

Compal Confidential

QIWG5/QIWG6 DIS M/B Schematics Document

Intel Ivy Bridge Processor with DDRIII + Panther Point PCH

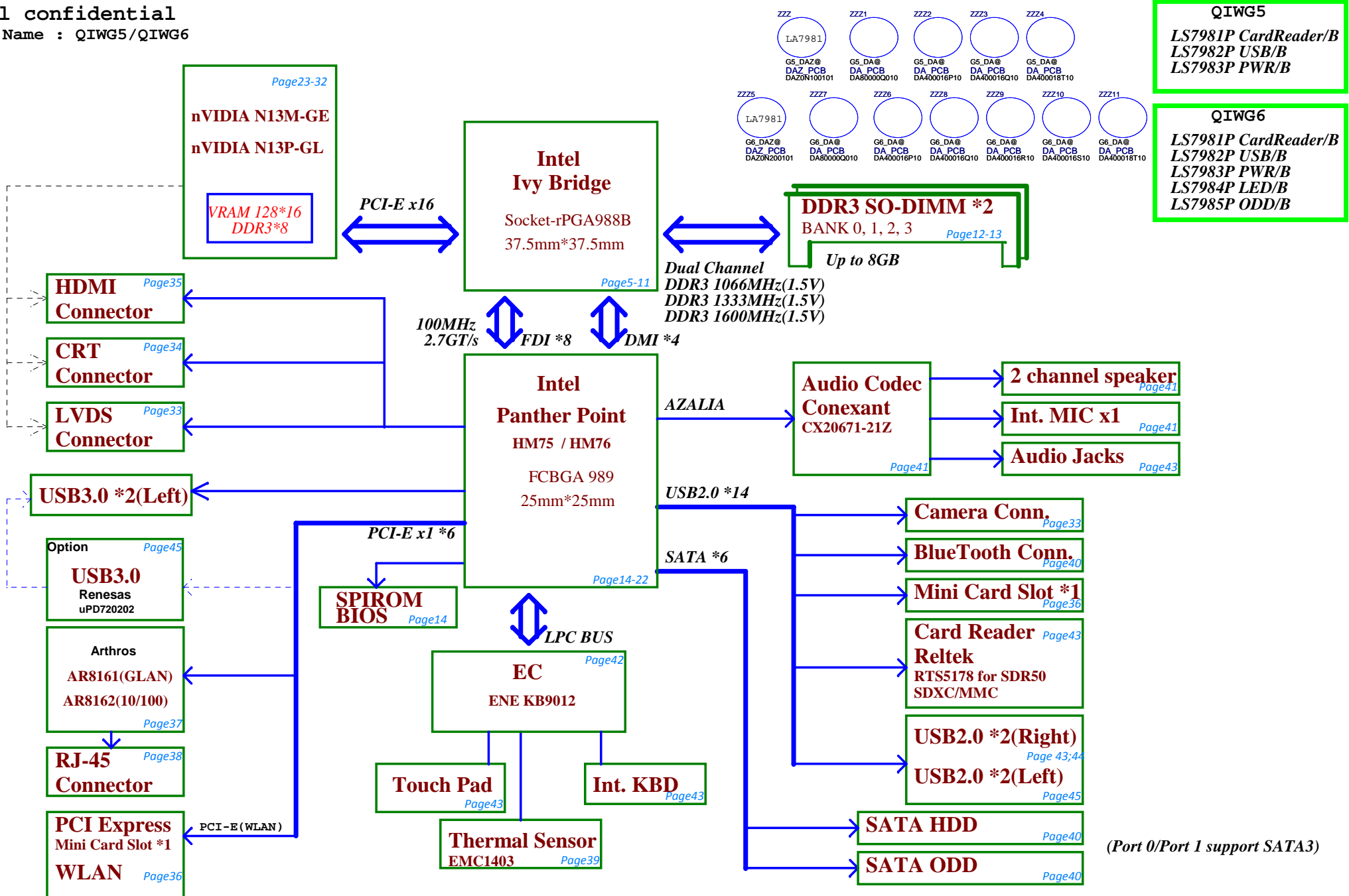
nVIDIA N13X

2012-02-01

LA-7981P

REV:1.0

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				Size	Document Number	Rev
				Custom	LA-7981P	1.0



(Port 0/Port 1 support SATA3)

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Size	Document Number	Rev			
Custom	LA-7981P	1.0			
Date:	Wednesday, February 15, 2012	Sheet	2	of	60

Voltage Rails

power plane	+B	+5VALW	+1.5V	+3VS
		+3VALW		+1.5VS
State				+V1.05S_VCCP
				+VCC_CORE
				+VGA_CORE
				+VCC_GFXCORE_AXG
				+1.8VS
				+0.75VS
				+1.05VS
S0	○	○	○	○
S3	○	○	○	X
S5 S4/AC	○	○	X	X
S5 S4/ Battery only	○	X	X	X
S5 S4/AC & Battery don't exist	X	X	X	X

EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011Xb	Thermal Sensor F75303M	1001_101xb

PCH SM Bus address

Device	Address
DDR DIMM0	1001 000Xb
DDR DIMM2	1001 010Xb

NV-GPU SM Bus address

Device	Address
Internal thermal sensor	1001 111Xb (0x9E)

SMBUS Control Table

	SOURCE	VGA	BATT	KB9012	SODIMM	WLAN WWAN	Thermal Sensor	PCH
SMB_EC_CK1	KB9012	X	√	X	X	X	X	X
SMB_EC_DA1	+3VALW		+3VALW					
SMB_EC_CK2	KB9012	X	X	X	X	X	X	√
SMB_EC_DA2	+3VALW							+3VS
SMBCLK	PCH	X	X	X	√	√	X	X
SMBDATA	+3VALW				+3VS	+3VS		
SMLCLK	PCH	X	X	X	X	X	X	X
SML0DATA	+3VALW							
SML1CLK	PCH	√	X	√	X	X	√	X
SML1DATA	+3VALW	+3VS		+3VS			+3VS	

BOARD ID Table

Board ID	PCB Revision
0	0.1
1	
2	
3	
4	
5	
6	
7	

STATE	SIGNAL	SLP_S1#	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON		HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1 (Power On Suspend)		LOW	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)		LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)		LOW	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)		LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF

Vcc	3.3V +/- 5%
Ra/Rc/Re	100K +/- 5%

Board ID / SKU ID Table for AD channel

Board ID	Rb / Rd / Rf	VAD_BID min	VAD_BID typ	VAD_BID max	Project	Phase
0	0	0 V	0 V	0 V	G-series	MP
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V	G-series	PVT
2	18K +/- 5%	0.436 V	0.503 V	0.538 V	G-series	DVT
3	33K +/- 5%	0.712 V	0.819 V	0.875 V	G-series	EVT
4	56K +/- 5%	1.036 V	1.185 V	1.264 V	Y-series	EVT
5	100K +/- 5%	1.453 V	1.650 V	1.759 V	Y-series	DVT
6	200K +/- 5%	1.935 V	2.200 V	2.341 V	Y-series	PVT
7	NC	2.500 V	3.300 V	3.300 V	Y-series	MP

USB Port Table

	USB 2.0	Port	3 External USB Port
EHCI1 USB3.0	UHCI0	0	
		1	USB Port (Right Side CR-BD)
	UHCI1	2	USB Port (Left Side) USB3.0
		3	USB Port (Left Side) USB3.0
	UHCI2	4	
		5	Camera
6			
7			
EHCI2	UHCI4	8	
		9	USB/B (Right Side USB-BD)
	UHCI5	10	Mini Card(WLAN)
		11	Card Reader
	UHCI6	12	
		13	Blue Tooth

BOM Structure Table

BTO Item	BOM Structure
GPU:N13P-GL	N13P@
GPU:N13M-GE	N13M@
HDMI	HDMI@
Interna-Intel-USB3.0	IU3@
External-NEC-USB3.0	EU3@
Blue Tooth	BT@
Connector	ME@
45 LEVEL	45@
10/100 LAN	8162@
GIGA LAN	GIGA@
LAN LDO Mode	LDO@
LAN Switch mode	SWR@
Camera	CMOS@
For QIWG5 (14")	14@
For QIWG6 (15")	15@
Unpop	@
G5/G6/G9(Low/Mid END)	nonBBH@
G9 High-END	BBH@
G9	G9 @
G5/G6/G9(Low/Mid END)	15_nonBBH@

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Size B	Document Number	Rev		
	LA-7981P	1.0		

Hot plug detect for IFP link C

VGA and GDDR3 Voltage Rails (N13x GPIO)

GPIO	I/O	ACTIVE	Function Description
GPIO0	OUT	-	GPU VID4
GPIO1	OUT	-	GPU VID3
GPIO2	OUT	H	Panel Back-Light brightness(PWM capable)
GPIO3	OUT	H	Panel Power Enable
GPIO4	OUT	H	Panel Back-Light On/Off (PWM)
GPIO5	OUT	-	GPU VID1
GPIO6	OUT	-	GPU VID2
GPIO7	OUT	N/A	
GPIO8	I/O	-	Thermal Catastrophic Over Temperature
GPIO9	OUT	-	Thermal Alert
GPIO10	OUT	-	Memory VREF Control
GPIO11	OUT	-	GPU VID0
GPIO12	IN		AC Power Detect Input (10K pull low)
GPIO13	OUT	-	GPU VID5
GPIO14	OUT	N/A	
GPIO15	IN		Hot plug detect for IFP link C
GPIO16	OUT	N/A	
GPIO17	IN	N/A	
GPIO18	IN		Hot Plug Detect for IFPE
GPIO19	IN	N/A	

Performance Mode P0 TDP at Tj = 102 C* (GDDR3)

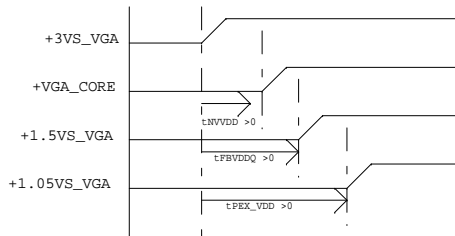
Products	GPU (4)	Mem (1,5)	NVCLK /MCLK	NVVDD			FBVDD (1.35V)		FBVDDQ (GPU+Mem) (1.35V)		PCI Express (1.05V) (6)		I/O and PLLVDD (1.8V)		I/O and PLLVDD (1.05V)		Other (3.3V)	
	(W)	(W)	(MHz)	(V)	(A)	(W)	(A)	(W)	(A)	(W)	(mA)	(W)	(mA)	(W)	(mA)	(W)	(mA)	(W)
N13P-GL 64bit 1GB GDDR3	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Physical Strapping pin	Power Rail	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0
ROM_SCLK	+3VS_VGA	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM
ROM_SI	+3VS_VGA	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]
ROM_SO	+3VS_VGA	FB[1]	FB[0]	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	+3VS_VGA	USER[3]	USER[2]	USER[1]	USER[0]
STRAP1	+3VS_VGA	3GIO_PAD_CFG_ADR[3]	3GIO_PAD_CFG_ADR[2]	3GIO_PAD_CFG_ADR[1]	3GIO_PAD_CFG_ADR[0]
STRAP2	+3VS_VGA	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP3	+3VS_VGA	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
STRAP4	+3VS_VGA	RESERVED	PCIE_SPEED_CHANGE_GEN3	PCIE_MAX_SPEED	DP_PLL_VDD33V

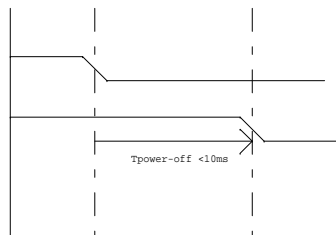
	Device ID
N13P-GL (28nm)	??
N13M-GE (28nm)	???

