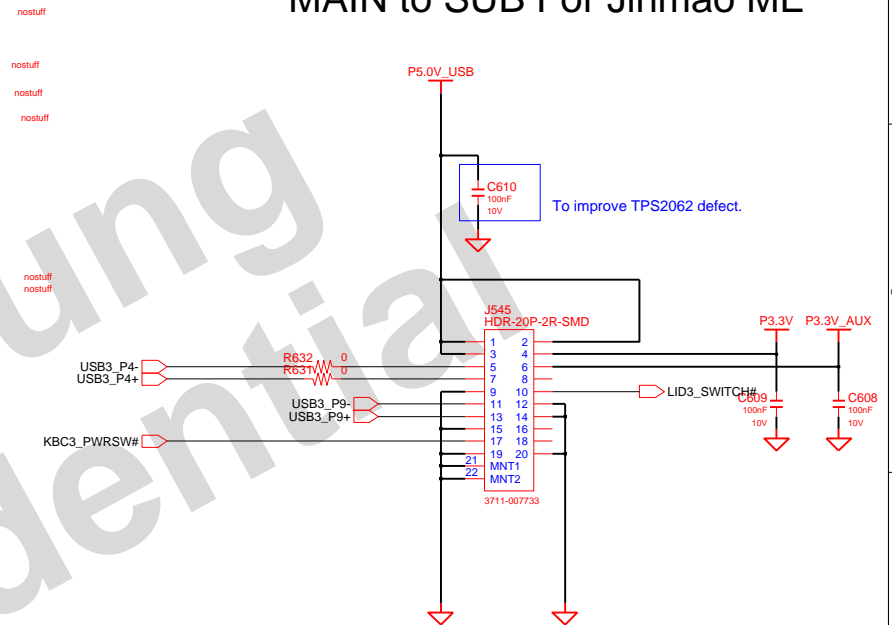
POWER S/W SUB B'D CONNECTOR

MAIN to SUB

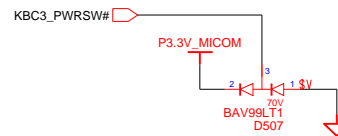
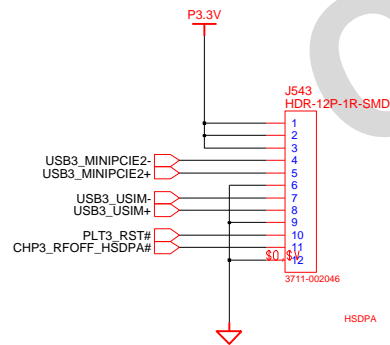


