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Scala3-14CRV

CPU : IVY Bridge PGA
Chip Set : Intel Panther Point
GFX : NVIDIA N13M-GS/GE
Remarks : Chief River Platform

Model Name : Scala3-14CRV
PBA Name : MAIN_Dual
PCB Code : BA41-02092A (GCE)
BA41-02093A (HST)
BA41-02094A (PTC)
BA41-02098A (GBM)

Dev. Step : MP
Revision : 1.1
T.R. Date : 2012.06.14

Design	CHECK	APPROVAL
Tao Xiaofeng	Chu XF	BL LEE

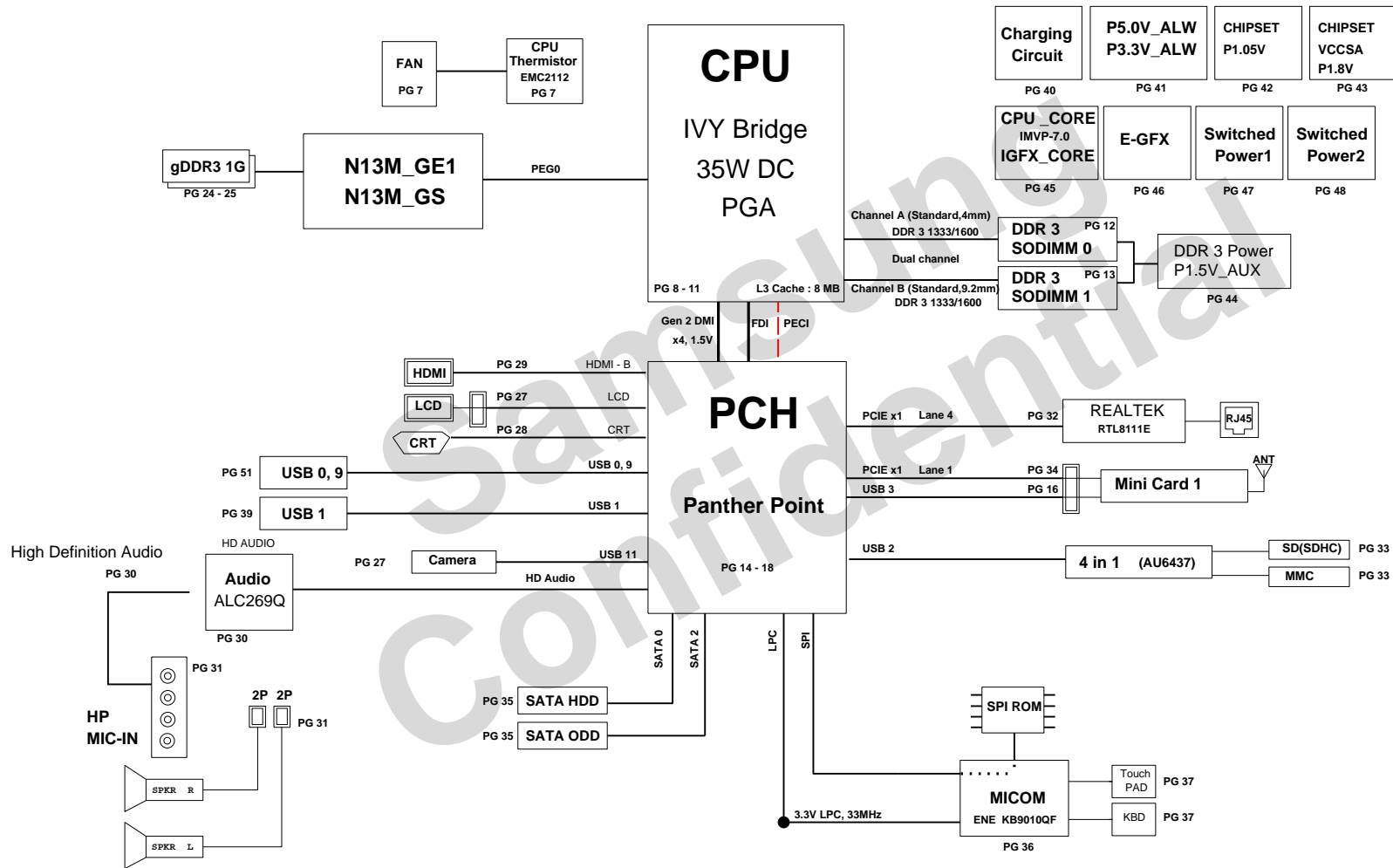
Owner : SEC Mobile R & D Signature : X

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- sheet15 : PCH-CougarPoint
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- sheet17 : PCH-CougarPoint
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- sheet29 : HDMI
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- sheet31 : Audio - HP/MIC
- sheet32 : LAN (Realtek RTL8111E)
- sheet33 : 4-in-1 card (AU6437)
- sheet34 : WLAN
- sheet35 : SATA interface
- sheet36 : MICOM / BIOS
- sheet37 : MICOM Glue Logic (KBD / TP)
- sheet38 : LED for 14" & for 15"
- sheet39 : USB connector
- sheet40 : Power - charger
- sheet41 : Power - P3.3V_AUX / P5.0V_AUX
- sheet42 : Power - P1.05V (Chipset Power)
- sheet43 : Power - P0.8V (Chipset Power)
- sheet44 : Power - DDR3
- sheet45 : Power - CPU VRM
- sheet46 : Power - EGFX_CORE
- sheet47 : Power - Switched Power 1
- sheet48 : Power - Switched Power 2
- sheet49 : Power - Power Discharge
- sheet50 : Mount Hole / Thermal Hole
- sheet51 : USB Sub B'D

DRAW	XF TAO	DATE	11/06/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092-94A
CHECK	XF CHU	DEV.STEP	MP	MAIN		
APPROVAL	BL LEE	REV	REV 1.1	COVER		
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM	PAGE 1 OF 51		

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BLOCK DIAGRAM



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	MAIN		
APPROVAL	BL LEE	REV	REV 1.0	BLOCK DIAGRAM	PART NO. BA41-02092-94A	
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	2	OF 51

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BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

Voltage Rails		Active in
VDC	Primary DC system power supply (7 to 21V)	S4 - S5
P3.3V_MICOM	3.3V always power rail (for Micom)	
P5.0V_STB	5.0V always power rail	
P5.0V_ALW	5.0V always power rail	
P3.3V_ALW	3.3V always power rail	
P12.0V_ALW	12.0V always power rail	
P5.0V_AUX	5.0V switched on power rail (off in S4-S5)	S3
P3.3V_AUX	3.3V switched on power rail (off in S4-S5)	
P1.5V_AUX	1.5V power rail for DDR3 (off in S4-S5)	
P5.0V	5.0V switched power rail (off in S3-S5)	S0
P3.3V	3.3V switched power rail (off in S3-S5)	
P1.8V	1.8V switched power rail (off in S3-S5)	
P1.5V	1.5V switched power rail (off in S3-S5)	
P0.75V	0.75V power rail for DDR3 (off in S3-S5)	
P0.8V	0.8V switched power rail (off in S3-S5)	
VCC_CORE	Core Voltage for CPU	S0
EGFX_CORE	Core Voltage for GPU	
P1.05V (VCCP)	VCC for COUGARPOINT	
P3.3V_D	3.3V discrete power rail for N12X	
P1.5V_D	1.5V discrete power rail for N12X	
P1.05V_D	1.05V discrete power rail for N12X	

Crystal / Oscillator			
TYPE	FREQUENCY	DEVICE	USAGE
Crystal	32.768KHz	HM65	Real Time Clock
Crystal	25MHz	LAN	Intel LAN
Crystal	25MHz	GREENCLK	GREENCLK
Crystal	25MHz	HM65	INTEL
Crystal	27MHz	N12P-GVR	NVIDIA

LCD Pannel Detect (TBD)		
Devices	Resolution	PANNEL_DETECT_0

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	SYSTEM PORT 2	5	NC
5	NC	6	NC
6	NC	7	NC
7	NC	8	NC
8	NC		
9	NC		
10	BLUETOOTH		
11	Camera(LCD Cable)		
12	NC		
13	NC		

I ² C / SMB Address			
Devices	Address	Hex	Bus
HM65	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	Thermal Sensor
SODIMM0	1010 000x	A0h	-
SODIMM1	1010 010x	A4h	-
Thermal Sensor on SODIMM0	0011 000x	30h	-
Thermal Sensor on SODIMM1	0011 010x	34h	-
Thermal Sensor on board	1101 100x	98h	-
Power thermal management TS	1101 011x	96h	-

SATA PORT Assign	
PORT #	ASSIGNED TO
0	HDD
1	NC
2	ODD
3	NC
4	NC
5	NC

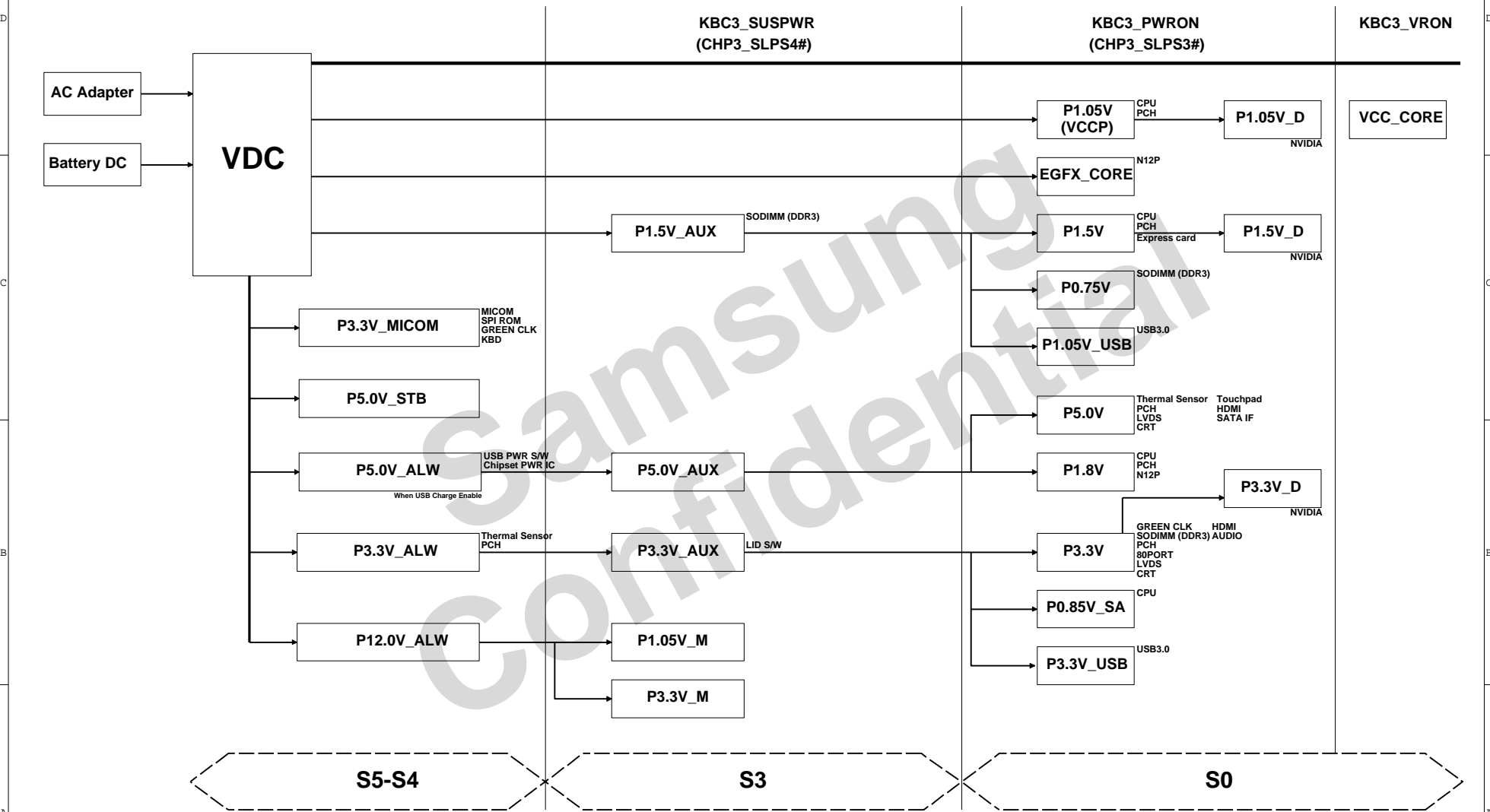
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CHECK	XF CHU	DEV. STEP	MP		MAIN	
APPROVAL	BL LEE	REV	REV 1.0		BOARD INFO	PART NO. BA41-02092-94A
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	3	OF 51

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POWER DIAGRAM

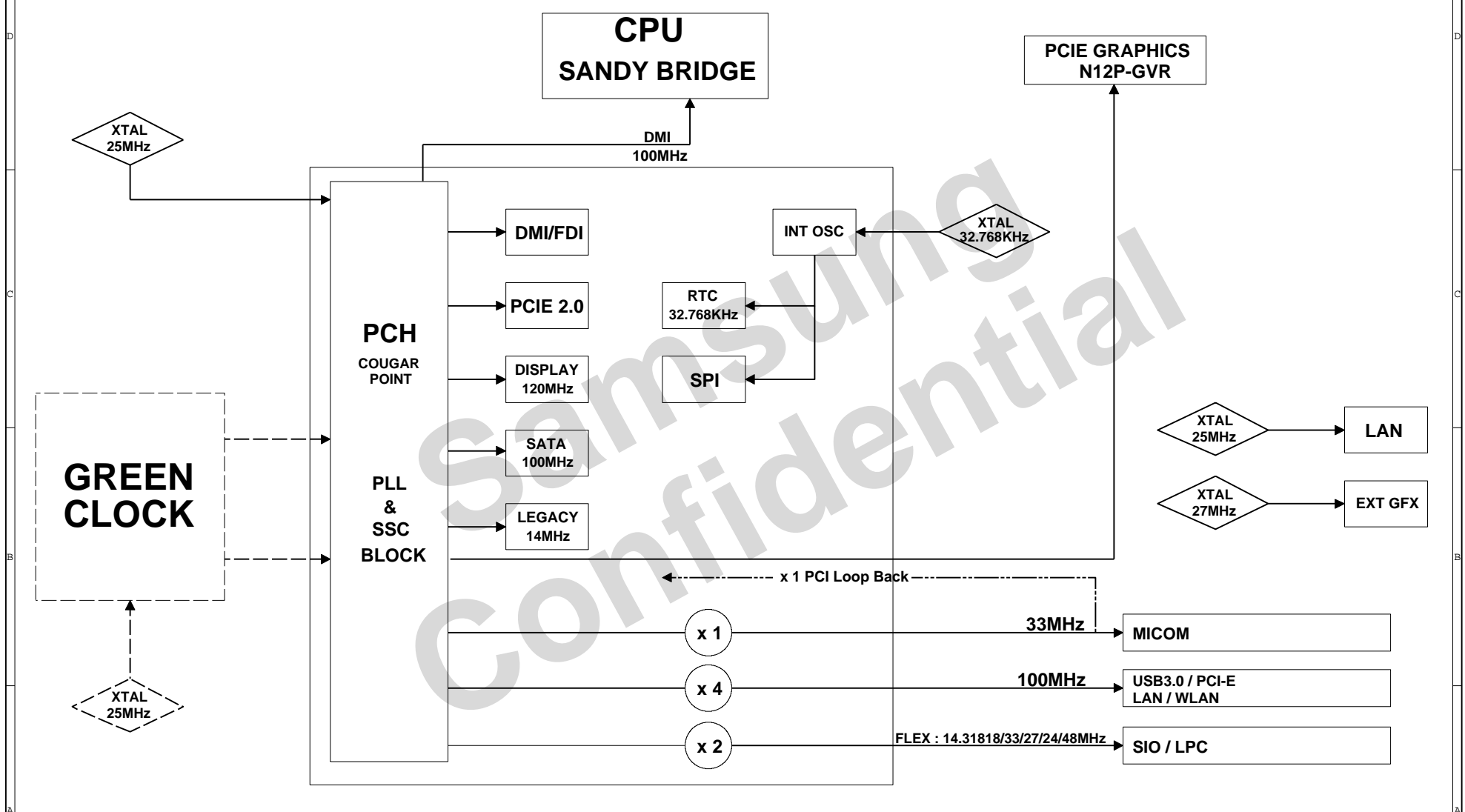
Rev 0.8



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092-94A
CHECK	XF CHU	DEV. STEP	MP	MAIN		
APPROVAL	BL LEE	REV	REV 1.0	POWER DIAGRAM		
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE 4 OF 51		

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CLOCK DISTRIBUTION Rev. 0.8

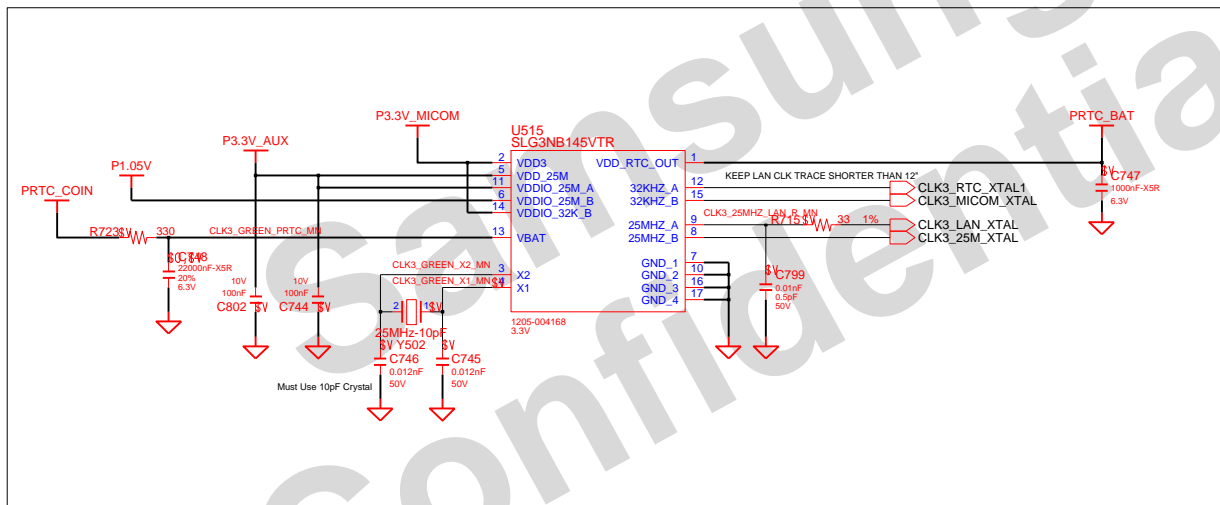


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CHECK	XF CHU	DEV. STEP	MP	MAIN	PART NO.	
APPROVAL	BL LEE	REV	REV 1.0	CLOCK DIAGRAM	BA41-02092-94A	
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CLOCK DISTRIBUTOR



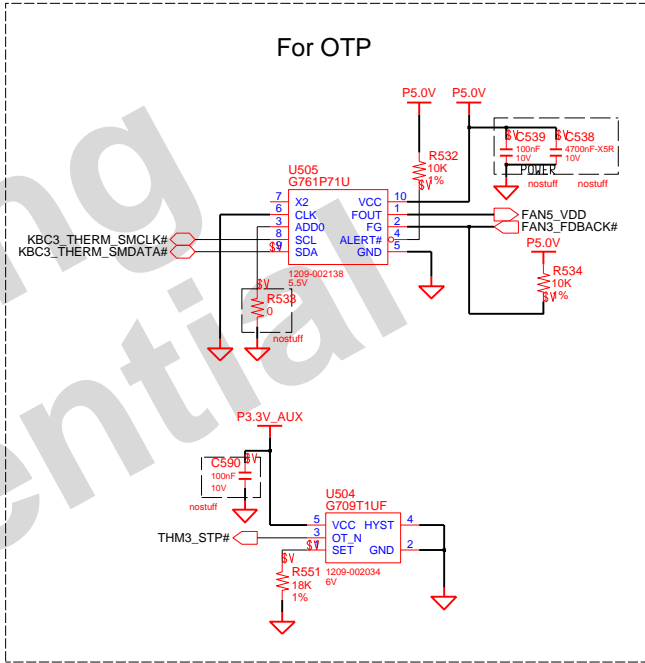
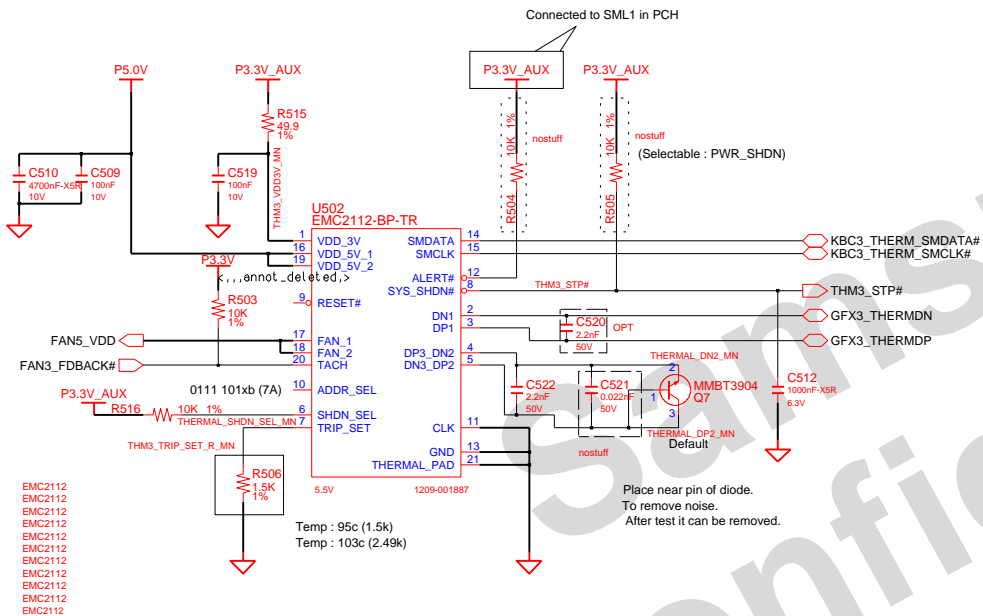
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK

DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	CLOCK		
APPROVAL	BL LEE	REV	REV 1.0	CLOCK DISTRIBUTION	PART NO.	BA41-02092-94A
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	6	OF 51

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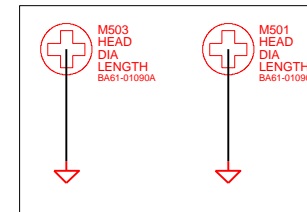
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THERMAL SENSOR & FAN CONTROL



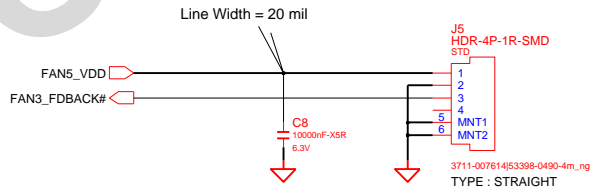
Temperature : 95.78c
confirmed by thermal charger
(2011.05.02)
R_{th} (kohm) = 0.0012T² - 0.9308T + 96.147

