

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

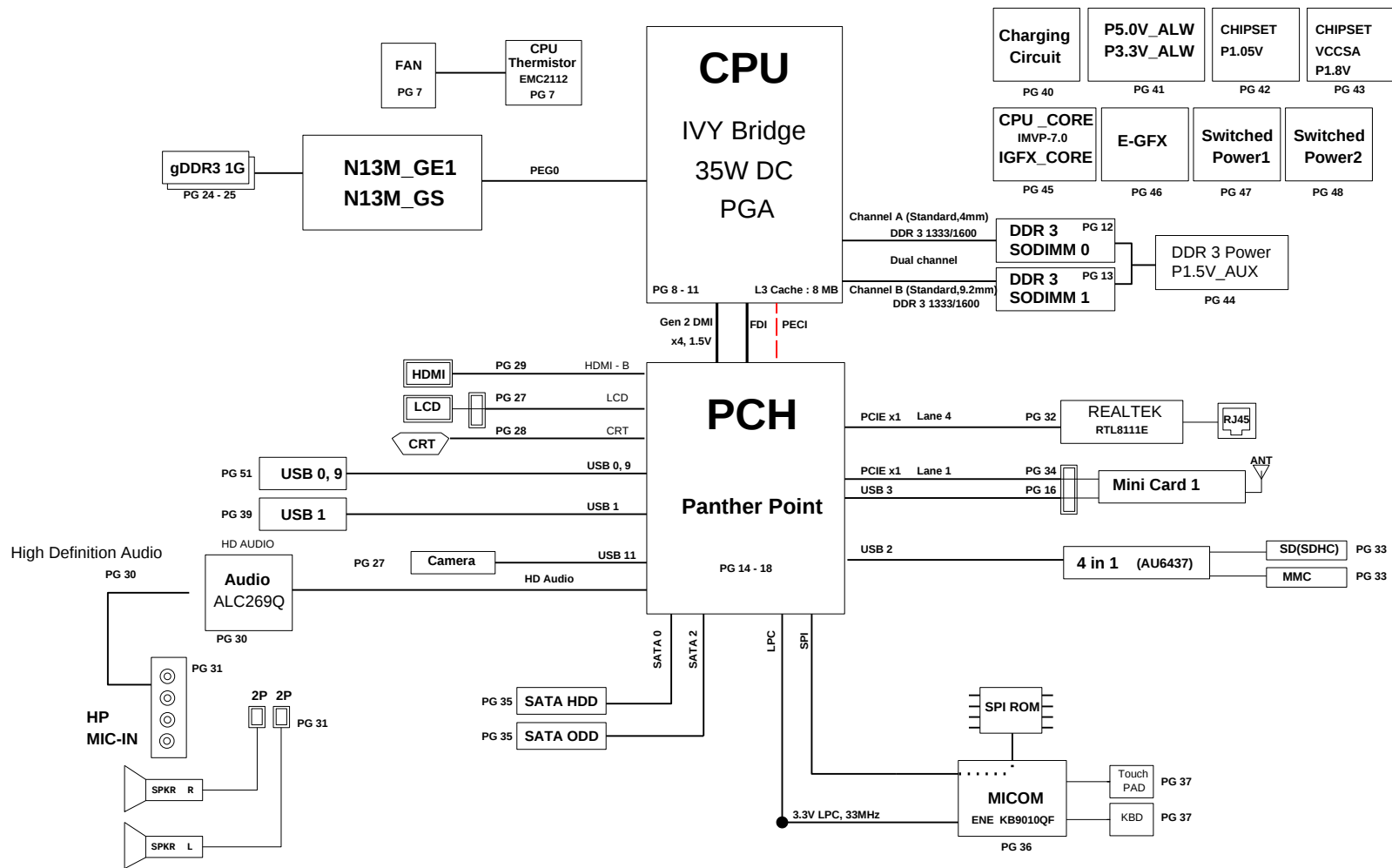
Owner : SEC Mobile R & D Signature : X

sheet01 : Cover
sheet02 : BLOCK DIAGRAM
sheet03 : BOARD INFORMATION
sheet04 : POWER DIAGRAM
sheet05 : CLOCK DISTRIBUTION
sheet06 : Green Clock
sheet07 : Thermal Sensor
sheet08 : CPU
sheet09 : CPU
sheet10 : CPU
sheet11 : CPU
sheet12 : DDR3 SODIMM #0
sheet13 : DDR3 SODIMM #1
sheet14 : PCH-CougarPoint
sheet15 : PCH-CougarPoint
sheet16 : PCH-CougarPoint
sheet17 : PCH-CougarPoint
sheet18 : PCH-CougarPoint
sheet19 : N12P-GVR
sheet20 : N12P-GVR
sheet21 : N12P-GVR
sheet22 : N12P-GVR
sheet23 : N12P-GVR
sheet24 : GFX memory
sheet25 : GFX memory
sheet26 : STRAP
sheet27 : LVDS/CAMERA
sheet28 : CRT
sheet29 : HDMI
sheet30 : Audio - ALC269
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
CHECK	XF CHU	DEV. STEP	MP	MAIN		ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.1	COVER		PART NO.
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	1	OF 51

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

BLOCK DIAGRAM



DRAW	XF TAO	DATE	23/05/2012	Scala3-14R MAIN BLOCK DIAGRAM		SAMSUNG ELECTRONICS				
CHECK	XF CHU	DEV. STEP	MP							
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	2	OF	51

BOARD INFORMATION

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

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

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		

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

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

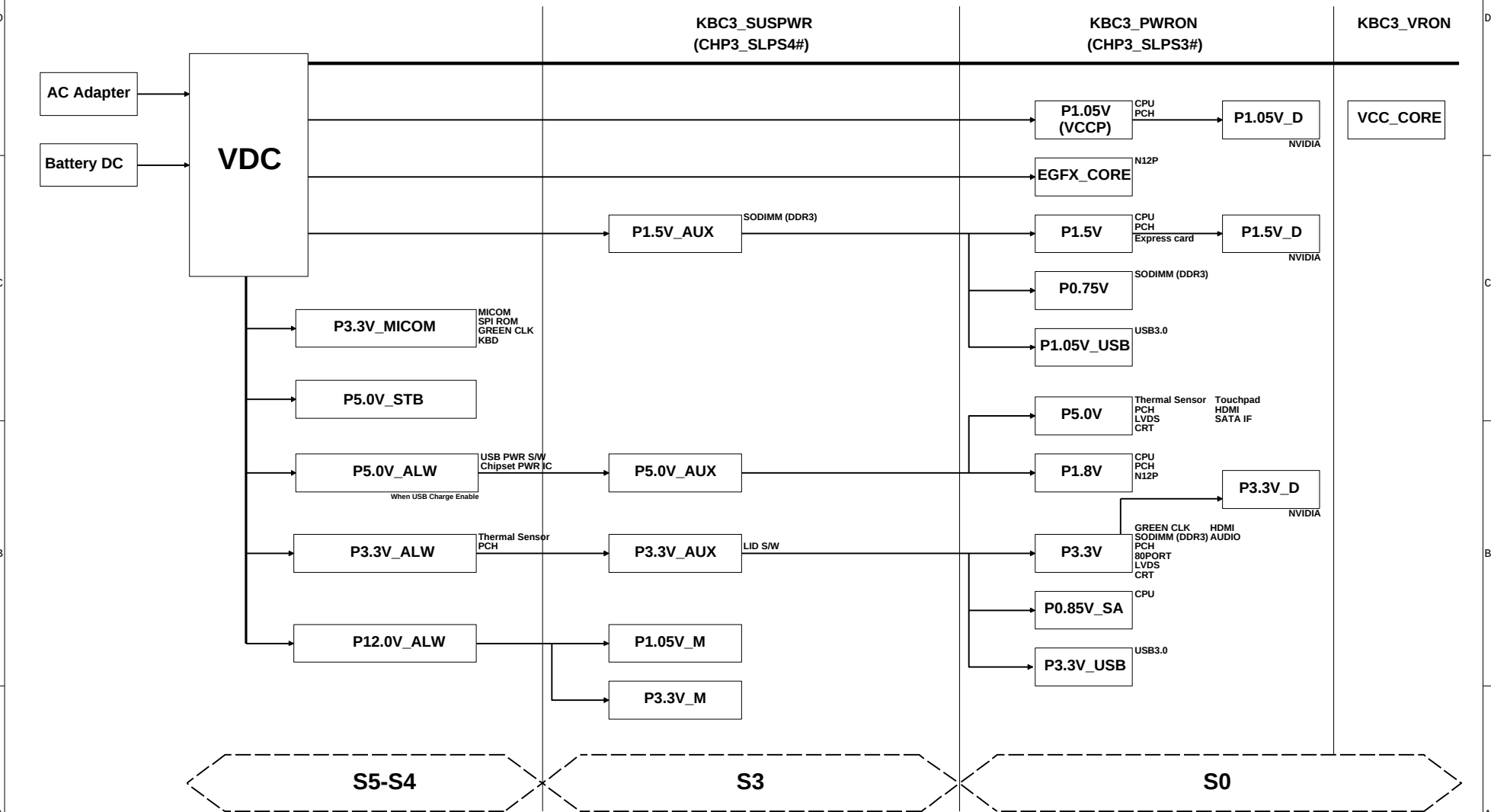
LCD Pannel Detect (TBD)

Devices	Resolution	PANNEL_DETECT_0
---------	------------	-----------------

I²C / SMB Address

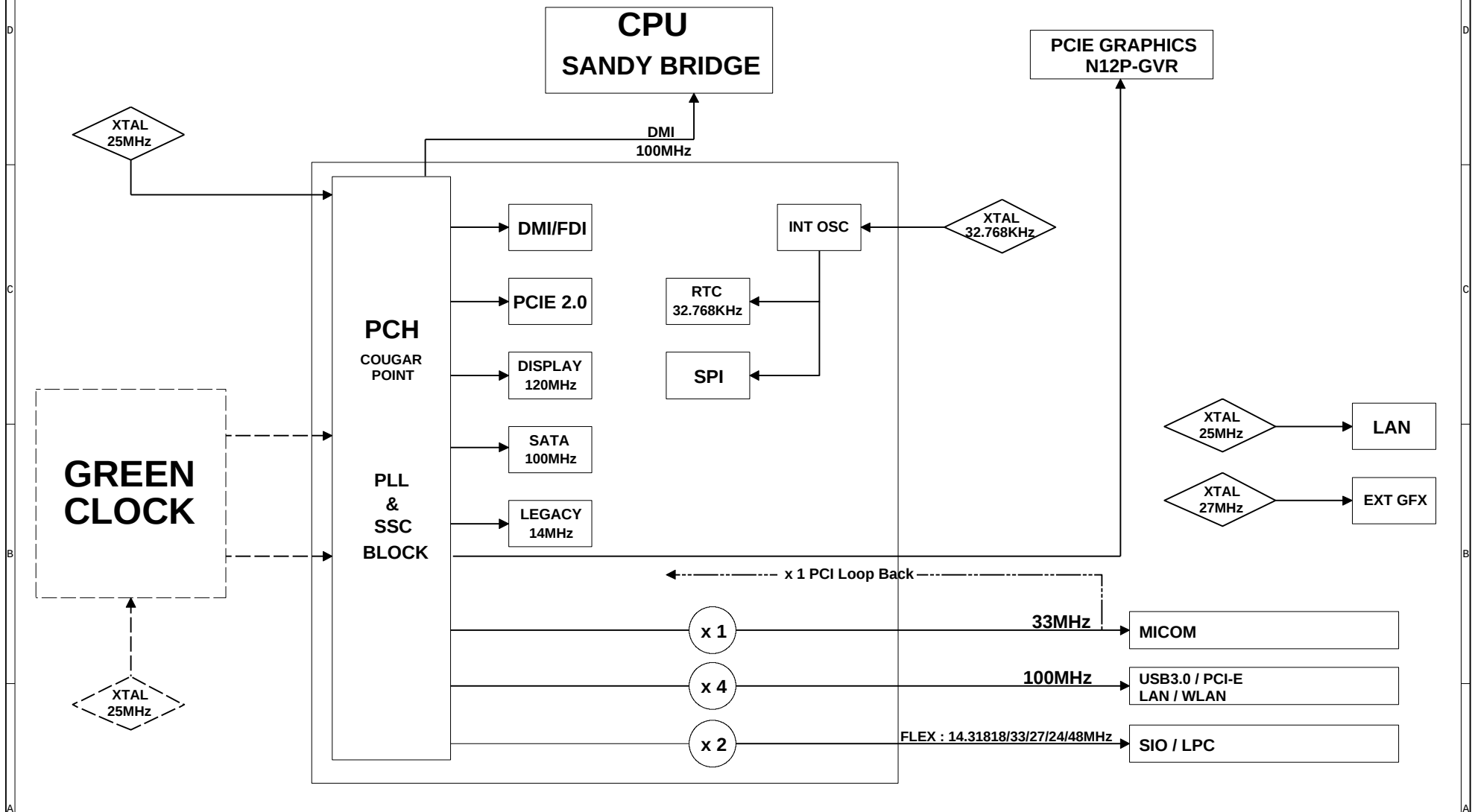
Devices	Address	Hex	Bus
HM65	Master	-	SMBUS Master
CPU Thermal Sensor	0111 101x	7Ah	Thermal Sensor
SODIMM0	1010 000x	A0h	
SODIMM1	1010 010x	A4h	
Thermal Sensor on SODIMM0	0011 000x	30h	
Thermal Sensor on SODIMM1	0011 010x	34h	
Thermal Sensor on board	1101 100x	98h	
Power thermal management TS	1101 011x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

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



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						

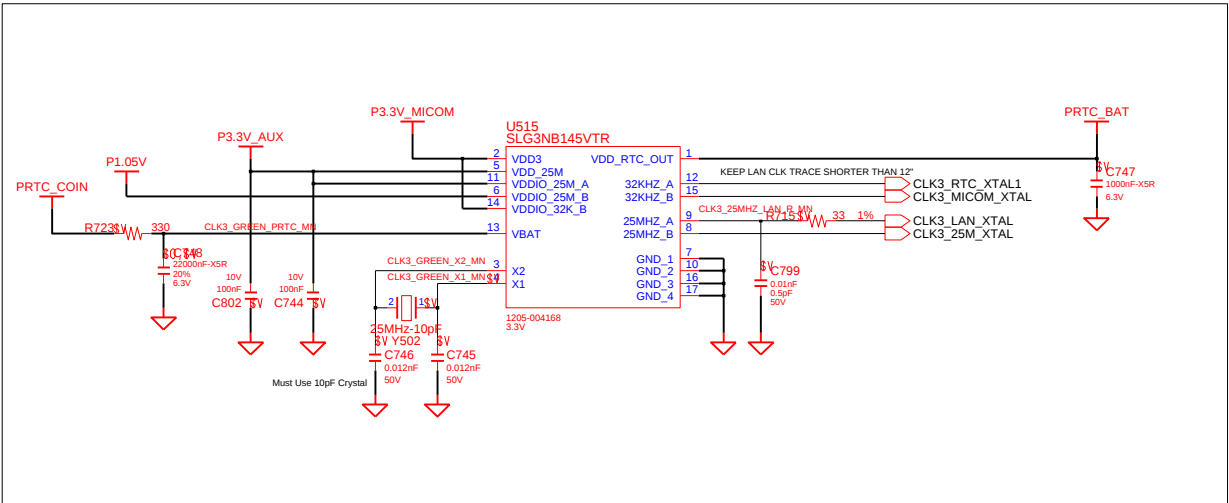
CLOCK DISTRIBUTION Rev. 0.8



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG
CHECK	XF CHU	DEV. STEP	MP	MAIN	CLOCK DIAGRAM	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0			PART NO.
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	5	OF 51