POWER S/W SUB B'D CONNECTOR

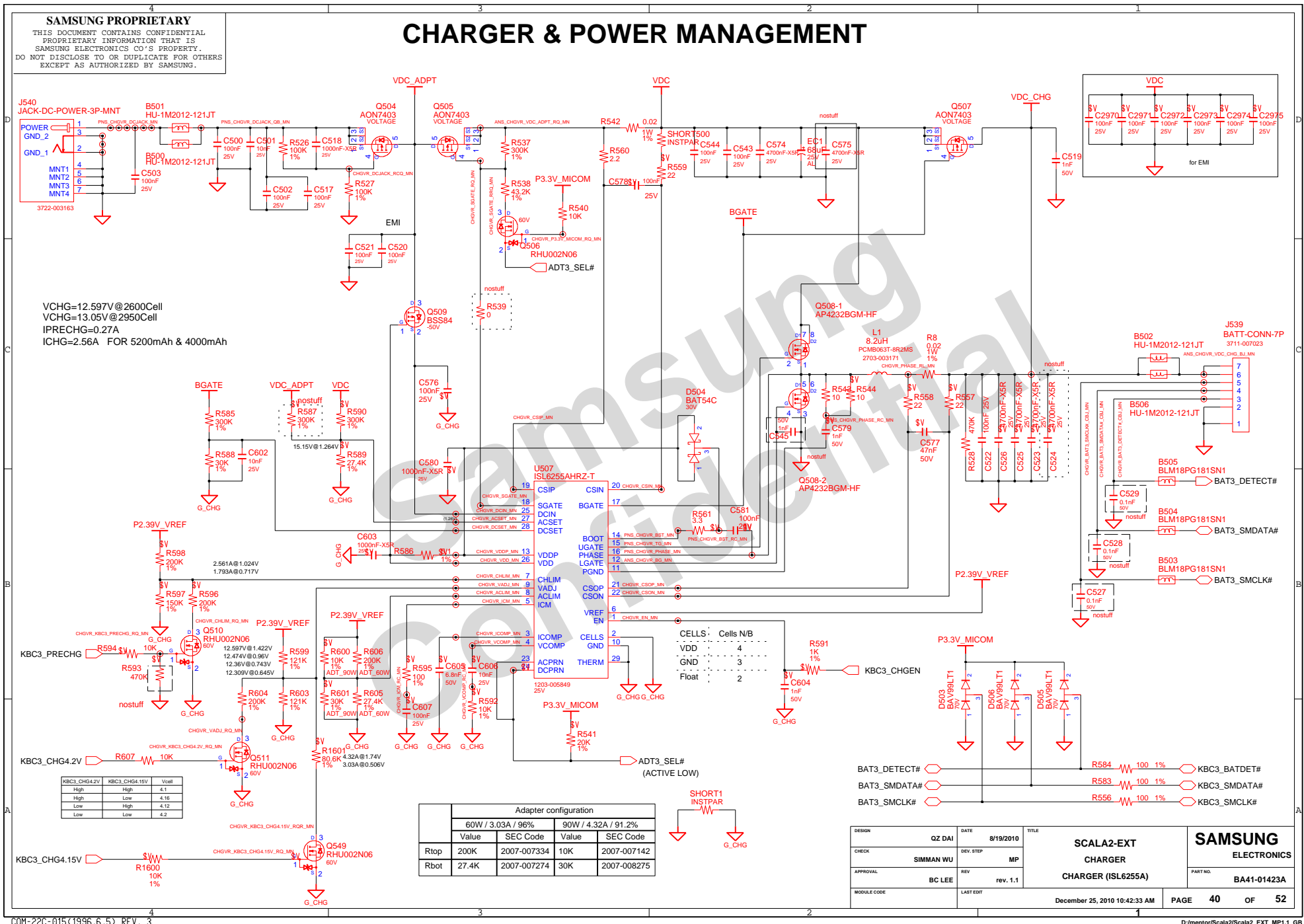
MAIN to SUB For Jinmao ME



HSPA MAIN TO SUB CONN

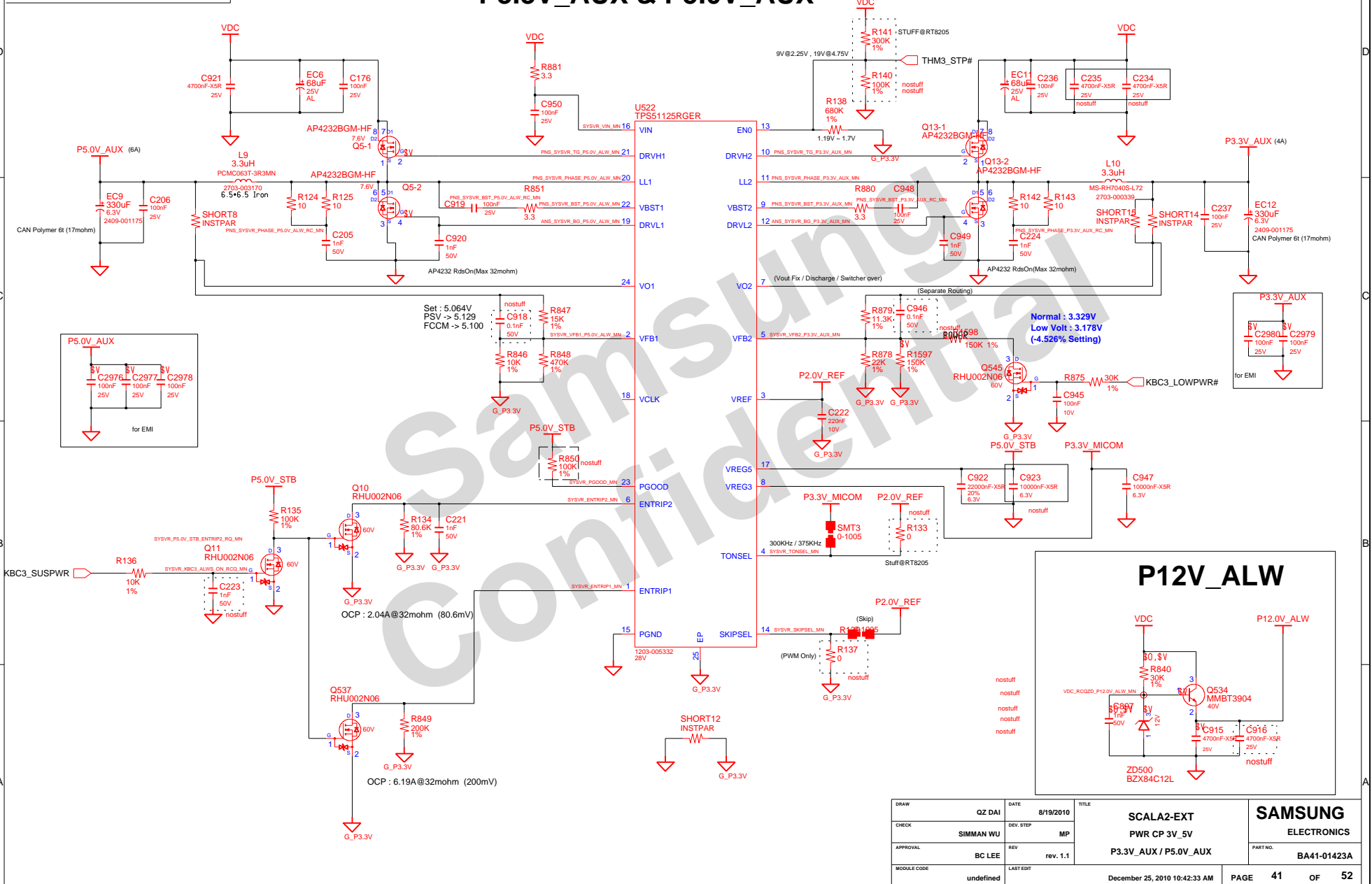


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT USB_CONN	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP			PART NO. BA41-01423A
APPROVAL	BC LEE	REV	rev. 1.1		USB CONNECTOR	
MODULE CODE		LAST EDIT		December 25, 2010 10:42:33 AM	PAGE 39 OF 52	