FAN PEM



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

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

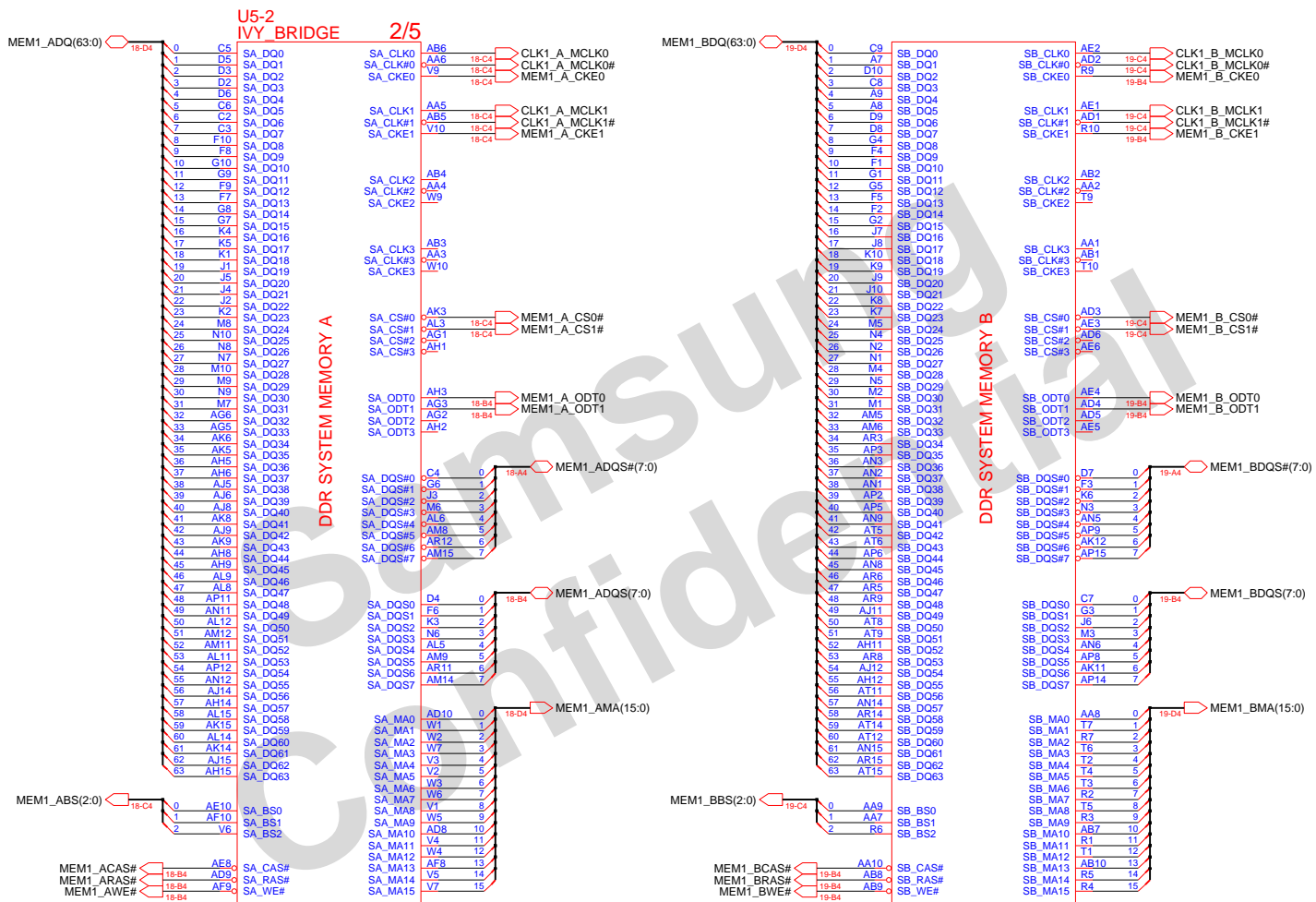


DESIGN	DATE	TITLE	
XF TAO	23/05/2012	Scala3-14R	
XF CHU	DEV.STEP	THERMAL SENSOR	
BL LEE	REV 1.0	THERMAL SENSOR EMC2112	
MODULE CODE	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE 7 OF 51

SAMSUNG ELECTRONICS	
PART NO.	BA41-02092-94A

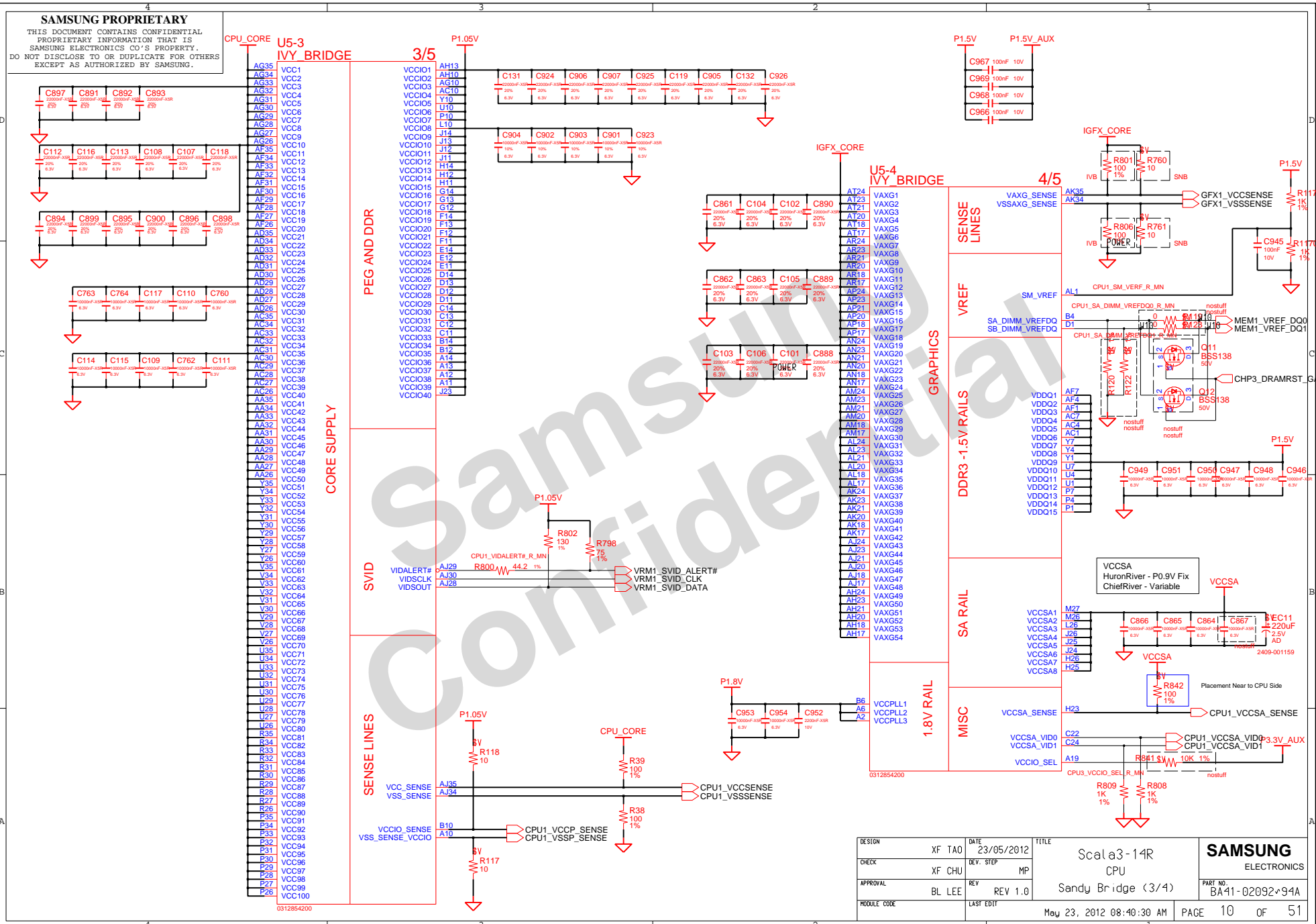
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DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R CPU	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP			
APPROVAL	BL LEE	REV	REV 1.0		Sandy Bridge (2/4)	PART NO. BA41-02092-94A
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	9 OF 51	



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DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		CPU	
APPROVAL	BL LEE	REV	REV 1.0		Sandy Bridge (3/4)	PART NO. BA11-02092.94A
MODULE CODE		LAST EDIT			May 23, 2012 08:40:30 AM	PAGE 10 OF 51

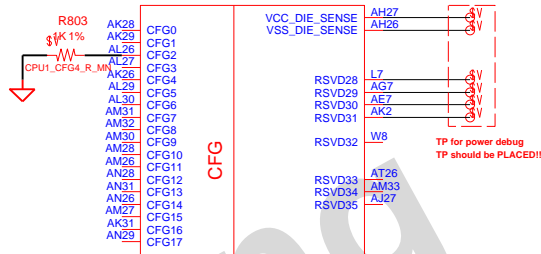
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**U5-5
 IVY BRIDGE 5/5**

AT35	VSS1	VSS81	AJ22	T35	VSS161	VSS234	F22
AT34	VSS2	VSS82	AJ19	T34	VSS162	VSS235	F19
AT29	VSS5	VSS83	AJ16	T33	VSS163	VSS236	E30
AT27	VSS3	VSS84	AJ13	T32	VSS164	VSS237	E27
AT25	VSS5	VSS85	AJ10	T31	VSS165	VSS238	E24
AT22	VSS6	VSS86	AJ7	T30	VSS166	VSS239	E21
AT19	VSS8	VSS87	AJ4	T29	VSS167	VSS240	E18
AT16	VSS8	VSS88	AJ3	T28	VSS168	VSS241	E15
AT13	VSS9	VSS89	AJ2	T27	VSS169	VSS242	E13
AT10	VSS10	VSS90	AJ1	T26	VSS170	VSS243	E10
AT7	VSS11	VSS91	AH35	T25	VSS171	VSS244	E9
AT4	VSS12	VSS92	AH34	P8	VSS172	VSS245	E7
AT3	VSS13	VSS93	AH32	P6	VSS173	VSS246	E6
AR25	VSS14	VSS94	AH30	P5	VSS174	VSS247	E6
AR22	VSS15	VSS95	AH28	P3	VSS175	VSS248	E5
AR19	VSS16	VSS96	AH26	P2	VSS176	VSS249	E4
AR16	VSS17			N35	VSS177	VSS250	E3
AR13	VSS18	VSS98	AH25	N34	VSS178	VSS251	E2
AR10	VSS19	VSS99	AH22	N33	VSS179	VSS252	E1
AR7	VSS20	VSS100	AH18	N32	VSS180	VSS253	D35
AR4	VSS21	VSS101	AH7	N31	VSS181	VSS254	D32
AR2	VSS22	VSS102	AH5	N30	VSS182	VSS255	D29
AP34	VSS23	VSS103	AH4	N29	VSS183	VSS256	D26
AP31	VSS24	VSS104	AG9	N28	VSS184	VSS257	D20
AP29	VSS25	VSS105	AG8	N27	VSS185	VSS258	D17
AP28	VSS25	VSS105	AG4	N26	VSS186	VSS259	D17
AP22	VSS26	VSS106	AF6	N25	VSS187	VSS260	D17
AP19	VSS28	VSS108	AF5	M34	VSS188	VSS261	C34
AP13	VSS29	VSS109	AF3	L33	VSS189	VSS262	C29
AP10	VSS30	VSS110	AF2	L30	VSS190	VSS263	C25
VSS31	VSS31	VSS111	AE35	L9	VSS191	VSS264	C23
AP7	VSS32	VSS112	AE34	L8	VSS192	VSS265	C10
AP4	VSS33	VSS113	AE33	L6	VSS193	VSS266	C1
AP1	VSS34	VSS114	AE31	L5	VSS194	VSS267	C0
AN30	VSS34	VSS114	AE31	L4	VSS195	VSS268	B22
AN27	VSS35	VSS115	AE30	L3	VSS196	VSS269	B17
AN25	VSS36	VSS116	AE29	L3	VSS197	VSS270	B15
AN22	VSS37	VSS117	AE28	L2	VSS198	VSS271	B13
AN19	VSS38	VSS118	AE27	L1	VSS199	VSS272	B11
AN16	VSS39	VSS119	AE26	K35	VSS200	VSS273	B9
AN13	VSS40	VSS120	AE9	K29	VSS201	VSS274	B8
AN10	VSS42	VSS122	AD7	K26	VSS202	VSS275	B7
AN7	VSS43	VSS123	AC8	J34	VSS203	VSS276	B5
AN4	VSS44	VSS124	AC6	J31	VSS204	VSS277	B2
AM29	VSS45	VSS125	AC5	H33	VSS205	VSS278	B2
AM25	VSS46	VSS126	AC5	H30	VSS206	VSS279	A35
AM22	VSS47	VSS127	AC3	H27	VSS207	VSS280	A32
AM19	VSS48	VSS128	AC2	H24	VSS208	VSS281	A29
AM16	VSS49	VSS129	AB34	H18	VSS209	VSS282	A23
AM13	VSS50	VSS130	AB33	H10	VSS210	VSS283	A20
AM10	VSS51	VSS131	AB33	H15	VSS211	VSS284	A20
AM7	VSS52	VSS132	AB32	H13	VSS212	VSS285	A3
AM4	VSS53	VSS133	AB31	H9	VSS213		
AM3	VSS54	VSS134	AB30	H8	VSS214		
AM2	VSS55	VSS135	AB29	H7	VSS215		
AM1	VSS56	VSS136	AB28	H6	VSS216		
AL34	VSS57	VSS137	AB27	H6	VSS217		
AL31	VSS58	VSS138	AB26	H5	VSS218		
AL28	VSS59	VSS139	Y9	H4	VSS219		
AL25	VSS60	VSS140	Y8	H3	VSS220		
AL22	VSS61	VSS141	Y6	H2	VSS221		
AL19	VSS62	VSS142	Y3	H1	VSS222		
AL16	VSS63	VSS143	Y2	G35	VSS223		
AL13	VSS64	VSS144	Y2	G32	VSS224		
AL10	VSS65	VSS145	W35	G29	VSS225		
AL7	VSS66	VSS146	W34	G26	VSS226		
AL4	VSS67	VSS147	W33	G23	VSS227		
AL2	VSS68	VSS148	W32	G20	VSS228		
AK33	VSS69	VSS149	W31	G17	VSS229		
AK30	VSS70	VSS150	W30	G11	VSS230		
AK27	VSS71	VSS151	W29	F34	VSS231		
AK25	VSS72	VSS152	W28	F31	VSS232		
AK22	VSS73	VSS153	W27	F29	VSS233		
AK19	VSS74	VSS154	W26				
AK16	VSS75	VSS155	U9				
AK13	VSS76	VSS156	U6				
AK10	VSS77	VSS157	U5				
AK7	VSS78	VSS158	U3				
AK4	VSS79	VSS159	U2				
AJ25	VSS80	VSS160	U2				

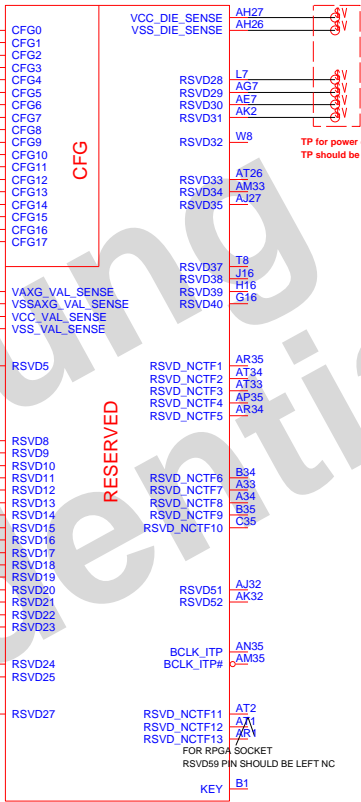
VSS

VSS



CFG Straps for Processor

PEG STATIC LANE REVERSAL - CFG2 IS FOR THE 16X	
CFG2	1 : (DEFAULT) NORMAL OPERATION 0 : LANE REVERSED
PCIe PORT BIFURCATION STRAPS	
CFG6[6:5]	11 : (DEFAULT) X16 - DEVICE 1 FUNCTIONS 1 AND 2 DISABLED 10 : X8, X8 - DEVICE 1 FUNCTION 1 ENABLED ; FUNCTION 2 DISABLED 01 : RESERVED - (DEVICE 1 FUNCTION 1 DISABLED ; FUNCTION 2 ENABLED) 00 : X8, X4, X4 - DEVICE 1 FUNCTIONS 1 AND 2 ENABLED
Display Port Presence	
CFG4	1 : Disabled - No DP device is connected to eDP 0 : Enabled - (DP device is connected to eDP)
PEG DEFER TRAINING	
CFG7	1 : (DEFAULT) PEG TRAIN IMMEDIATELY FOLLOWING XXRESETB DEASSERTION 0 : PEG WAIT FOR BIOS FOR TRAINING



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		CPU	
APPROVAL	BL LEE	REV	REV 1.0		Sandy Bridge (4/4)	PART NO. BA41-02092*94A
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM	PAGE	11 OF 51

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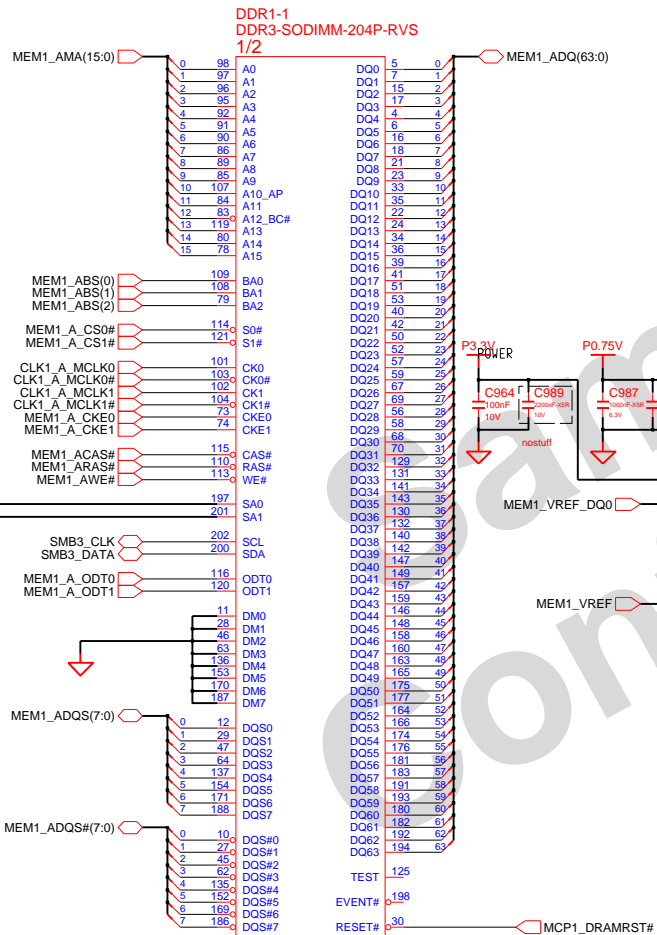
SO-DIMM#0 : 2nd SO-DIMM

DDR SO-DIMM #0

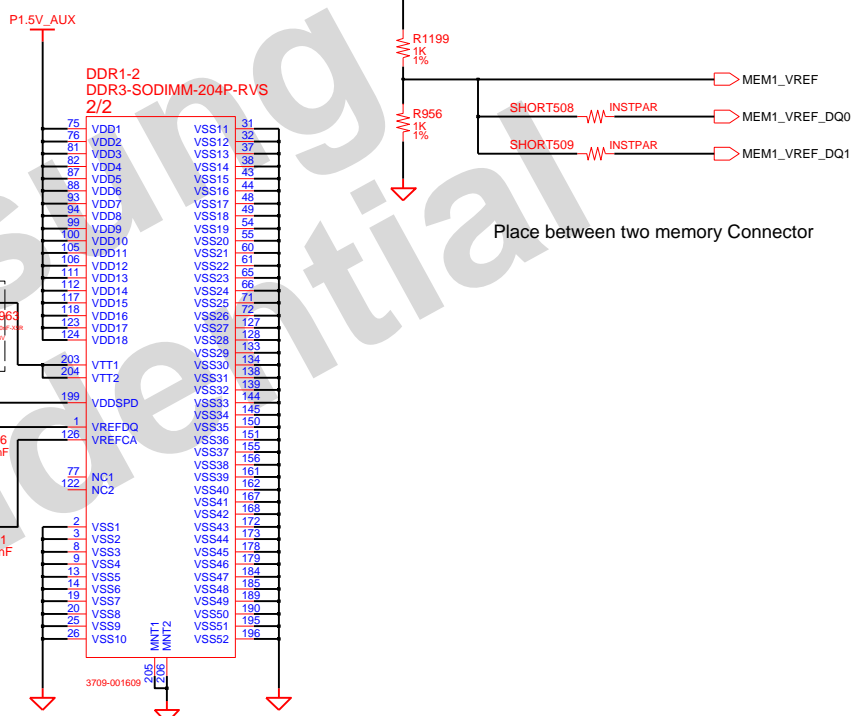
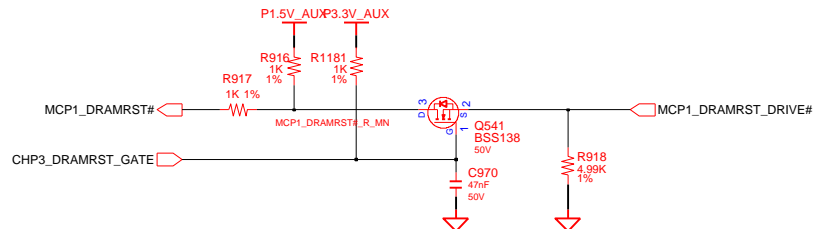
Height : 9.2 mm (REVERSE)

P/N : 3709-001656 (Foxconn)

P/N : 3709-001609 (Concraft)

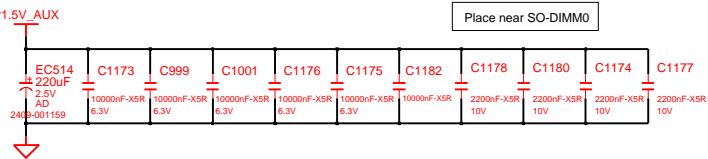


SA0	0	0
SA1	0	1
SPD ADD	0xA0	0xA2
TS ADD	0x30	0x32



Place between two memory Connector

Place near SO-DIMM0



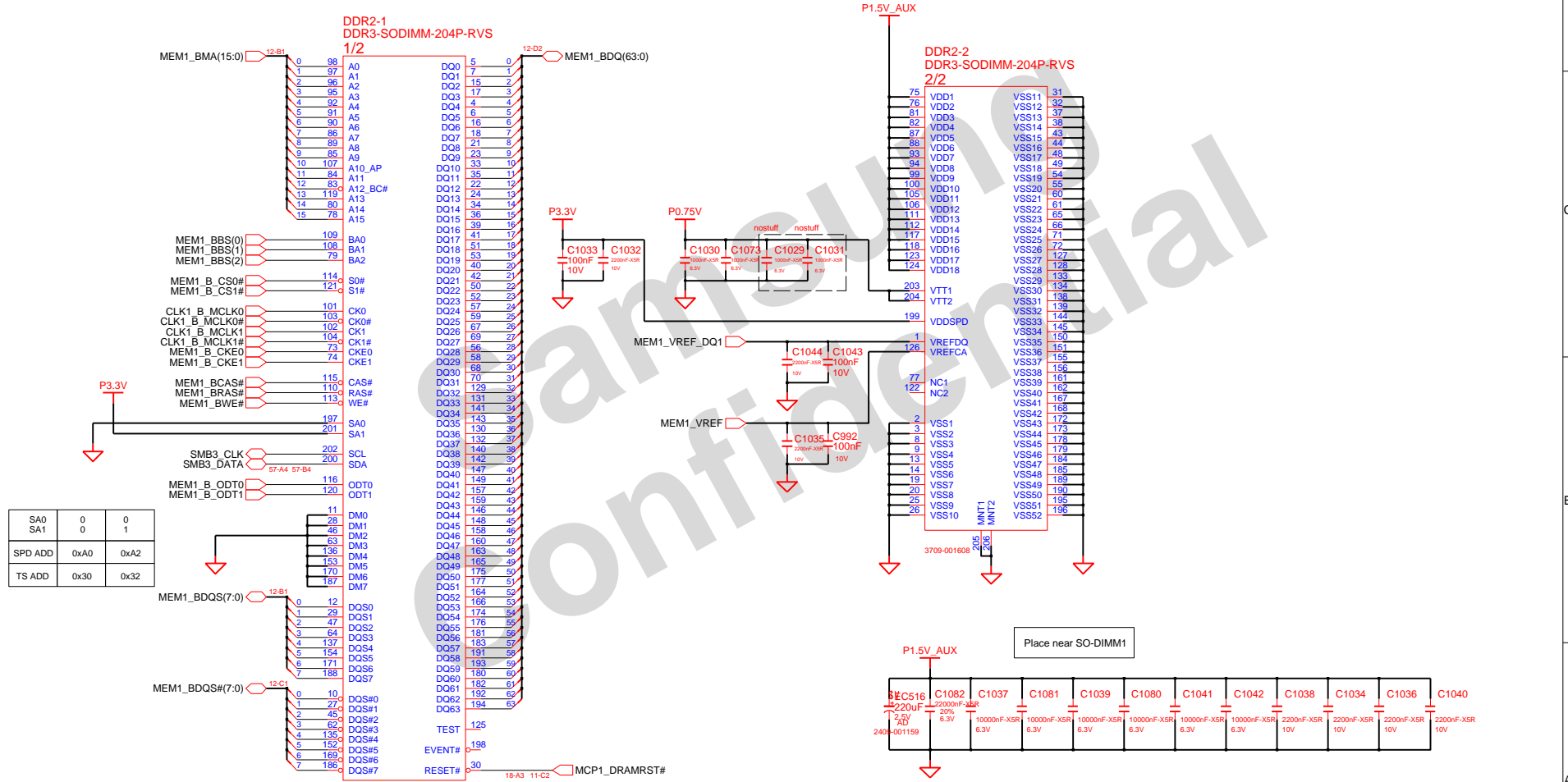
DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		SODIMM A	
APPROVAL	BL LEE	REV	REV 1.0		DDR3	PART NO. BA41-02092-94A
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	12	OF 51