GPU	FB Memory (GDDR3)	ROM_SO	ROM_SCLK	ROM_SI	STRAP2	STRAP1	STRAP0
N13P-GL N13M-GE	Samsung 2500MHz	K4G10325FG-HC04					
		32Mx32	PD 10K	PD 15K	PD 20K	PU 20K	PD 35K PU 45K
	Hynix 2500MHz	H5GQ1H24BFR-T2C					
		32Mx32	PD 10K	PD 15K	PD 15K	PU 20K	PD 35K PU 45K
	Samsung 2500MHz	K4G20325FG-HC04					
		64Mx32	PD 10K	PD 15K	PD 20K	PU 20K	PD 35K PU 45K
	Hynix 2500MHz	H5GQ2H24MFR-T2C					
		64Mx32	PD 10K	PD 15K	PD 20K	PU 20K	PD 35K PU 45K

X76



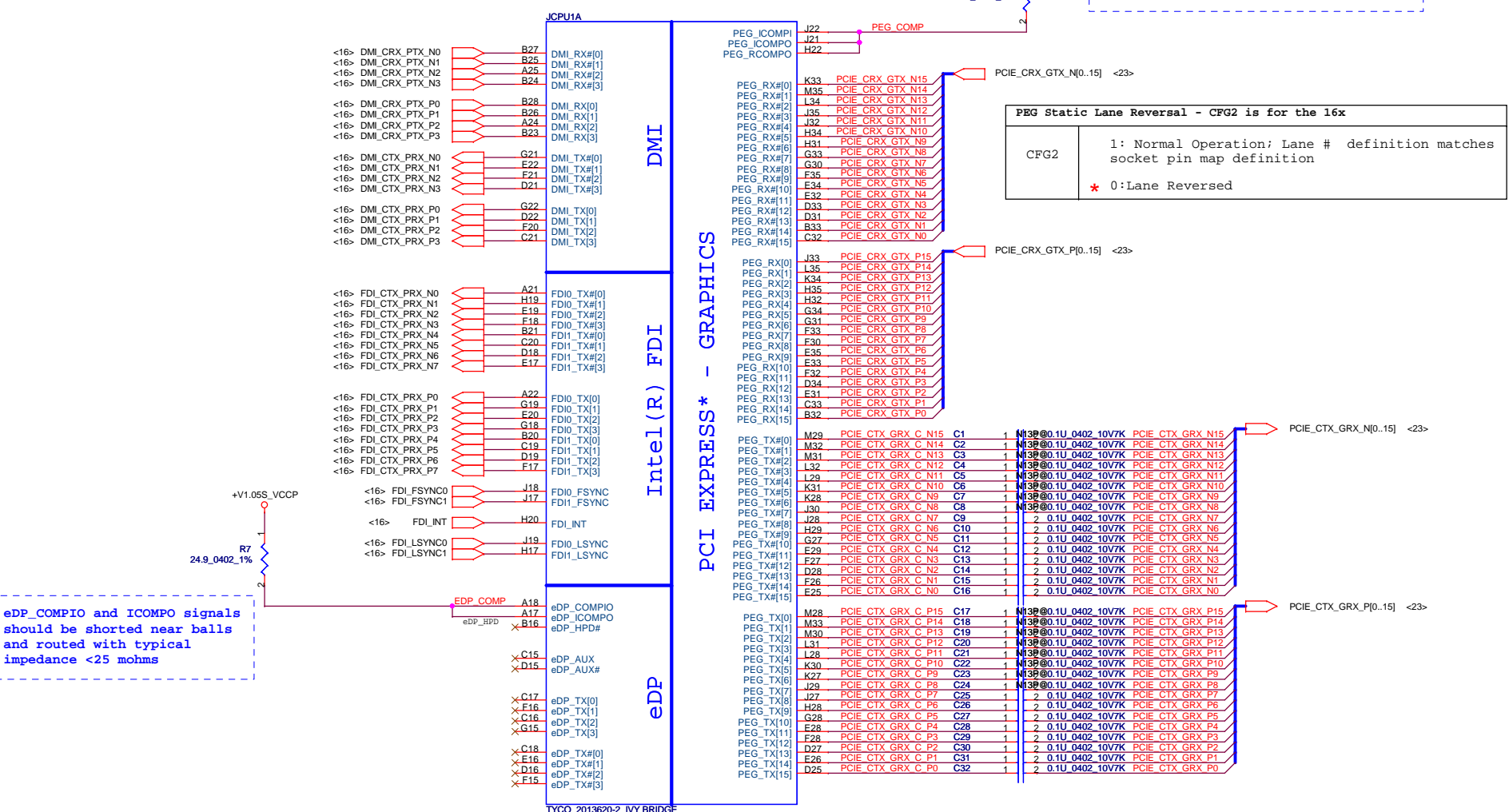
1. all power rail ramp up time should be larger than 40us
2. Optimus system VDDb33 avoids drop down earlier than NVDD and FBVDDQ



1. all GPU power rails should be turned off within 10ms

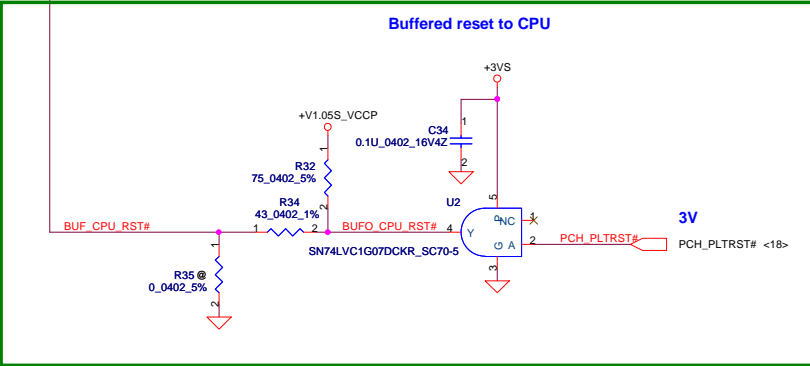
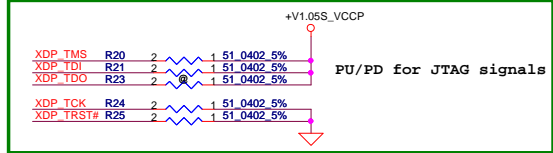
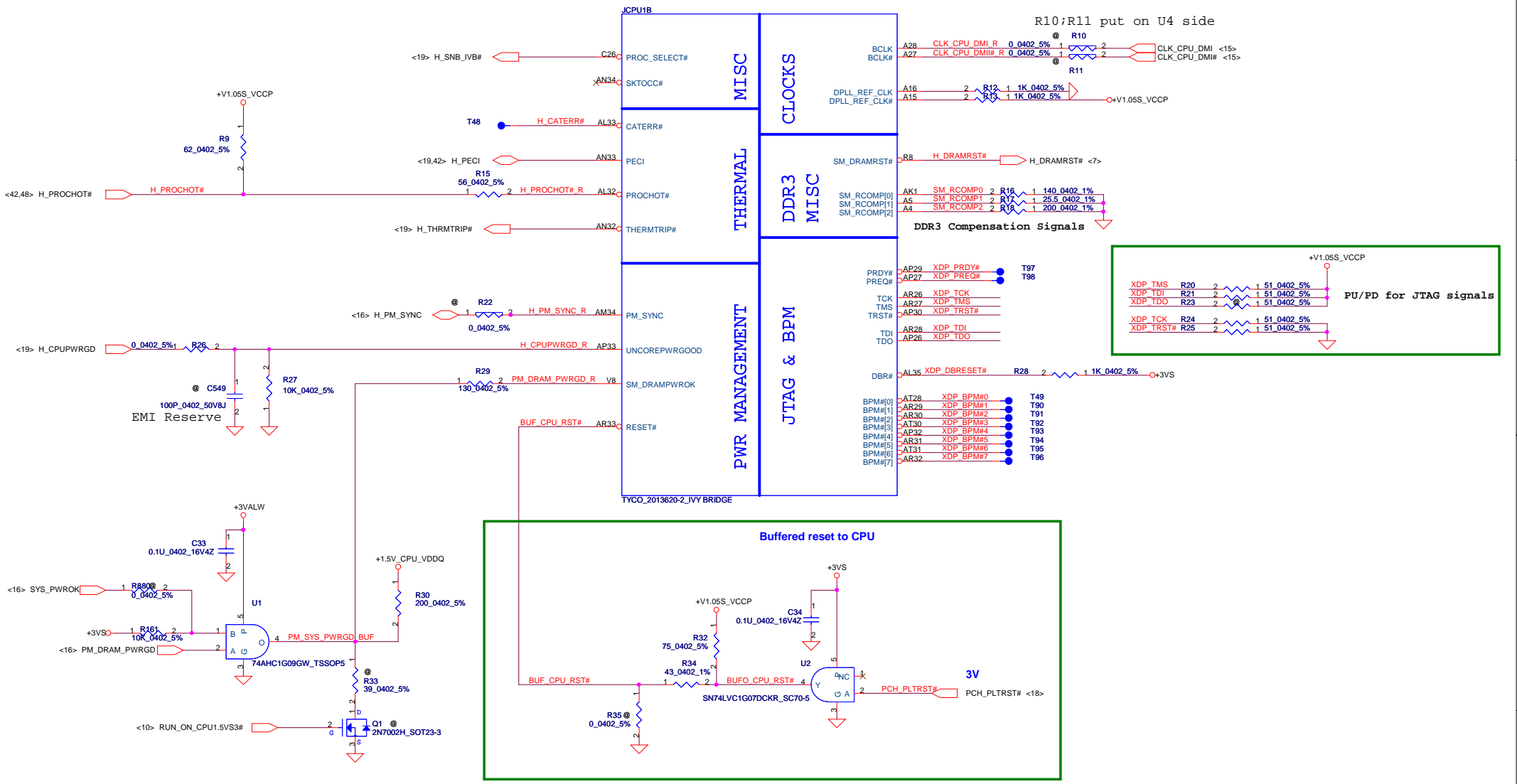
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								LA-7981P		0.2			
								Date: Tuesday, February 14, 2012		Sheet 4 of 60			

PEG_ICOMPI and RCOMPO signals should be shorted and routed with - max length = 500 mils - typical impedance = 43 mohms
 PEG_ICOMPO signals should be routed with - max length = 500 mils - typical impedance = 14.5 mohms