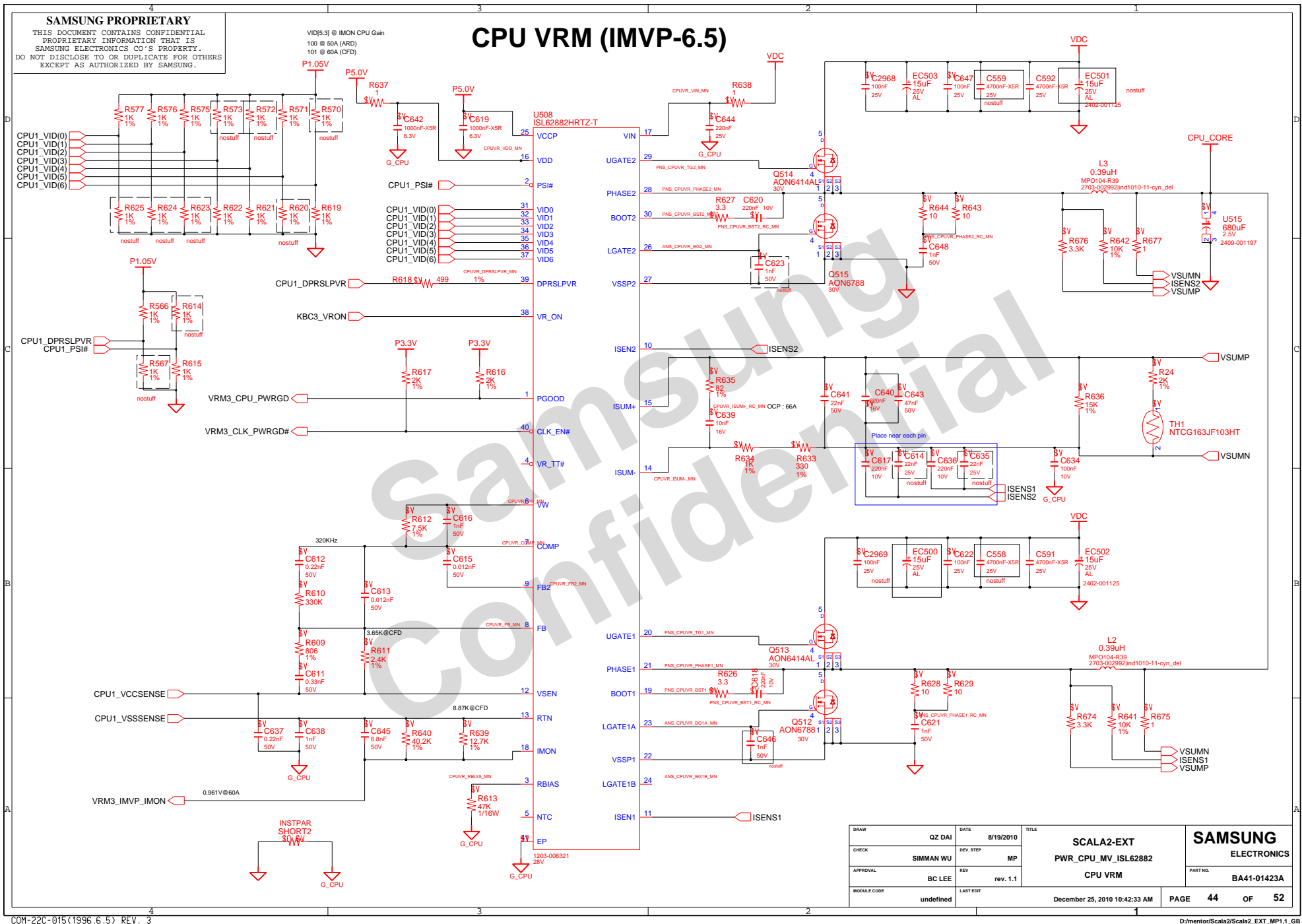


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P3.3V_AUX & P5.0V_AUX



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



GFX3_VOLTID		
G1	G0	
1	1	0.825V
1	0	0.85V
0	1	0.9V
0	0	1.0V

N11P-GE1@23.04W	31.66A @N11P-GE1&gDDR3
N10P-GE@20.97W	29.48A @N10P-GE&gDDR3
N11M-GE1@14.21W	16.77A @N11M-GE1&gDDR3
N10M-GE@13.36W	14.72A @N10M-GE&gDDR3