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SO-DIMM#1 : 1st SO-DIMM

DDR SO-DIMM #1

Height : 4.0 mm (REVERSE)
 P/N : 3709-001654 (Foxconn)
 P/N : 3709-001608 (Concraft)

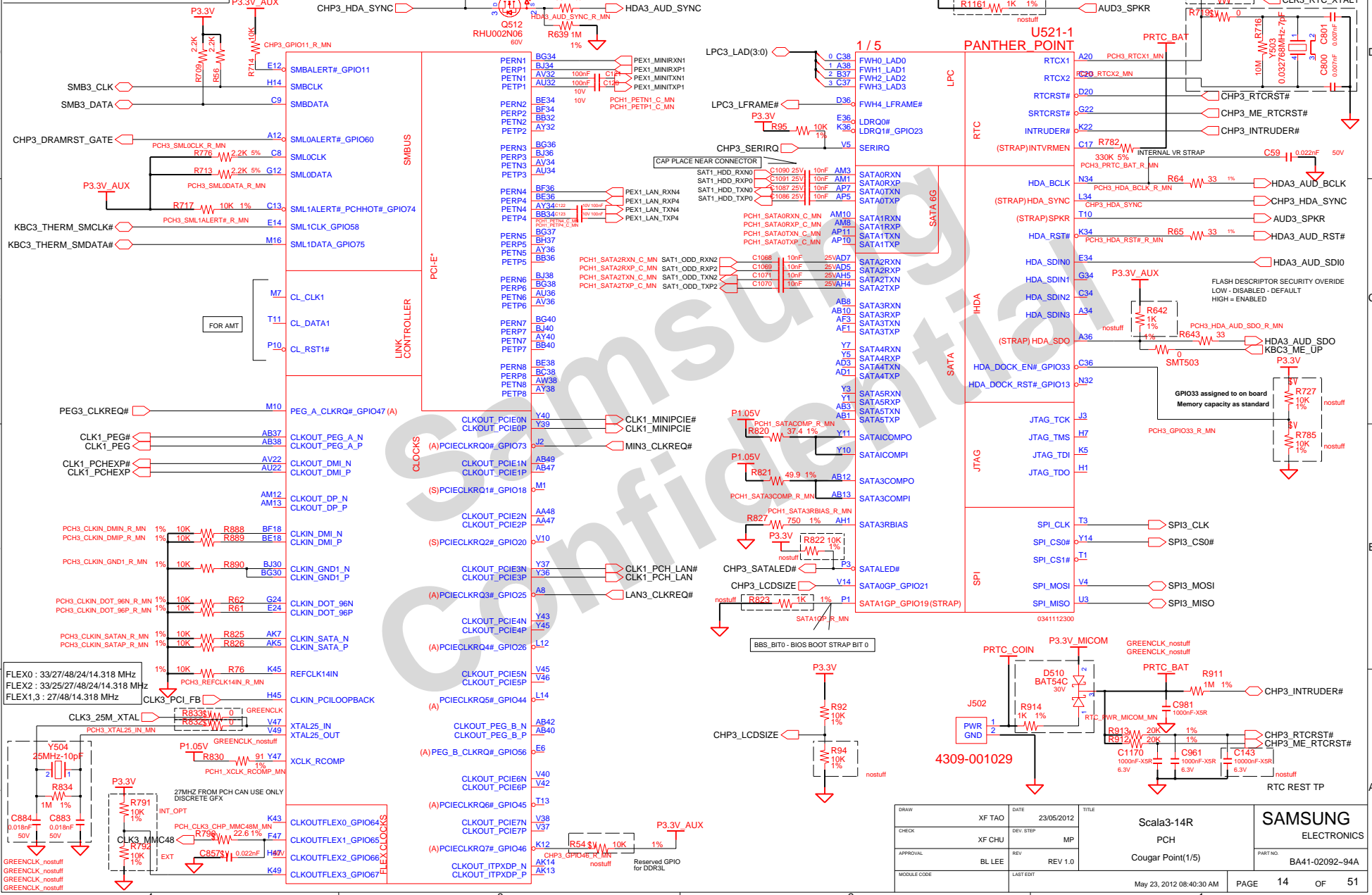


DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		SODIMM B	
APPROVAL	BL LEE	REV	REV 1.0		DDR3	PART NO. BA41-02092-94A
MODULE CODE		LAST ENT				

May 23, 2012 08:40:30 AM PAGE 13 OF 51

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NO REBOOT STRAP



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV_STEP	MP		PCH
APPROVAL	BL LEE	REV	REV 1.0		Cougar Point(1/5)
MODULE CODE		LAST ENT			
			May 23, 2012 08:40:30 AM	PAGE	14 OF 51

SAMSUNG
ELECTRONICS
PART NO. BA41-02092-94A

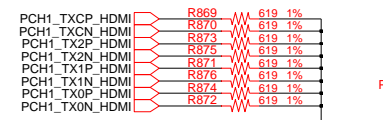
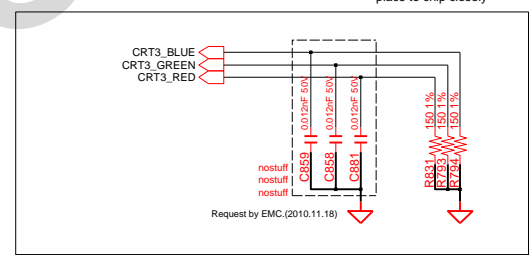
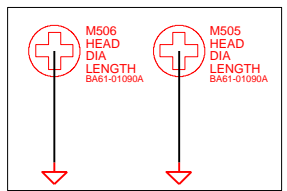
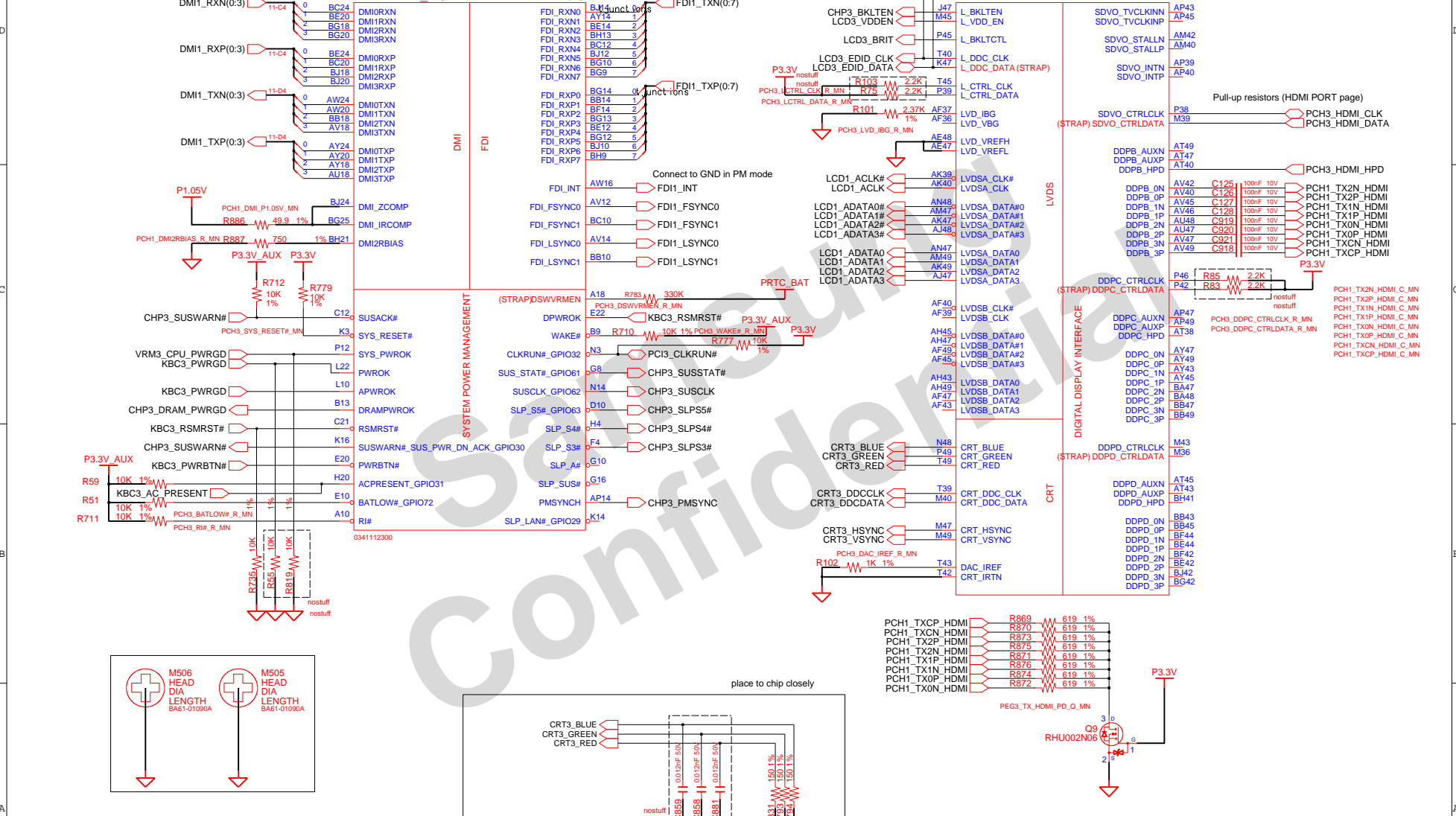
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U521-2 PANTHER POINT

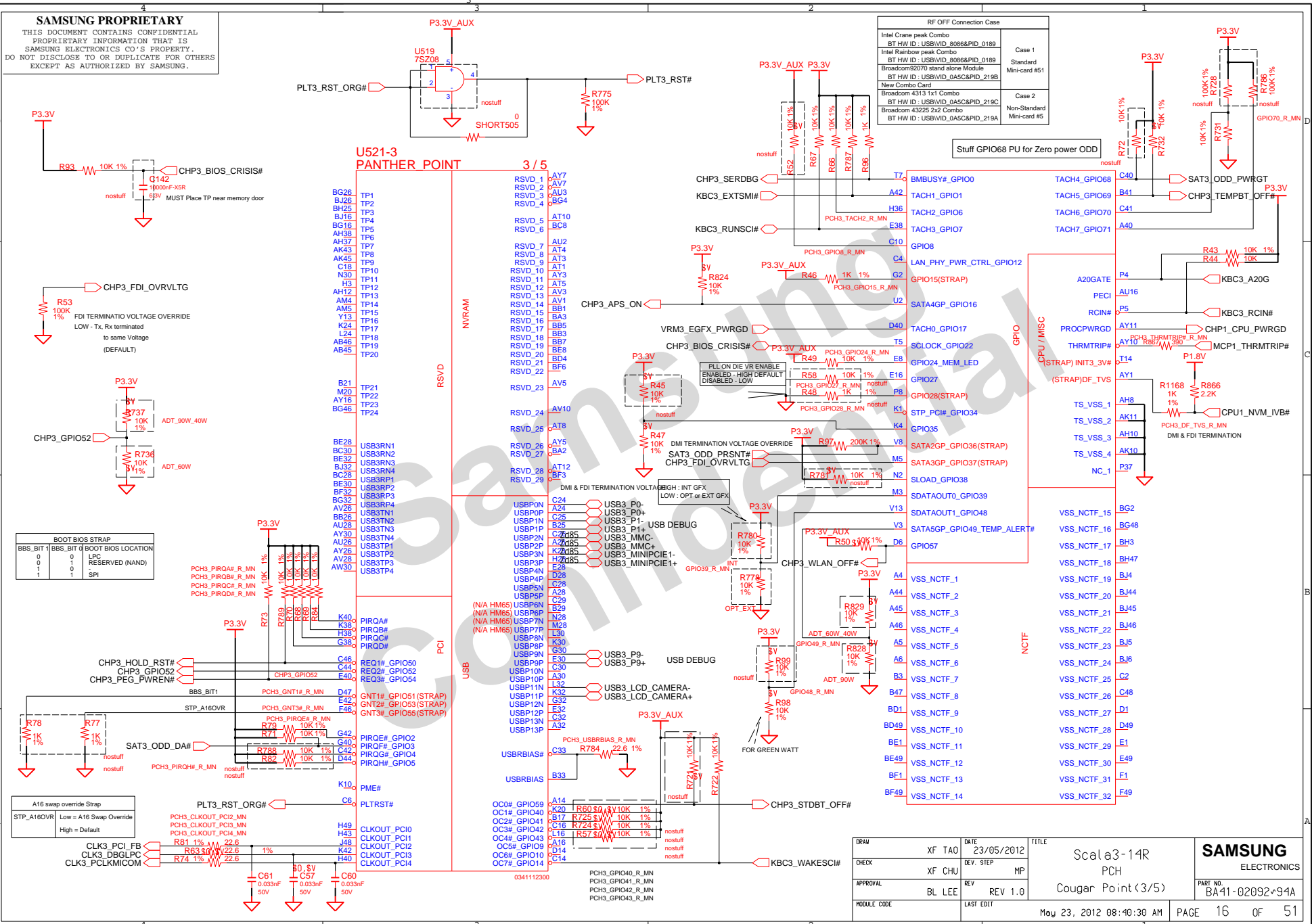
2 / 5

DDI PORT B DETECT	
SDVO_CTRL_DATA	1 PORT B DETECTED 0 PORT B NOT DETECTED



DRAW	XF TAO	DATE	23/05/2012	TITLE
CHECK	XF CHU	DEV.STEP	MP	
APPROVAL	BL LEE	REV	REV 1.0	
MODULE CODE		LAST EDIT		

Scala3-14R	SAMSUNG ELECTRONICS
PCH	
Cougar Point(2/5)	PART NO. BA41-02092-94A
May 23, 2012 08:40:30 AM	PAGE 15 OF 51

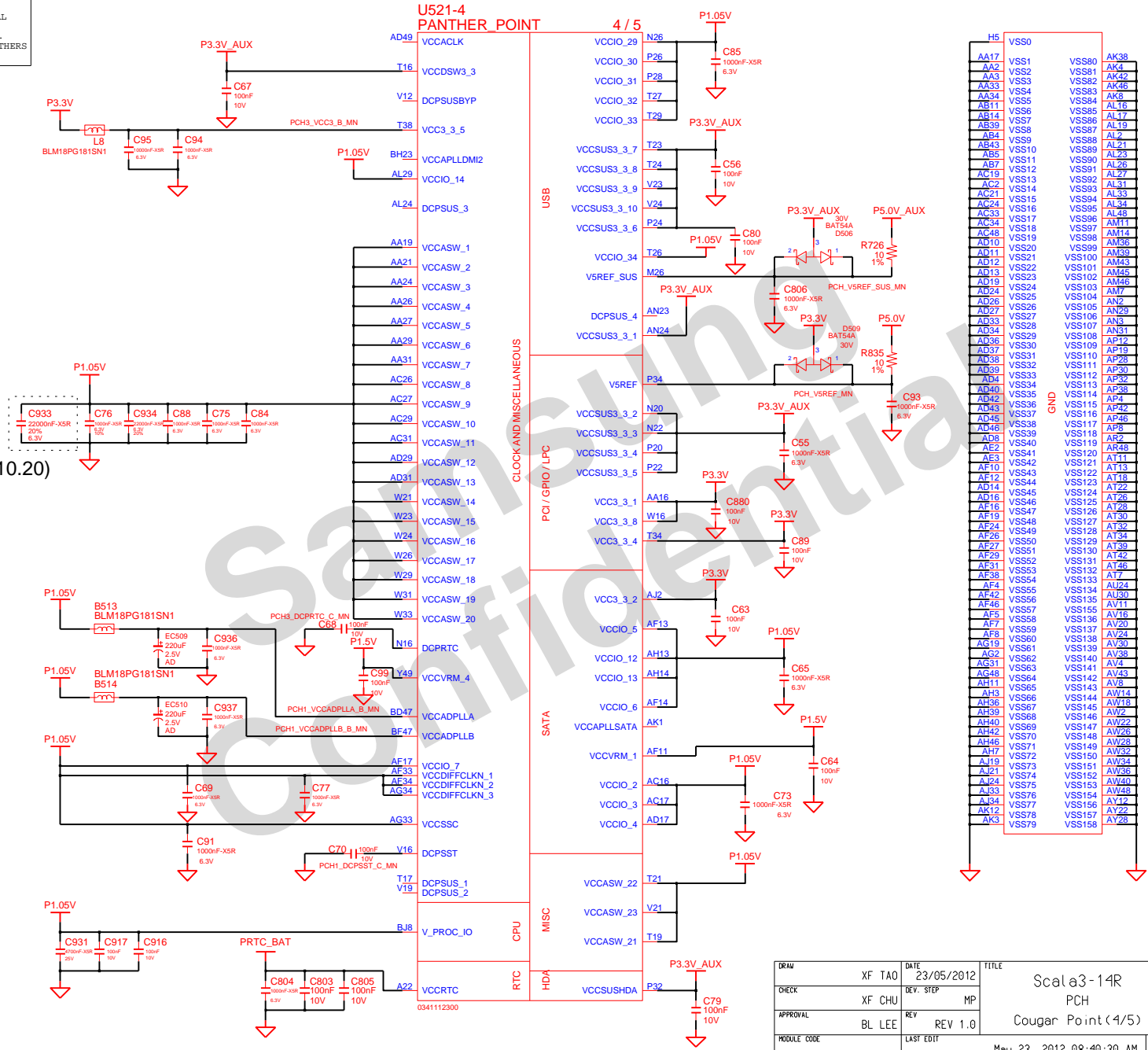


DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	REV. STEP	MP	Scala3-14R PCH	PART NO. BA11-02092-91A	
APPROVAL	BL LEE	REV	REV 1.0	Cougar Point (3/5)	PAGE	16 OF 51
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM			

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U521-4 PANTHER POINT 4 / 5



H5	VSS0	AK38
AA17	VSS1	AK4
AA2	VSS2	AK42
AA3	VSS3	AK46
AA34	VSS4	AK8
AB11	VSS5	AL16
AB14	VSS6	AL17
AB37	VSS7	AL19
AB39	VSS8	AL2
AB4	VSS9	AL21
AB43	VSS10	AL23
AB5	VSS11	AL26
AB7	VSS12	AL27
AC2	VSS13	AL31
AC21	VSS14	AL33
AC24	VSS15	AL34
AC33	VSS16	AL48
AC34	VSS17	AM11
AC48	VSS18	AM14
AD10	VSS19	AM36
AD11	VSS20	AM39
AD12	VSS21	AM43
AD13	VSS22	AM45
AD19	VSS23	AM46
AD24	VSS24	AN2
AD26	VSS25	AN29
AD27	VSS26	AN3
AD33	VSS27	AN31
AD34	VSS28	AP12
AD36	VSS29	AP19
AD37	VSS30	AP28
AD38	VSS31	AP30
AD39	VSS32	AP32
AD4	VSS33	AP38
AD40	VSS34	AP4
AD42	VSS35	AP42
AD43	VSS36	AP46
AD45	VSS37	AR2
AD46	VSS38	AR48
AD8	VSS39	AT11
AE3	VSS40	AT18
AF10	VSS41	AT22
AF12	VSS42	AT26
AF14	VSS43	AT30
AF16	VSS44	AT32
AF19	VSS45	AT34
AF24	VSS46	AT39
AF26	VSS47	AT42
AF27	VSS48	AT46
AF29	VSS49	AV11
VSS50	VSS50	AV16
AF31	VSS51	AV20
AF33	VSS52	AV24
AF38	VSS53	AV38
AF4	VSS54	AV4
AF42	VSS55	AV43
AF46	VSS56	AV48
AF5	VSS57	AW14
AF7	VSS58	AW18
AF8	VSS59	AW2
AG19	VSS60	AW22
AG2	VSS61	AW26
AG31	VSS62	AW32
AG48	VSS63	AW34
AH11	VSS64	AW36
AH3	VSS65	AW40
AH36	VSS66	AW48
AH39	VSS67	AY12
AH40	VSS68	AY22
AH42	VSS69	AY28
AH46	VSS70	
AH7	VSS71	
AJ19	VSS72	
AJ21	VSS73	
AJ24	VSS74	
AJ33	VSS75	
AJ34	VSS76	
AK12	VSS77	
AK15	VSS78	
VSS79	VSS79	

PI Request (2010.10.20)