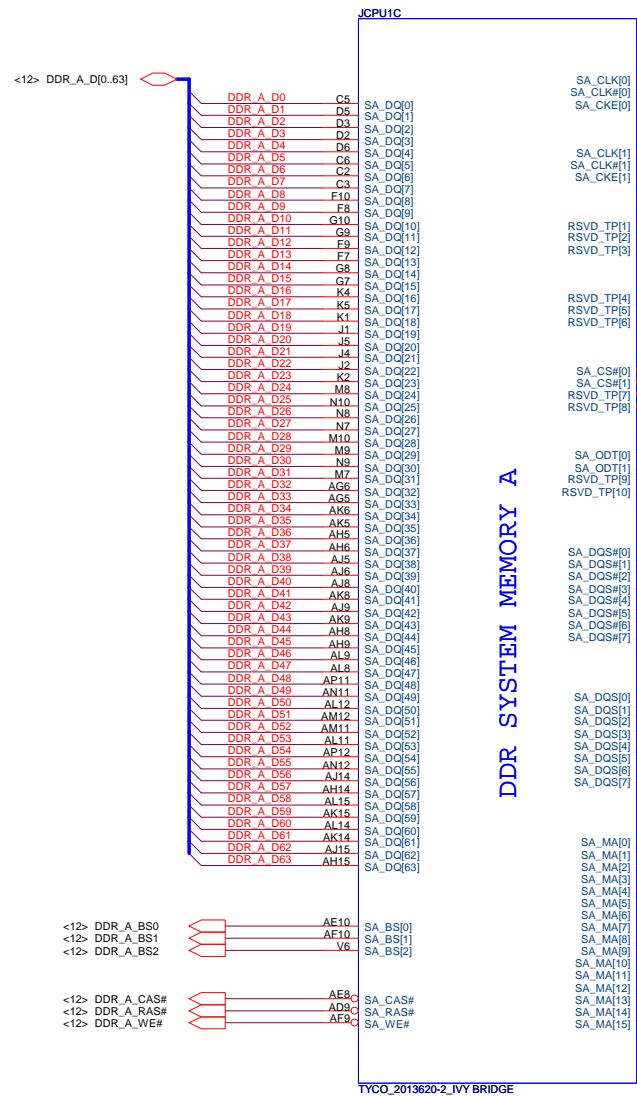
eDP_COMP and ICOMPO signals should be shorted near balls and routed with typical impedance <25 mohms

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Customer	Document Number	Date		LA-7981P	0.2
				Tuesday, February 14, 2012	Sheet 5 of 60



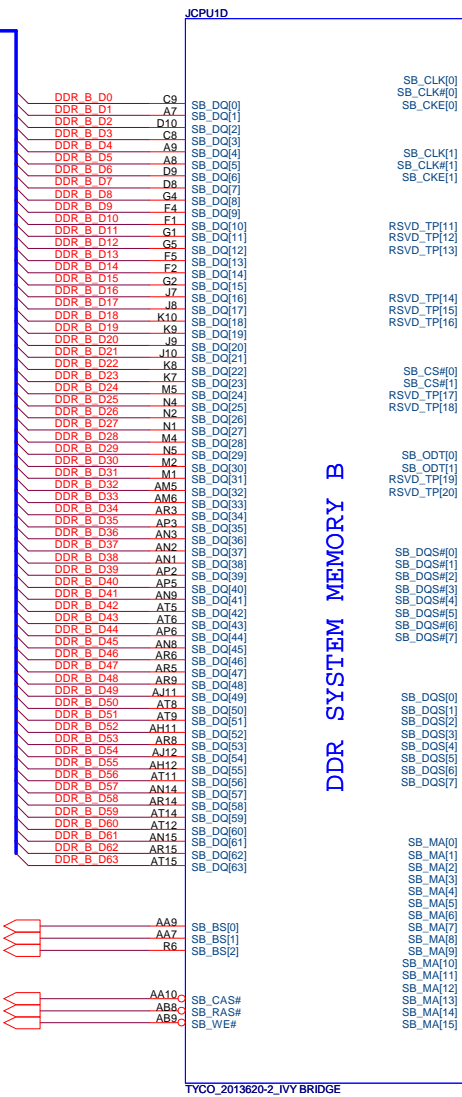
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Size	Document Number	Rev		
Custom	LA-7981P	0.2		
Date:	Tuesday, February 14, 2012	Sheet	6	of 60

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PROCESSOR(2/7) PM,XDP,CLK

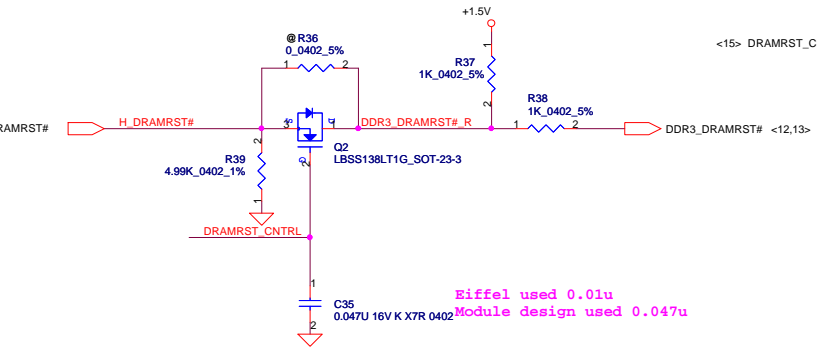


DDR SYSTEM MEMORY A

<13> DDR_B_D[0..63]



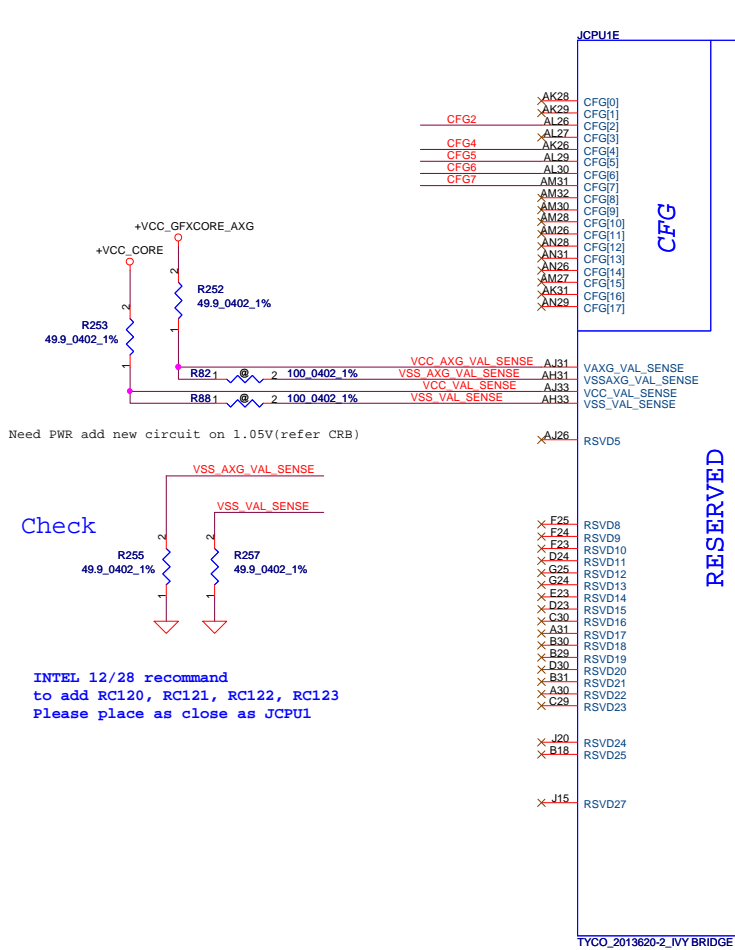
DDR SYSTEM MEMORY B



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Compal Electronics, Inc.		
Title: PROCESSOR(3/7) DDRIII		
Size	Document Number	Rev
Customer	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet 7 of 60

CFG Straps for Processor



Interl request AH26 short GND
check on EVT phase

PEG Static Lane Reversal - CFG2 is for the 16x	
CFG2	1: Normal Operation; Lane # definition matches socket pin map definition * 0: Lane Reversed

Display Port Presence Strap	
CFG4	* 1 : Disabled; No Physical Display Port attached to Embedded Display Port 0 : Enabled; An external Display Port device is connected to the Embedded Display Port

PCIE Port Bifurcation Straps	
CFG[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

PEG DEFER TRAINING	
CFG7	1: (Default) PEG Train immediately following xxRESETB de assertion 0: PEG Wait for BIOS for training

+VCC_GFXCORE_AXG
+VCC_CORE

R252 49.9_0402_1%
R253 49.9_0402_1%
R821 2 100_0402_1%
R881 2 100_0402_1%

VCC_AXG_VAL_SENSE
VSS_AXG_VAL_SENSE
VCC_VAL_SENSE
VSS_VAL_SENSE

Need PWR add new circuit on 1.05V(refer CRB)

Check

R255 49.9_0402_1%
R257 49.9_0402_1%

VSS_AXG_VAL_SENSE
VSS_VAL_SENSE

INTEL 12/28 recommend
to add RC120, RC121, RC122, RC123
Please place as close as JCPU1

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Title	PROCESSOR(4/7) RSVD,CFG	
Size	Document Number	Rev
Custom	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet 8 of 60

POWER

+VCC_CORE
QC=94A
DC=53A

JCPU1F

+V1.05S_VCCP
8.5A

PEG AND DDR

CORE SUPPLY

SVID

SENSE LINES

VIDALERT#

VIDSCLK

VIDSOUT

VCC_SENSE

VSS_SENSE

VCCIO_SENSE

VSS_SENSE_VCCIO

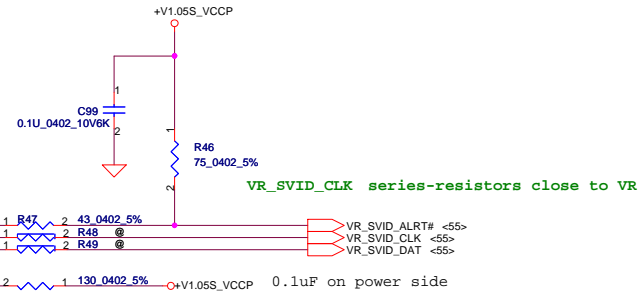
- VCC1
- VCC2
- VCC3
- VCC4
- VCC5
- VCC6
- VCC7
- VCC8
- VCC9
- VCC10
- VCC11
- VCC12
- VCC13
- VCC14
- VCC15
- VCC16
- VCC17
- VCC18
- VCC19
- VCC20
- VCC21
- VCC22
- VCC23
- VCC24
- VCC25
- VCC26
- VCC27
- VCC28
- VCC29
- VCC30
- VCC31
- VCC32
- VCC33
- VCC34
- VCC35
- VCC36
- VCC37
- VCC38
- VCC39
- VCC40
- VCC41
- VCC42
- VCC43
- VCC44
- VCC45
- VCC46
- VCC47
- VCC48
- VCC49
- VCC50
- VCC51
- VCC52
- VCC53
- VCC54
- VCC55
- VCC56
- VCC57
- VCC58
- VCC59
- VCC60
- VCC61
- VCC62
- VCC63
- VCC64
- VCC65
- VCC66
- VCC67
- VCC68
- VCC69
- VCC70
- VCC71
- VCC72
- VCC73
- VCC74
- VCC75
- VCC76
- VCC77
- VCC78
- VCC79
- VCC80
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- VCC82
- VCC83
- VCC84
- VCC85
- VCC86
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- VCC88
- VCC89
- VCC90
- VCC91
- VCC92
- VCC93
- VCC94
- VCC95
- VCC96
- VCC97
- VCC98
- VCC99
- VCC100