VID1	VID0	N10P-GE	N11P-GE	N11M-GE1	N11M-LP1	Design Value	Measured Value
1	1	0.80 V	0.8V	0.8V	0.8V	0.825V	
1	0	0.85V	0.85V	0.85V	0.85V	0.850V	
0	1	0.95V	0.95V	-	-	0.900V	
0	0	-	-	1.03V	-	1.000V	

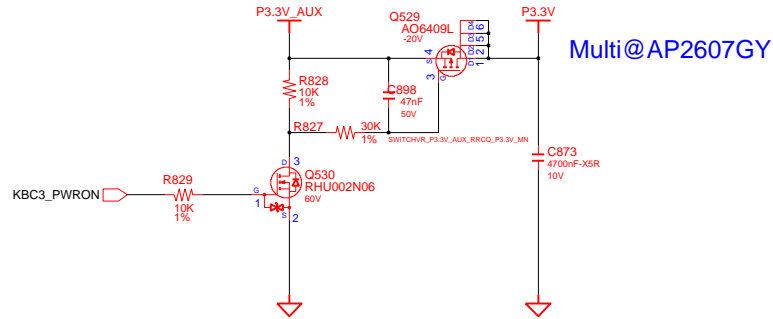
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CHECK	SIMMAN WU	DEV. STEP	MP	PWR_GFX_MV_EXT	ELECTRONICS		
APPROVAL	BC LEE	REV	rev. 1.1	External Graphic Power	PART NO.	BA41-01423A	
MODULE CODE	LAST EDIT			December 25, 2010 10:42:33 AM	PAGE	45	OF 52

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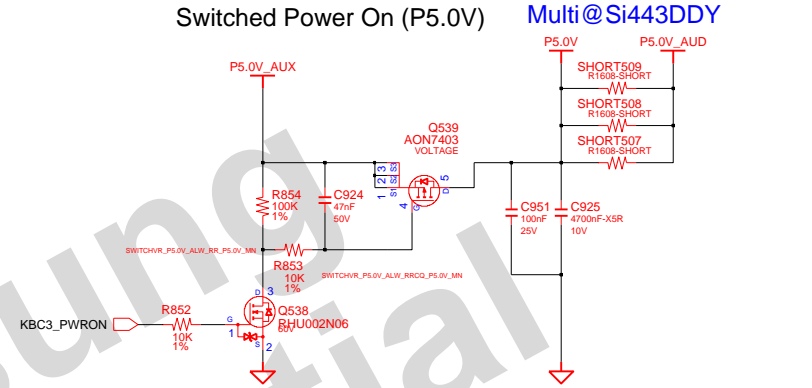
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Switched Power

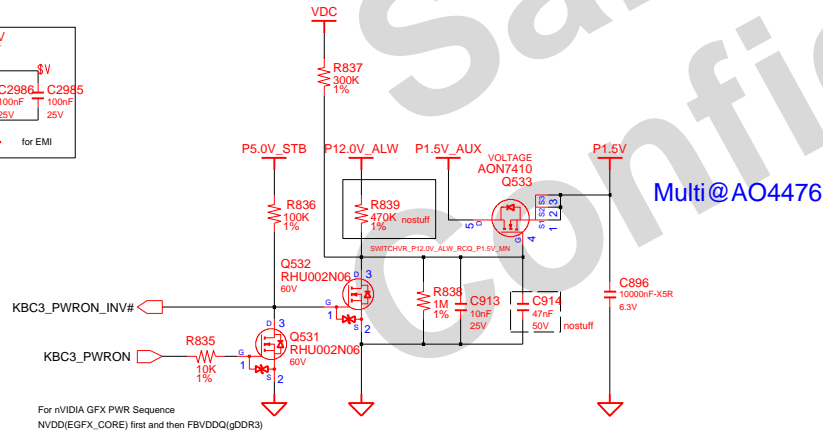
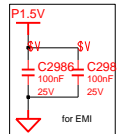
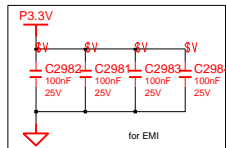
Switched Power On (P3.3V)



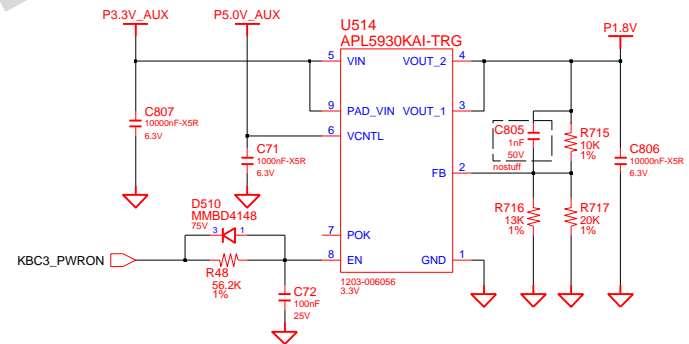
Switched Power On (P5.0V)