0341112300

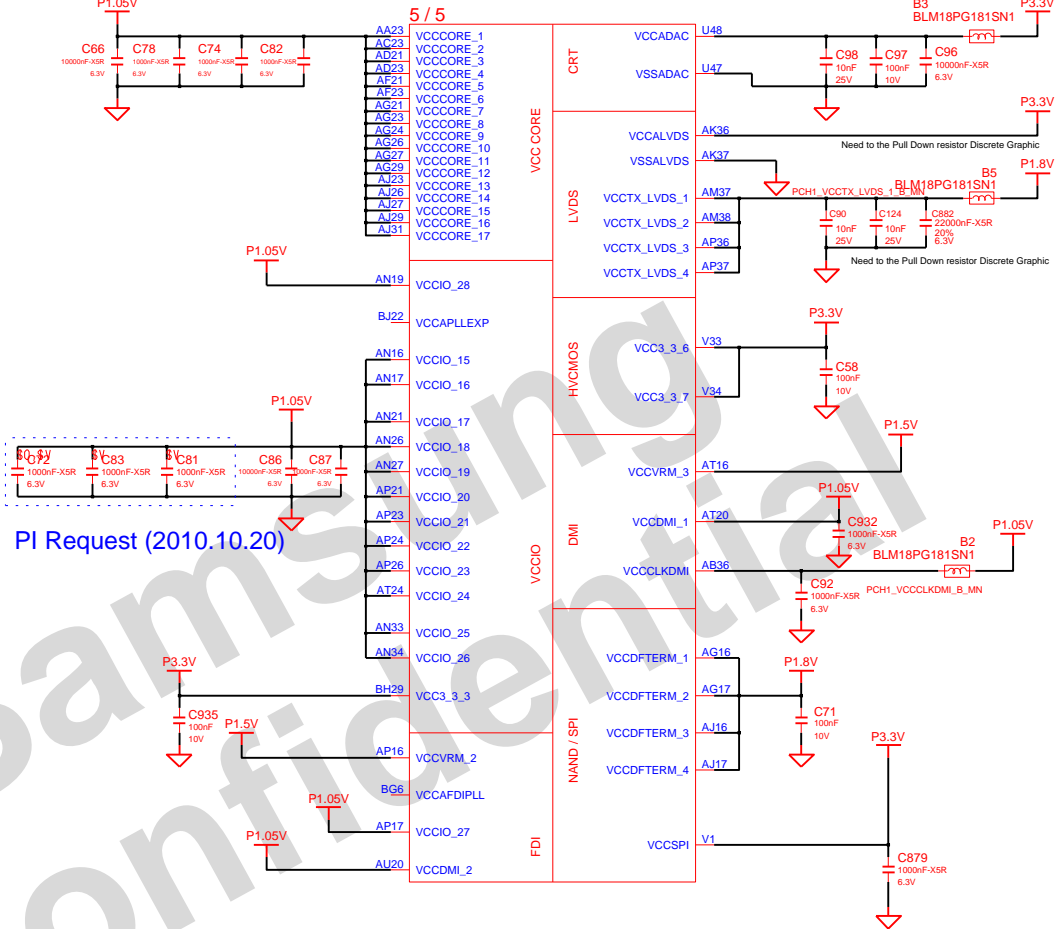
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CHECK	XF CHU	DEV. STEP	MP		PCH	
APPROVAL	BL LEE	REV	REV 1.0		Cougar Point (4/5)	May 23, 2012 08:40:30 AM PAGE 17 OF 601
MODULE CODE		LAST EDIT				

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**U521-5
 PANTHER_POINT**

This power share with thermal sensor

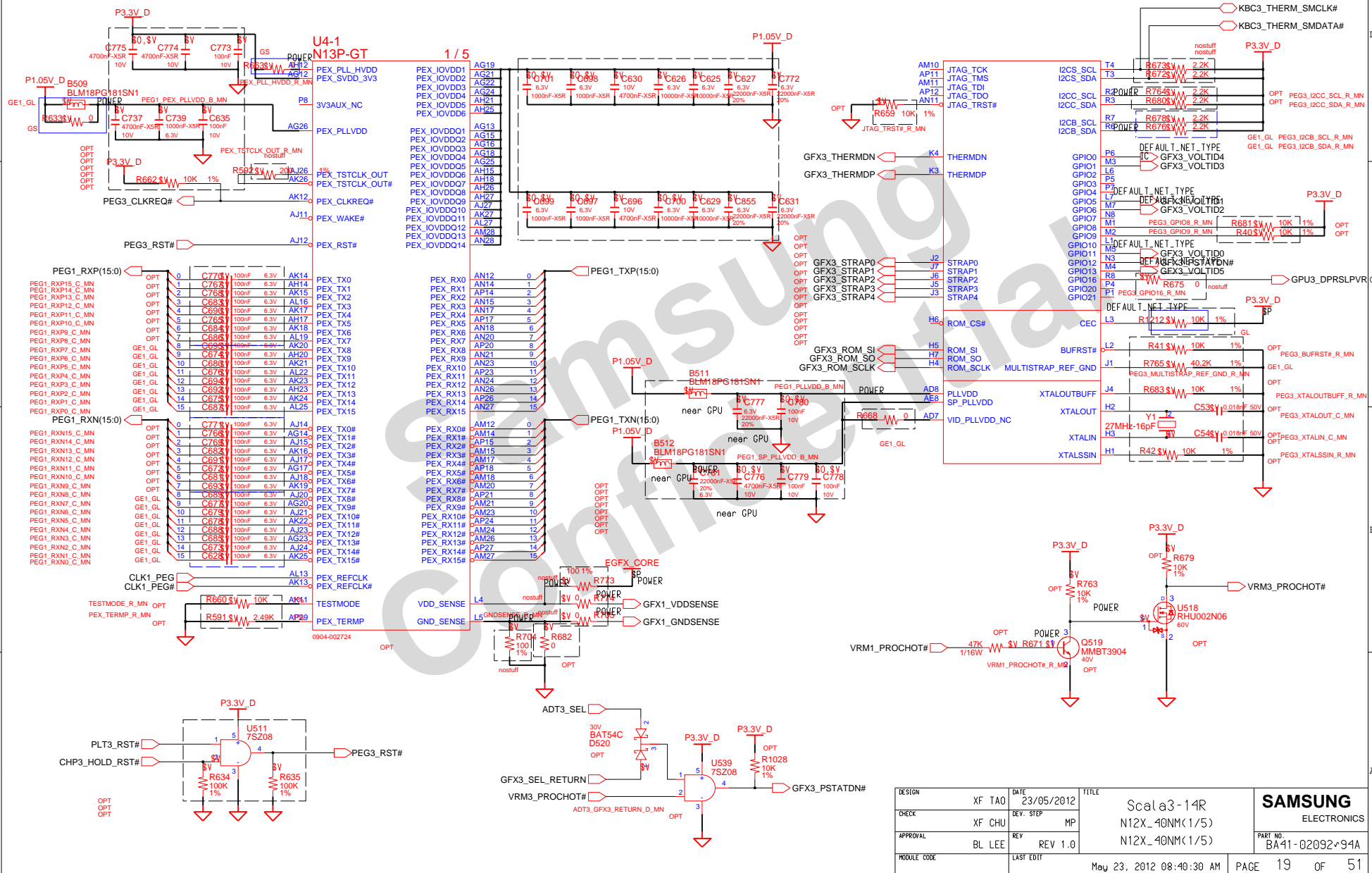
AY4	VSS159	VSS259	H46
AY42	VSS160	VSS260	K18
AY46	VSS161	VSS261	K39
AY8	VSS162	VSS262	K46
B11	VSS163	VSS263	K7
B15	VSS164	VSS264	L2
B19	VSS165	VSS265	L20
B23	VSS166	VSS266	L26
B27	VSS167	VSS267	L28
B31	VSS168	VSS268	L36
B35	VSS169	VSS269	L48
B39	VSS170	VSS270	M12
B7	VSS171	VSS271	M18
F45	VSS172	VSS272	M22
BB12	VSS173	VSS273	M24
BB16	VSS174	VSS274	M30
BB20	VSS175	VSS275	M32
BB22	VSS176	VSS276	M34
BB24	VSS177	VSS277	M38
BB28	VSS178	VSS278	M4
BB30	VSS179	VSS279	M42
BB38	VSS180	VSS280	M46
BB4	VSS181	VSS281	M8
BB46	VSS182	VSS282	N18
BC14	VSS183	VSS283	N18
BC18	VSS184	VSS284	N18
BC2	VSS185	VSS285	N30
BC22	VSS186	VSS286	N47
BC26	VSS187	VSS287	N47
BC32	VSS188	VSS288	P15
BC34	VSS189	VSS289	P30
BC36	VSS190	VSS290	P47
BC40	VSS191	VSS291	P47
BC42	VSS192	VSS292	P47
BC48	VSS193	VSS293	P47
BD46	VSS194	VSS294	R2
BD5	VSS195	VSS295	R48
BE22	VSS196	VSS296	R48
BE26	VSS197	VSS297	T31
BE40	VSS198	VSS298	T37
BF10	VSS199	VSS299	T4
BF12	VSS200	VSS300	W34
BF16	VSS201	VSS301	T46
BF20	VSS202	VSS302	T47
BF22	VSS203	VSS303	T8
BF24	VSS204	VSS304	T8
BF26	VSS205	VSS305	V11
BF28	VSS206	VSS306	V26
BF30	VSS207	VSS307	V27
BF38	VSS208	VSS308	V29
BF40	VSS209	VSS309	V29
BF48	VSS210	VSS310	V31
BF9	VSS211	VSS311	V36
BG17	VSS212	VSS312	V38
BG21	VSS213	VSS313	V43
BG33	VSS214	VSS314	V7
BG44	VSS215	VSS315	W17
BG9	VSS216	VSS316	W2
BH11	VSS217	VSS317	W27
BH15	VSS218	VSS318	W38
BH17	VSS219	VSS319	W48
BH19	VSS220	VSS320	Y12
H10	VSS221	VSS321	Y38
BH27	VSS222	VSS322	Y4
BH31	VSS223	VSS323	Y42
BH33	VSS224	VSS324	Y46
BH35	VSS225	VSS325	Y8
BH39	VSS226	VSS326	BG29
BH43	VSS227	VSS327	N24
BH7	VSS228	VSS328	AJ3
D3	VSS229	VSS329	AD47
D12	VSS230	VSS330	E43
D16	VSS231	VSS331	BE10
D18	VSS232	VSS332	BG11
D22	VSS233	VSS333	BG11
D24	VSS234	VSS334	H16
D26	VSS235	VSS335	T36
D30	VSS236	VSS336	BG22
D32	VSS237	VSS337	BG24
D34	VSS238	VSS338	C22
D38	VSS239	VSS339	AP13
D42	VSS240	VSS340	M14
D8	VSS241	VSS341	AP3
E18	VSS242	VSS342	AP1
E26	VSS243	VSS343	BE16
E18	VSS244	VSS344	BE16
G20	VSS245	VSS345	BG28
G26	VSS246	VSS346	BJ28
G28	VSS247	VSS347	
G36	VSS248	VSS348	
G48	VSS249	VSS349	
H12	VSS250	VSS350	
H18	VSS251	VSS351	
H22	VSS252	VSS352	
H24	VSS253		
H26	VSS254		
H30	VSS255		
H32	VSS256		
H34	VSS257		
F3	VSS258		



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		PCH	
APPROVAL	BL LEE	REV	REV 1.0		Cougar Point(5/5)	PART NO. BA41-02092-94A
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	18	OF 51

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DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV. STEP	MP		N12X_40NM(1/5)
APPROVAL	BL LEE	REV	REV 1.0		N12X_40NM(1/5)
MODULE CODE		LAST EDIT			

May 23, 2012 08:40:30 AM		PAGE	19	OF	51
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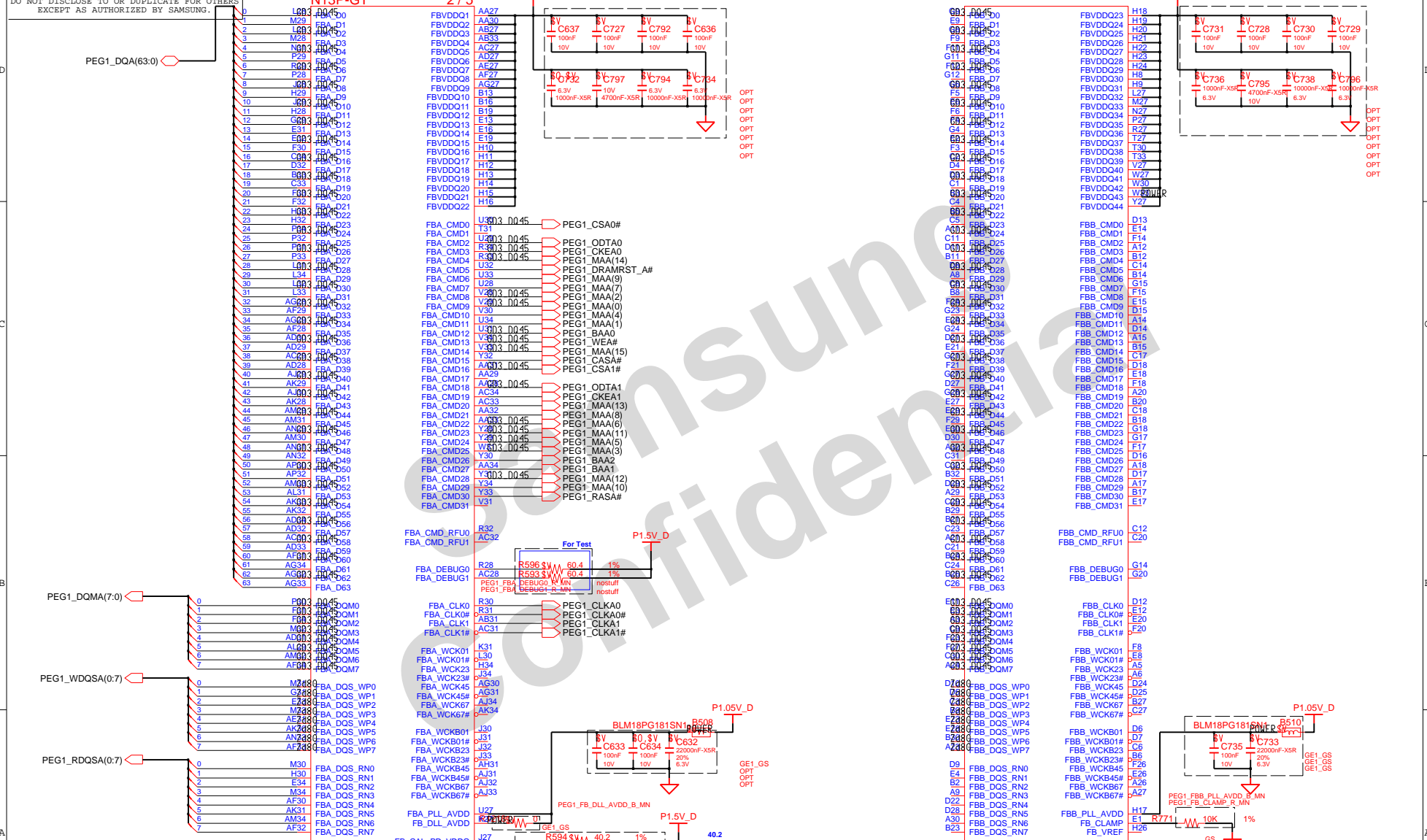
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U4-2 N13P-GT 2/5

P1.5V_D

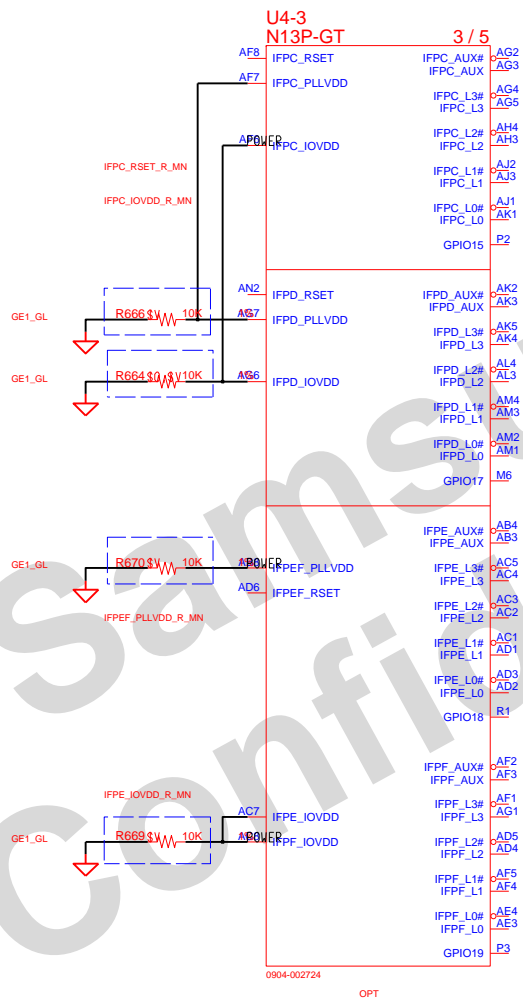
P1.5V_D



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA11-02092*94A
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APPROVAL	BL LEE	REV	REV 1.0		N12X_40NM(2/5)	
MODULE CODE		LAST EDIT				
				May 23, 2012 08:40:30 AM	PAGE 20 OF 51	

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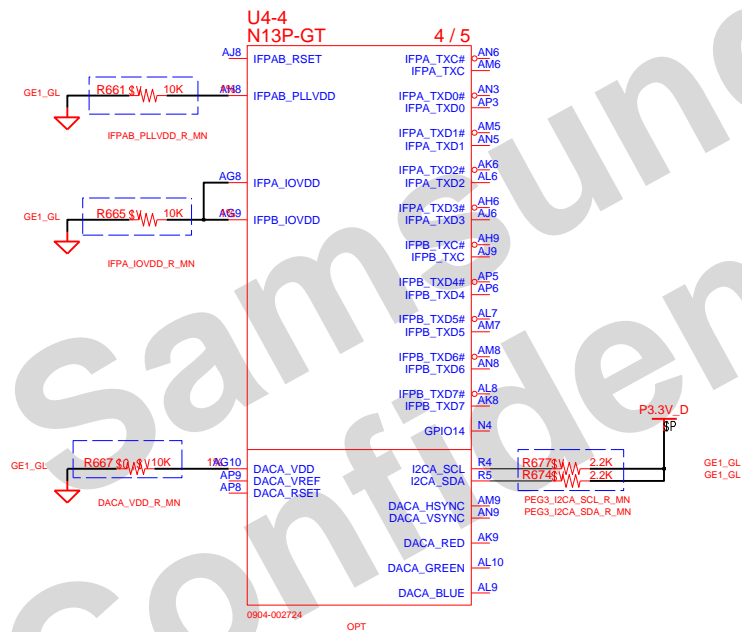
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DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		N12X_40NM(3/5)	
APPROVAL	BL LEE	REV	REV 1.0		N12X_40NM(3/5)	PART NO. BA41-02092-94A
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM	PAGE	21 OF 51

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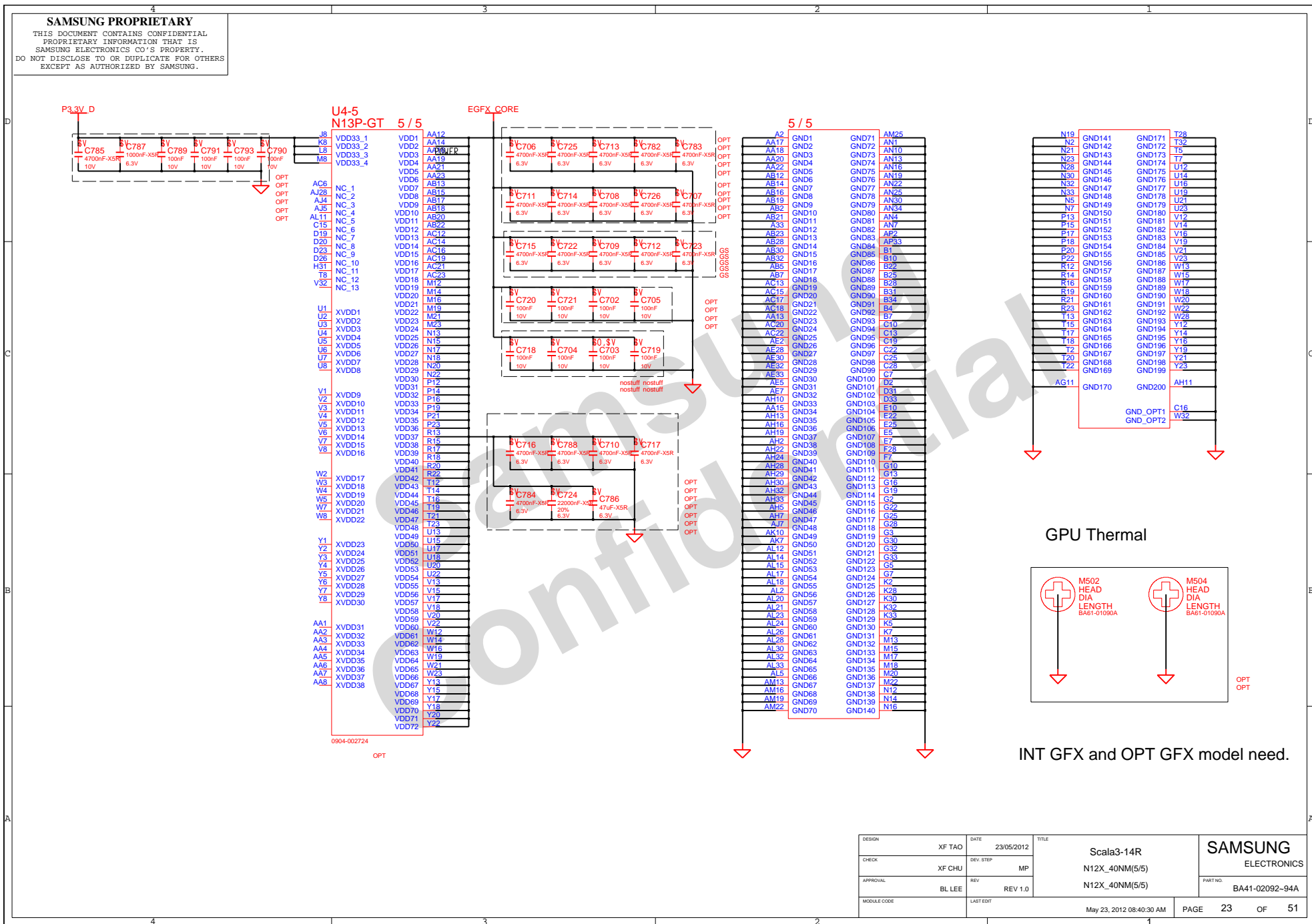
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DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R N12X_40NM(4/5) N12X_40NM(4/5)	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP			
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM			
					PAGE	22 OF 51

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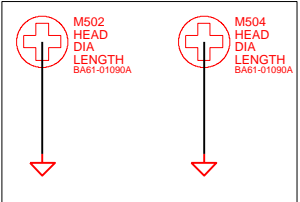
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0904-002724

OPT

GPU Thermal



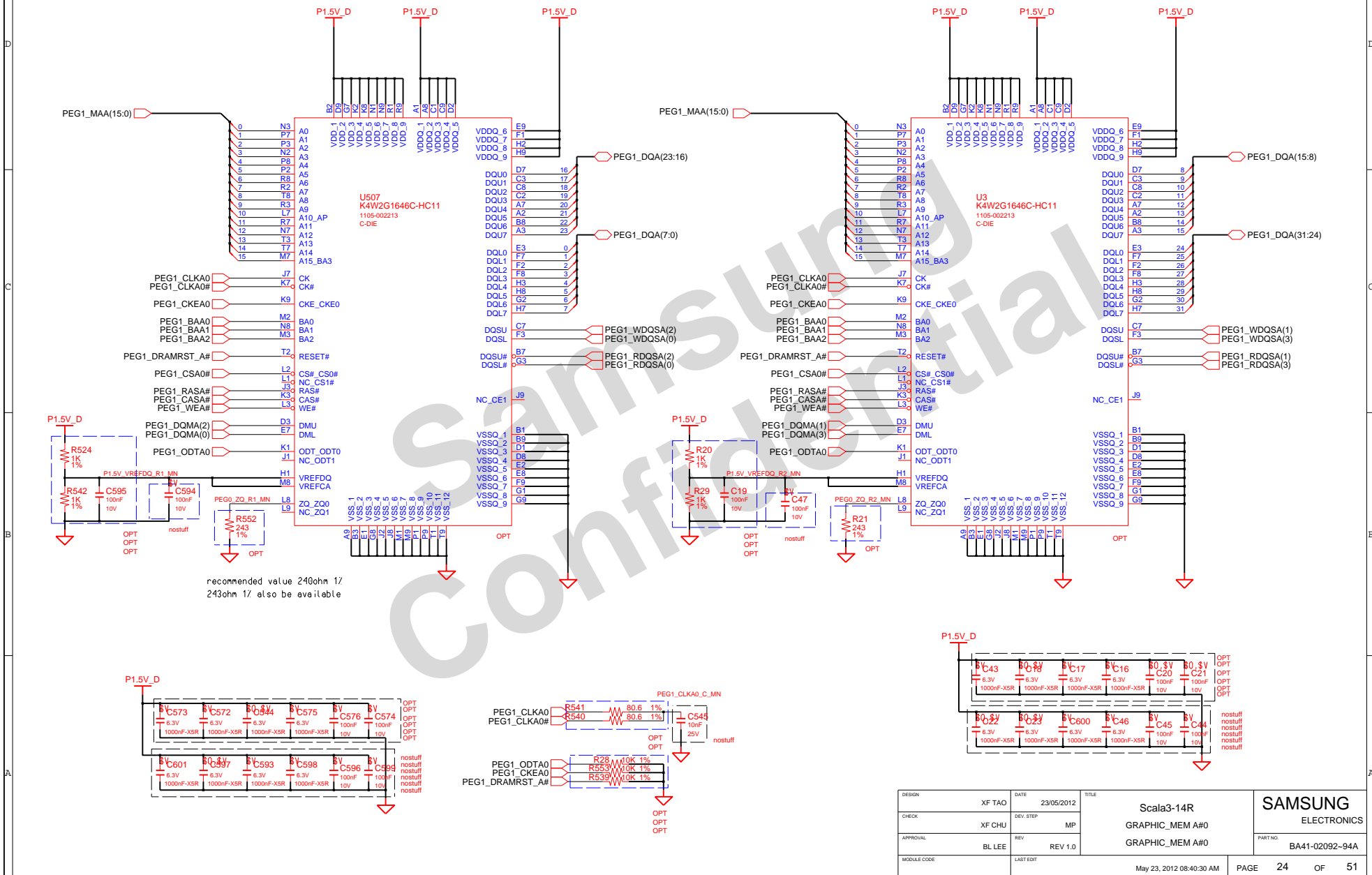
INT GFX and OPT GFX model need.

DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		N12X_40NM(5/5)	
APPROVAL	BL LEE	REV	REV 1.0		N12X_40NM(5/5)	
MODULE CODE		LAST EDIT				PART NO. BA41-02092-94A
					May 23, 2012 08:40:30 AM	PAGE 23 OF 51

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A-Channel #0 (D-mode)

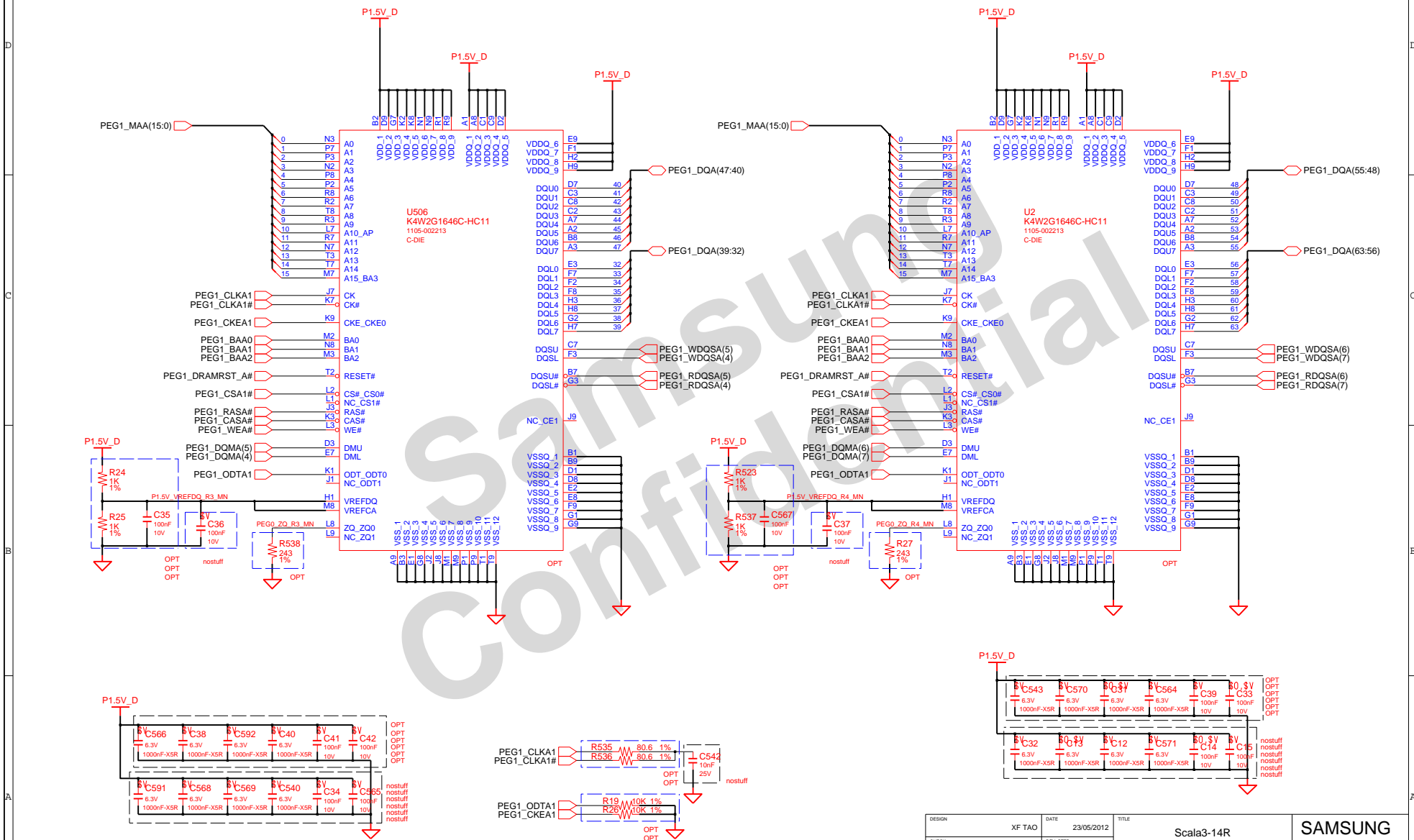


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		GRAPHIC_MEM A#0	
APPROVAL	BL LEE	REV	REV 1.0		GRAPHIC_MEM A#0	PART NO. BA41-02092-94A
MODULE CODE		LAST EDIT				
				May 23, 2012 08:40:30 AM	PAGE	24 OF 51

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A-Channel #1 (D-mode)



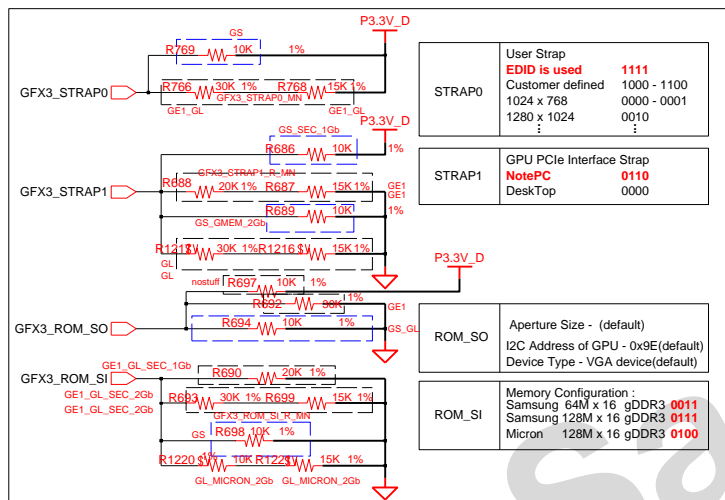
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APPROVAL	BL LEE	REV	REV 1.0	GRAPHIC_MEM A#1		
MODULE CODE		LAST EDIT			May 23, 2012 08:40:30 AM	PAGE 25 OF 51

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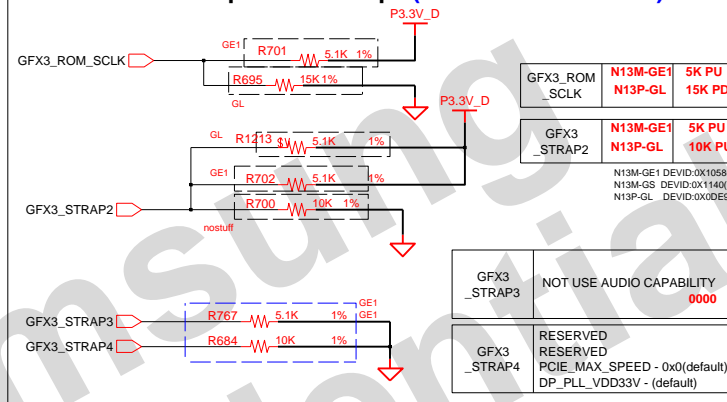
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N13x STRAP

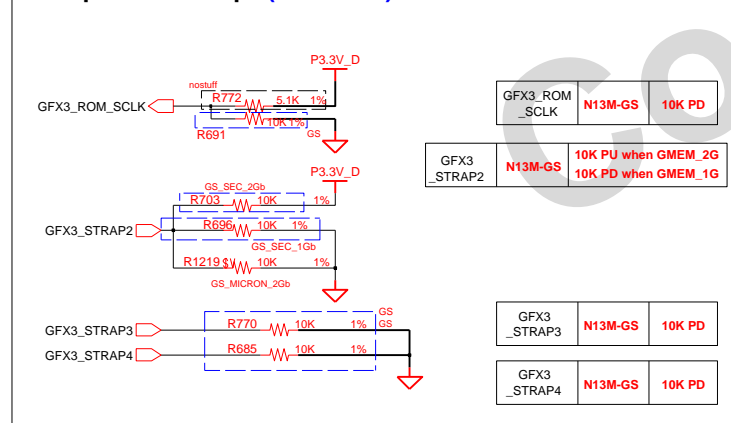
Function Straps



Chip Select Straps (N13M-GE1/N13P-GL)



Chip Select Straps (N13M-GS)



STRAP PIN	STRAP MAPPING	Resistance	Polarity
STRAP0	RAMCFG[0]	10K ohm	Pull-up to 3V3 for binary '1'
STRAP1	RAMCFG[1]	10K ohm	Pull-down to GND for binary '0'
STRAP2	RAMCFG[2]	10K ohm	Samsung 64M x 16 gDDR3 0011
STRAP3	RAMCFG[3]	10K ohm	Samsung 128M x 16 gDDR3 0101 Micron 128M x 16 gDDR3 0001
ROM_SO	VGA_DEVICE	10K ohm	Pull-down to GND(no display)
ROM_SI	SUB_VENDOR	10K ohm	Pull-up to 3V3 if VBIOS ROM exists Pull-down to GND if no VBIOROM
ROM_SCLK	SMB_ALT_ADDR	10K ohm	Pull-down to GND
STRAP4	PCI_MAX_SPEED	10K ohm	Pull-down to GND

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

STRAP PIN	BIT 3	BIT 2	BIT 1	BIT 0
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]
STRAP1	3GIO_PAD_CFG_ADR[3]	3GIO_PAD_CFG_ADR[2]	3GIO_PAD_CFG_ADR[1]	3GIO_PAD_CFG_ADR[0]
ROM_SO	FB[1] (GE1)	FB[0] (GE1)	SMB_ALT_ADDR	VGA_DEVICE
ROM_SI	RAMCFG[3] (GL)	RAMCFG[2] (GL)	RAMCFG[1]	RAMCFG[0]
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
ROM_SCLK	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG (GE1) (GL)	PEX_PLL_EN_TERM
STRAP3	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
STRAP4	RESERVED	RESERVED	PCIE_MAX_SPEED	DP_PLL_VDD33V

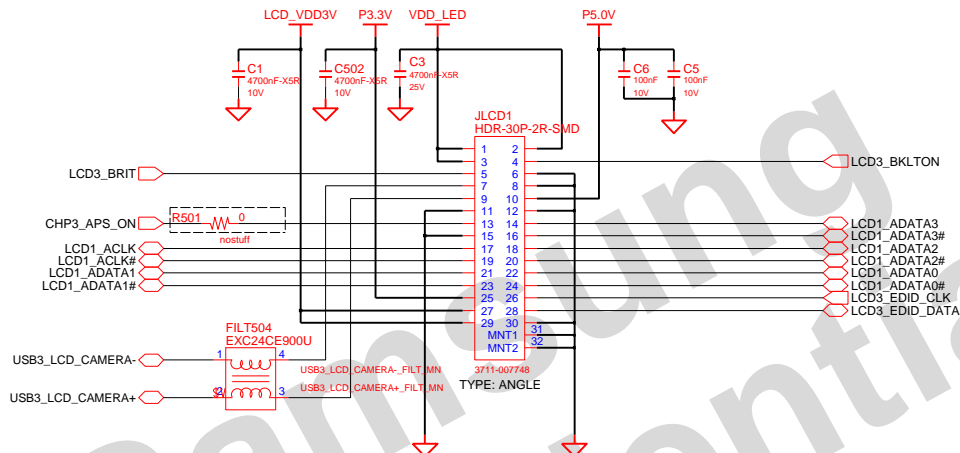
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CHECK	XF CHU	DEV. STEP	MP	GRAPHIC_MEM C#0		
APPROVAL	BL LEE	REV	REV 1.0	GRAPHIC_MEM C#0	PART NO.	BA41-02092-94A
MODULE CODE		LAST EDIT			May 23, 2012 08:40:30 AM	PAGE 26 OF 51

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LVDS LOGIC

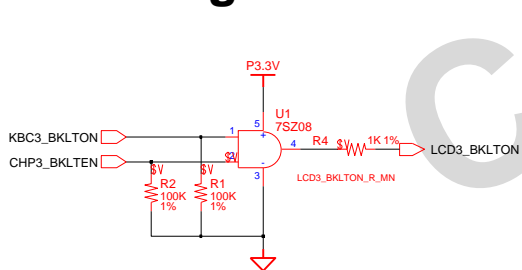
1Ch. LCD Connector + CAMERA



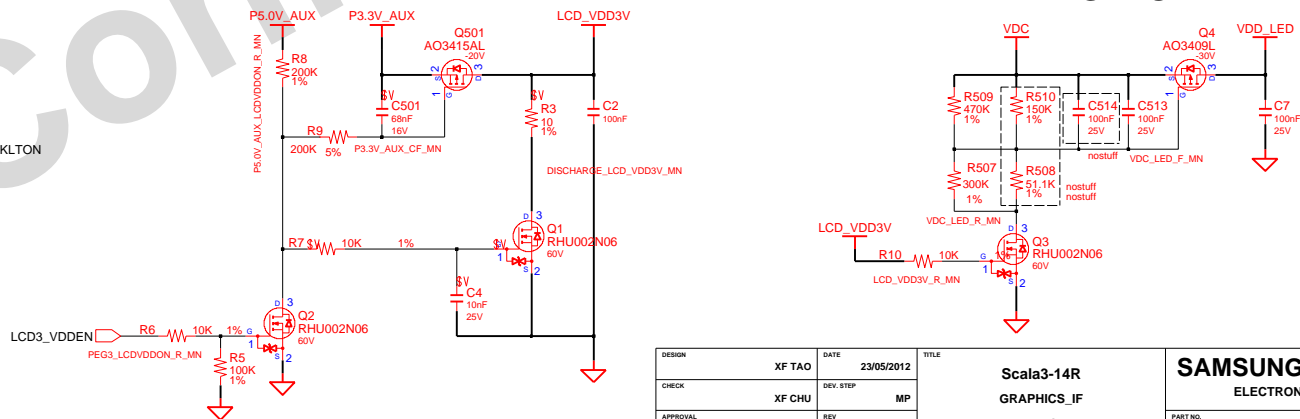
LCD Power

EBL Purpose

Backlight On



LED Power

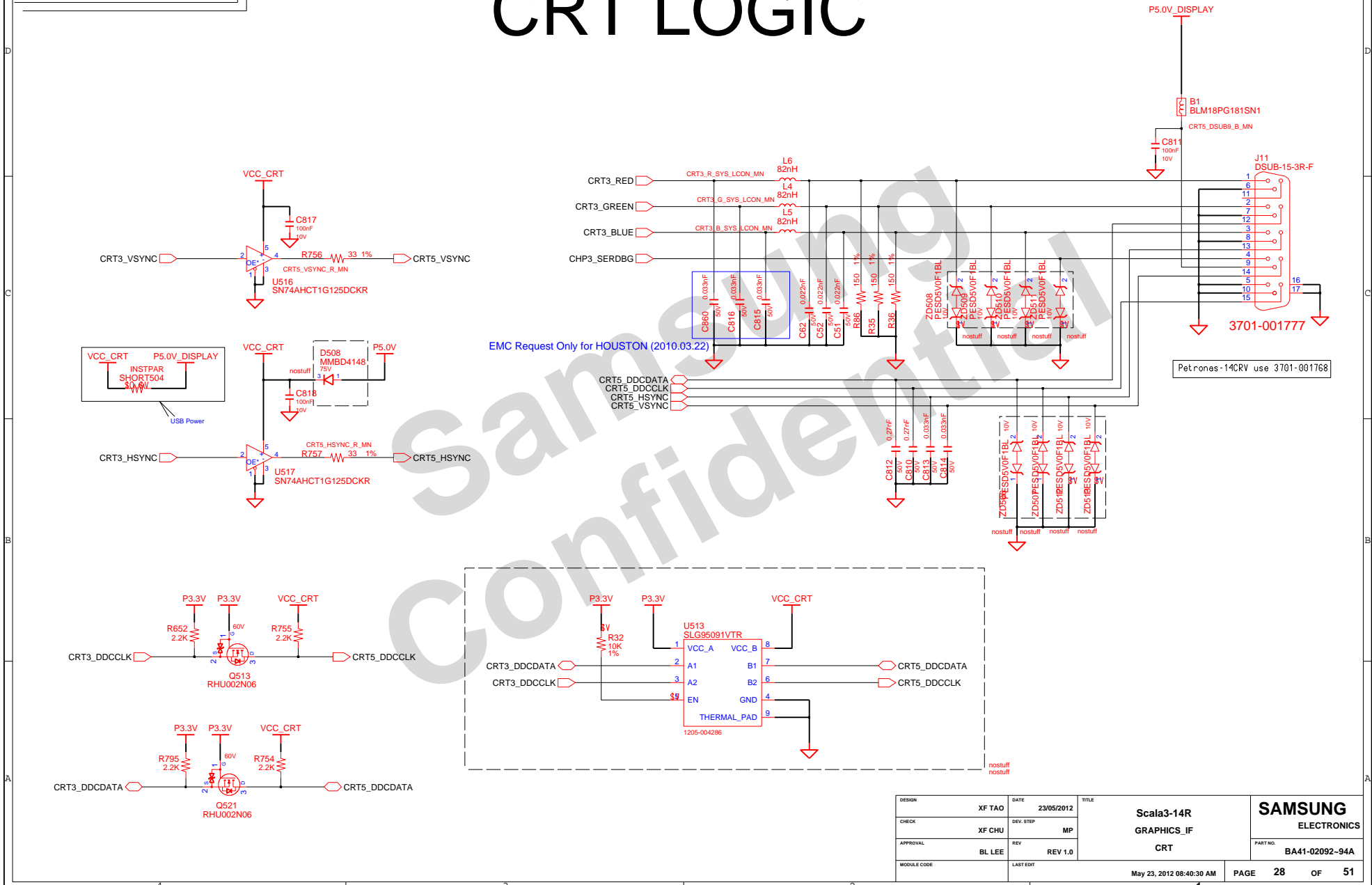


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CHECK	XF CHU	DEV. STEP	MP	GRAPHICS_IF	PART NO.	
APPROVAL	BL LEE	REV	REV 1.0	LVDS	BA41-02092-94A	
MODULE CODE		LAST EDIT				
				May 23, 2012 08:40:30 AM	PAGE	27 OF 51

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CRT LOGIC



EMC Request Only for HOUSTON (2010.03.22)

Petronas-14CRV use 3701-001768

DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	GRAPHICS_IF	PART NO.	
APPROVAL	BL LEE	REV	REV 1.0	CRT	BA41-02092-94A	
MODULE CODE		LAST EDIT				
				May 23, 2012 08:40:30 AM	PAGE	28 OF 51

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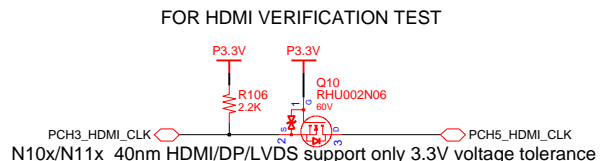
HDMI Graphic

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

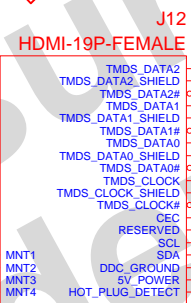
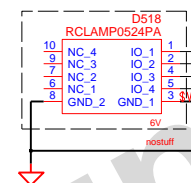
(EMC request at 2010.04.15)

After checking, Veyron_R don't need to use CMC for each signal.