- VCCI01
- VCCI02
- VCCI03
- VCCI04
- VCCI05
- VCCI06
- VCCI07
- VCCI08
- VCCI09
- VCCI10
- VCCI11
- VCCI12
- VCCI13
- VCCI14
- VCCI15
- VCCI16
- VCCI17
- VCCI18
- VCCI19
- VCCI20
- VCCI21
- VCCI22
- VCCI23
- VCCI24
- VCCI25
- VCCI26
- VCCI27
- VCCI28
- VCCI29
- VCCI30
- VCCI31
- VCCI32
- VCCI33
- VCCI34
- VCCI35
- VCCI36
- VCCI37
- VCCI38
- VCCI39
- VCCI40

- AH13
- AH10
- AG10
- AC10
- Y10
- P10
- L10
- J14
- J13
- J12
- J11
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- G12
- F14
- F13
- F12
- F11
- E14
- E12

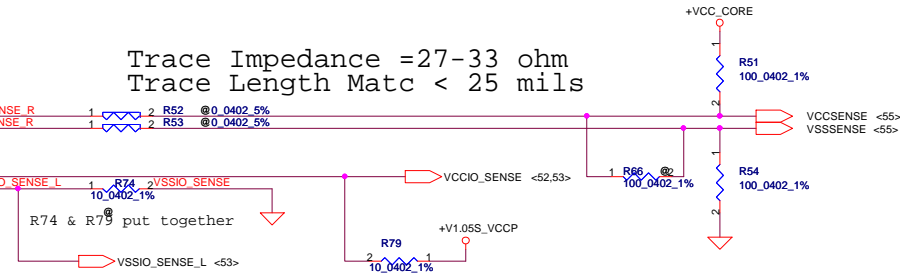
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- D13
- D12
- D11
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- B14
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- A12
- A11

- J23



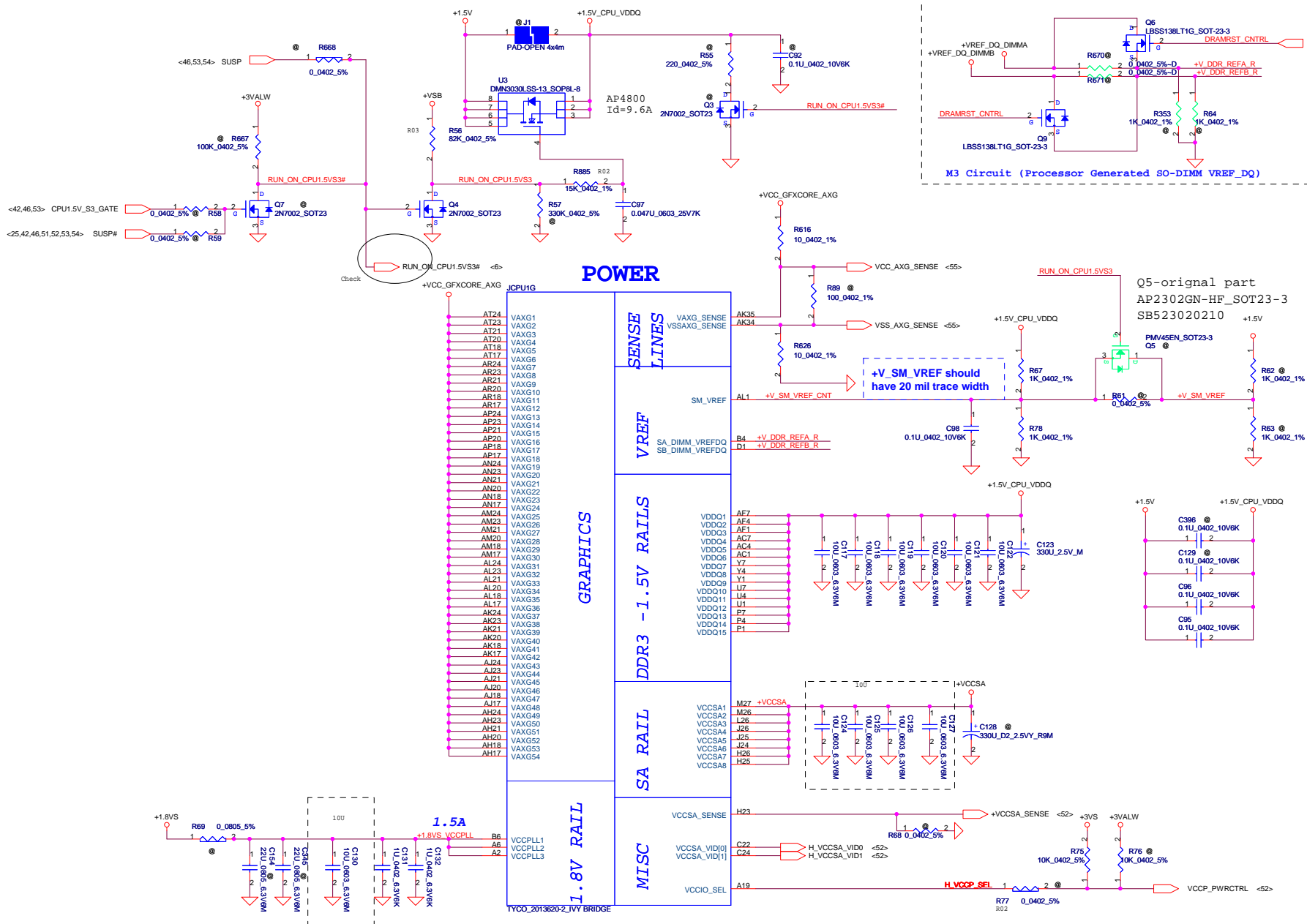
VCC_SENCE 100ohm +-1% pull-up to VCC near processor

Trace Impedance =27-33 ohm
 Trace Length Matc < 25 mils



TYCO_2013620-2_IVY BRIDGE

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Date:	Tuesday, February 14, 2012	Sheet	9	of	60

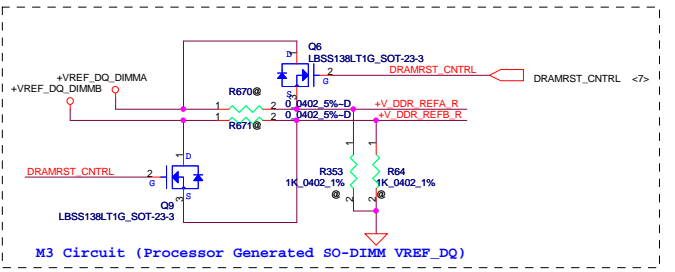


POWER

GRAPHICS

1.8V RAIL

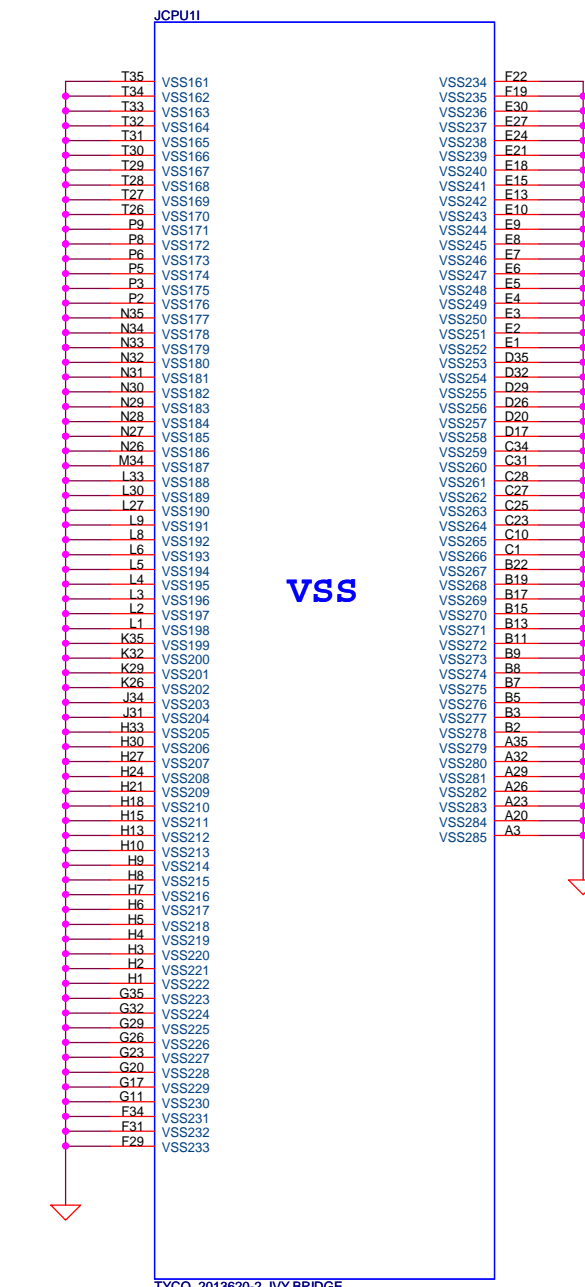
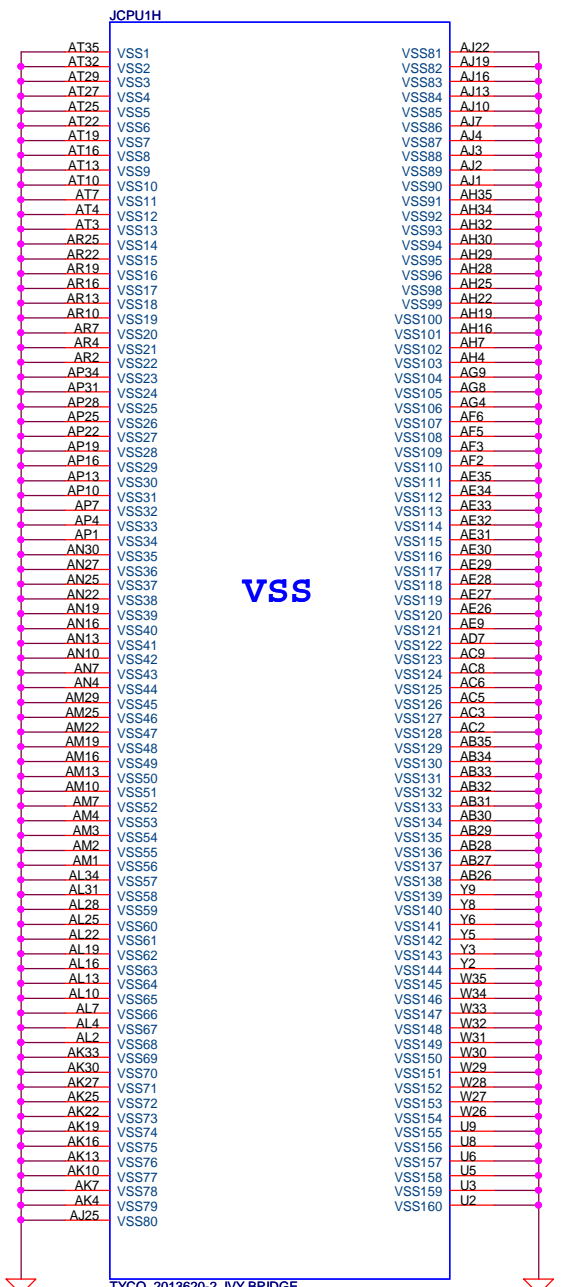
AT24	VAXG1		
AT23	VAXG2		
AT21	VAXG3		
AT20	VAXG4		
AT18	VAXG5		
AT17	VAXG6		
AR24	VAXG7		
AR23	VAXG8		
AR21	VAXG9		
AR20	VAXG10		
AR18	VAXG11		
AR17	VAXG12		
AP24	VAXG13		
AP23	VAXG14		
AP21	VAXG15		
AP20	VAXG16		
AP18	VAXG17		
AP17	VAXG18		
AN24	VAXG19		
AN23	VAXG20		
AN21	VAXG21		
AN20	VAXG22		
AN18	VAXG23		
AN17	VAXG24		
AM24	VAXG25		
AM23	VAXG26		
AM21	VAXG27		
AM20	VAXG28		
AM18	VAXG29		
AM17	VAXG30		
AL24	VAXG31		
AL23	VAXG32		
AL21	VAXG33		
AL20	VAXG34		
AL18	VAXG35		
AL17	VAXG36		
AK24	VAXG37		
AK23	VAXG38		
AK21	VAXG39		
AK20	VAXG40		
AK18	VAXG41		
AK17	VAXG42		
AJ24	VAXG43		
AJ23	VAXG44		
AJ21	VAXG45		
AJ20	VAXG46		
AJ18	VAXG47		
AH24	VAXG48		
AH23	VAXG49		
AH21	VAXG50		
AH20	VAXG51		
AH18	VAXG52		
AH17	VAXG53		
AH16	VAXG54		