Switched Power On (P1.5V)



P1.8V(LDO)

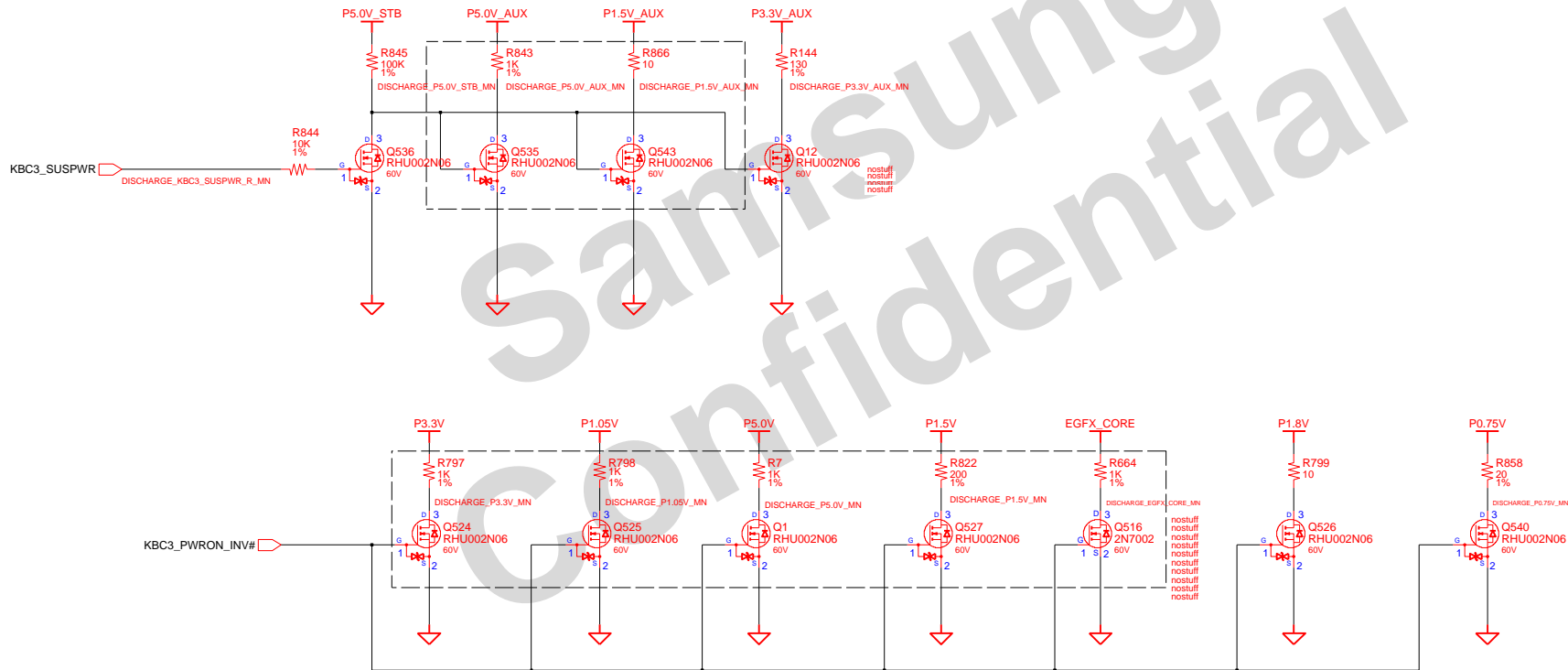


DRAW	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP		PWR_MV_SWITCHED	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1		SWITCHED POWER	PART NO.
MODULE CODE		LAST EDIT				BA41-01423A
				December 25, 2010 10:42:33 AM	PAGE	46 OF 52