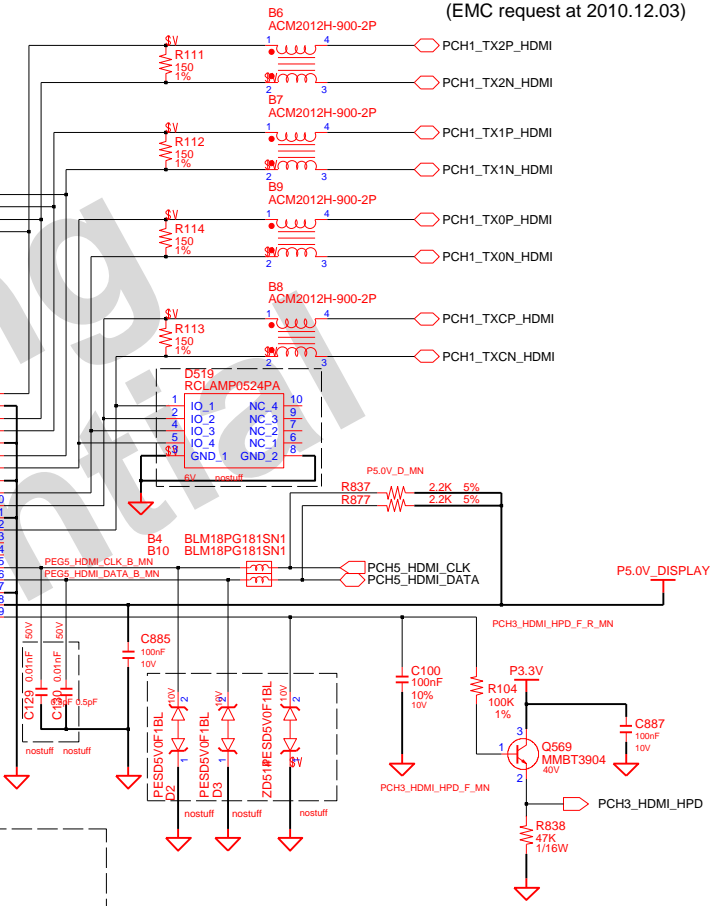
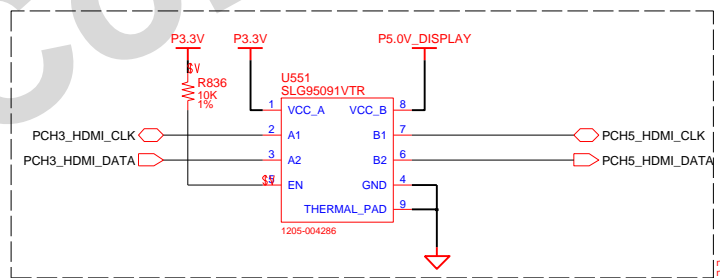
(EMC request at 2010.12.03)



Petrones-14CRV use 3701-001785



3701-001782



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV.STEP	MP		GRAPHICS_IF
APPROVAL	BL LEE	REV	REV 1.0		HDMI
MODULE CODE		LAST EDIT			

SAMSUNG ELECTRONICS	
PART NO.	BA41-02092-94A

May 23, 2012 08:40:30 AM	PAGE	29	OF	51
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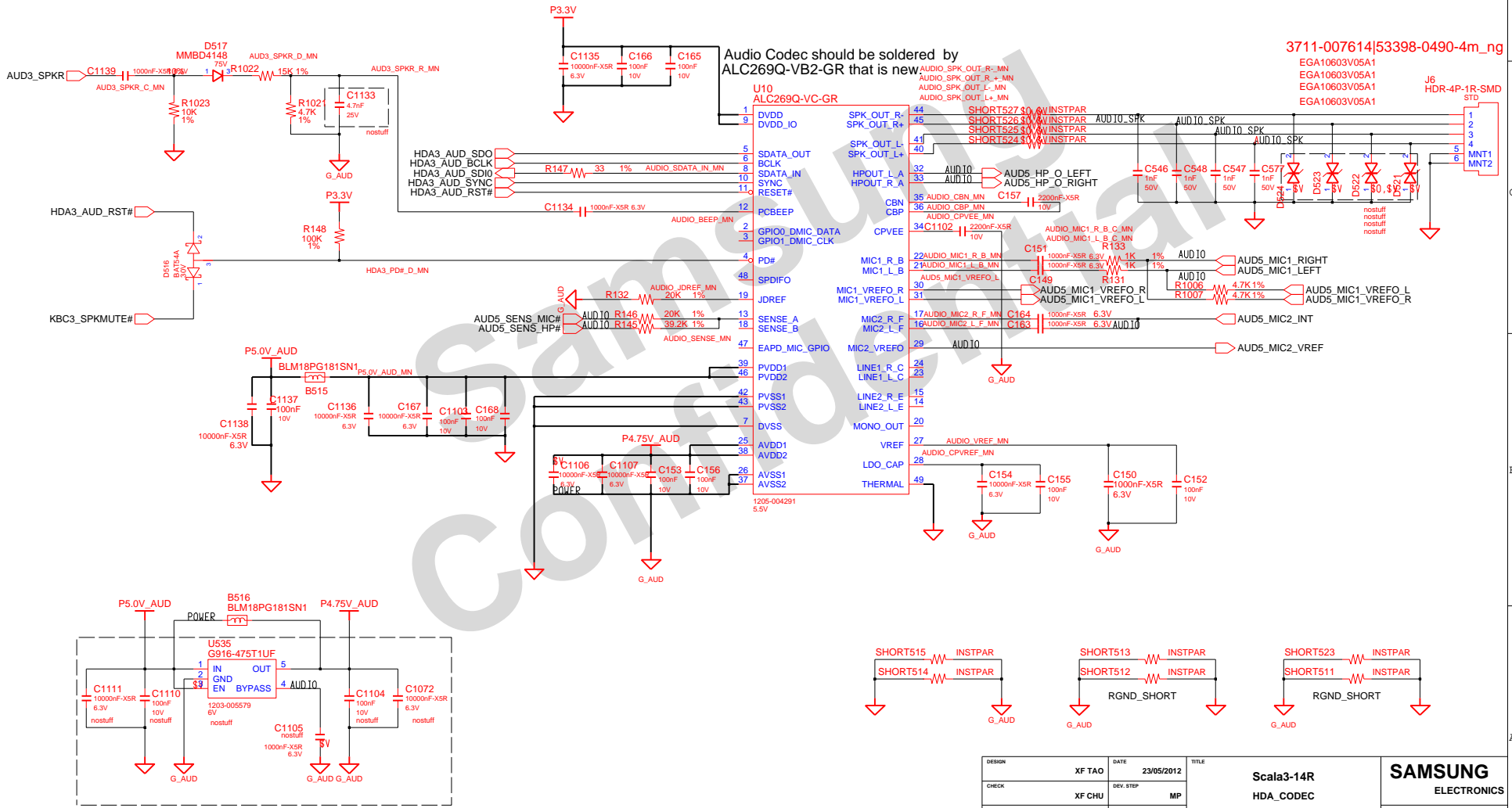
HD AUDIO

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

Audio Codec should be soldered by ALC269Q-VB2-GR that is new.

3711-007614|53398-0490-4m_ng

EGA10603V05A1
EGA10603V05A1
EGA10603V05A1
EGA10603V05A1

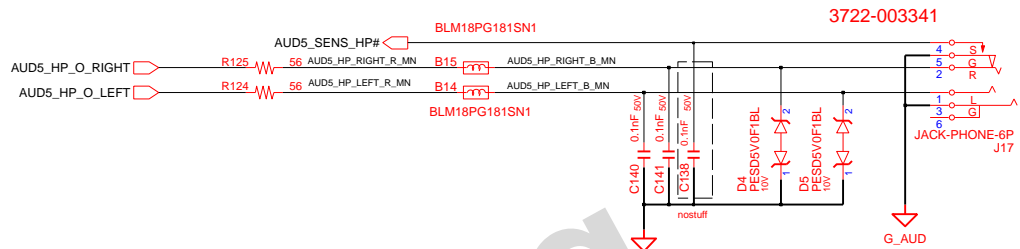


DESIGN	DATE	TITLE	SAMSUNG ELECTRONICS
XF TAO	23/05/2012	Scala3-14R	
CHECK	DEV. STEP	HDA_CODEC	PART NO: BA41-02092-94A
XF CHU	MP	AUDIO CODEC ALC269	
APPROVAL	REV	REV 1.0	
BL LEE	REV 1.0		
MODULE CODE	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE 30 OF 51

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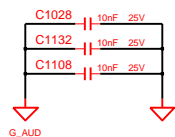
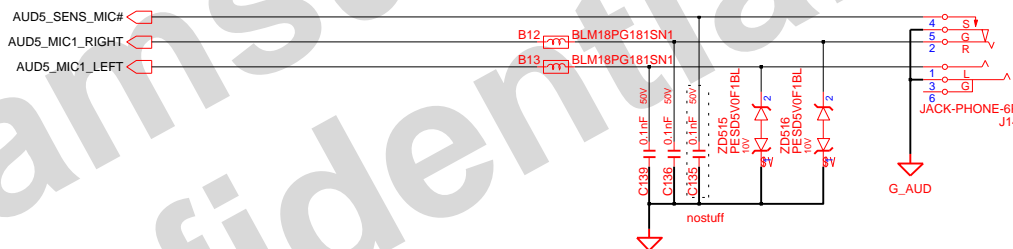
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HEADPHONE

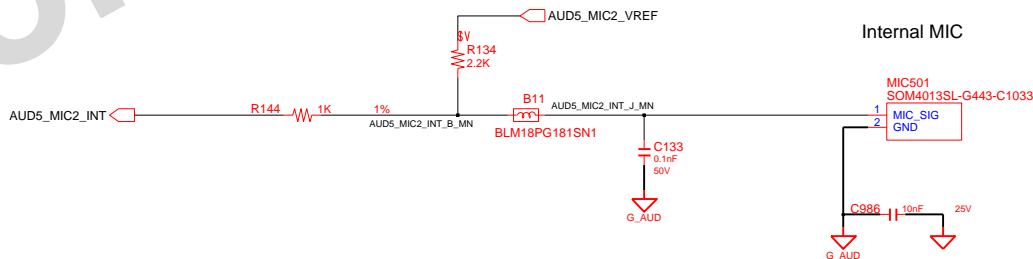


Petrones-14CRV J14 J17 use 3722-003324

MIC JACK



Internal MIC

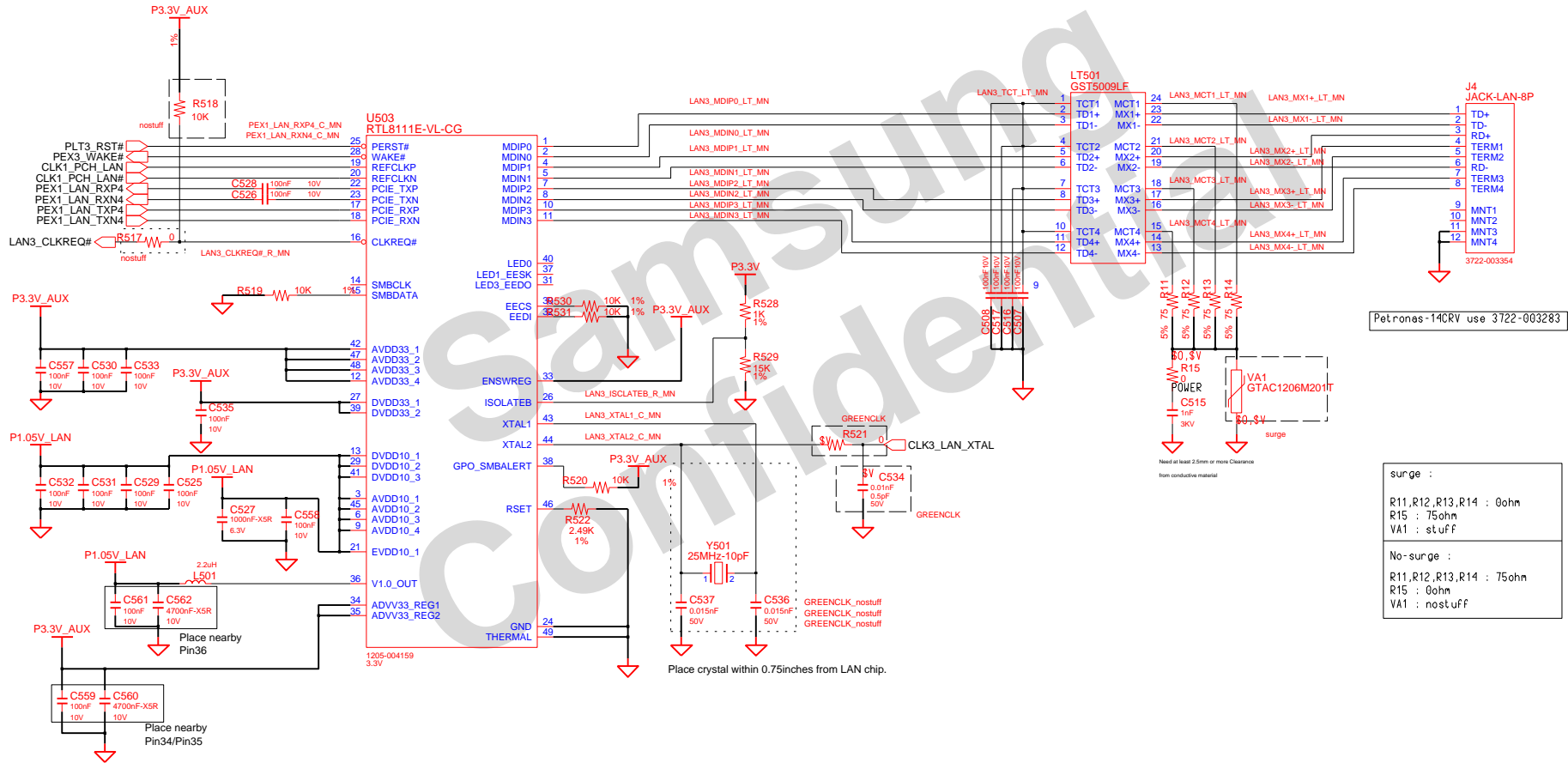


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV.STEP	MP	HDA_CODEC	PART NO.	
APPROVAL	BL LEE	REV	REV 1.0	AUDIO JACK	BA41-02092-94A	
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM	PAGE	31 OF 51

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Reatek RTL8111E



Petronas-14CRV use 3722-003283

surge :
R11,R12,R13,R14 : 0ohm
R15 : 75ohm
VA1 : stuf

No-surge :
R11,R12,R13,R14 : 75ohm
R15 : 0ohm
VA1 : nostuff

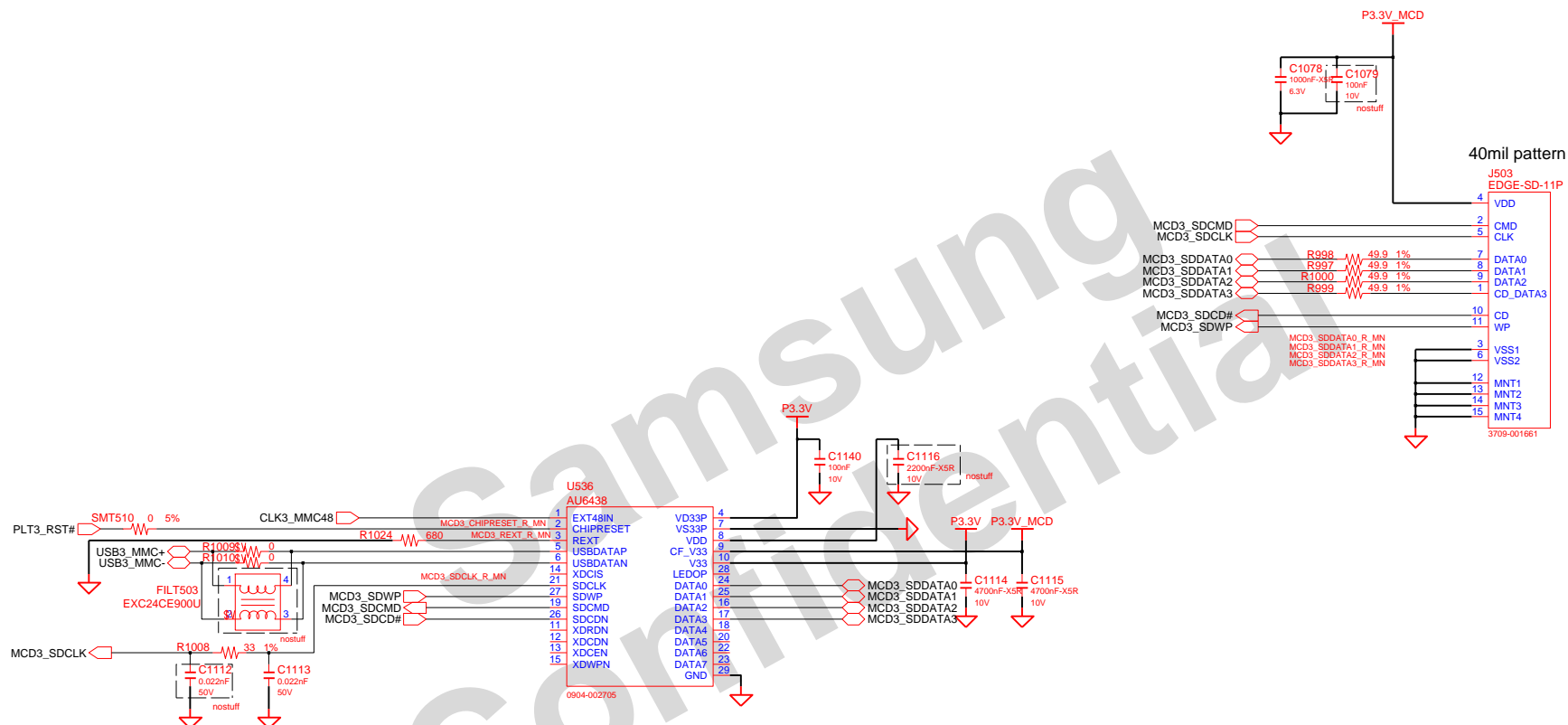
Place crystal within 0.75inches from LAN chip.

DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		LAN	
APPROVAL	BL LEE	REV	REV 1.0		LAN_Reatek_RTL8111E	PART NO. BA41-02092-94A
MODULE CODE		LAST EDIT				
May 23, 2012 08:40:30 AM						PAGE 32 OF 51

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4 IN 1 CARD

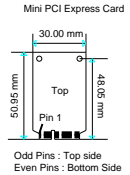
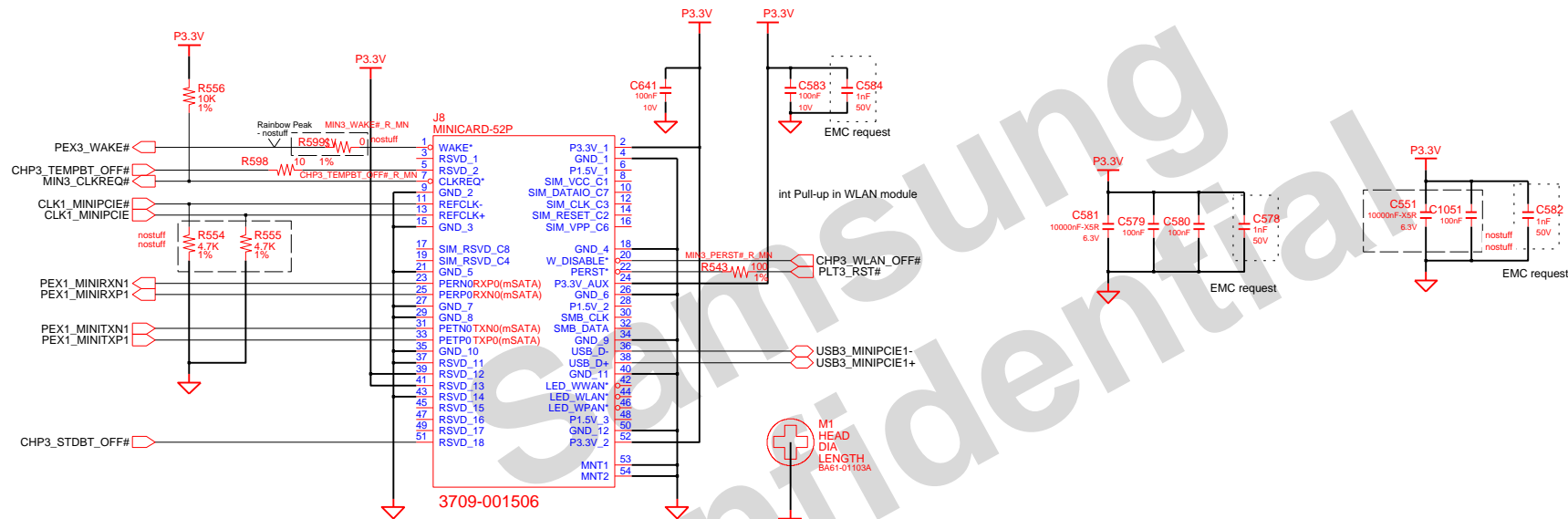


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092-94A
CHECK	XF CHU	DEV. STEP	MP		MULTICARD	
APPROVAL	BL LEE	REV	REV 1.0		4 IN 1 CARD(AU6438)	
MODULE CODE		LAST EDIT				
				May 23, 2012 08:40:30 AM	PAGE	33 OF 51

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WLAN, 7mm



Confidential
 Samsung

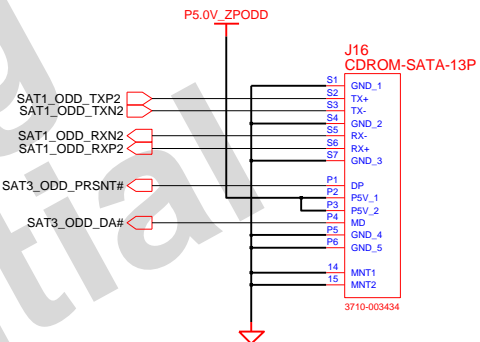
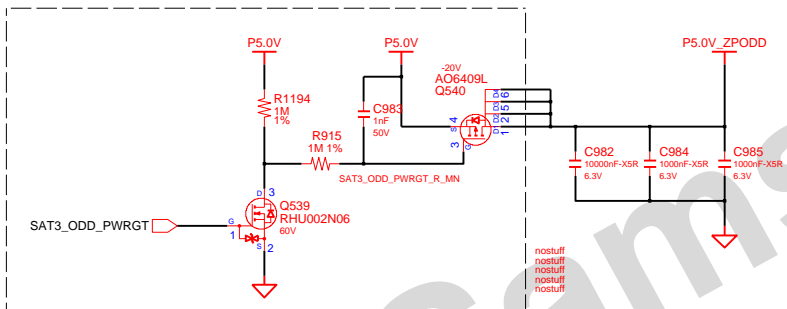
DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092-94A
CHECK	XF CHU	DEV. STEP	MP		MINI_PCIE_CONN	
APPROVAL	BL LEE	REV	REV 1.0		WLAN	
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM	PAGE	34 OF 51

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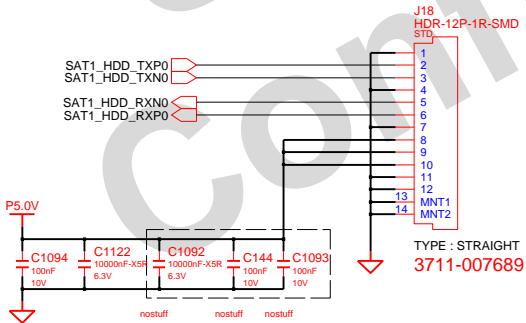
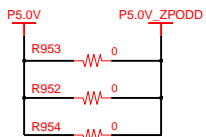
SATA I/F CONN

SATA ODD CONN 14"



Petrones-14CRV use 3710-002796

SATA HDD CONN



TYPE : STRAIGHT
3711-007689

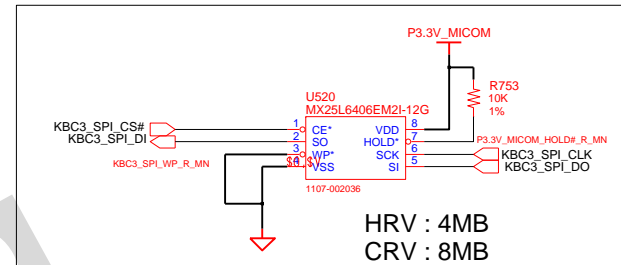
DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R SATA_DEVICES	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV.STEP	MP	HDD & ODD SUB CONNECTOR		
APPROVAL	BL LEE	REV	REV 1.0			PART NO. BA41-02092-94A
MODULE CODE	LAST EDIT		May 23, 2012 08:40:30 AM	PAGE	35	OF 51

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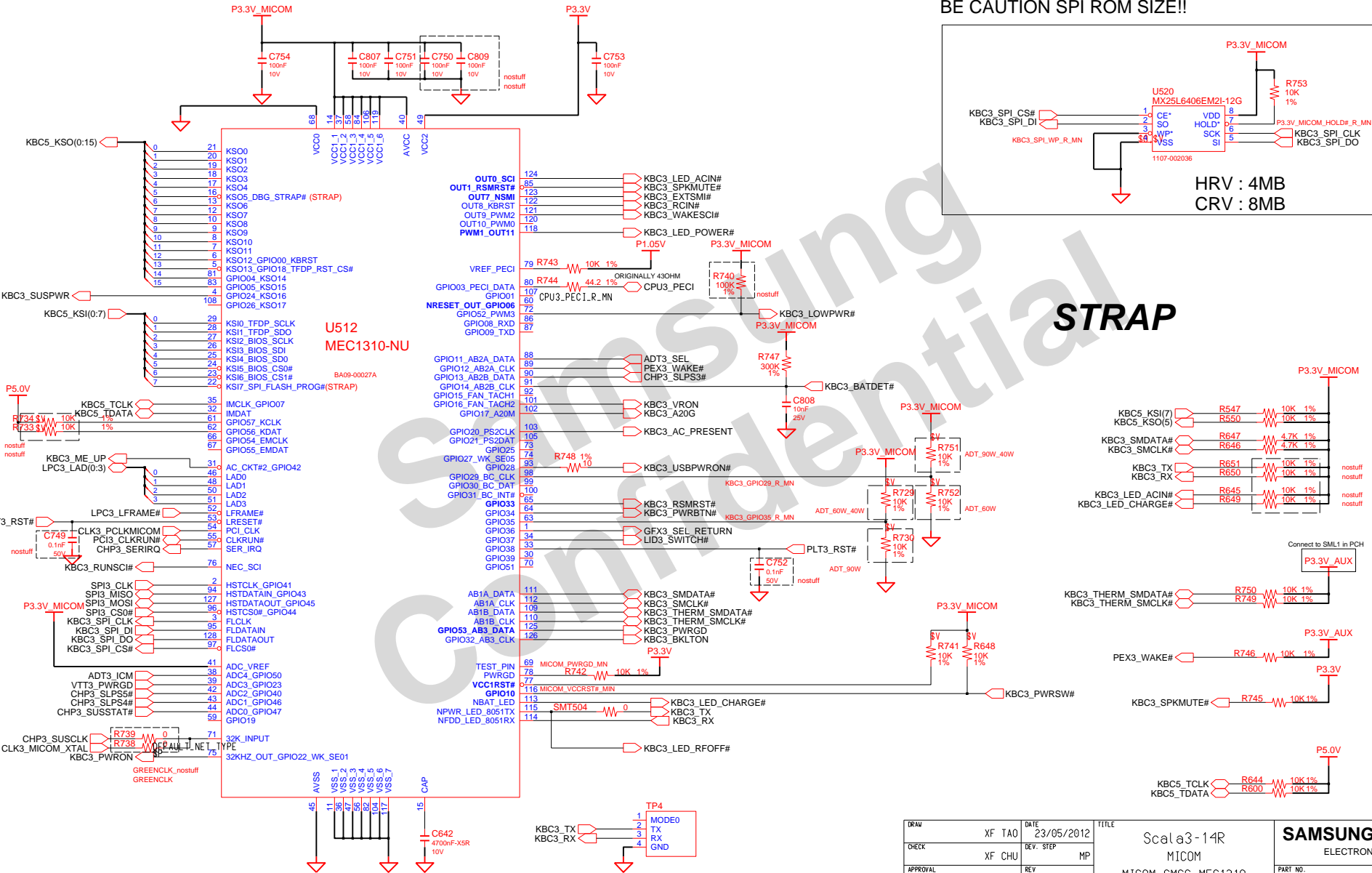
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MAIN BOARD (MICOM)

BE CAUTION SPI ROM SIZE!!