+V_SM_VREF should have 20 mil trace width

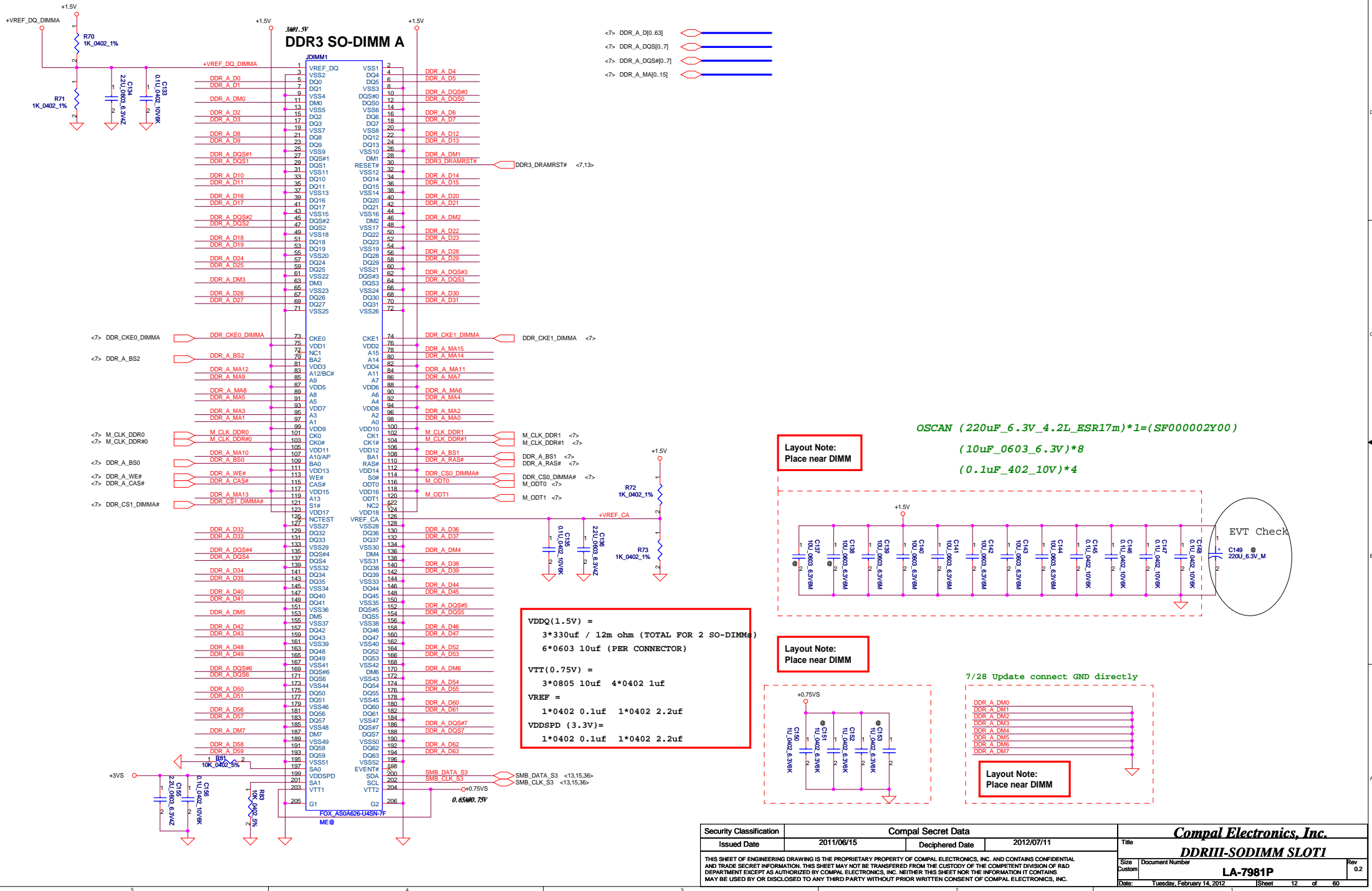
IVY Bridge drives VCCIO_SEL low
 VCCP_PWRCTRL:0
 Sandy Bridge is NC for A19
 VCCP_PWRCTRL:1

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			Rev: 0.2 Sheet: 10 of 60



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Compal Electronics, Inc. PROCESSOR(7/7) VSS	
Title	Document Number
Size	LA-7981P
Custom	Rev 0.2
Date:	Tuesday, February 14, 2012
Sheet	11 of 60



Layout Note:
Place near DIMM

OSCAN (220uF_6.3V_4.2L_ESR17m)*1=(SF000002Y00)
(10uF_0603_6.3V)*8
(0.1uF_402_10V)*4

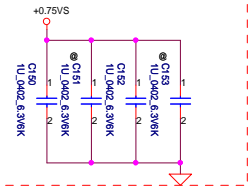
Layout Note:
Place near DIMM

VDDQ(1.5V) =
3*330uF / 12m ohm (TOTAL FOR 2 SO-DIMMs)
6*0603 10uF (PER CONNECTOR)

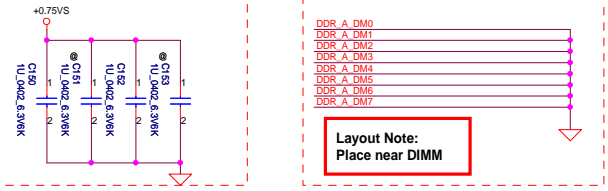
VTT(0.75V) =
3*0805 10uF 4*0402 1uF

VREF =
1*0402 0.1uF 1*0402 2.2uF

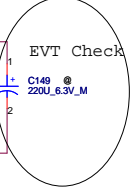
VDDSPD (3.3V) =
1*0402 0.1uF 1*0402 2.2uF



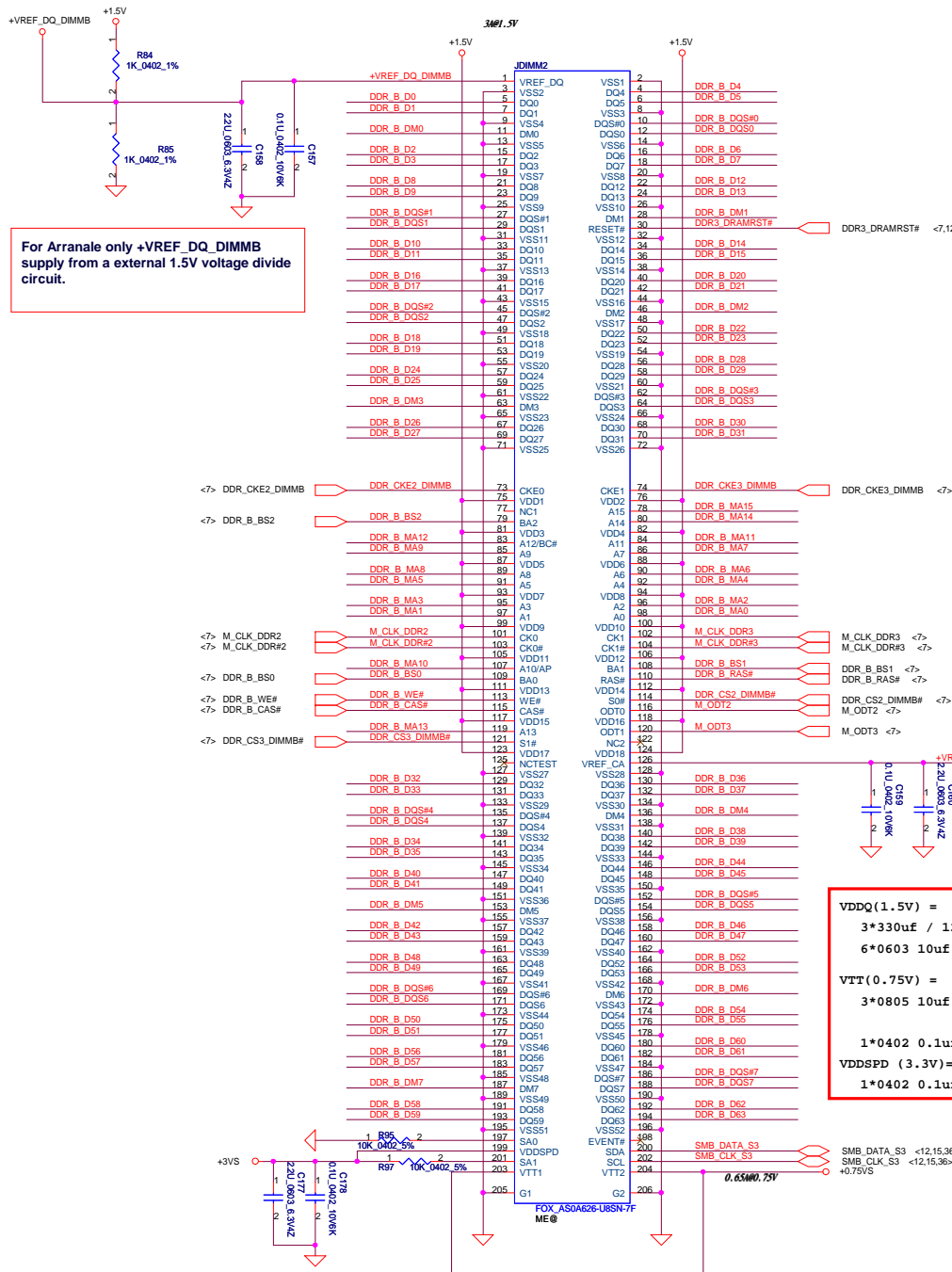
7/28 Update connect GND directly



Layout Note:
Place near DIMM



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For Arranale only +VREF_DQ_DIMMB supply from a external 1.5V voltage divide circuit.