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

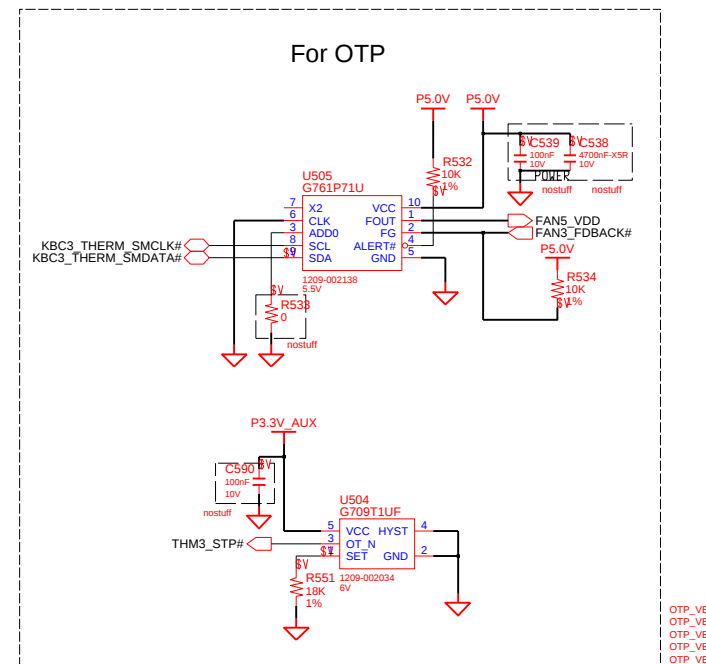
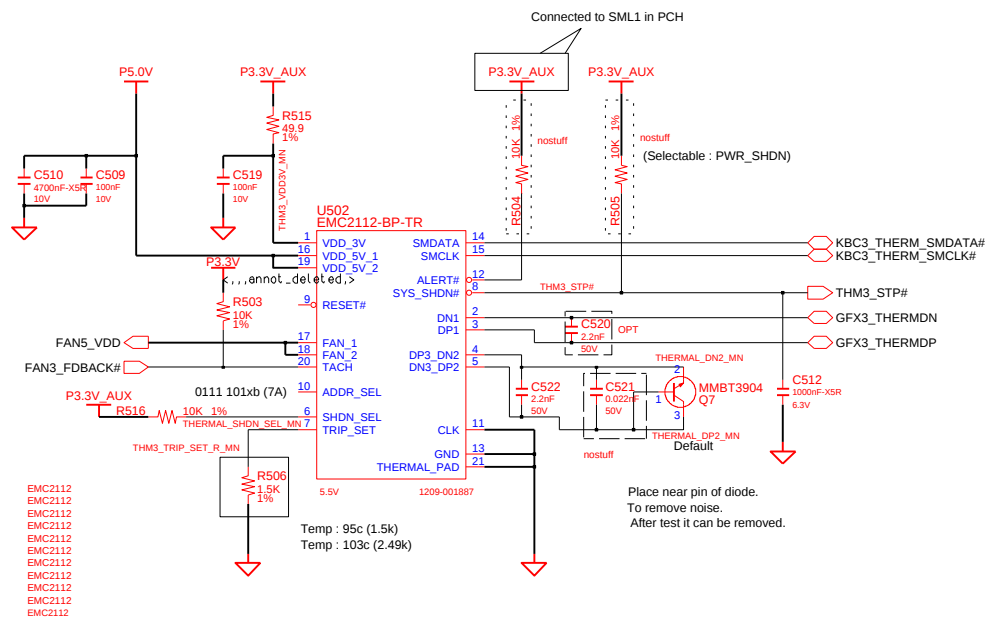
CLOCK DISTRIBUTOR



GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK
GREENCLK

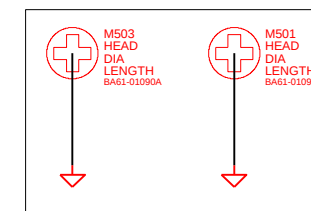
DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG
CHECK	XF CHU	DEV. STEP	MP		CLOCK	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		CLOCK DISTRIBUTION	PART NO.
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM			BA41-02092-94A
				PAGE	6	OF 51

THERMAL SENSOR & FAN CONTROL



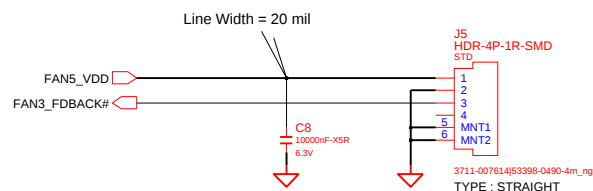
Temperature : 95.78c
confirmed by thermal charger
(2011.05.02)
 $R_{th}(\text{kohm}) = 0.0012T^2 - 0.9308T + 96.147$

FAN PEM



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

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

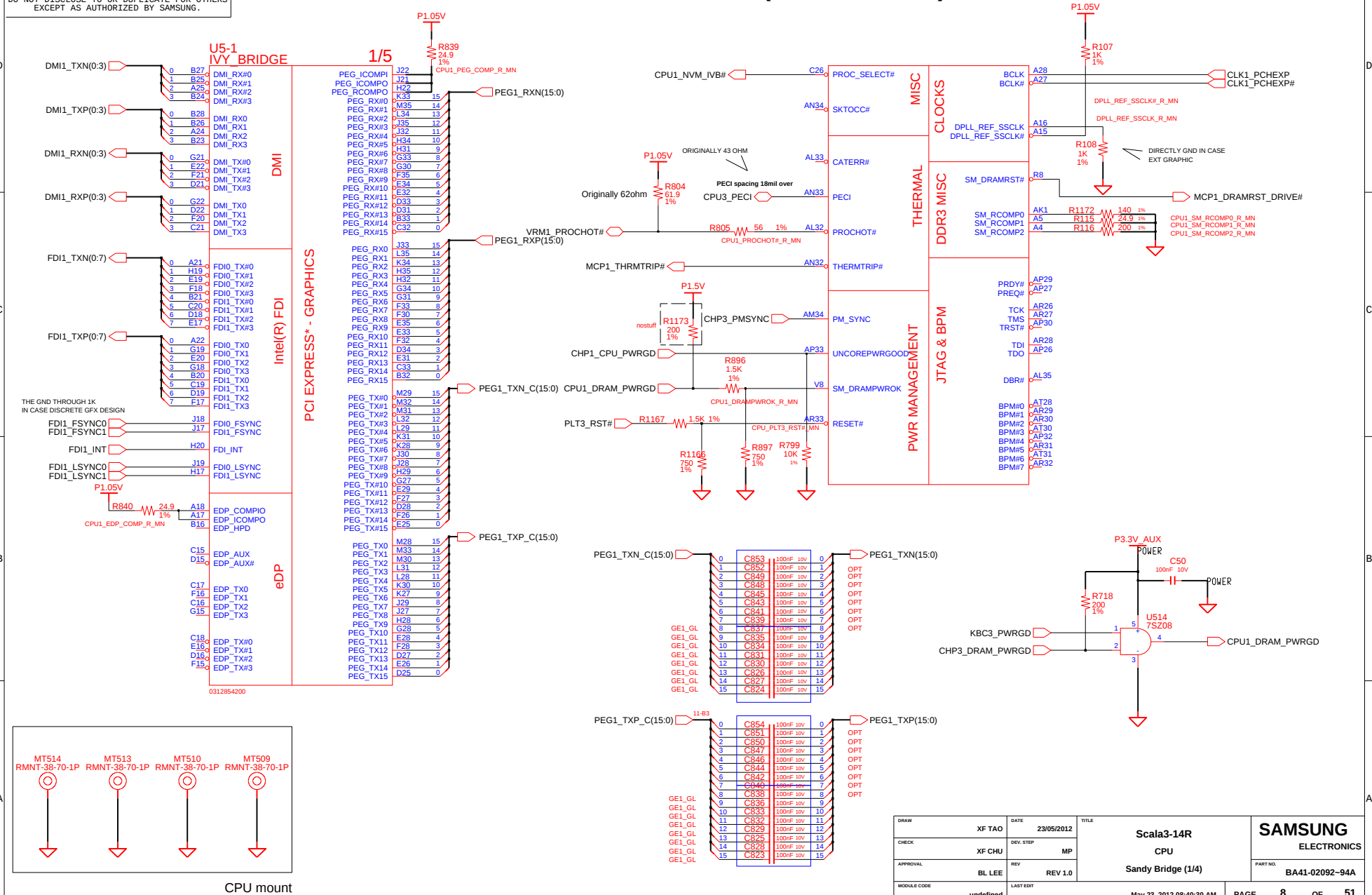


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV. STEP	MP		THERMAL SENSOR
APPROVAL	BL LEE	REV	REV 1.0		THERMAL SENSOR EMC2112
MODULE CODE		LAST EDIT			
				May 23, 2012 08:40:30 AM	PAGE 7 OF 51

SAMSUNG ELECTRONICS
PART NO. BA41-02092-94A

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

IVY BRIDGE PROCESSOR (DMI,PEG, FDI)



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV. STEP	MP		CPU
APPROVAL	BL LEE	REV	REV 1.0		Sandy Bridge (1/4)
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	8 OF 51



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

[illegible]



PEG STATIC LANE REVERSAL - CFG2 IS FOR THE 16X	
CFG2	1 : (DEFAULT) NORMAL OPERATION 0 : LANE REVERSED

PCIE PORT BIFURCACTION STRAPS	
CFG6[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

!!!

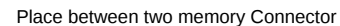
Display Port Presence	
CFG4	1 : Disabled - No DP device is connected to eDP 0 : Enabled - (DP device is connected to eDP

PEG DEFER TRAINING	
CFG7	1 : (DEFAULT) PEG TRAIN IMMEDIATELY FOLLOWING XRES/SET DEASSERTION 0 : PEG WAIT FOR BIOS FOR TRAINING

ELETRÔNICA

THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

P/N : 3709-001609 (Concraft)



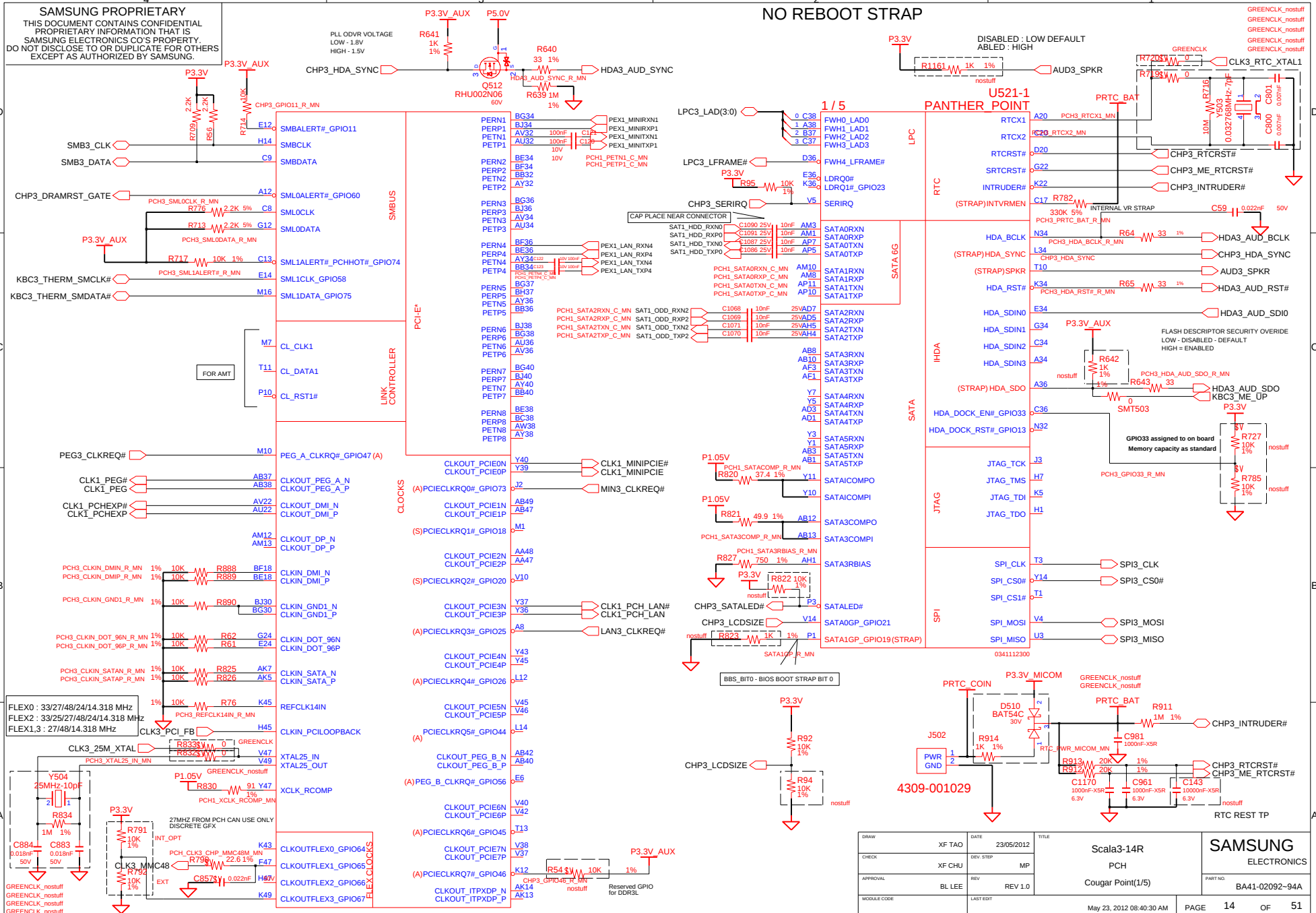
SA0	0	0
SA1	0	1
SPD ADD	0xA0	0xA2
TS ADD	0x30	0x32

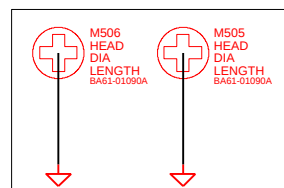
SAMSUNG
ELECTRONICS

PART NO. BA41-02092-94A

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

NO REBOOT STRAP





DRAW	XF TAO	DATE	23/05/2012	Scala3-14R PCH Cougar Point(2/5)	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	15 OF 51

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

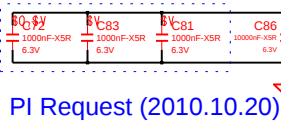
**U521-5
PANTHER POINT**

This power share with thermal sensor

5 / 5

AY4	VSS159	VSS259	H46
AY2	VSS160	VSS260	K18
AY46	VSS161	VSS261	K39
AY8	VSS162	VSS262	K46
B11	VSS163	VSS263	L18
B15	VSS164	VSS264	L2
B19	VSS165	VSS265	L2
B23	VSS166	VSS266	L20
B27	VSS167	VSS267	L26
B31	VSS168	VSS268	L26
B35	VSS169	VSS269	L26
B39	VSS170	VSS270	L48
B7	VSS171	VSS271	M12
F45	VSS172	VSS272	M16
BB12	VSS173	VSS273	M22
BB16	VSS174	VSS274	M24
BB20	VSS175	VSS275	M30
BB22	VSS176	VSS276	M32
BB24	VSS177	VSS277	M34
BB28	VSS178	VSS278	M34
BB30	VSS179	VSS279	M34
BB38	VSS180	VSS280	M4
BB4	VSS181	VSS281	M42
BB46	VSS182	VSS282	M42
BC14	VSS183	VSS283	M42
BC18	VSS184	VSS284	M42
BC2	VSS185	VSS285	M42
BC22	VSS186	VSS286	M42
BC26	VSS187	VSS287	M42
BC32	VSS188	VSS288	M42
BC34	VSS189	VSS289	M42
BC36	VSS190	VSS290	M42
BC40	VSS191	VSS291	M42
BC42	VSS192	VSS292	M42
BC46	VSS193	VSS293	M42
BD46	VSS194	VSS294	M42
BD5	VSS195	VSS295	M42
BD22	VSS196	VSS296	M42
BD24	VSS197	VSS297	M42
BD40	VSS198	VSS298	M42
BF10	VSS199	VSS299	M42
BF12	VSS200	VSS300	M42
BF16	VSS201	VSS301	M42
BF20	VSS202	VSS302	M42
BF22	VSS203	VSS303	M42
BF24	VSS204	VSS304	M42
BF26	VSS205	VSS305	M42
BF28	VSS206	VSS306	M42
BF3	VSS207	VSS307	M42
BF38	VSS208	VSS308	M42
BF40	VSS209	VSS309	M42
BF9	VSS210	VSS310	M42
BG17	VSS211	VSS311	M42
BG21	VSS212	VSS312	M42
BG33	VSS213	VSS313	M42
BG44	VSS214	VSS314	M42
CG8	VSS215	VSS315	M42
BH11	VSS216	VSS316	M42
BH15	VSS217	VSS317	M42
BH17	VSS218	VSS318	M42
BH19	VSS219	VSS319	M42
H10	VSS220	VSS320	M42
BH27	VSS221	VSS321	M42
BH31	VSS222	VSS322	M42
BH33	VSS223	VSS323	M42
BH36	VSS224	VSS324	M42
BH38	VSS225	VSS325	M42
BH43	VSS226	VSS326	M42
BH7	VSS227	VSS327	M42
D3	VSS228	VSS328	M42
D12	VSS229	VSS329	M42
D16	VSS230	VSS330	M42
D18	VSS231	VSS331	M42
D22	VSS232	VSS332	M42
D24	VSS233	VSS333	M42
D26	VSS234	VSS334	M42
D30	VSS235	VSS335	M42
D32	VSS236	VSS336	M42
D34	VSS237	VSS337	M42
D38	VSS238	VSS338	M42
D42	VSS239	VSS339	M42
D8	VSS240	VSS340	M42
E18	VSS241	VSS341	M42
E26	VSS242	VSS342	M42
G19	VSS243	VSS343	M42
G20	VSS244	VSS344	M42
G26	VSS245	VSS345	M42
G28	VSS246	VSS346	M42
G36	VSS247	VSS347	M42
G48	VSS248	VSS348	M42
H12	VSS249	VSS349	M42
H18	VSS250	VSS350	M42
H22	VSS251	VSS351	M42
H24	VSS252	VSS352	M42
H26	VSS253	VSS353	M42
H30	VSS254	VSS354	M42
H32	VSS255	VSS355	M42
H34	VSS256	VSS356	M42
F3	VSS257	VSS357	M42
F3	VSS258	VSS358	M42