STRAP



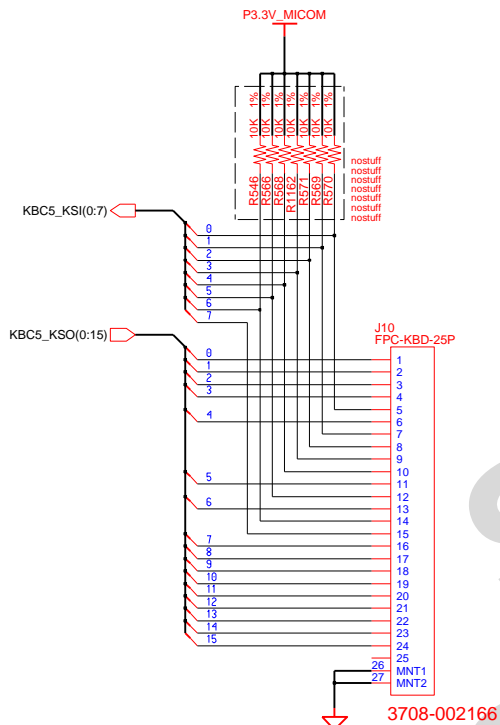
DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	MICOM	PART NO.	
APPROVAL	BL LEE	REV	REV 1.0	MICOM_SMSC_MEC1310	BA41-02092*94A	PAGE 36 OF 51
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM			

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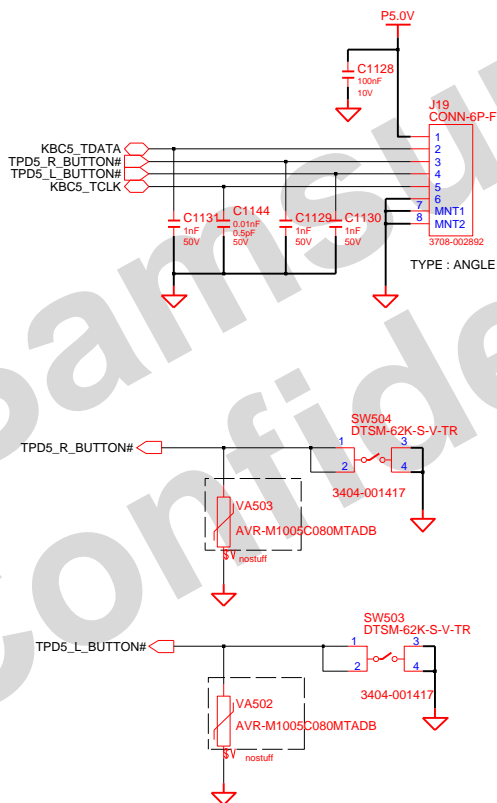
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Micom Glue Logic

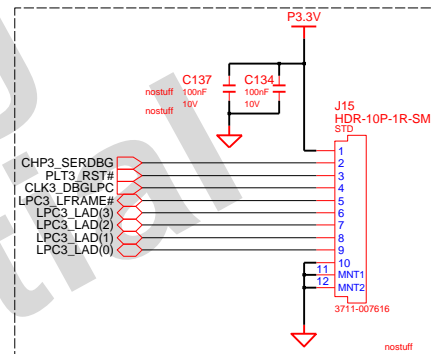
KEYBOARD



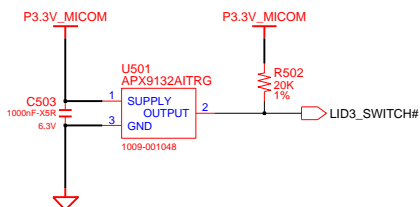
TOUCHPAD



80H PORT DEBUG



LID_SWITCH

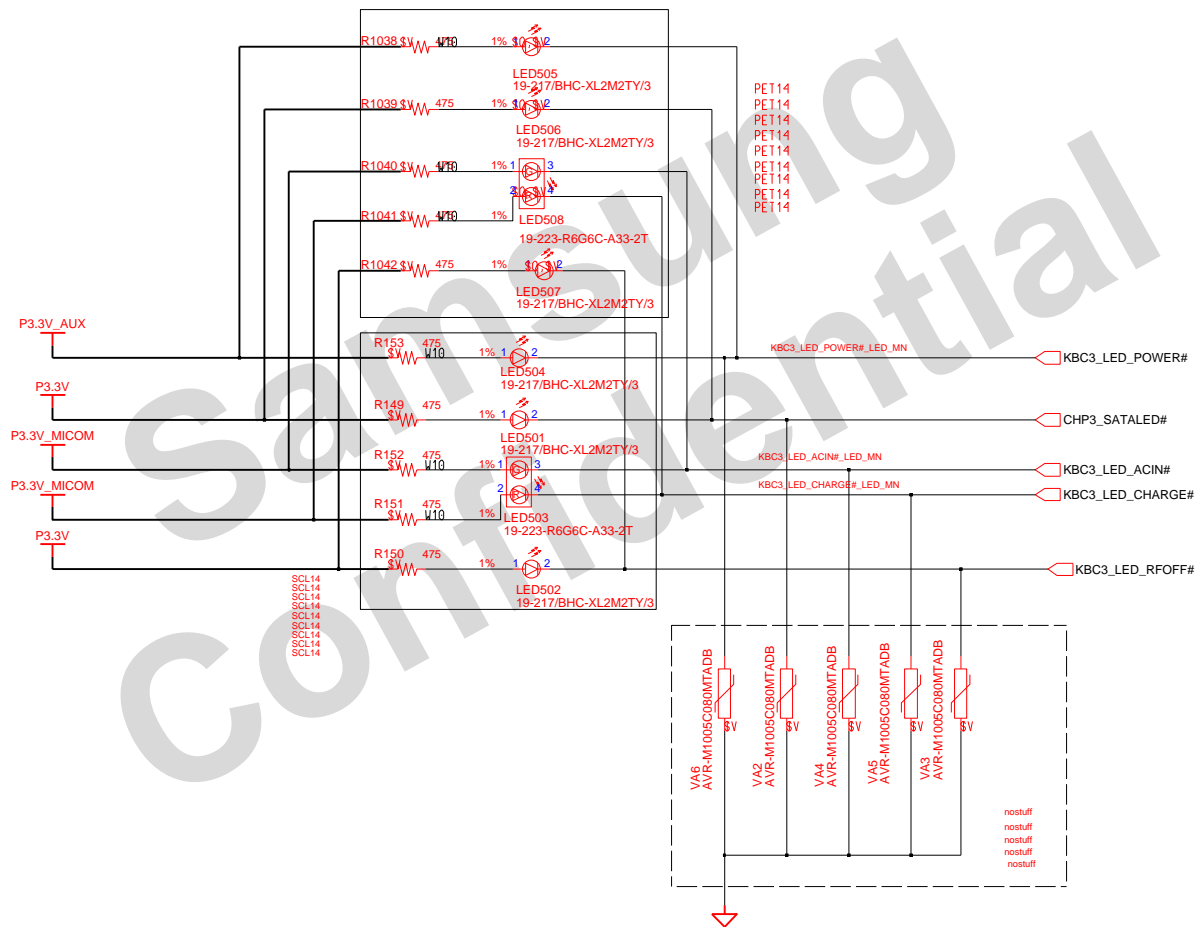


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	MICOM GLUE LOGIC	PART NO.	
APPROVAL	BL LEE	REV	REV 1.0	KETBOARD & TOUCHPAD	BA41-02092-94A	
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM	PAGE	37 OF 51

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LED for 14"

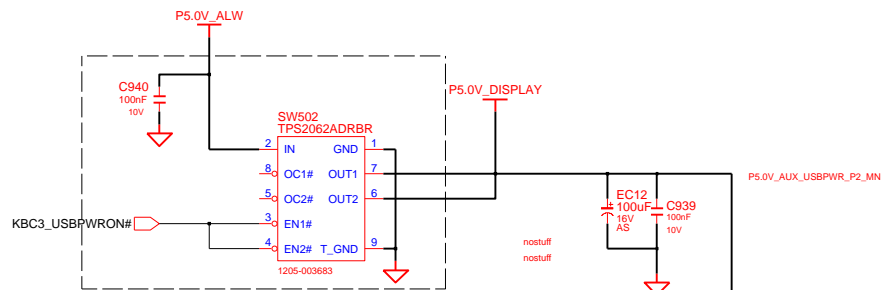


DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	LED_SWITCH	LED_SWITCH	
APPROVAL	BL LEE	REV	REV 1.0	LED_SWITCH	PART NO.	BA41-02092-94A
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	38	OF 51

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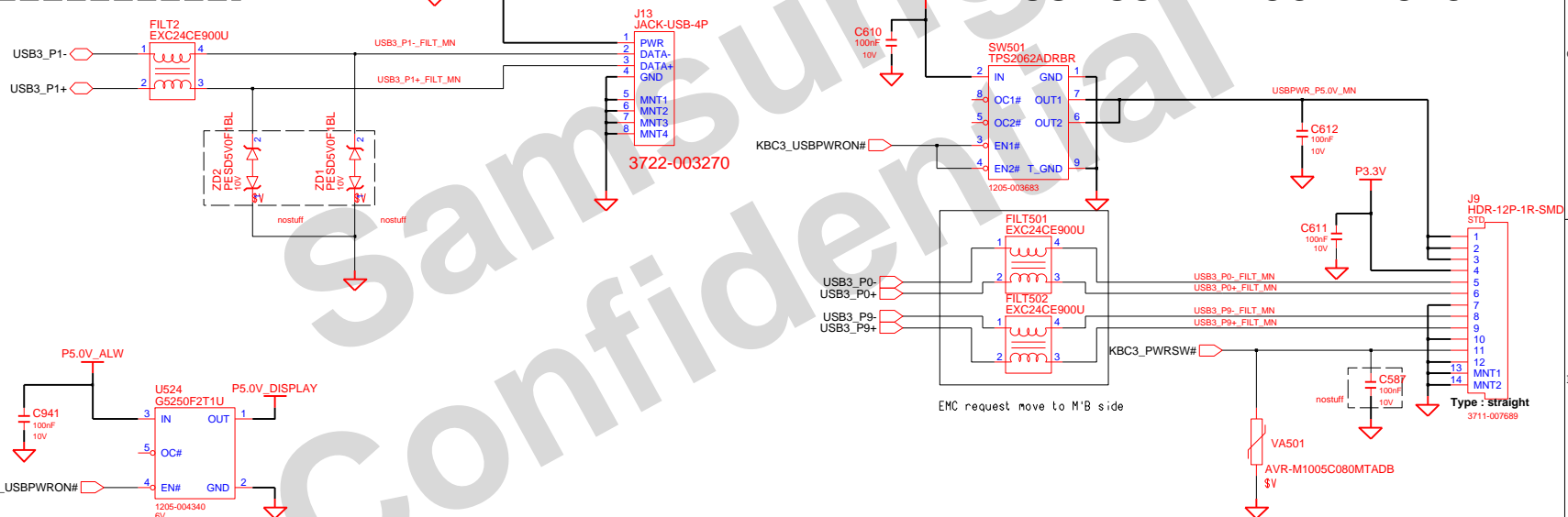
USB Single connector



MAIN TO SUB USB CONN

Right 2USB Port

USB SUB B'D CONNECTOR

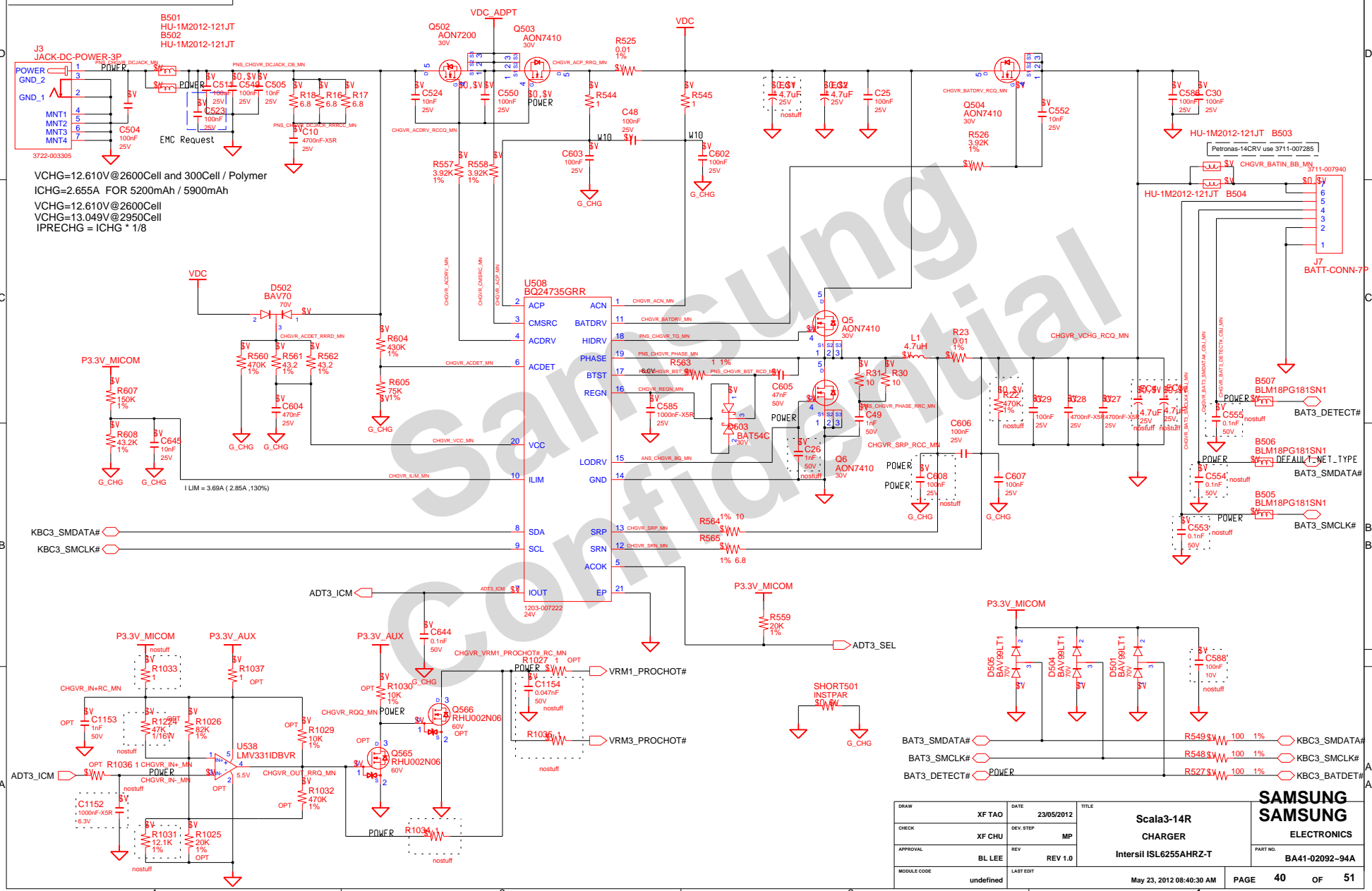


PLACE CLOSE TO USB SUB B'D Conenctor

DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		USB_CONN	
APPROVAL	BL LEE	REV	REV 1.0		USB Port	
MODULE CODE		LAST EDIT				PART NO. BA41-02092-94A
				May 23, 2012 08:40:30 AM	PAGE	39 OF 51

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CHARGER & POWER MANAGEMENT



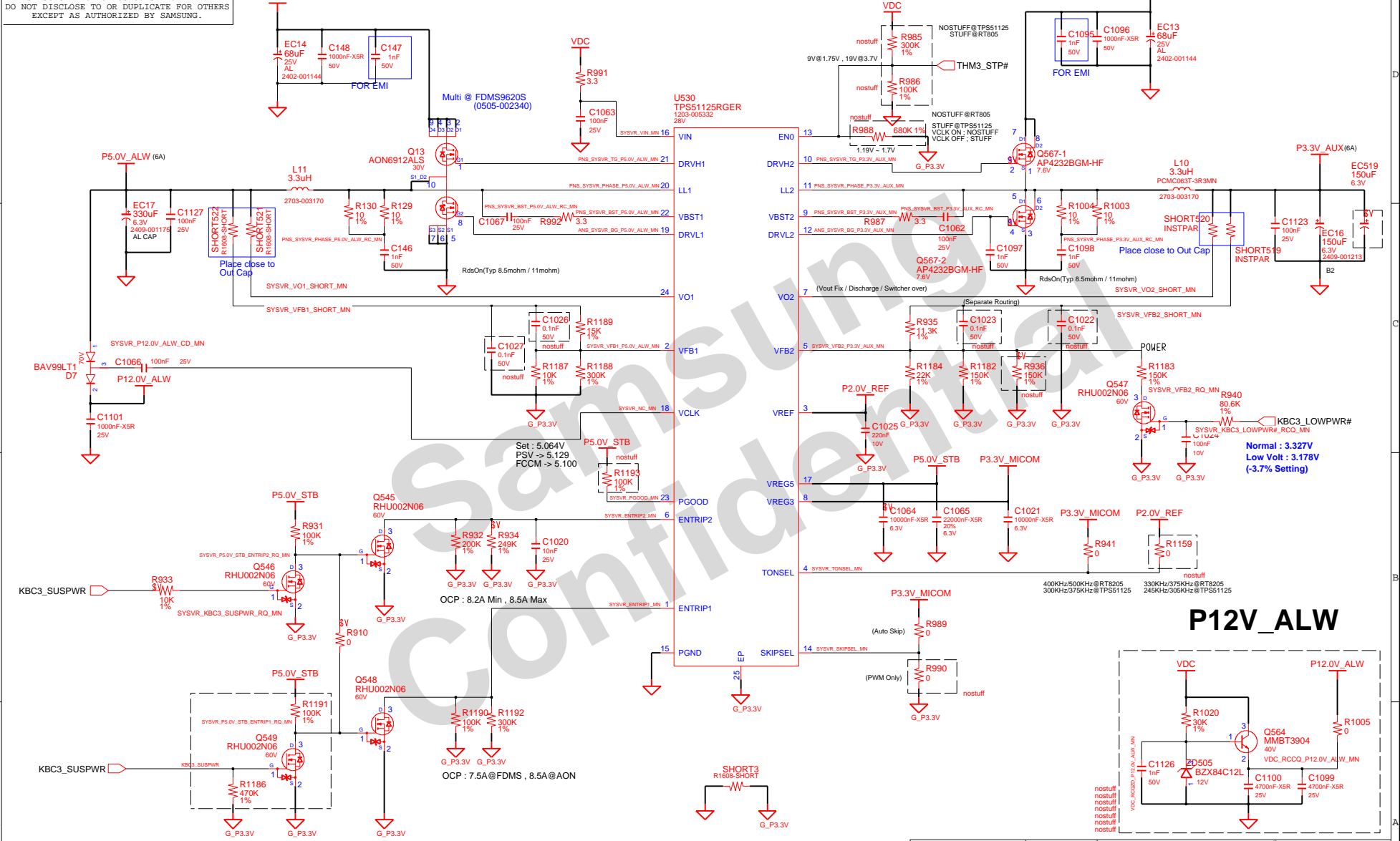
VCHG=12.610V@2600Cell and 300Cell / Polymer
 ICHG=2.655A FOR 5200mAh / 5900mAh
 VCHG=12.610V@2600Cell
 IPRECHG = ICHG * 1/8

$I_{LIM} = 3.69A (2.85A, 130\%)$

DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV-STEP	MP		SAMSUNG ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		PART NO. BA41-02092-94A
MODULE CODE	undefined	LAST EDIT			
			May 23, 2012 08:40:30 AM	PAGE	40 OF 51

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P3.3V_ALW & P5.0V_ALW

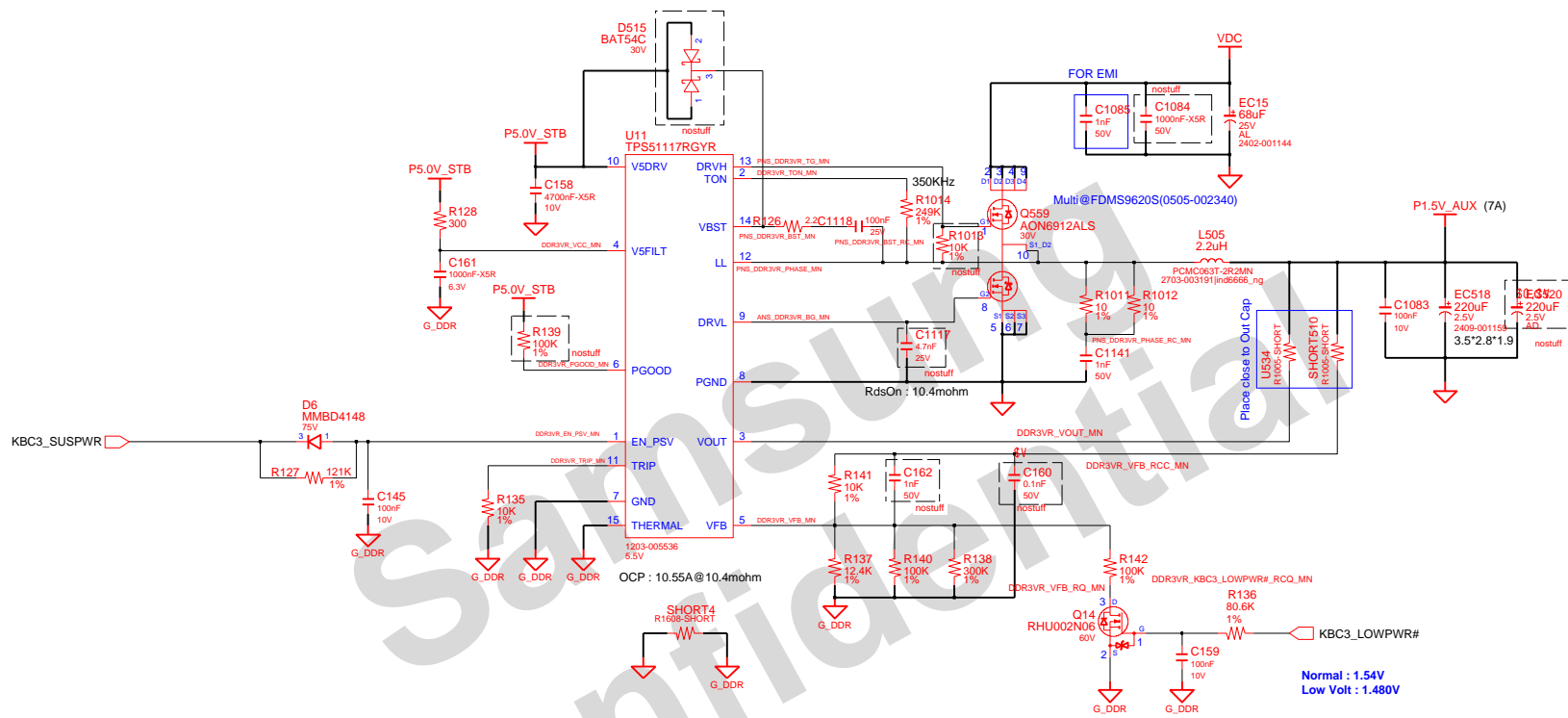


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	P3.3V_AUX / P5.0V_ALW		
APPROVAL	BL LEE	REV	REV 1.0	TI TPS51125		PART NO. BA41-02092*94A
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM		PAGE 41 OF 51