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POWER DISCHARGER

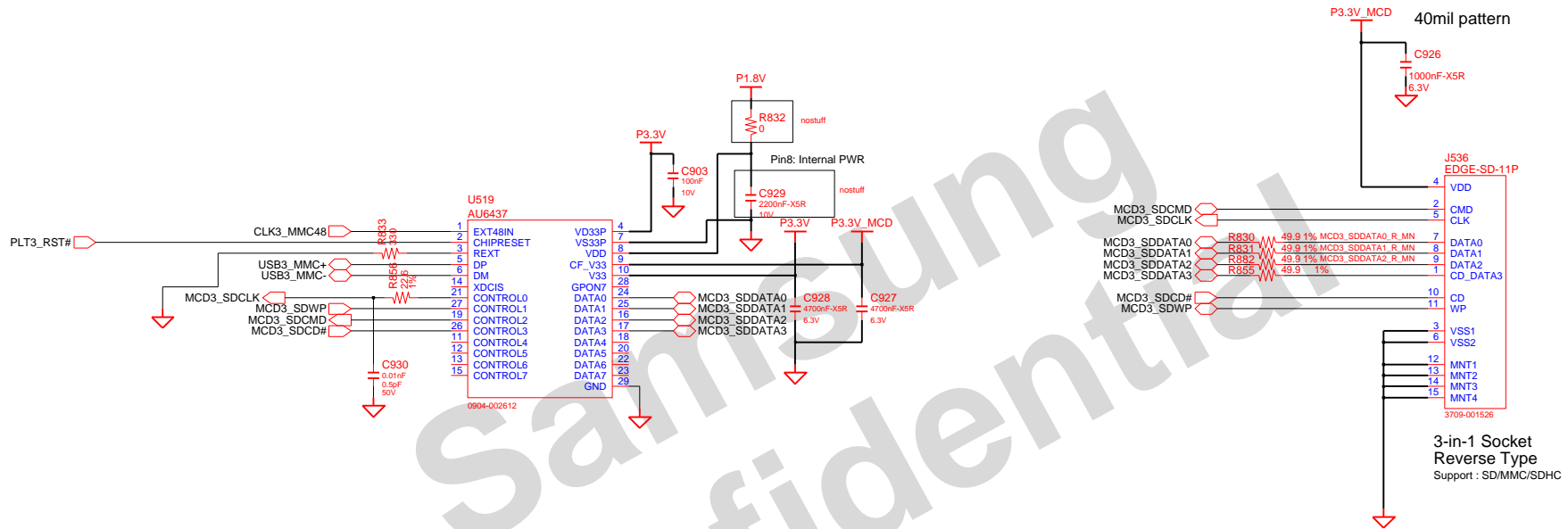


DRAW	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP		PWR_MV_DISCHARGER	ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1		DISCHARGING LOGIC	PART NO.
MODULE CODE	undefined	LAST EDIT	December 25, 2010 10:42:33 AM			BA41-01423A
				PAGE	47	OF 52

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3 IN 1 CARD (AU6437)



DESIGN	QZ DAI	DATE	8/19/2010	TITLE SCALA2-EXT SUB BOARD2 3 in 1 SUB		SAMSUNG ELECTRONICS	
CHECK	SIMMAN WU	DEV. STEP	MP				
APPROVAL	BC LEE	REV	rev. 1.1			PART NO.	BA41-01423A
MODULE CODE	LAST EDIT		December 25, 2010 10:42:33 AM		PAGE	48	OF 52

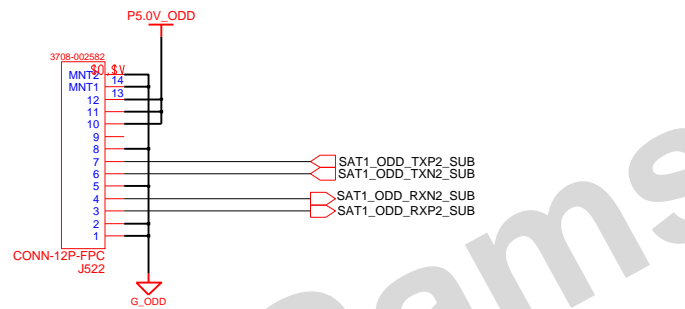
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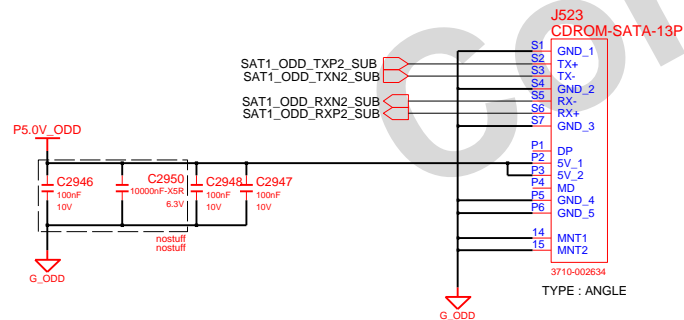
SATA ODD SUB BOARD

15.6"

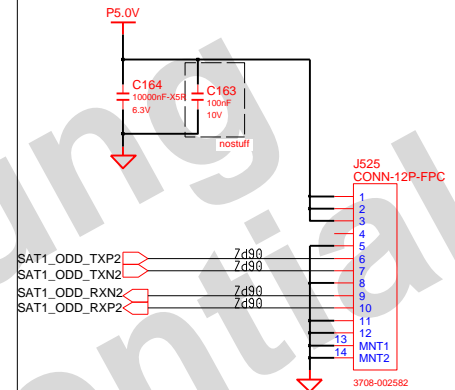
SUB TO MAIN : SATA ODD CONN



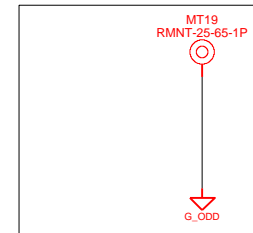
SATA ODD CONN



MAIN TO SUB : SATA ODD CONN



EXT15



ODD sub board mount hole

DRAW	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT SUB BOARD3 ODD SUB	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP			PART NO. BA41-01423A
APPROVAL	BC LEE	REV	rev. 1.1			
MODULE CODE		LAST EDIT		December 25, 2010 10:42:33 AM	PAGE 49 OF 52	