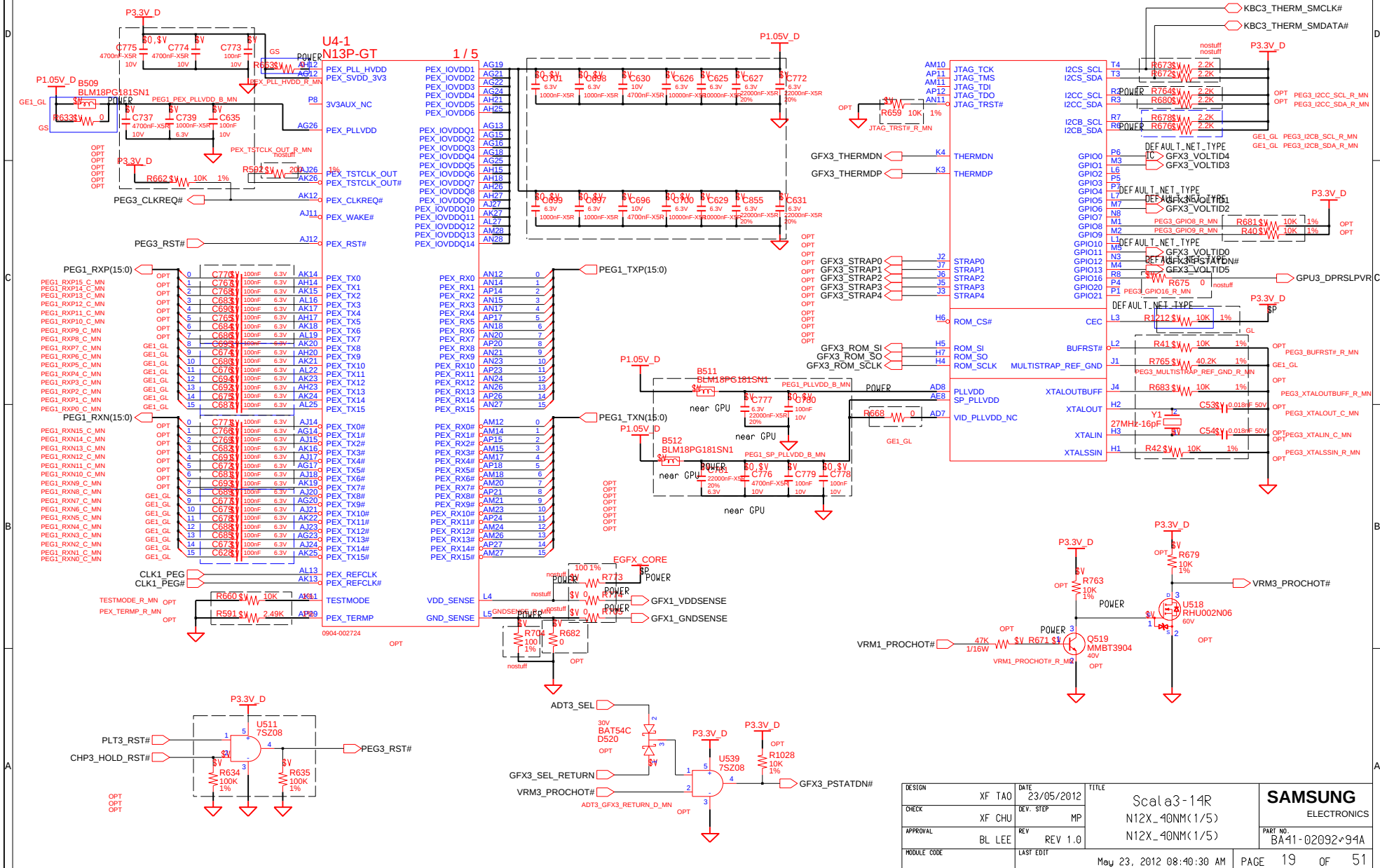
0341112300

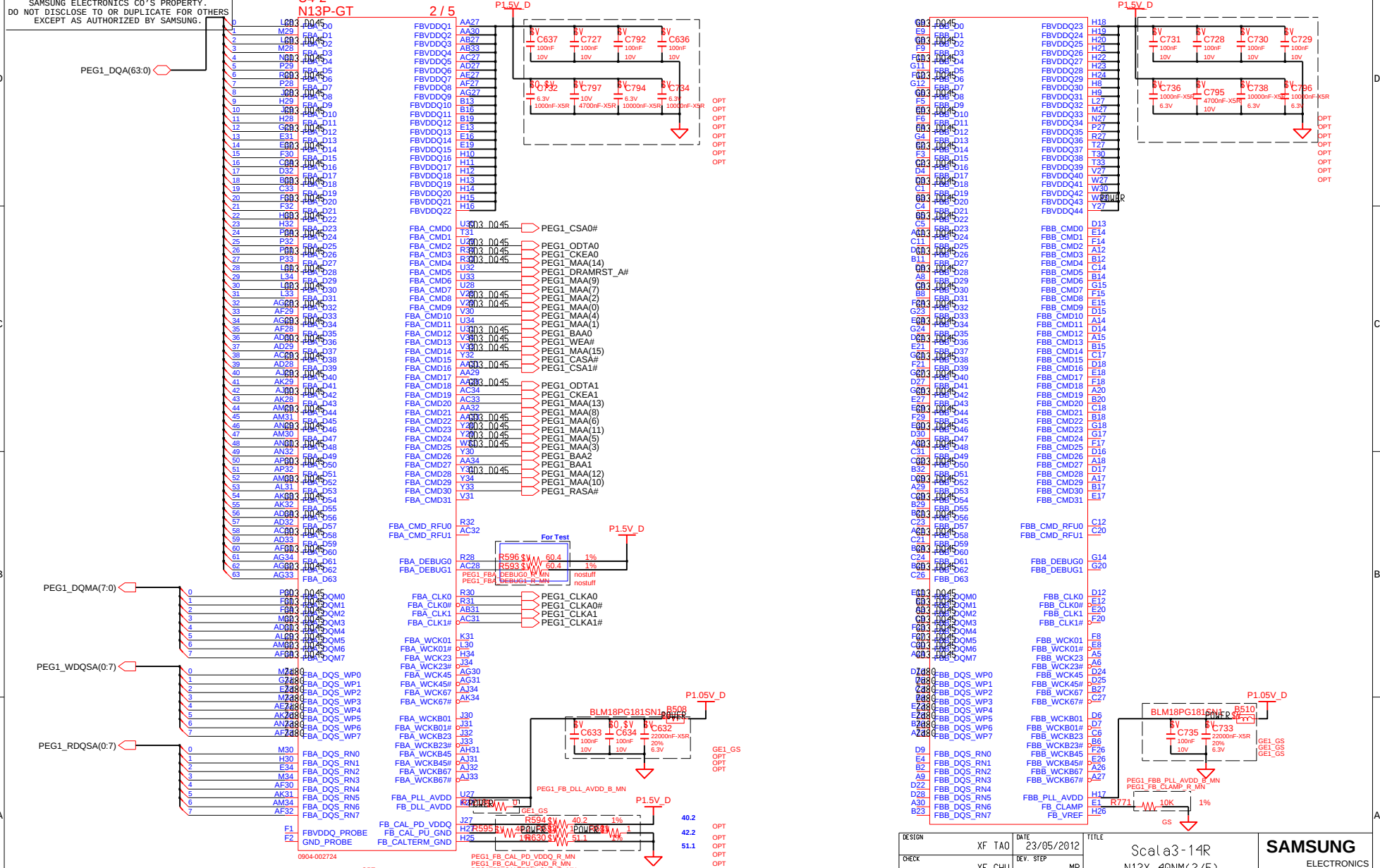


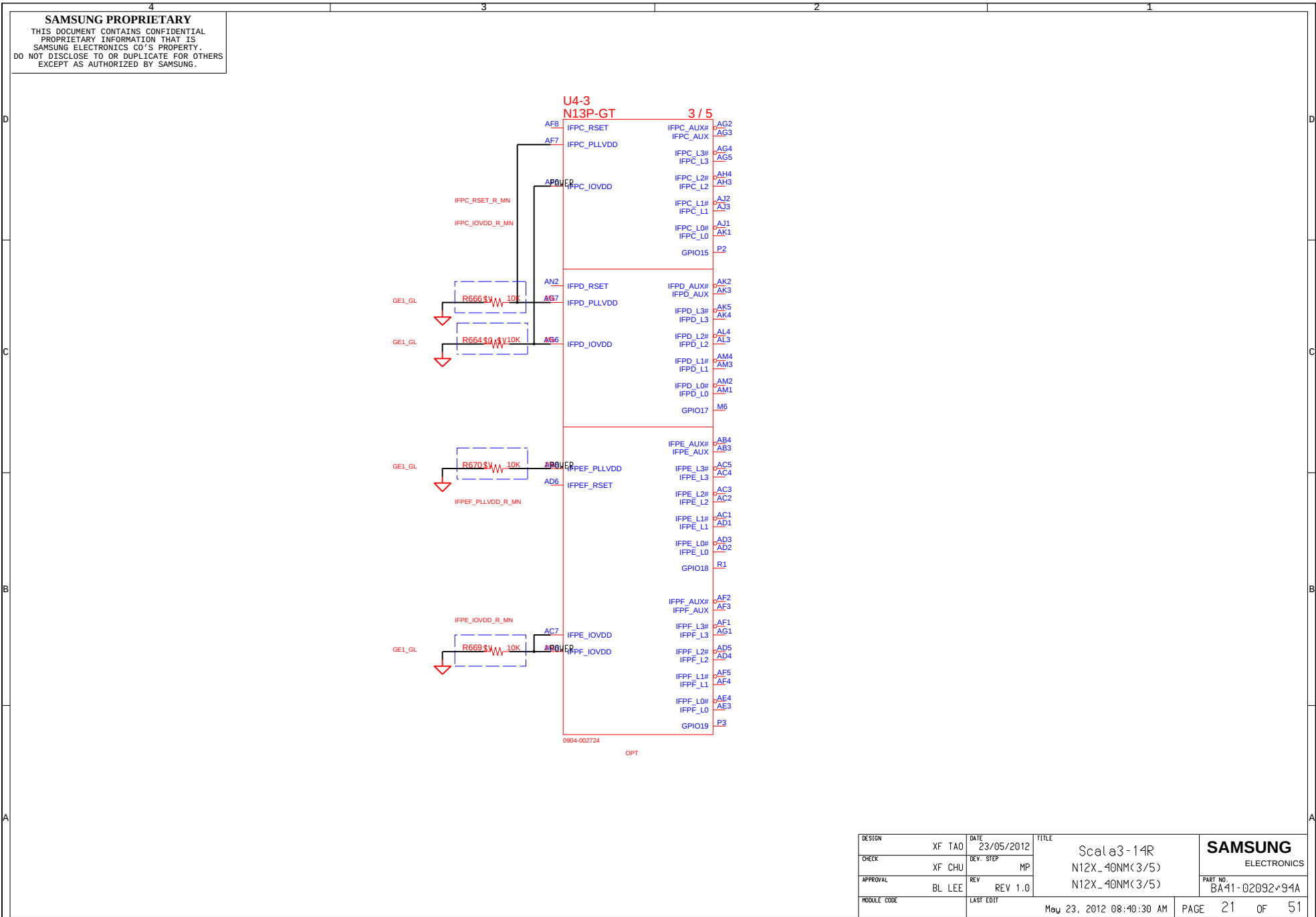
DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV. STEP	MP		PCH
APPROVAL	BL LEE	REV	REV 1.0		Cougar Point(5/5)
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	18 OF 51

SAMSUNG ELECTRONICS
PART NO. BA41-02092-94A

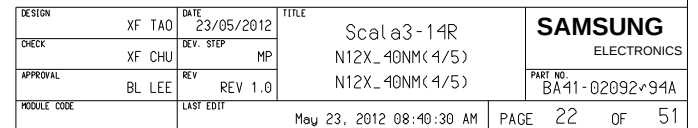
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



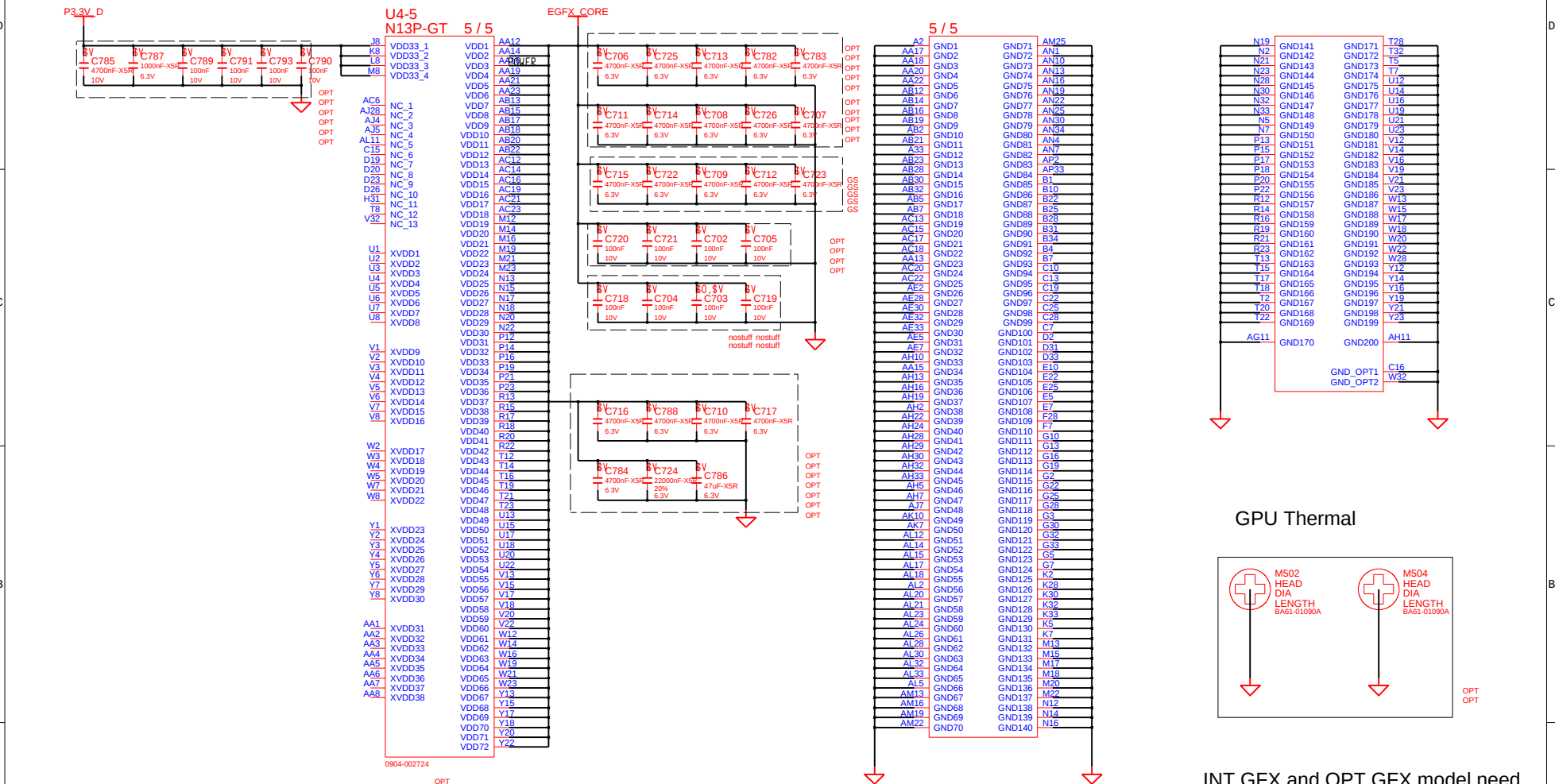




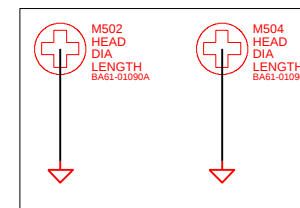
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.