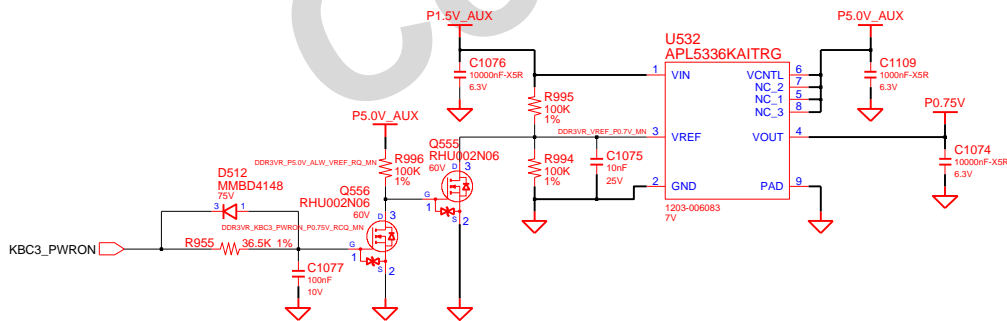
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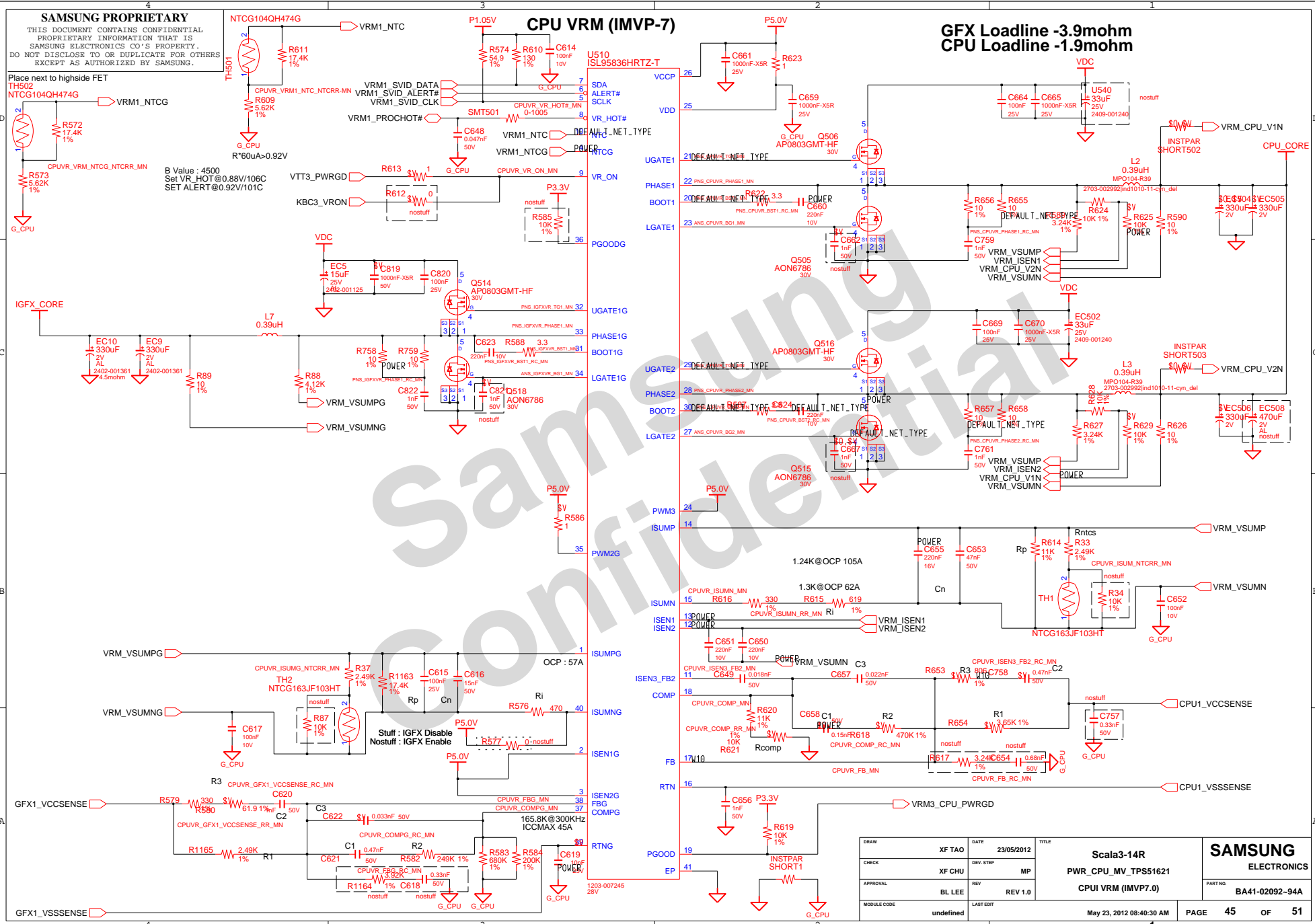
DDR3 Power



DDR3 VTT(0.75V)



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	PWR_MEMORY	PART NO.	
APPROVAL	BL LEE	REV	REV 1.0	DDR3 POWER	BA41-02092-94A	
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	44	OF 51



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		PWR_CPU_MV_TPS51621	
APPROVAL	BL LEE	REV	REV 1.0		CPU1 VRM (IMVP7.0)	PART NO. BA41-02092-94A
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM			PAGE 45 OF 51

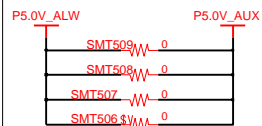
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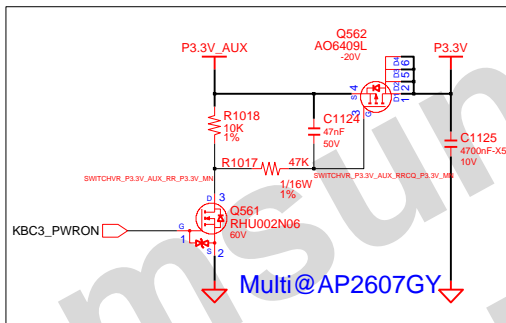
Switched Power 1

(P5.0V -> P3.3V -> EGFX_CORE -> P1.8V ->P1.5V -> P0.75V -> P1.05V -> P0.85V_SA -> CPU_CORE)

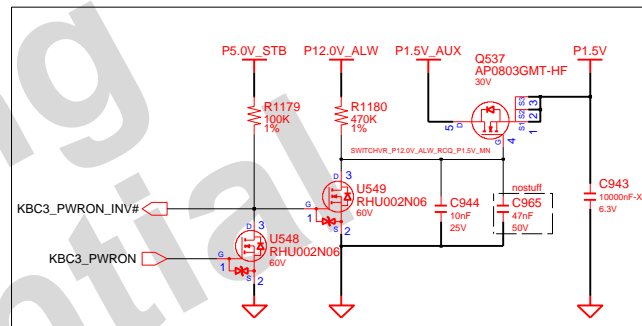
P5.0V_AUX



Switched Power On (P3.3V)

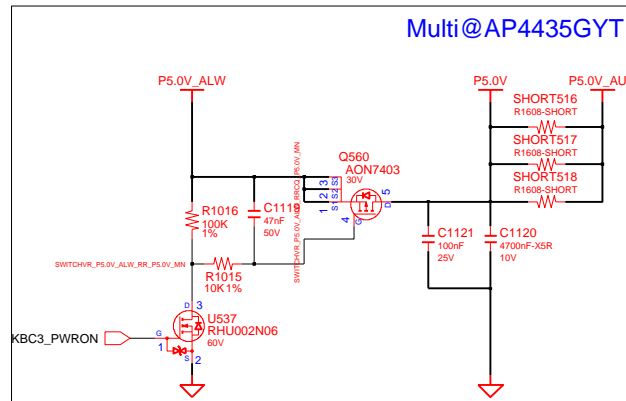


Switched Power On (P1.5V)



For nVIDIA GFX PWR Sequence
NVDD(EGFX_CORE) first and then FBVDDQ(gDDR3)

Switched Power On (P5.0V)



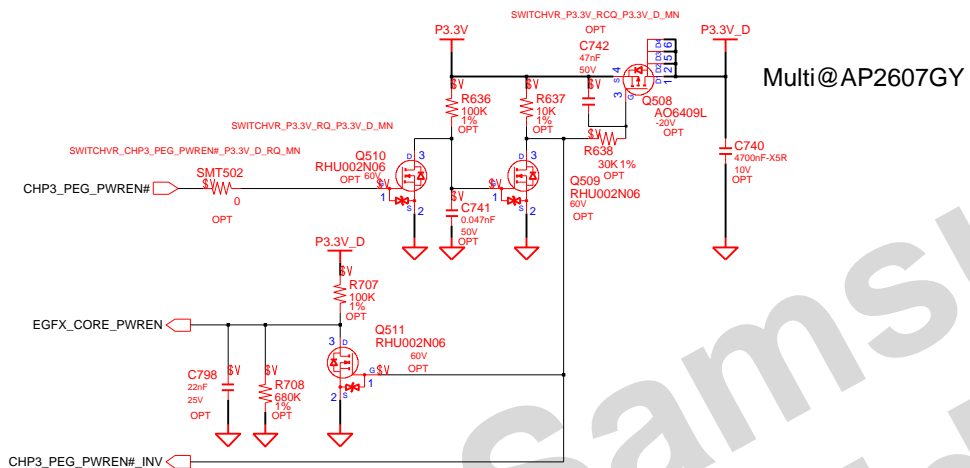
DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092-94A
CHECK	XF CHU	DEV. STEP	MP	Switched PWR 2		
APPROVAL	BL LEE	REV	REV 1.0	Switched Power		
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	47 OF 51	

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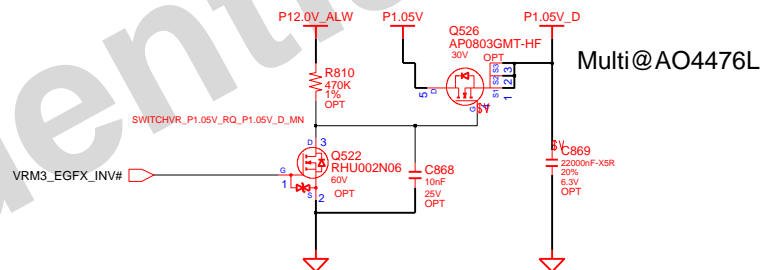
Switched Power 2 (For nVidia GFX Power Sequence)

Discrete Switched Power (D3.3V : Max_1.2A)



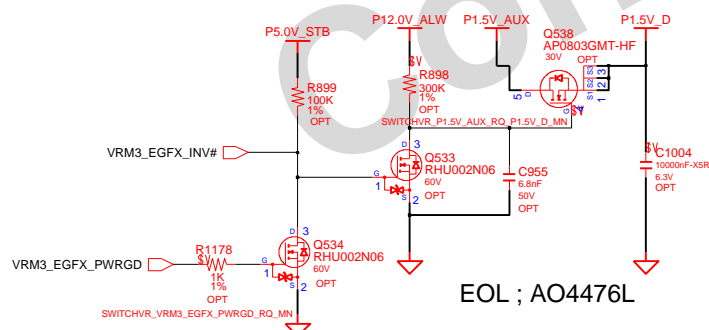
Multi@AP2607GY

Discrete Switched Power (D1.05V : Max 3.6A)



Multi@AO4476L

Discrete Switched Power (D1.5V : Max 5.0A)



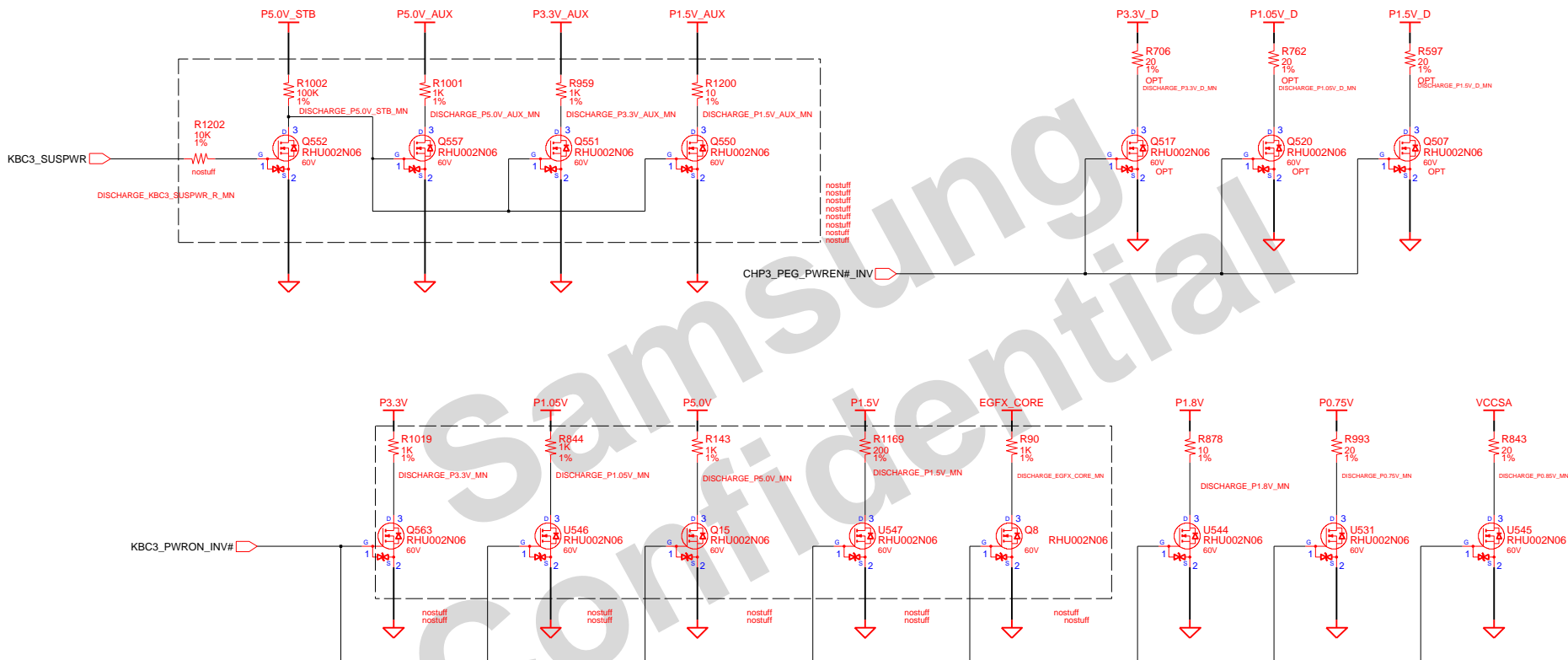
EOL ; AO4476L

DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP	Switched PWR	PART NO. BA41-02092-94A	
APPROVAL	BL LEE	REV	REV 1.0	FOR OPTIMUS PWR		
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	48	OF 51

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POWER DISCHARGER

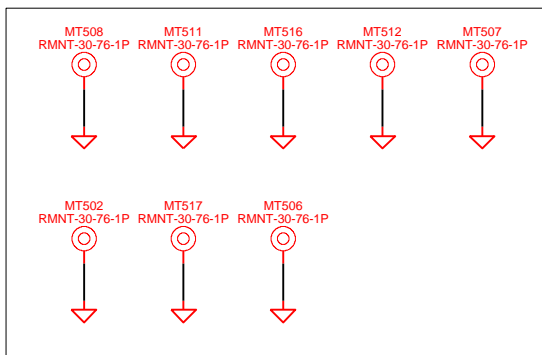


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092-94A
CHECK	XF CHU	DEV. STEP	MP	DISCHARGER LOGIC		
APPROVAL	BL LEE	REV	REV 1.0	DISCHARGING LOGIC		
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM	PAGE	49 OF 51

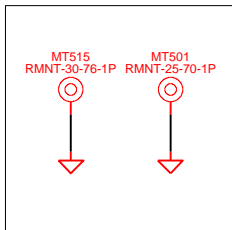
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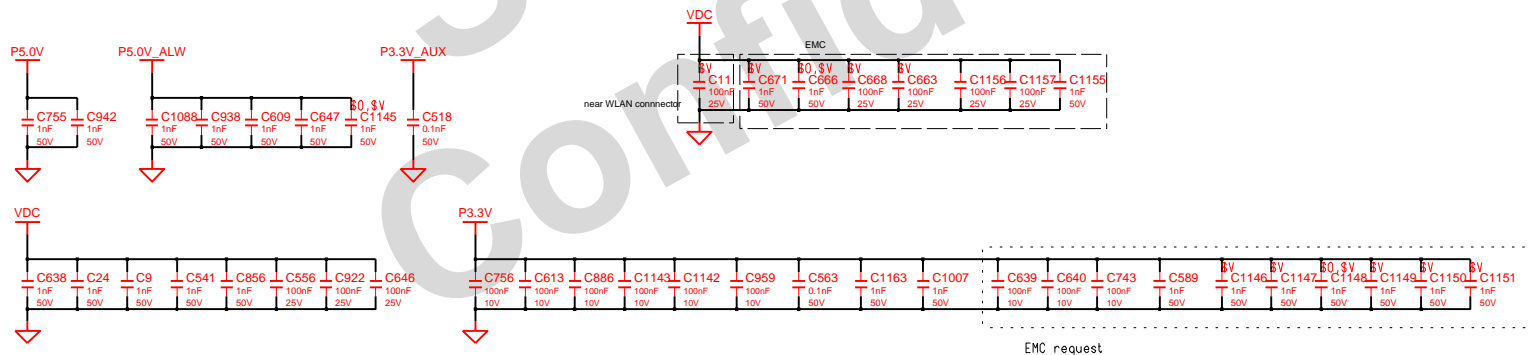
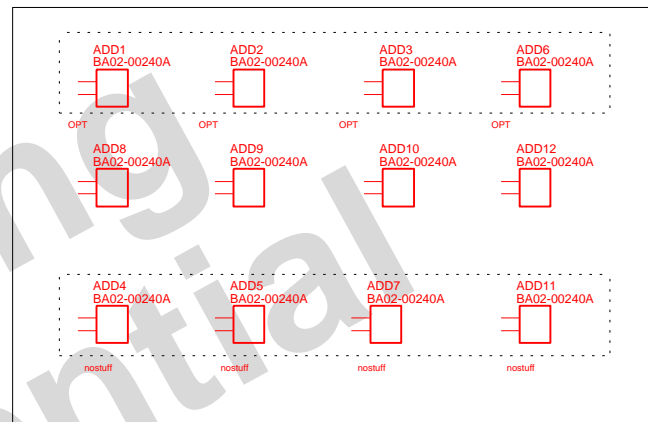
Mainboard Mount ((30-76)X8EA)



PCB FIX



Corner Fill for GPU, PCH



EMC request

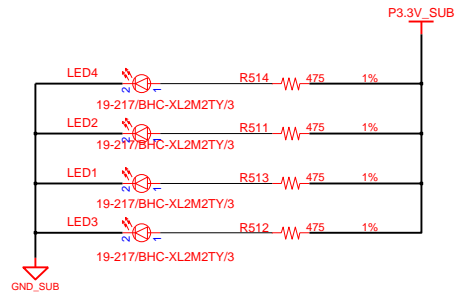
DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		MT Hole	
APPROVAL	BL LEE	REV	REV 1.0		MT Hole	PART NO. BA41-02092-94A
MODULE CODE		LAST EDIT				

SAMSUNG PROPRIETARY

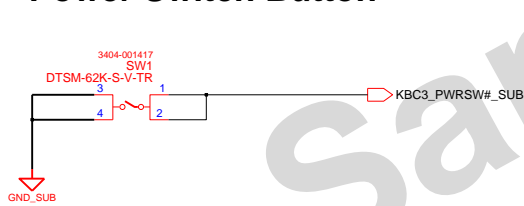
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USB SUB BOARD

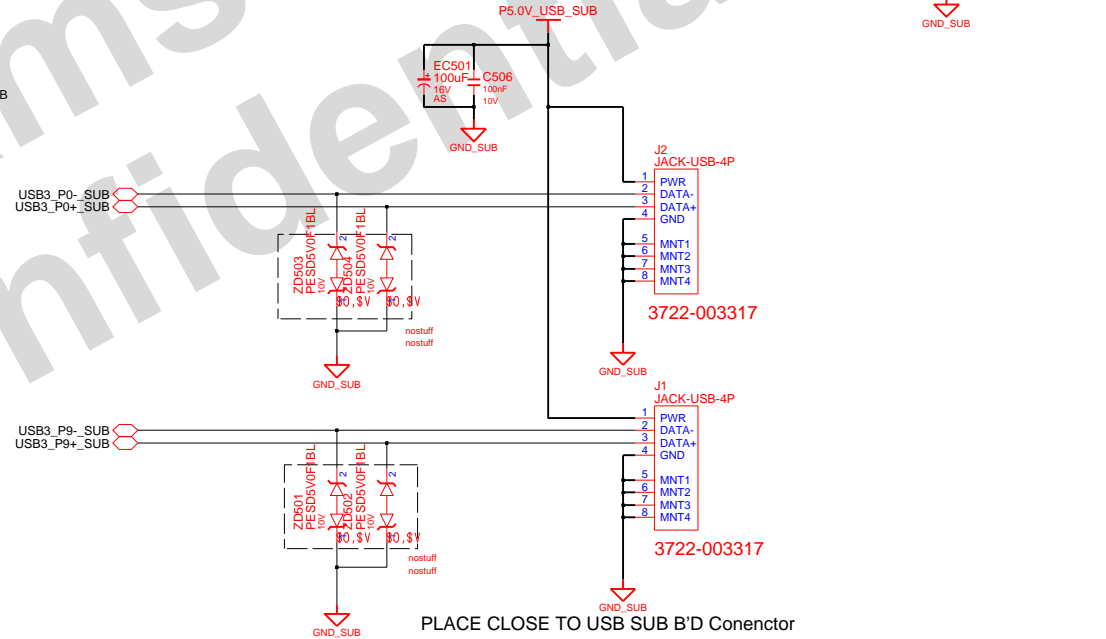
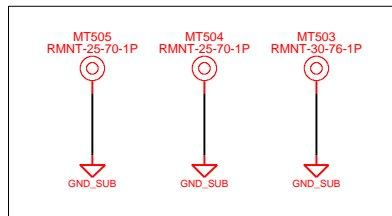
SUB TO MAIN



Power Switch Button



PCB Mount



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092*94A
CHECK	XF CHU	DEV. STEP	MP	SUB BOARD		
APPROVAL	BL LEE	REV	REV 1.0	SUB BOARD		
MODULE CODE		LAST EDIT				
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