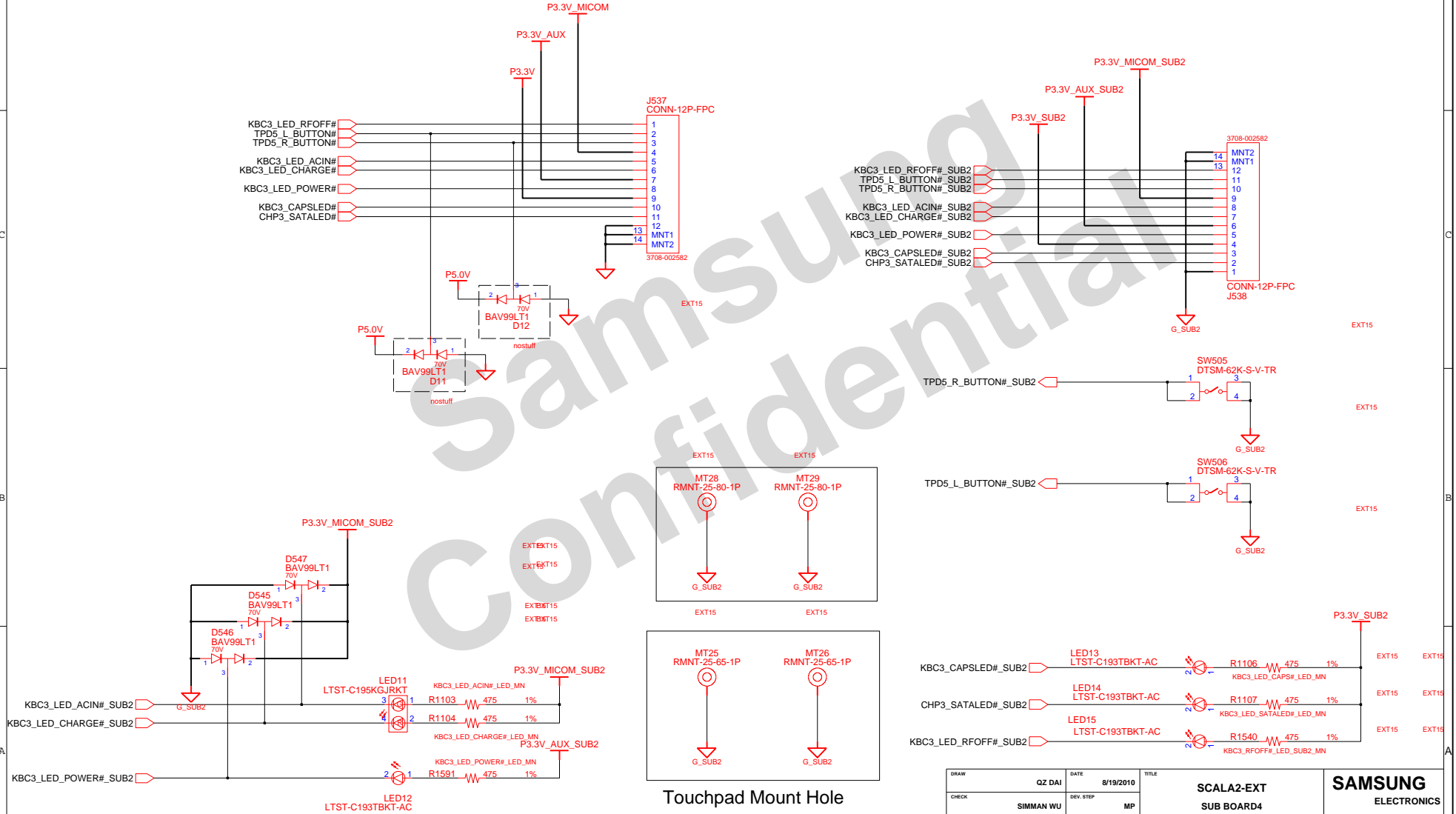
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15.6"