GPU Thermal



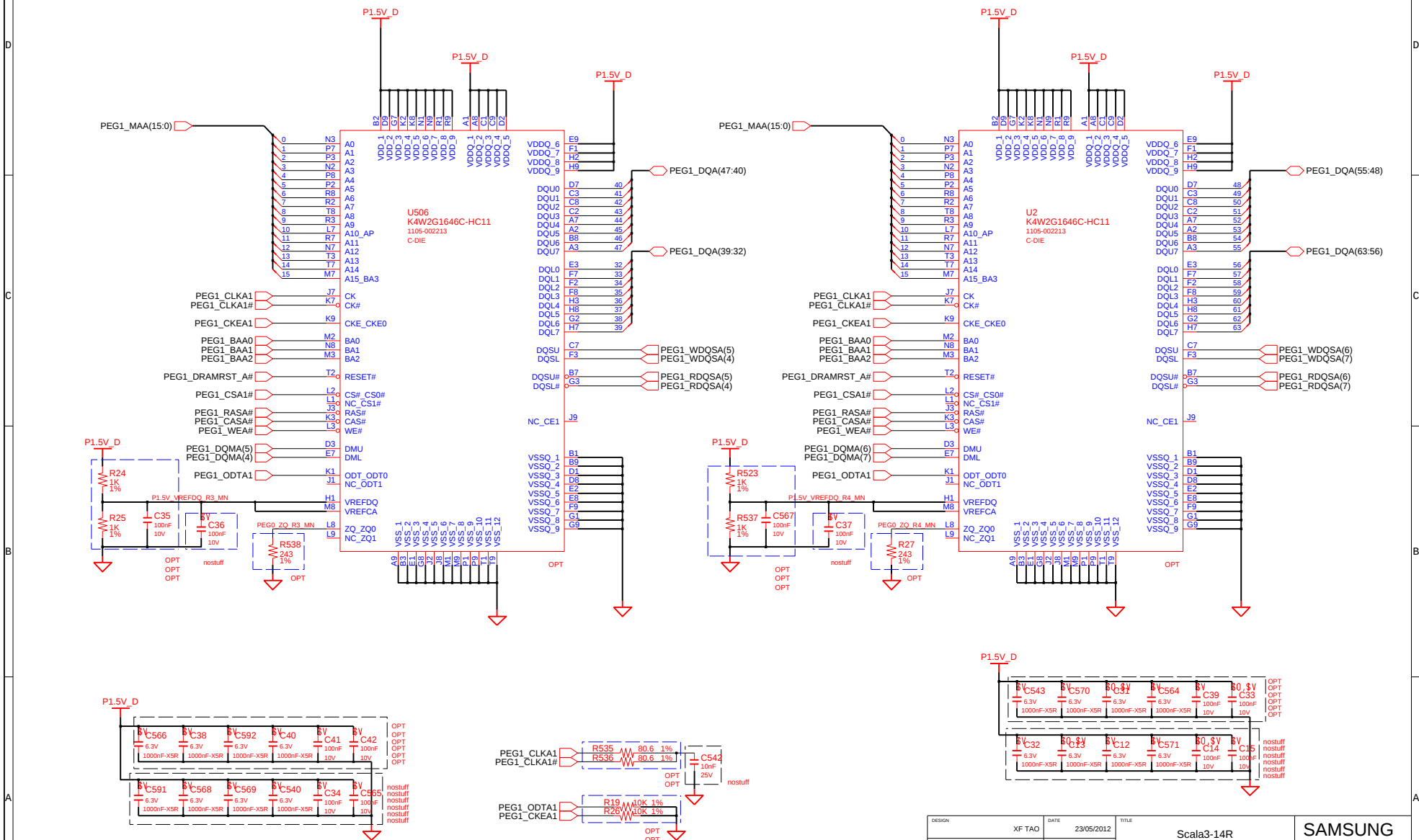
INT GFX and OPT GFX model need.

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

A-Channel #0 (D-mode)

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

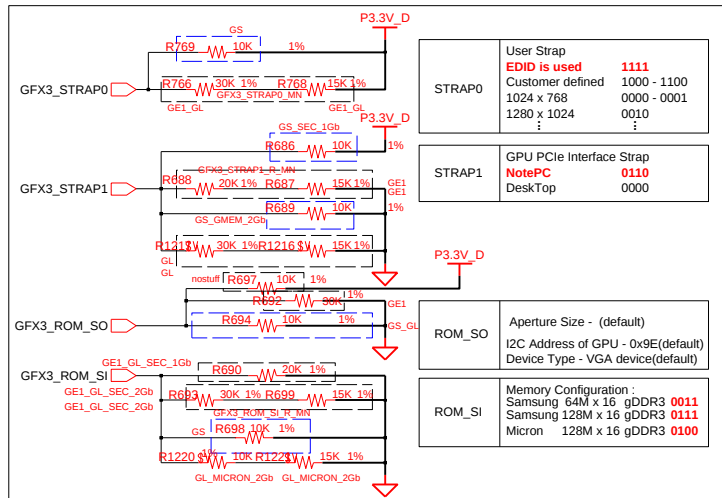
A-Channel #1 (D-mode)



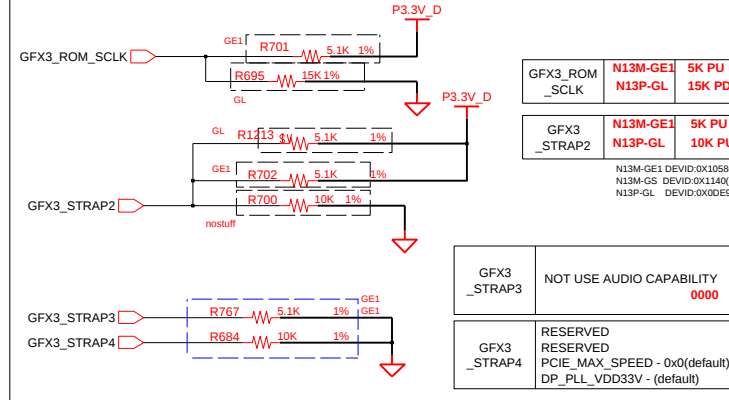
DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		GRAPHIC_MEM A#1	
APPROVAL	BL LEE	REV	REV 1.0		GRAPHIC_MEM A#1	
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM			PART NO. BA41-02092-94A
						PAGE 25 OF 51

N13x STRAP

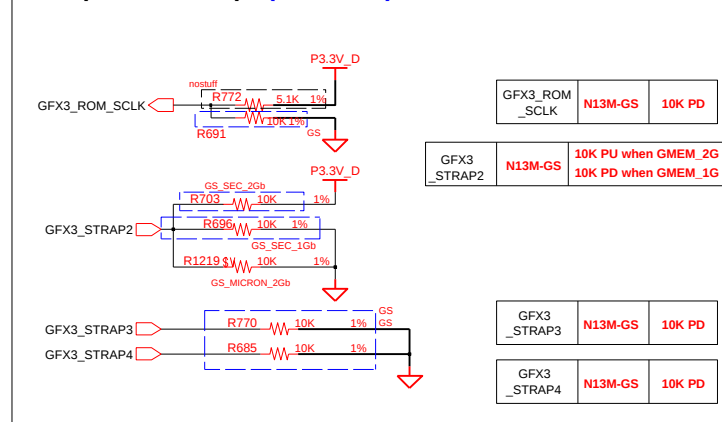
Function Straps



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



Chip Select Straps (N13M-GS)



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
ROM_SCLK	SMB_ALT_ADDR	10K ohm	Pull-down to GND if no VBIOROM
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

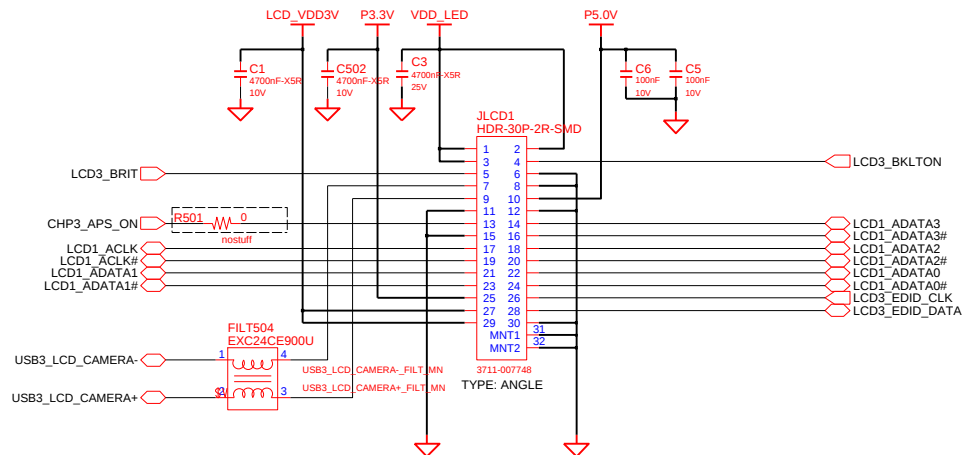
N13M-GE1/N13P-GL

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)	PEX_PLL_EN_TERM
STRAP3	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
STRAP4	RESERVED	RESERVED	PCIE_MAX_SPEED	DP_PLL_VDD33V

DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG
CHECK	XF CHU	DEV. STEP	MP		GRAPHIC_MEM C#0	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		GRAPHIC_MEM C#0	PART NO.
MODULE CODE		LAST EDIT				BA41-02092-94A
				May 23, 2012 08:40:30 AM	PAGE	26 OF 51

LVDS LOGIC

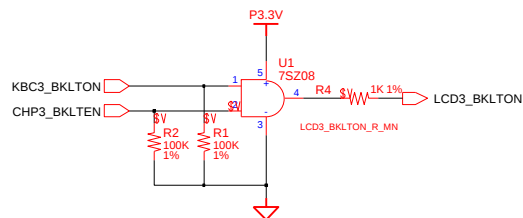
1Ch. LCD Connector + CAMERA



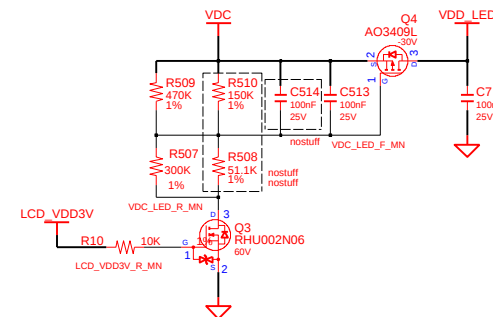
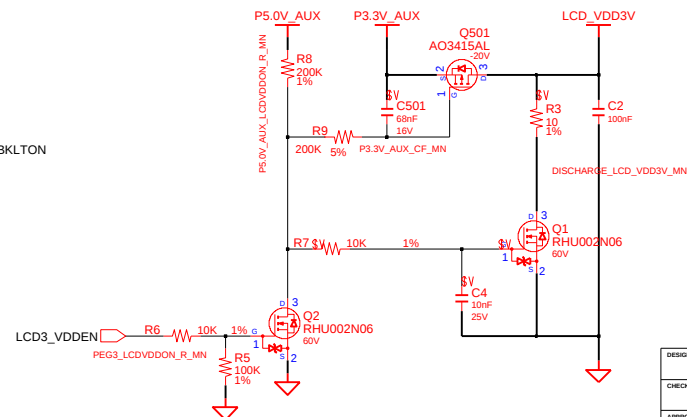
LCD Power

EBL Purpose

Backlight On



LED Power

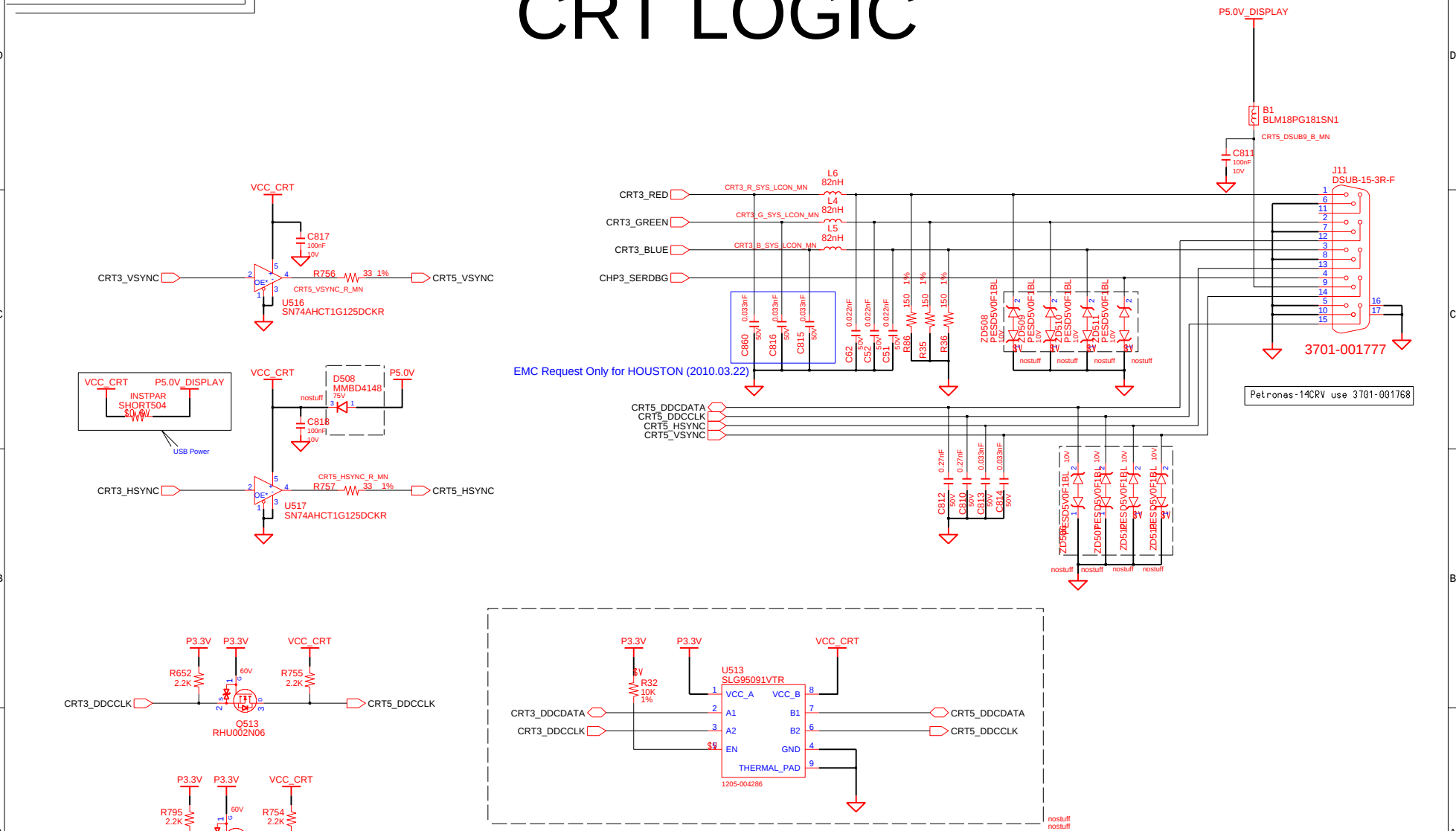


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R
CHECK	XF CHU	DEV. STEP	MP		GRAPHICS_IF
APPROVAL	BL LEE	REV	REV 1.0		LVDS
MODULE CODE		LAST EDIT			
				May 23, 2012 08:40:30 AM	PAGE 27 OF 51

SAMSUNG
ELECTRONICS
PART NO. BA41-02092-94A

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

CRT LOGIC



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	
APPROVAL	BL LEE	REV	REV 1.0		CRT	
MODULE CODE		LAST EDIT			May 23, 2012 08:40:30 AM	PAGE 28 OF 51

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.