- <7> DDR_B_D[0..63]
- <7> DDR_B_DQS[0..7]
- <7> DDR_B_DQS#0..7]
- <7> DDR_B_MA[0..15]

- <7> DDR_CKE2_DIMMB
- <7> DDR_B_BS2
- DDR_B_MA12
- DDR_B_MA9
- DDR_B_MA8
- DDR_B_MA5
- DDR_B_MA3
- DDR_B_MA1
- M_CLK_DDR2
- M_CLK_DDR#2
- DDR_B_MA10
- DDR_B_BS0
- DDR_B_WE#
- DDR_B_CAS#
- DDR_B_MA13
- DDR_CS3_DIMMB#

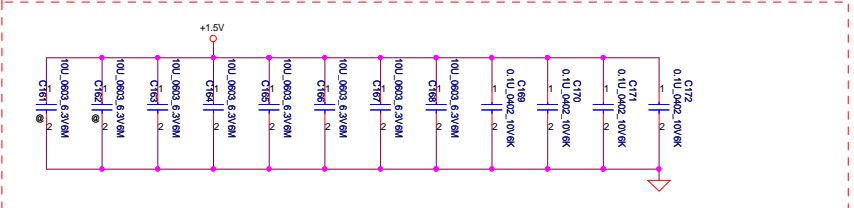
VDDQ(1.5V) =
 $3 * 330\mu\text{f} / 12\text{m ohm}$ (TOTAL FOR 2 SO-DIMMS)
 $6 * 0603\ 10\mu\text{f}$ (PER CONNECTOR)

VTT(0.75V) =
 $3 * 0805\ 10\mu\text{f}$ $4 * 0402\ 1\mu\text{f}$

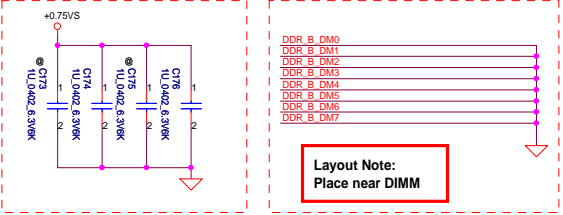
VDDSPD (3.3V) =
 $1 * 0402\ 0.1\mu\text{f}$ $1 * 0402\ 2.2\mu\text{f}$
 $1 * 0402\ 0.1\mu\text{f}$ $1 * 0402\ 2.2\mu\text{f}$

Layout Note:
Place near DIMM

$(10\mu\text{F}_0603_6.3\text{V}) * 8$
 $(0.1\mu\text{F}_402_10\text{V}) * 4$

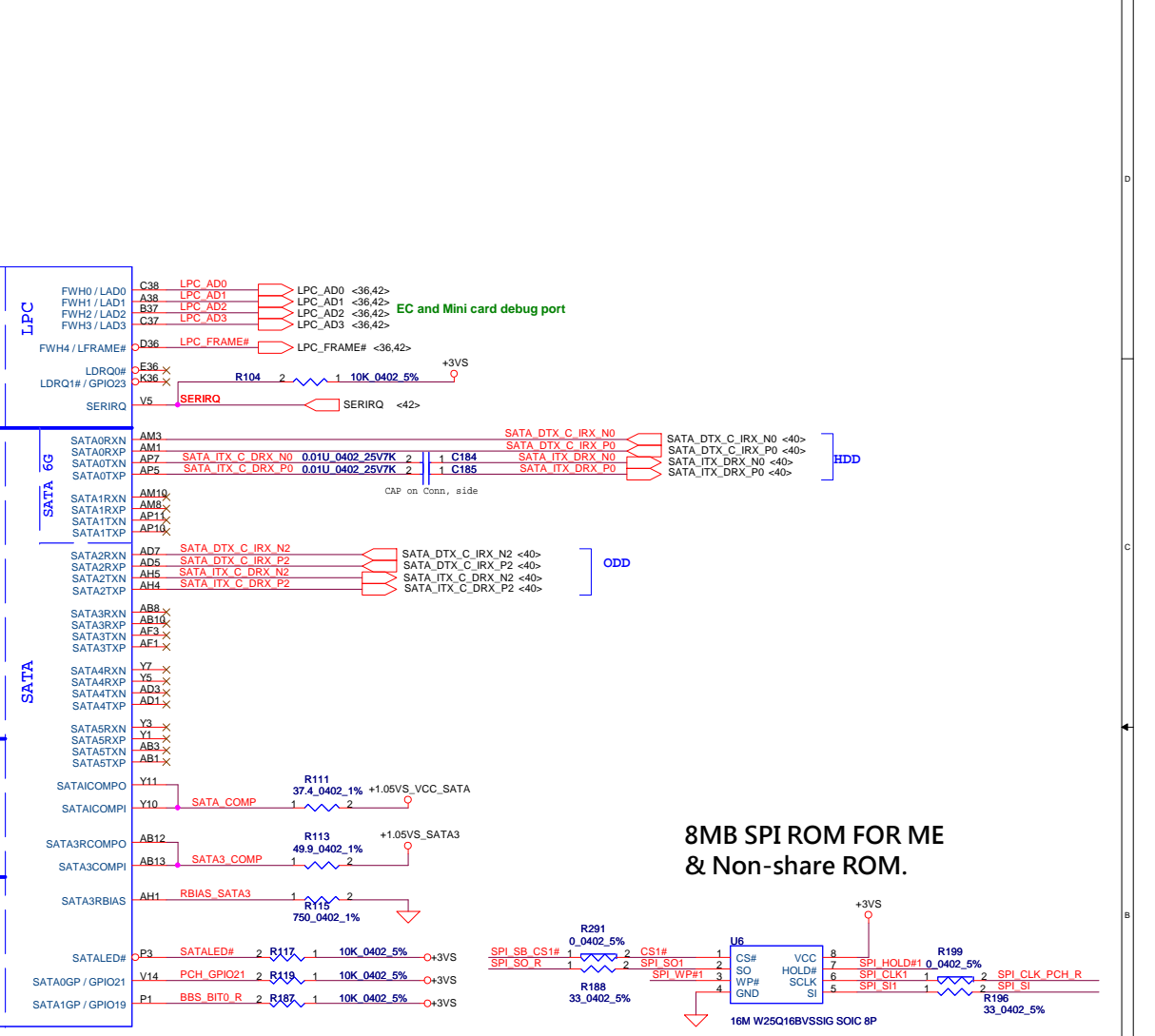
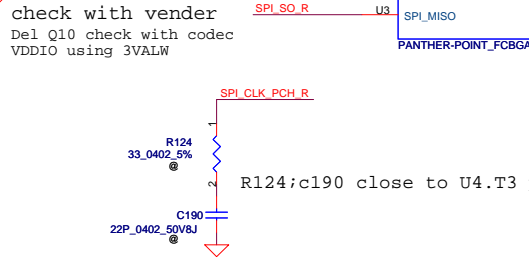
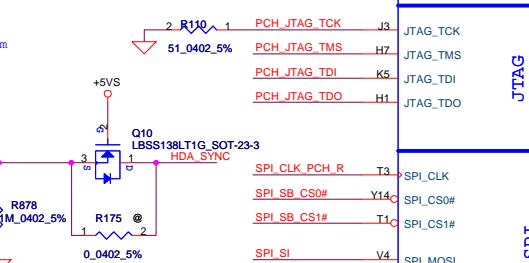
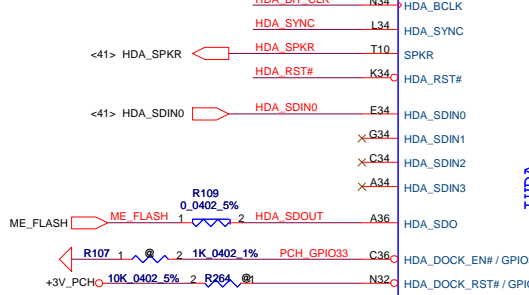
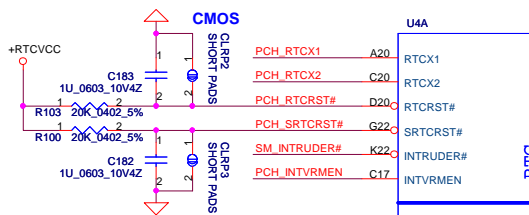
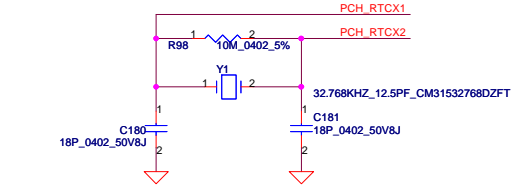
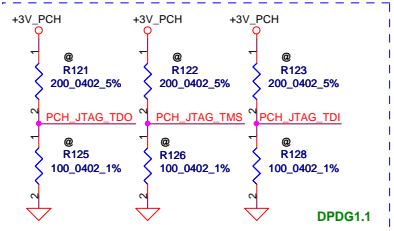
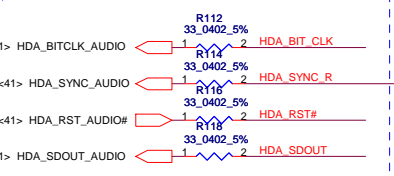
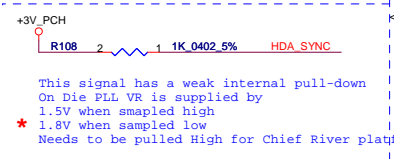
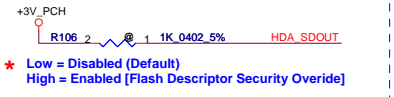
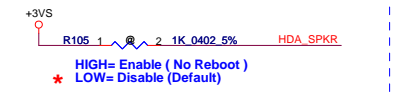
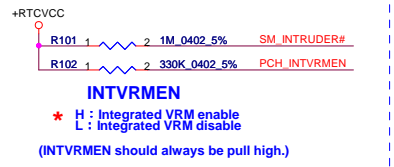
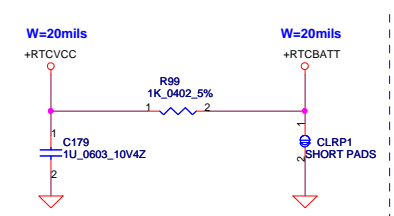


Layout Note:
Place near DIMM

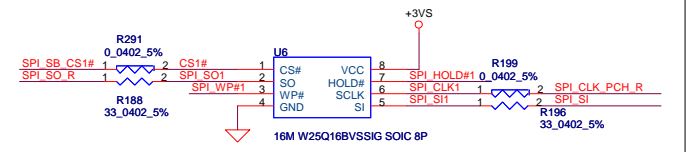


Layout Note:
Place near DIMM

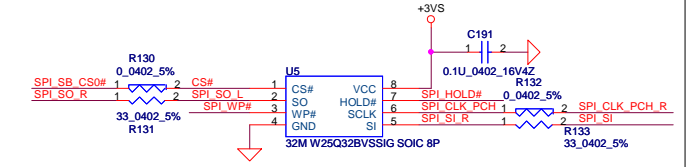
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				LA-7981P
Date:	Tuesday, February 14, 2012	Sheet	13	of 60