TOUCHPAD MAIN TO SUB

TOUCHPAD SUB TO MAIN

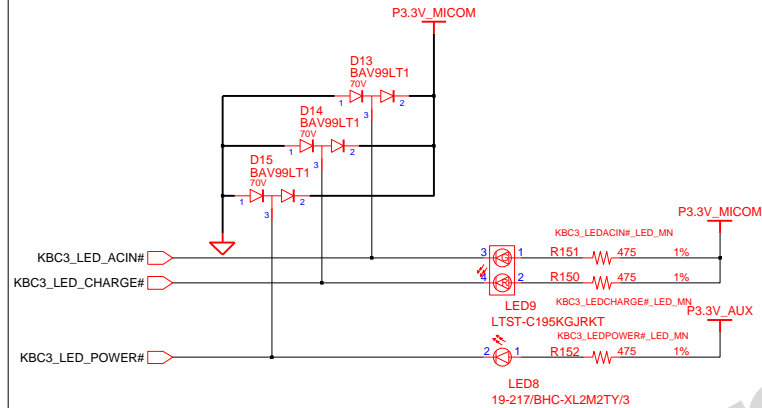


DRAW	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT SUB BOARD4 MULTIMEDIA SUB	SAMSUNG ELECTRONICS
CHECK	SIMMAN WU	DEV. STEP	MP			PART NO. BA41-01423A
APPROVAL	BC LEE	REV	rev. 1.1			
MODULE CODE		LAST EDIT				
December 25, 2010 10:42:33 AM						PAGE 50 OF 52

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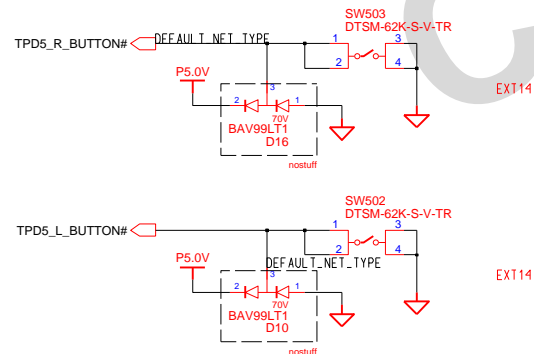
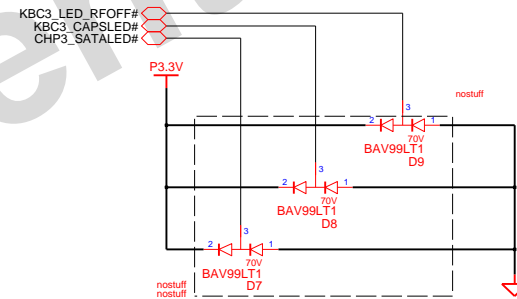
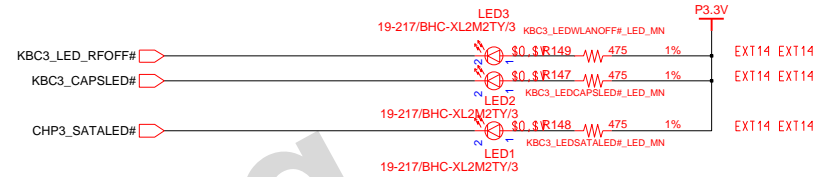
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ADAPTERIN/CHARGING LED



EXT14
EXT14 EXT14
EXT14 EXT14
EXT14 EXT14
EXT14

ADAPTERIN/CHARGING LED

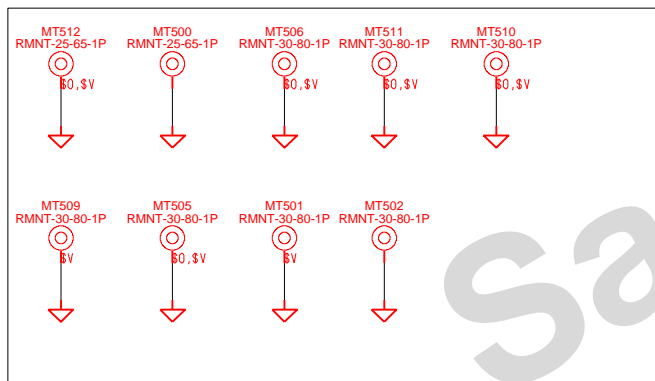


DESIGN	QZ DAI	DATE	8/19/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP	MNT hole		ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1	MNT hole		PART NO.
MODULE CODE		LAST EDIT				BA41-01423A
				December 25, 2010 10:42:33 AM	PAGE	51 OF 52

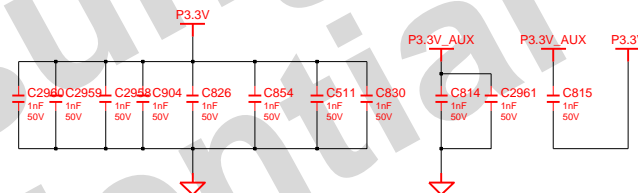
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Mainboard Mount ((25-65)X2EA, (30-80)X7EA)



EMI CAP



DRAW	QZ DAI	DATE	5/10/2010	TITLE	SCALA2-EXT	SAMSUNG
CHECK	SIMMAN WU	DEV. STEP	MP	Switched PWR 2		ELECTRONICS
APPROVAL	BC LEE	REV	rev. 1.1	FOR OPTIMUS PWR	PART NO.	BA41-01423A
MODULE CODE	LAST EDIT				December 25, 2010 10:42:33 AM	PAGE 52 OF 52