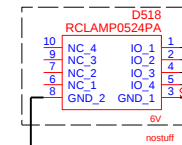
(EMC request at 2010.12.03)

FOR HDMI VERIFICATION TEST

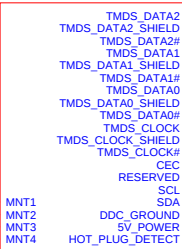
PCH3_HDMI_CLK PCH5_HDMI_CLK
N10x/N11x_40nm HDMI/DP/LVDS support only 3.3V voltage tolerance

PCH3_HDMI_DATA PCH5_HDMI_DATA

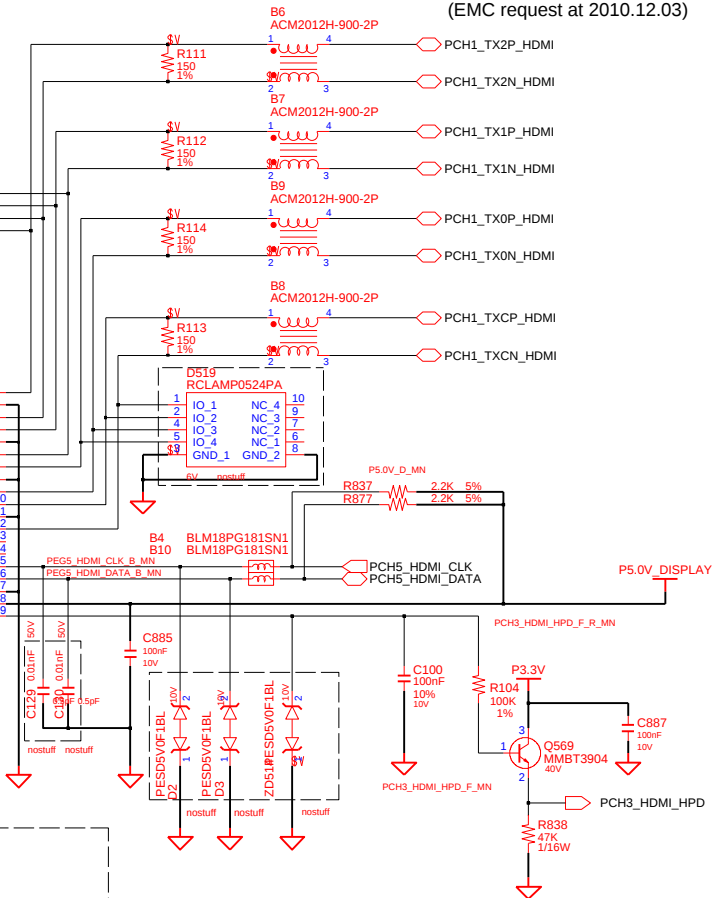
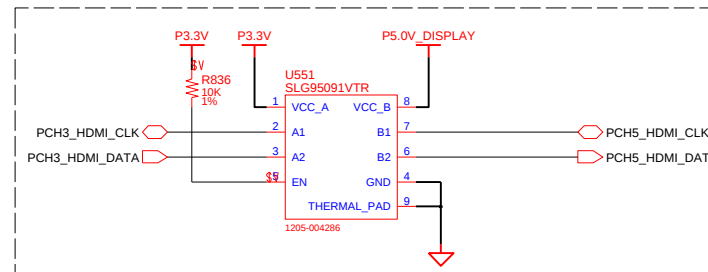
Petrones-14CRV use 3701-001785



J12
HDMI-19P-FEMALE



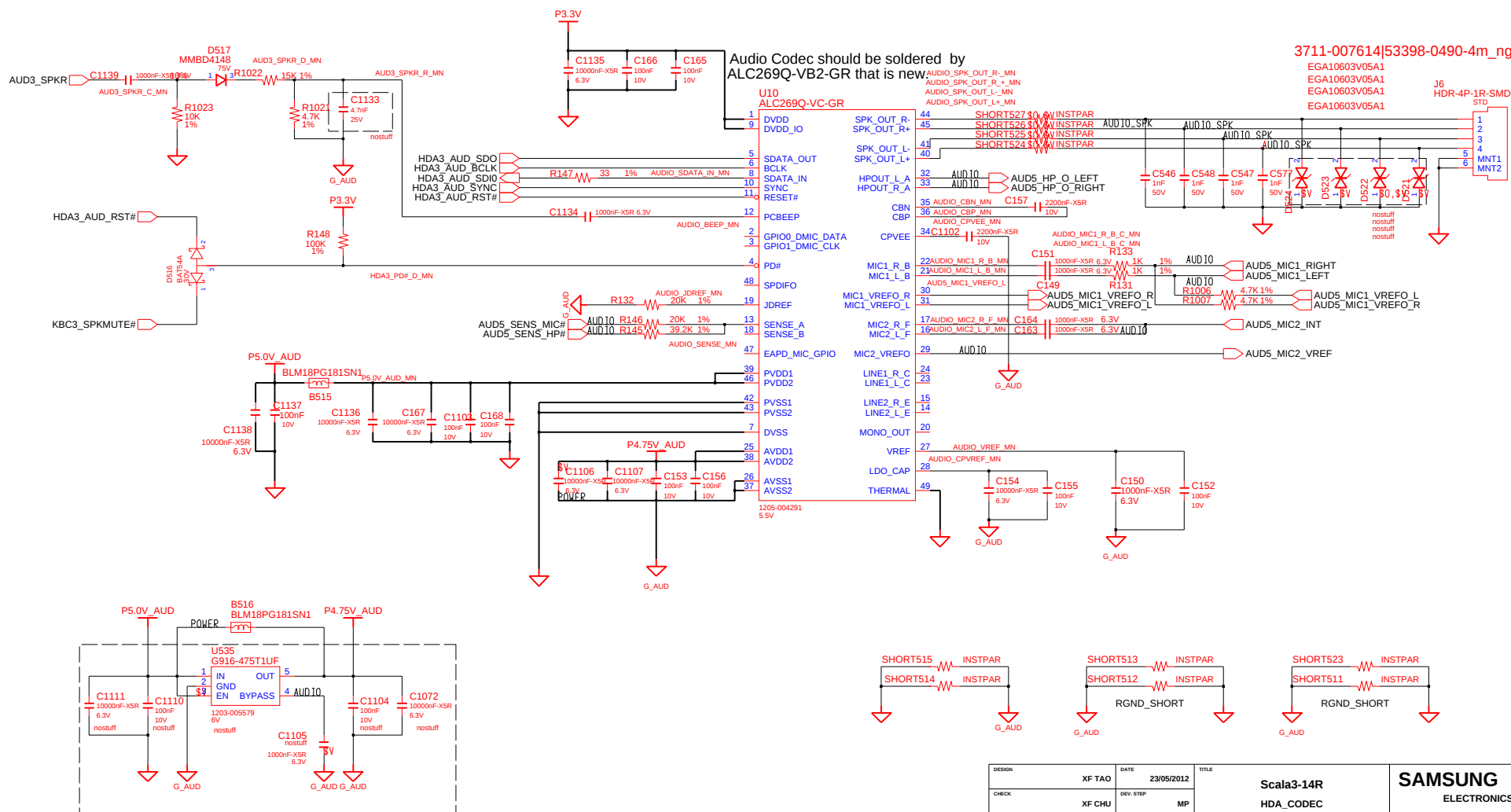
3701-001782



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		GRAPHICS_IF	
APPROVAL	BL LEE	REV	REV 1.0		HDMI	
MODULE CODE		LAST EDIT				PART NO. BA41-02092-94A
May 23, 2012 08:40:30 AM						PAGE 29 OF 51

THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

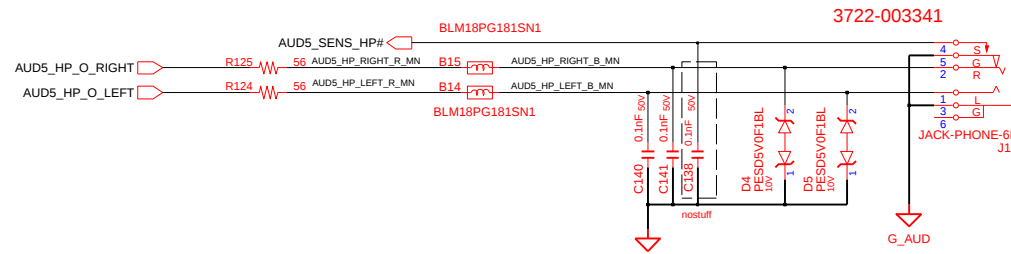
Codec Pin9 Setting	
S/B with Low Voltage IO	S/B without Low Voltage IO
Pin9 : 1.5V	Pin9 : 3.3V



DESIGN	XF TAO	DATE	23/05/2012	Scala3-14R HDA_CODEC AUDIO CODEC ALC269	SAMSUNG ELECTRONICS	PART NO. BA41-02092-94A
CHECK	XF CHU	DEV. STEP	MP			
APPROVAL	BL LEE	REV	REV 1.0			
MODULE CODE	LAST EDIT					

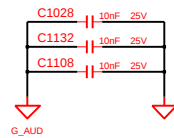
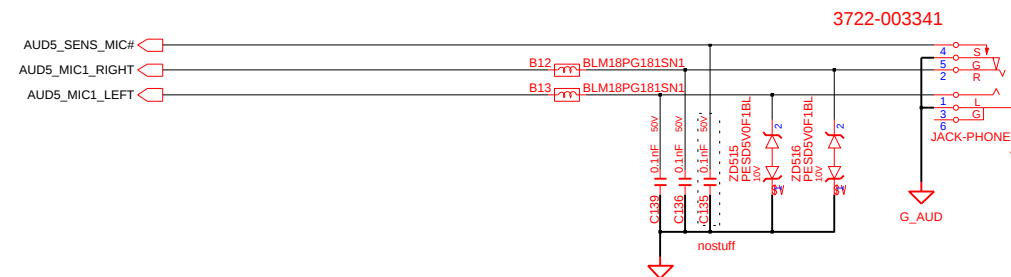
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

HEADPHONE

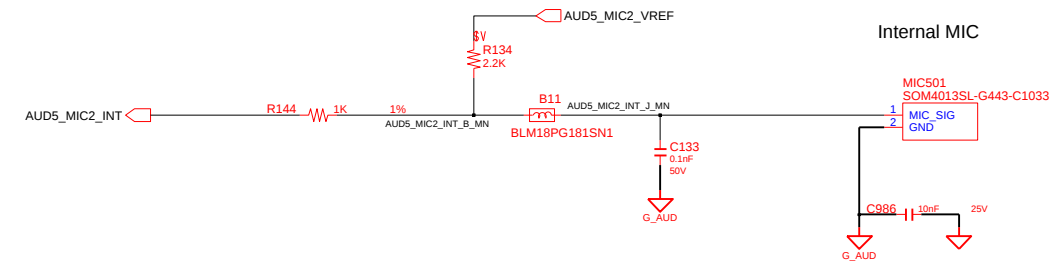


Petronex-14CRV J14 J17 use 3722-003324

MIC JACK

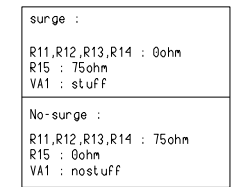


Internal MIC



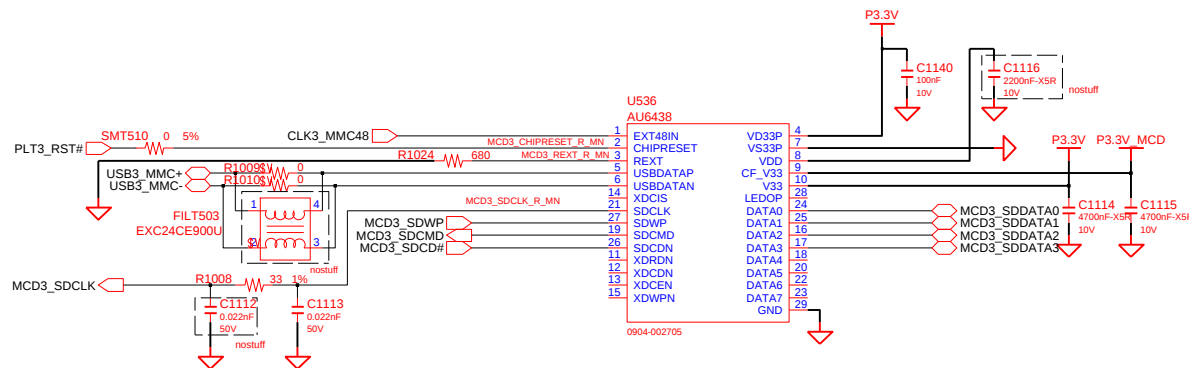
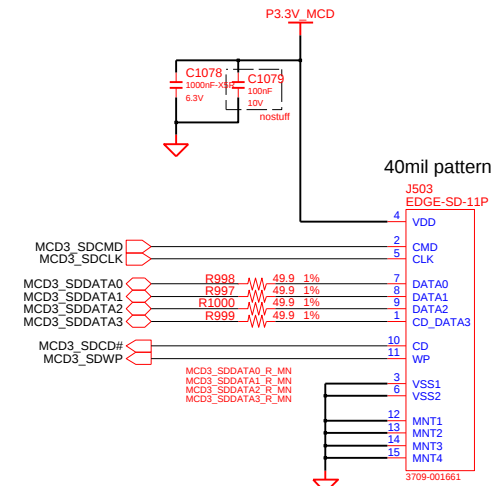
DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG
CHECK	XF CHU	DEV. STEP	MP		HDA_CODEC	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		AUDIO JACK	PART NO.
MODULE CODE		LAST EDIT				BA41-02092-94A
				May 23, 2012 08:40:30 AM	PAGE	31 OF 51