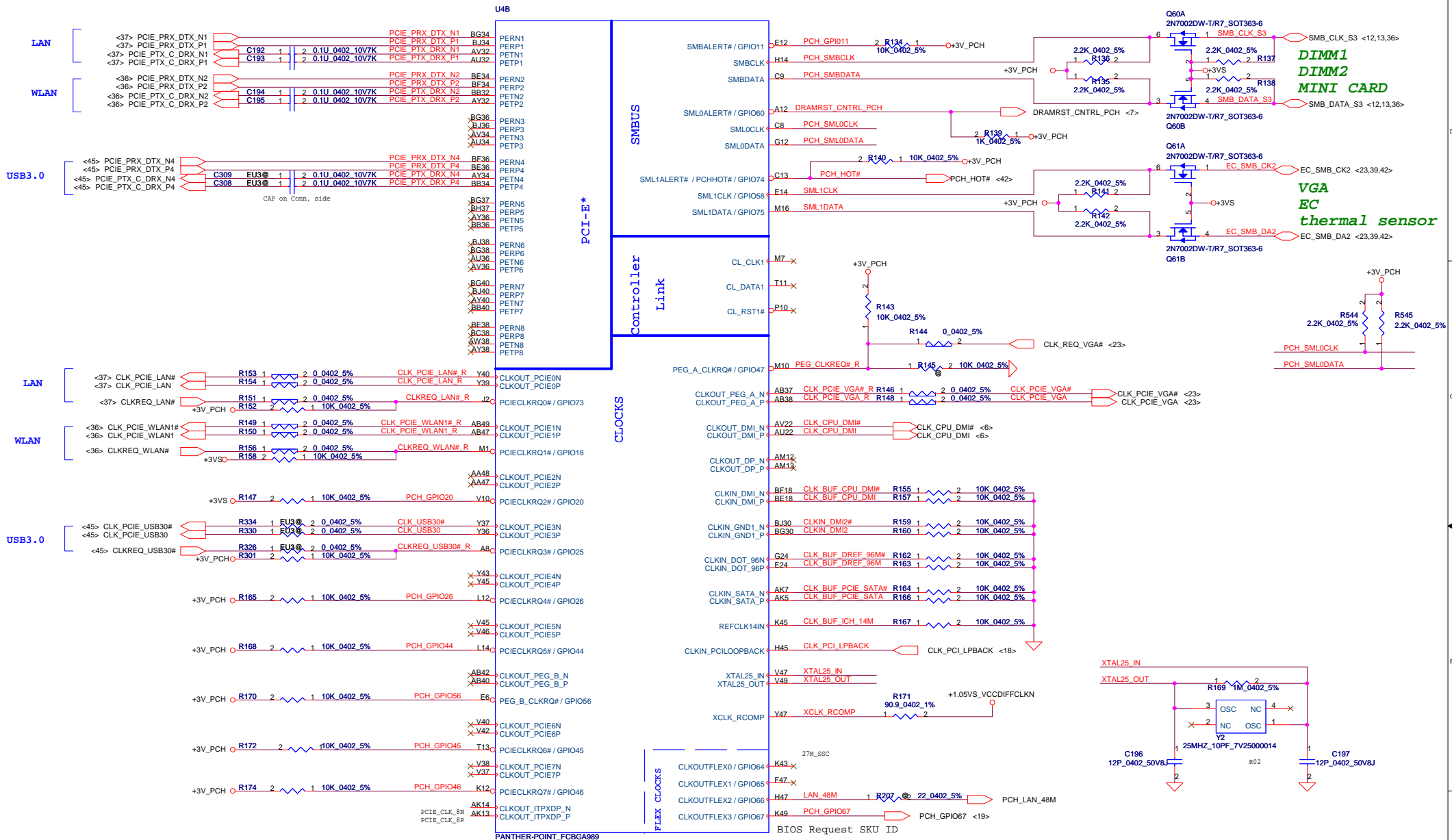
8MB SPI ROM FOR ME & Non-share ROM.



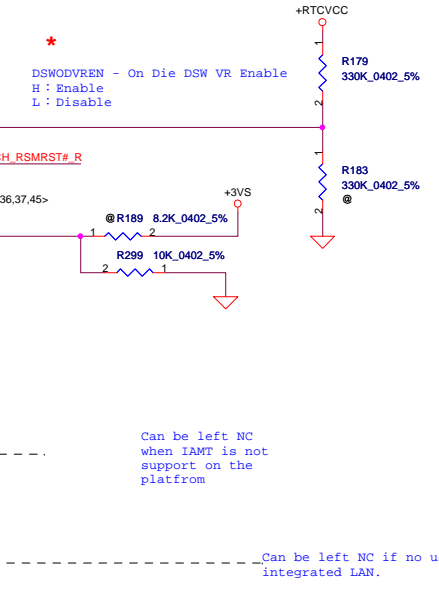
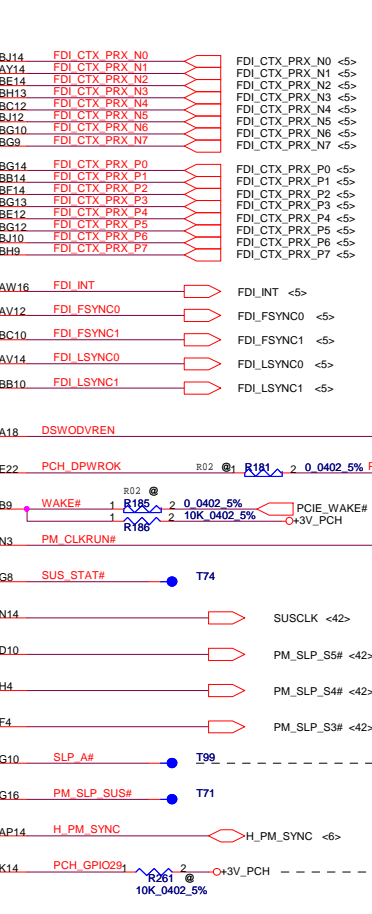
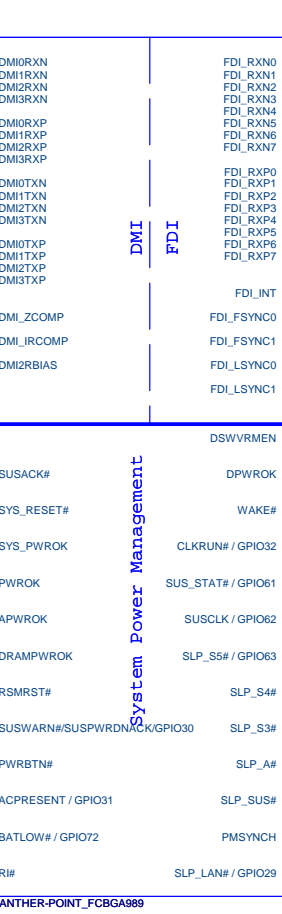
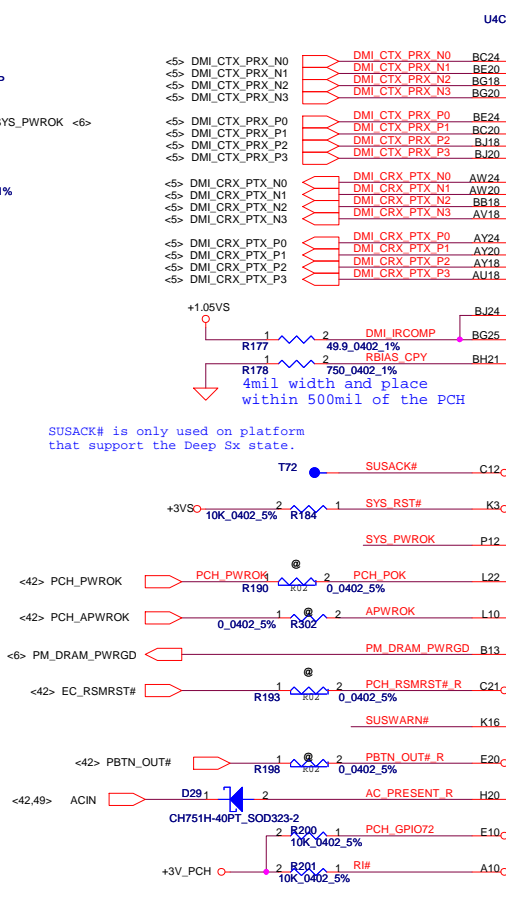
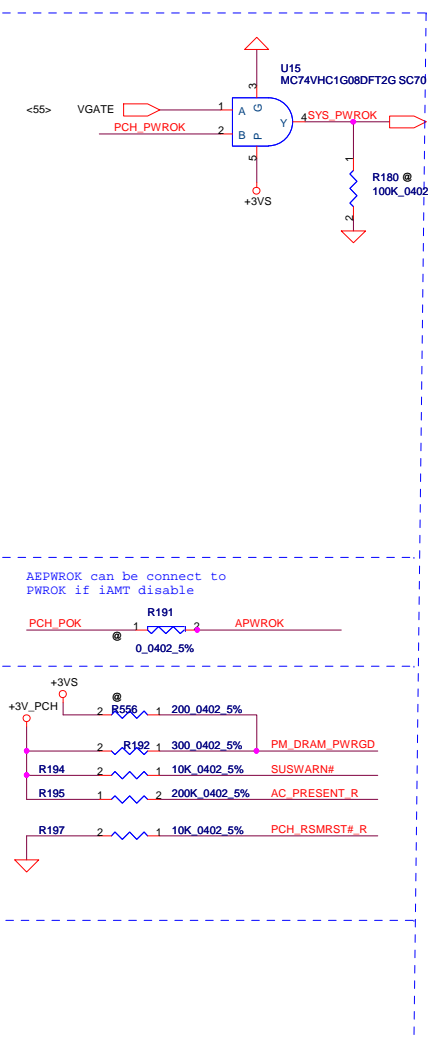
U6 Rersver 4M+2M Solution



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				LA-7981P	LA-7981P		0.2
				Date:	Tuesday, February 14, 2012	Sheet	14 of 60