1

D:/mentor/CPD3/Scala3_14R_ADV

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

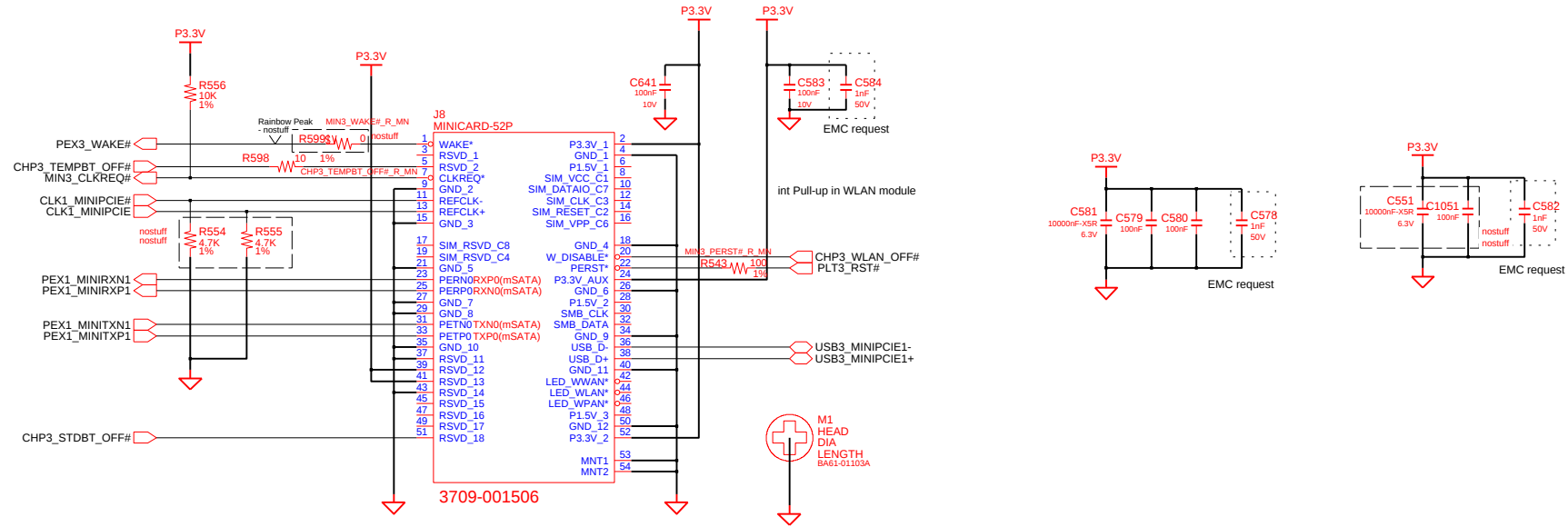
4 IN 1 CARD



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
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

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

WLAN, 7mm



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

MAIN BOARD (MICOM)

U520
MX25L6406EM2L-12G

1 CE*
2 SO
3 WP*
4 VSS
5 SI
6 SCK
7 HOLD*
8 VDD

KBC3_SPI_CS#
KBC3_SPI_DI
KBC3_SPI_WP_R_MN
KBC3_SPI_CLK
KBC3_SPI_DO

P3.3V_MICOM
R753
10K
1%

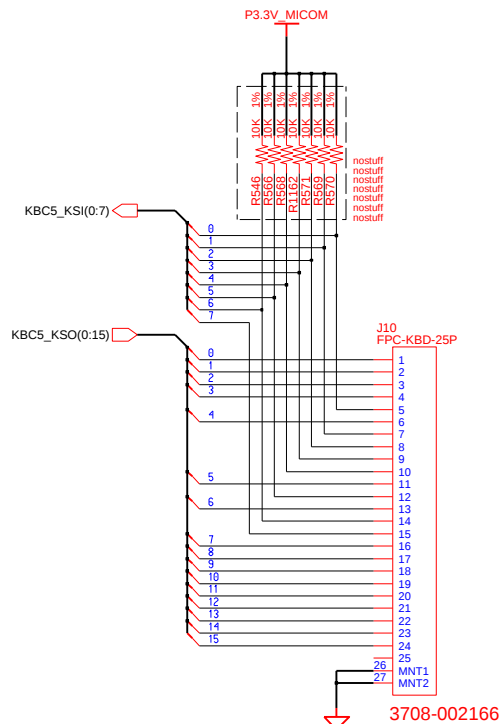
HRV : 4MB
CRV : 8MB

STRAP

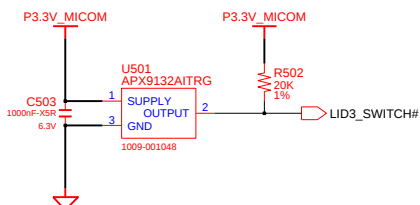


Micom Glue Logic

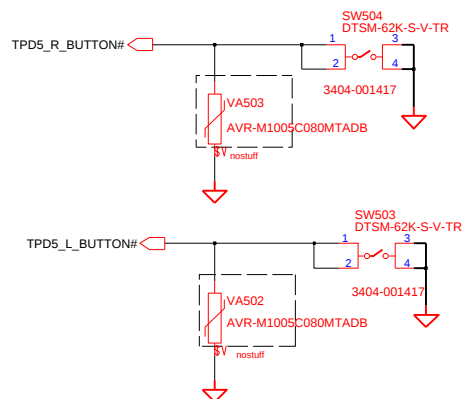
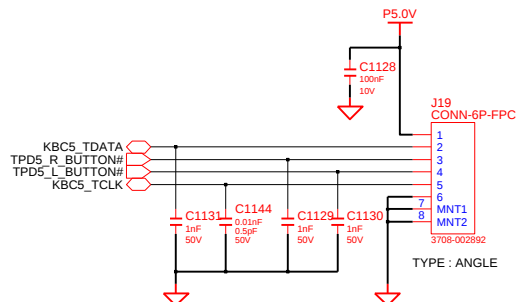
KEYBOARD



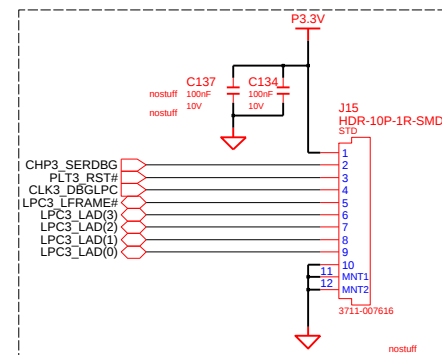
LID_SWITCH



TOUCHPAD



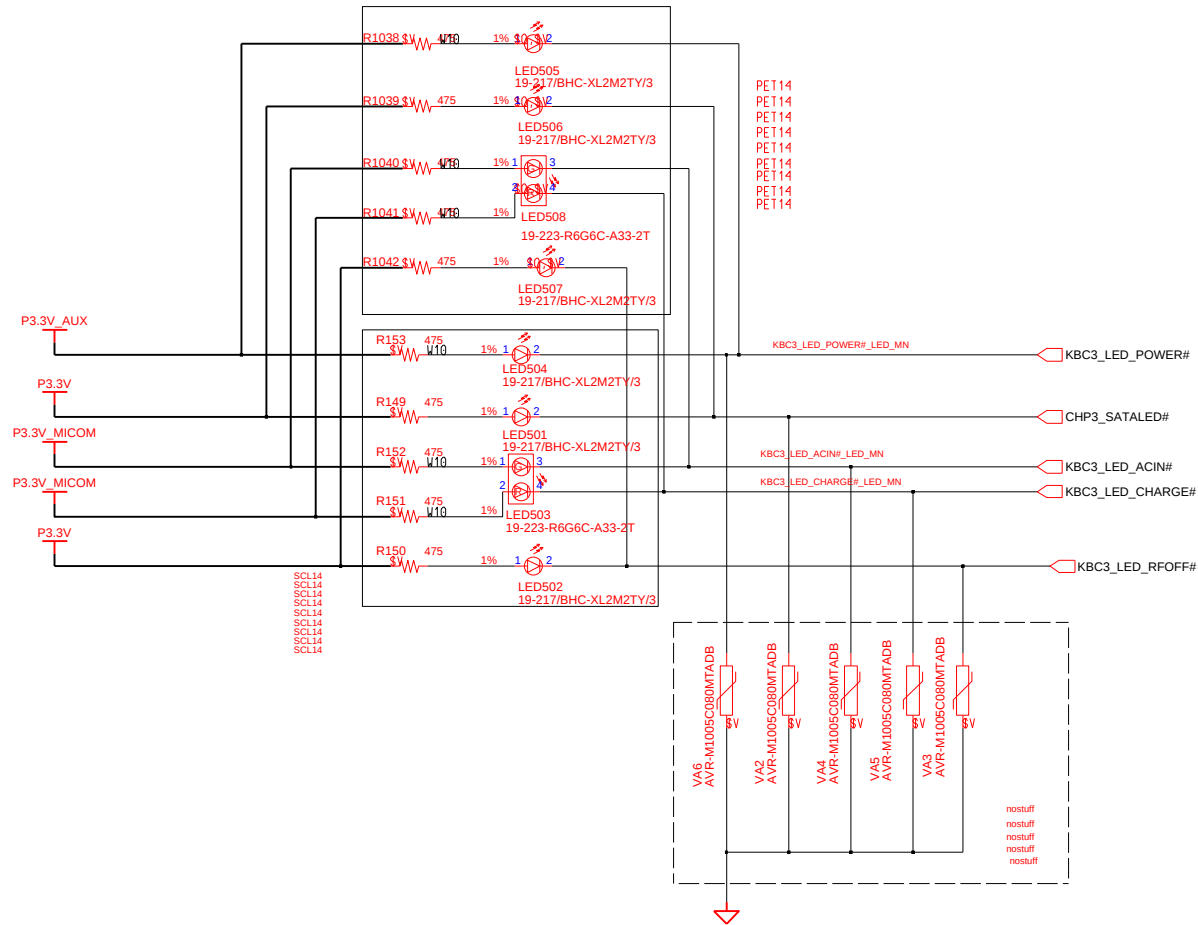
80H PORT DEBUG



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

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

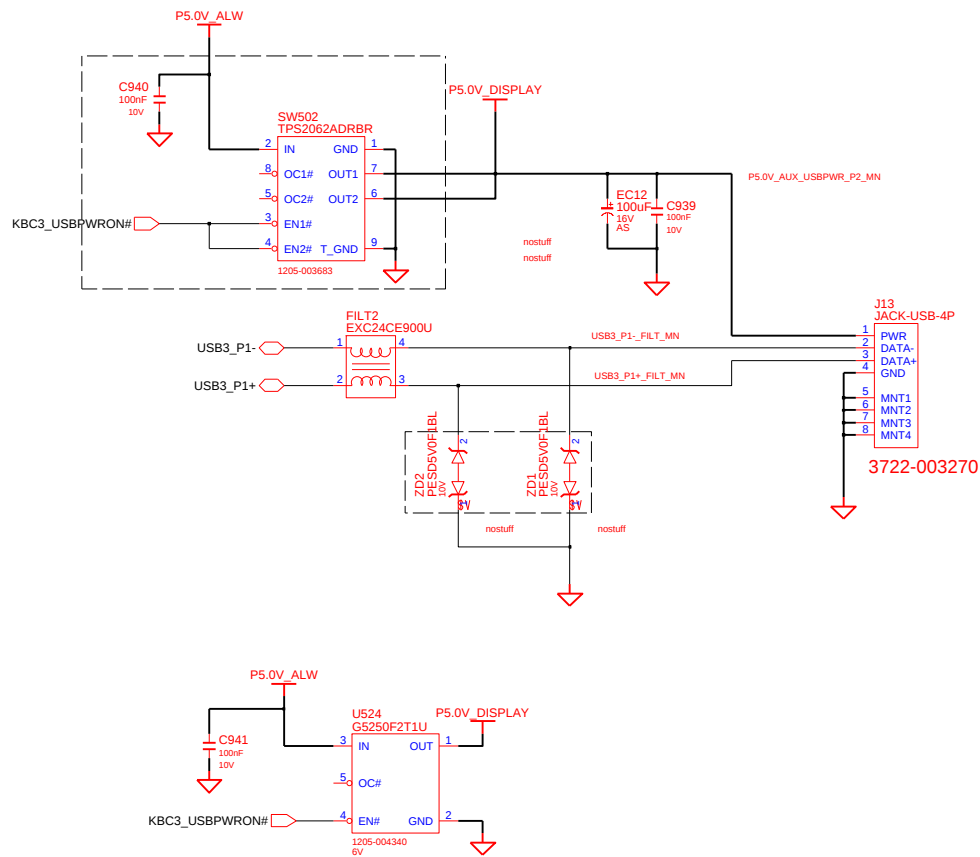
LED for 14"



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

SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

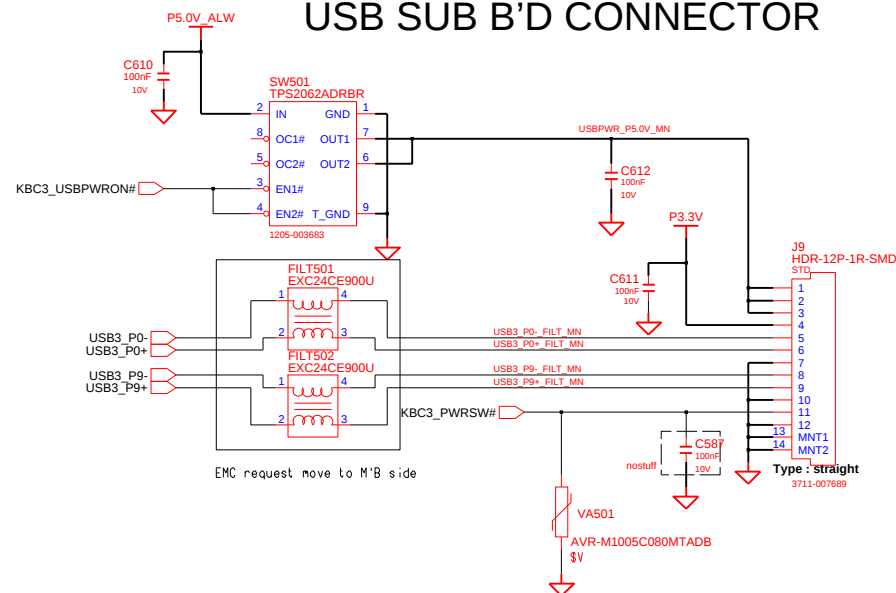
USB Single connector



MAIN TO SUB USB CONN

Right 2USB Port

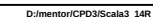
USB SUB B'D CONNECTOR



PLACE CLOSE TO USB SUB B'D Conenctor

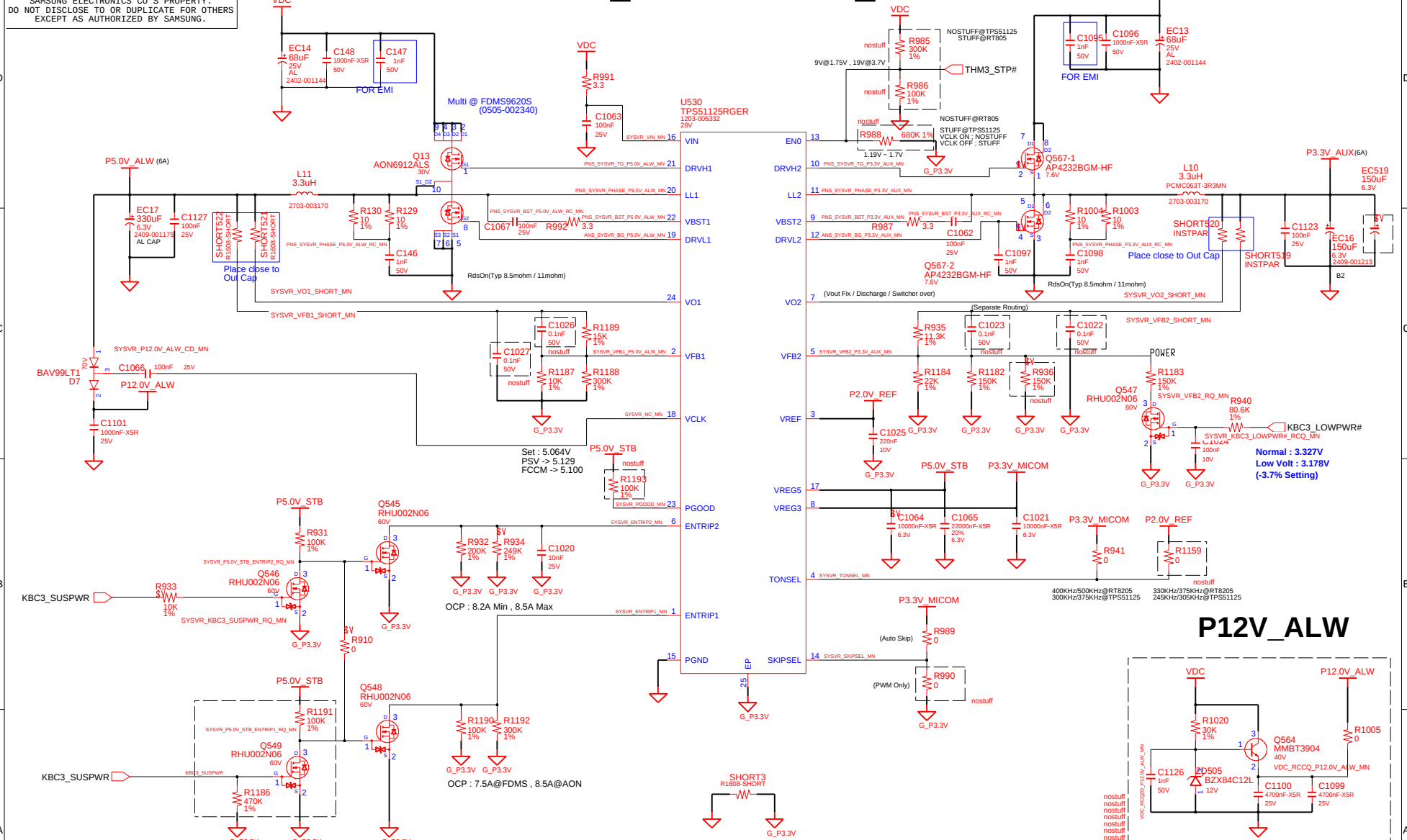
DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG
CHECK	XF CHU	DEV. STEP	MP		USB_CONN	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		USB Port	PART NO.
MODULE CODE		LAST EDIT				BA41-02092-94A
				May 23, 2012 08:40:30 AM	PAGE	39 OF 51

CHARGER & POWER MANAGEMENT



SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

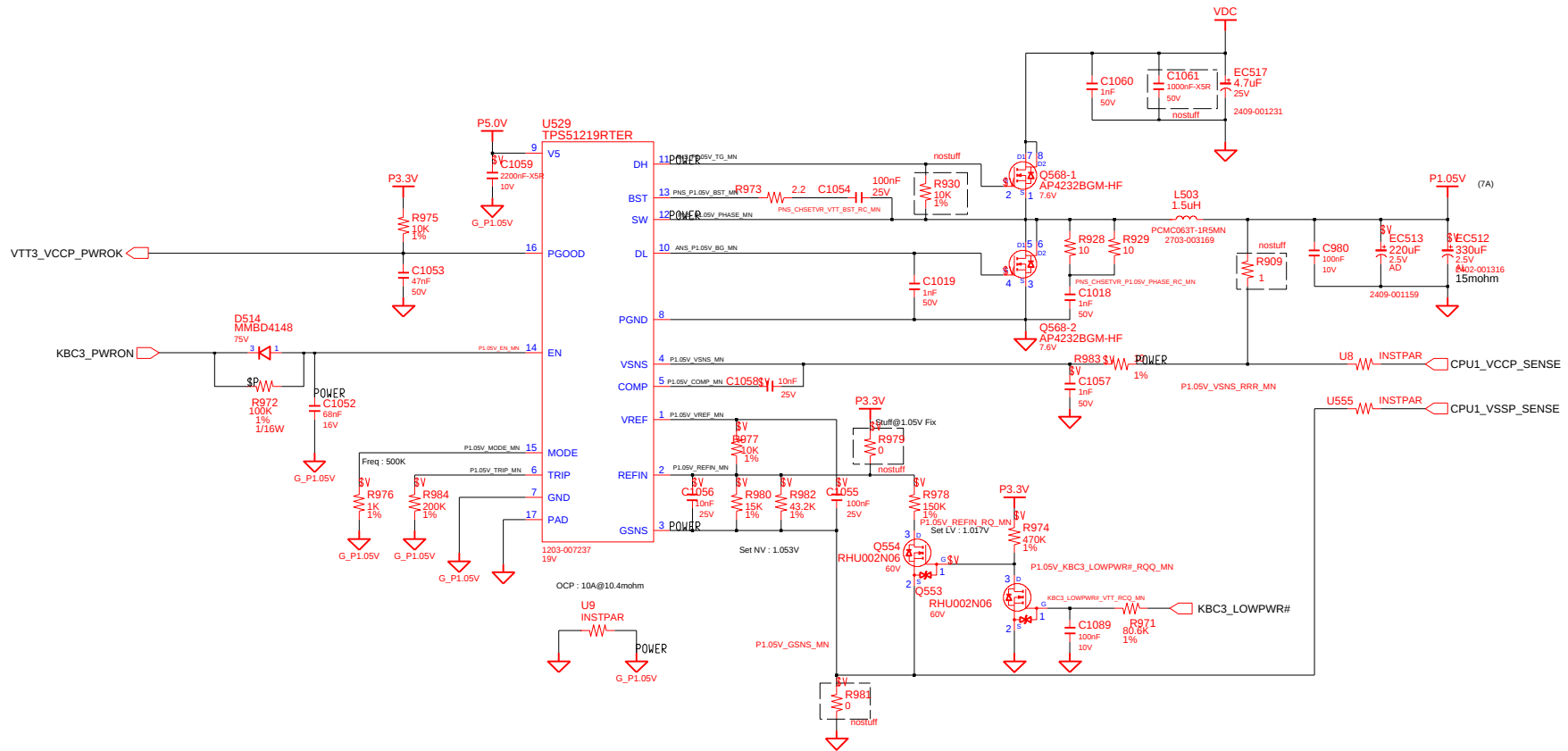
P3.3V_ALW & P5.0V_ALW



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092*94A
CHECK	XF CHU	DEV. STEP	MP		P3.3V_AUX / P5.0V_ALW	
APPROVAL	BL LEE	REV	REV 1.0		TI TPSS1125	
MODULE CODE		LAST EDIT				

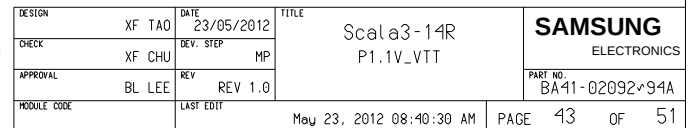
May 23, 2012 08:40:30 AM PAGE 41 OF 51

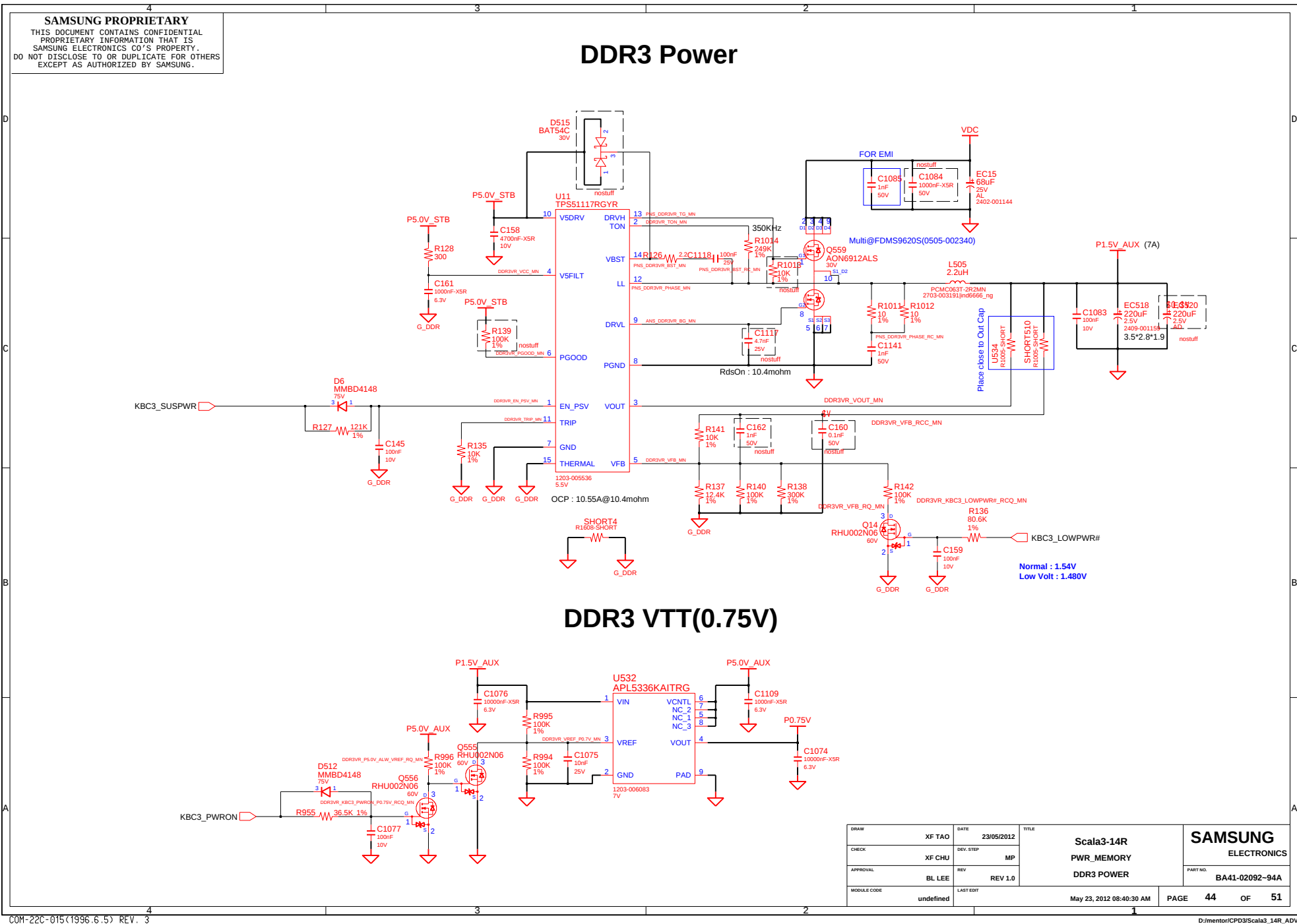
Chipset Power (P1.05V)



DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS
CHECK	XF CHU	DEV. STEP	MP		P1.05V	
APPROVAL	BL LEE	REV	REV 1.0		TI TPS51125	
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	42	OF 51

V_{ALW} U527 0.045
T8651461B5EP mF /

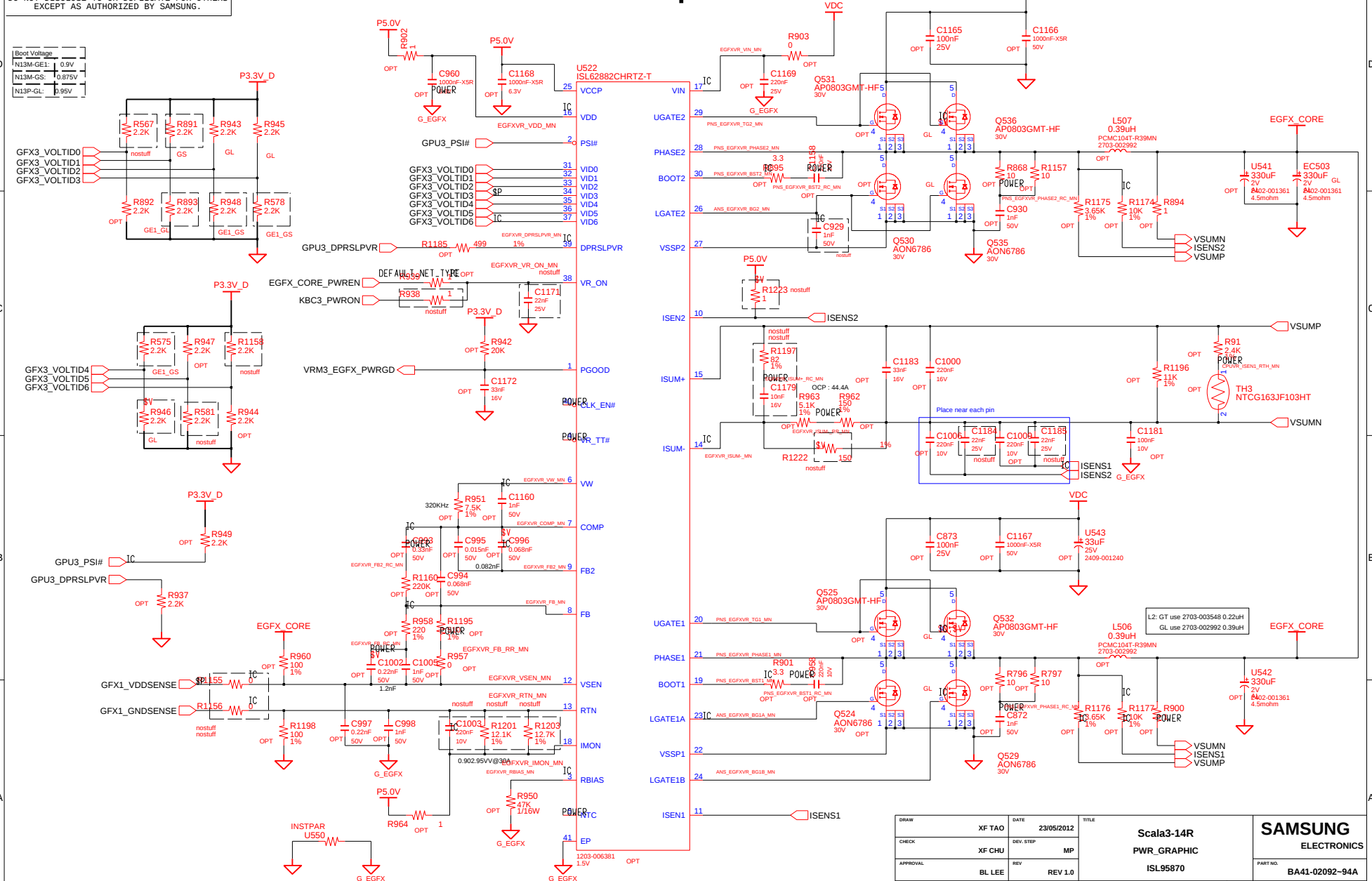




THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

Boot Voltage	
N13M-GE1:	0.9V
N13M-GS:	0.875V
N13P-GL:	0.95V

External Graphic Core Power

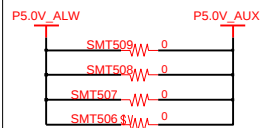


DRAW	XF TAO	DATE	23/05/2012	TITLE Scala3-14R PWR_GRAPHIC ISL95870		SAMSUNG ELECTRONICS	
CHECK	XF CHU	REV. STEP	MP				
APPROVAL	BL LEE	REV	REV 1.0			PART NO.	BA41-02092-94A
MODULE CODE	LAST EDIT			May 23, 2012 08:40:30 AM		PAGE	46 OF 51

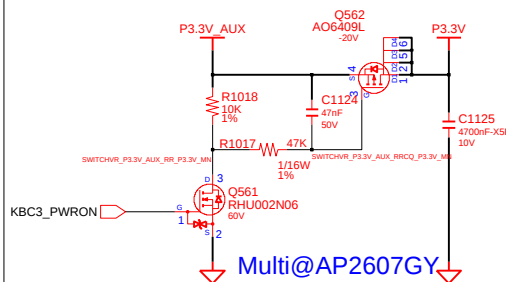
Switched Power 1

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

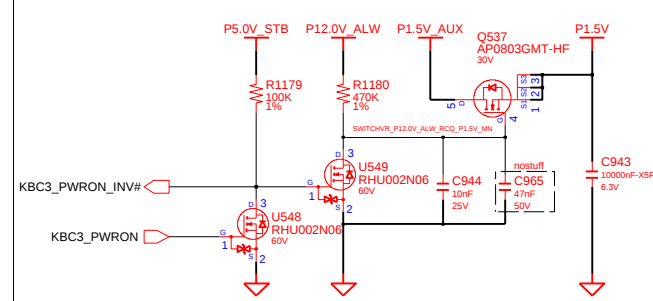
P5.0V_AUX



Switched Power On (P3.3V)

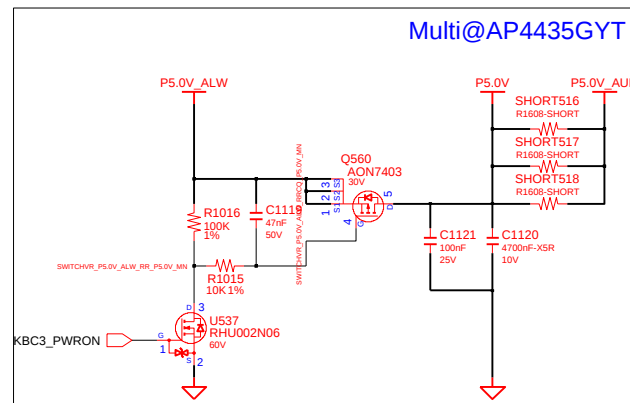


Switched Power On (P1.5V)



For nVIDIA GFX PWR Sequence
NVDD(EGFX_CORE) first and then FBVDDQ(qDDR3)

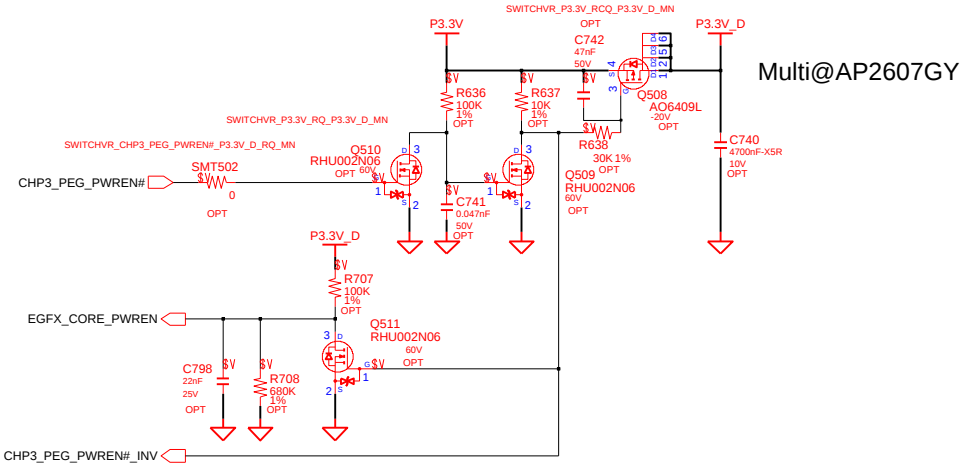
Switched Power On (P5.0V)



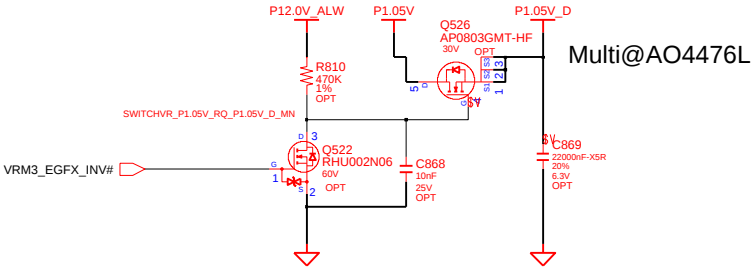
DRAW	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG
CHECK	XF CHU	DEV. STEP	MP		Switched PWR 2	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		Switched Power	PART NO.
MODULE CODE	undefined	LAST EDIT	May 23, 2012 08:40:30 AM			BA41-02092-94A
					PAGE	47 OF 51

Switched Power 2 (For nVidia GFX Power Sequence)

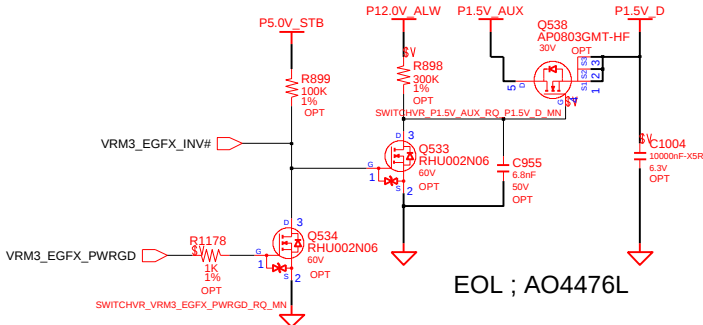
Discrete Switched Power (D3.3V : Max_1.2A)



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



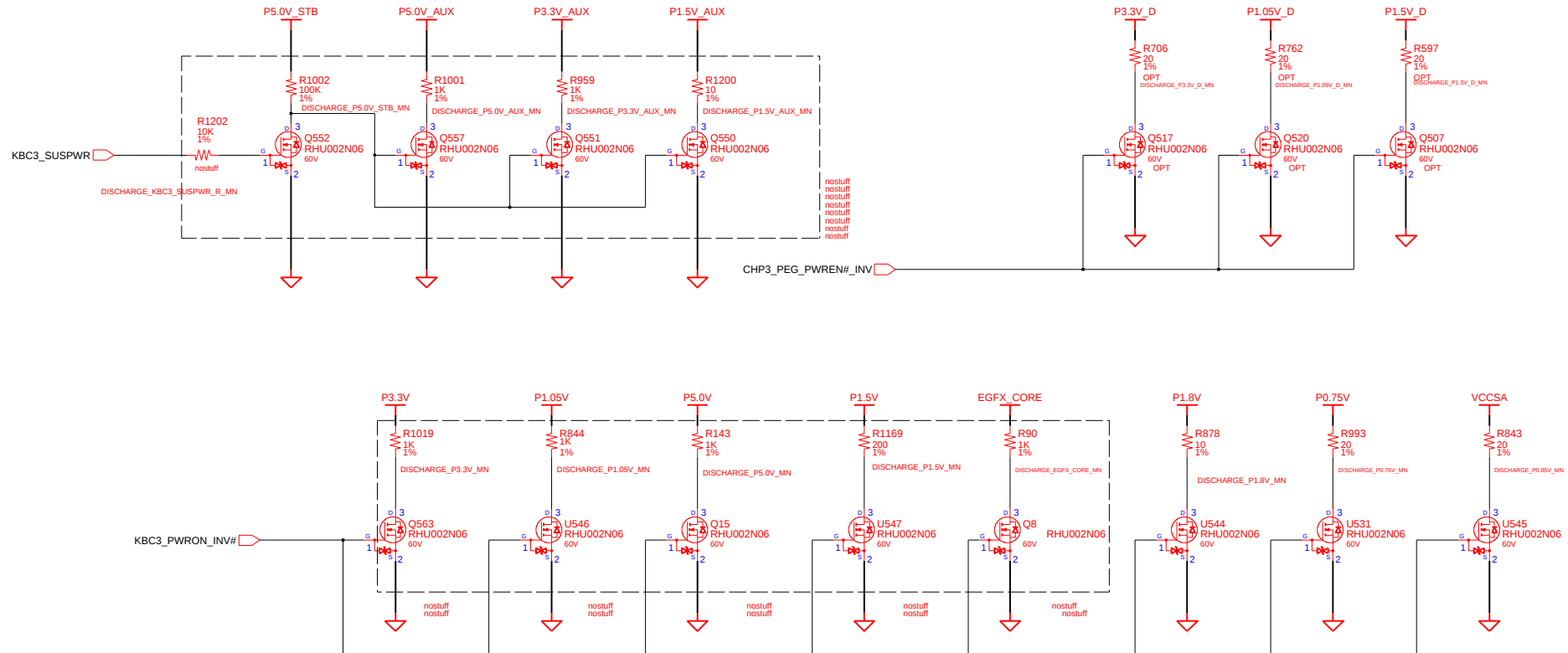
Discrete Switched Power (D1.5V : Max 5.0A)



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

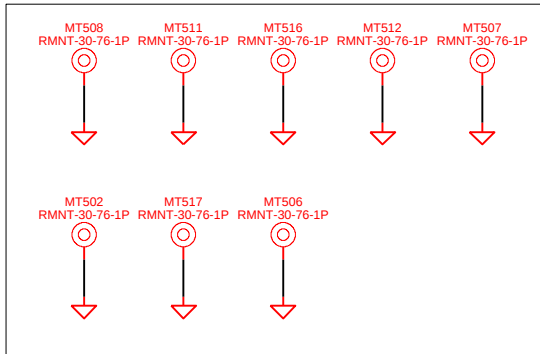
SAMSUNG PROPRIETARY
THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO.'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

POWER DISCHARGER

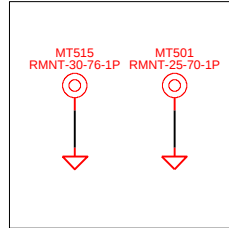


DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG
CHECK	XF CHU	DEV. STEP	MP		DISCHARGER LOGIC	ELECTRONICS
APPROVAL	BL LEE	REV	REV 1.0		DISCHARGING LOGIC	PART NO.
MODULE CODE		LAST EDIT	May 23, 2012 08:40:30 AM	PAGE	49	BA41-02092-94A
				OF	51	

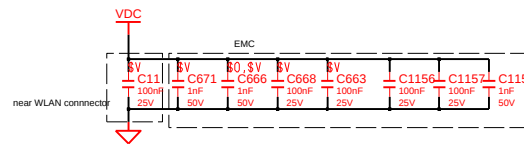
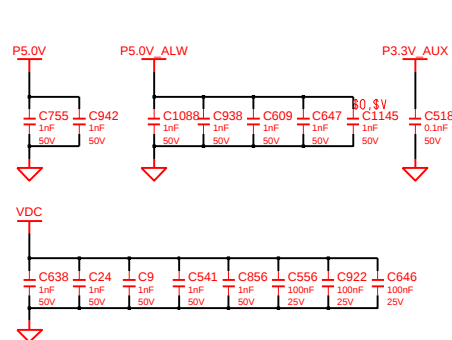
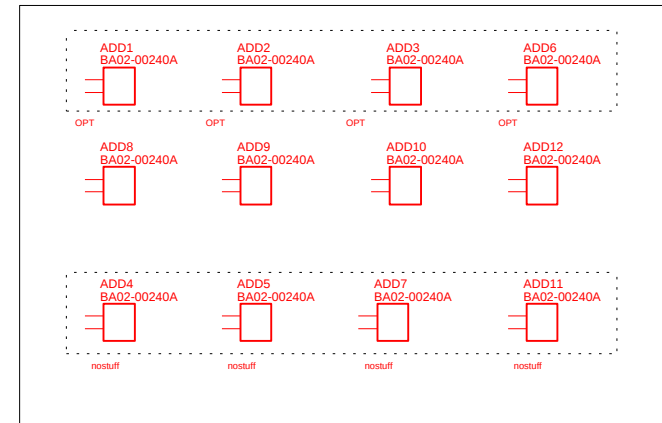
Mainboard Mount ((30-76)X8EA)



PCB FIX



Corner Fill for GPU, PCH

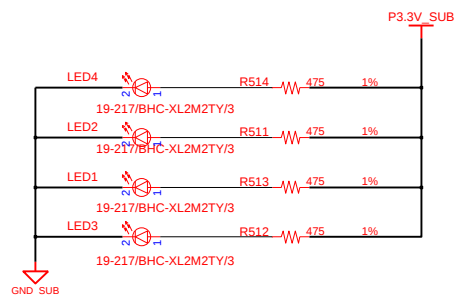


EMC request

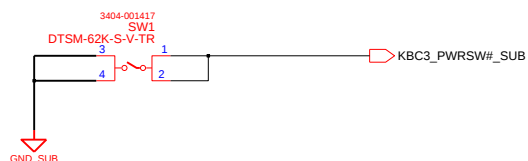
DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	SAMSUNG ELECTRONICS PART NO. BA41-02092-94A
CHECK	XF CHU	DEV. STEP	MP		MT Hole	
APPROVAL	BL LEE	REV	REV 1.0		MT Hole	
MODULE CODE		LAST EDIT		May 23, 2012 08:40:30 AM	PAGE 50 OF 51	

THIS DOCUMENT CONTAINS CONFIDENTIAL
PROPRIETARY INFORMATION THAT IS
SAMSUNG ELECTRONICS CO'S PROPERTY.
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS
EXCEPT AS AUTHORIZED BY SAMSUNG.

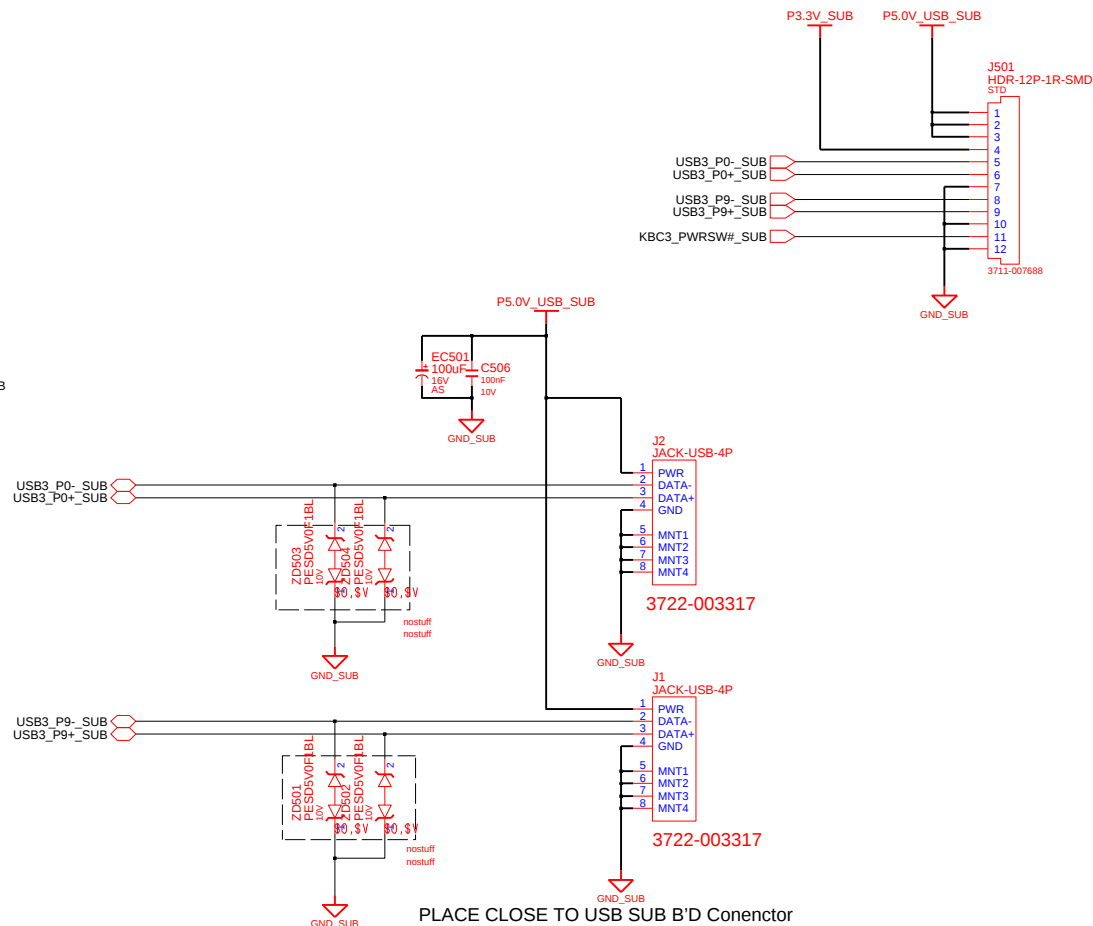
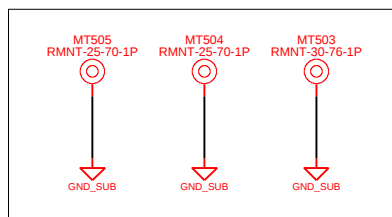
SUB TO MAIN



Power Switch Button



PCB Mount



DESIGN	XF TAO	DATE	23/05/2012	TITLE	Scala3-14R	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
					SUB BOARD	PART NO.	BA41-02092-94A