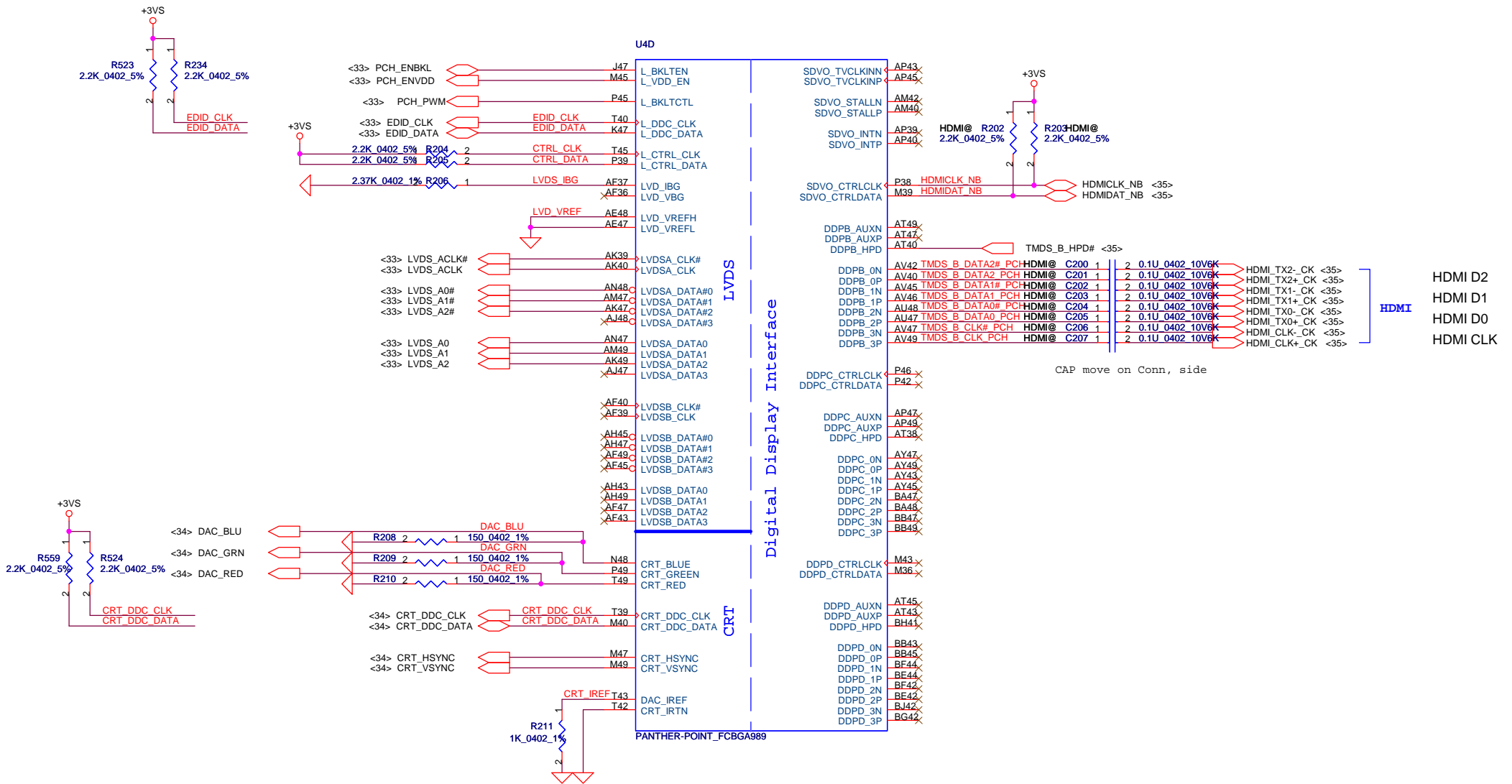


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Size	Customer	Document Number	Rev	Date: Tuesday, February 14, 2012 Sheet 15 of 60	
		LA-791P	0.2		

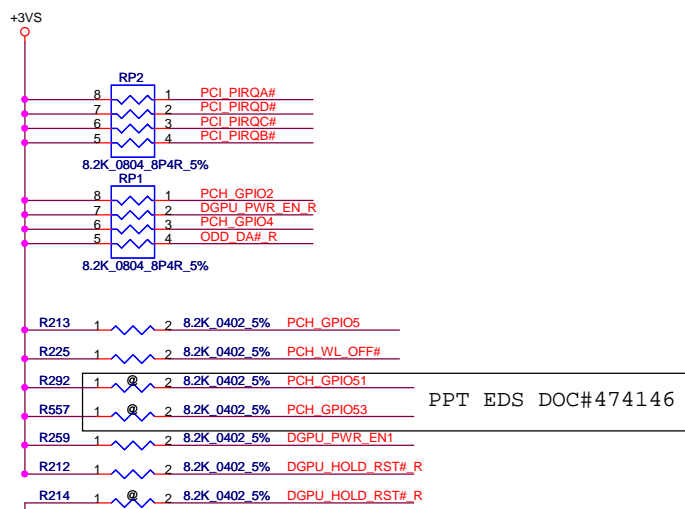


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Compal Electronics, Inc.		
Title	PCH (3/9) DMI,FDI,PM,	
Size	Document Number	Rev
Custom	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet 16 of 60

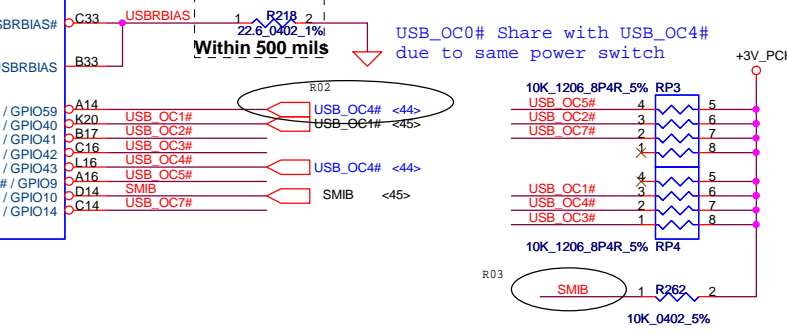
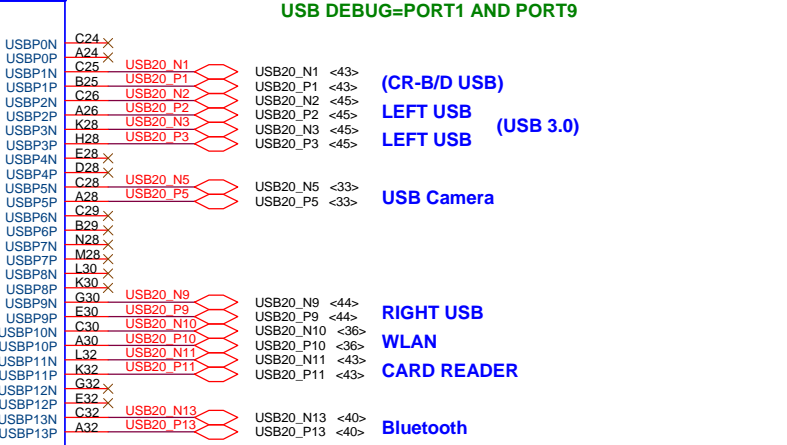
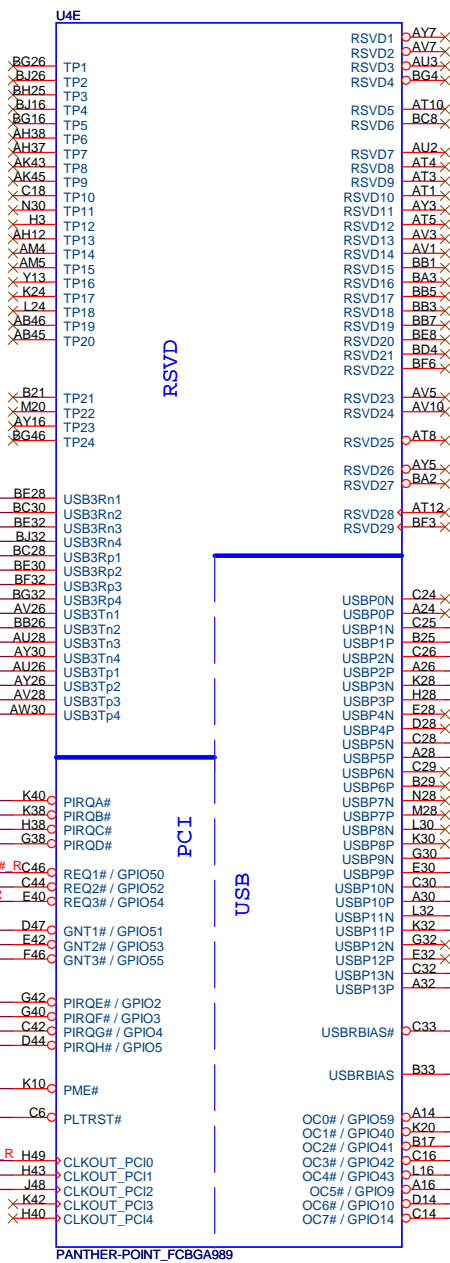
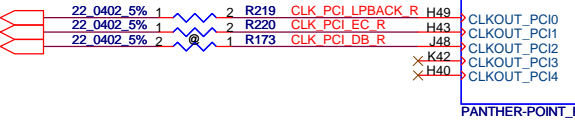
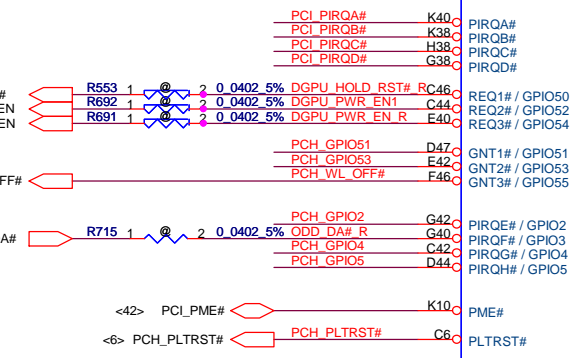
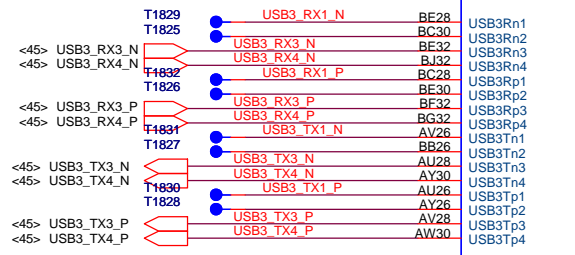
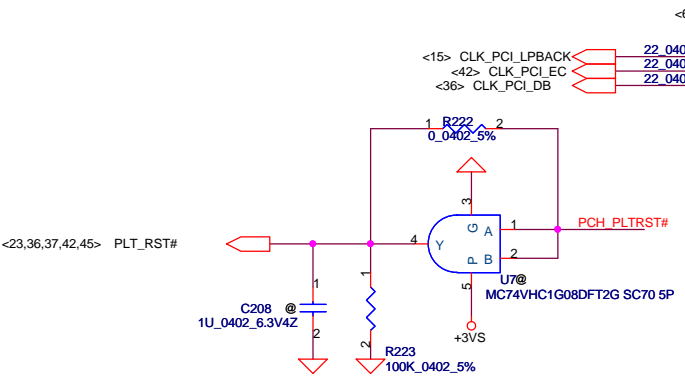
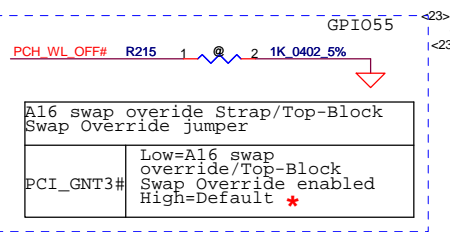
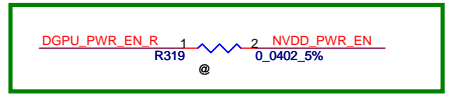


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				LA-7981P	Rev 0.2
				Date:	Tuesday, February 14, 2012
				Sheet	17 of 60



Boot BIOS Strap bit1 BBS1

GNT1#/GPIO51	Bit11	Bit10	Boot BIOS Destination
	0	1	Reserved
	1	0	Reserved
	1	1	* SPI (Default)
	0	0	LPC



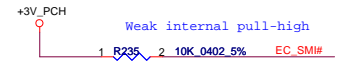
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Issued Date	2011/06/15	Deciphered Date
		2012/07/11

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Title	PCH (5/9) PCI, USB	
Size	Document Number	Rev
Custom	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet 18 of 60

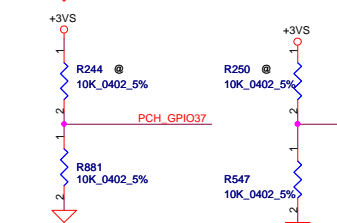
PCH_GPIO69	Function
0	HM76 by PCH
1	HM70 by PCH

PCH_GPIO70	Function
0	14/15"
1	17"
PCH_GPIO71	
0	USB3.0 by PCH
1	USB3.0 by NEC

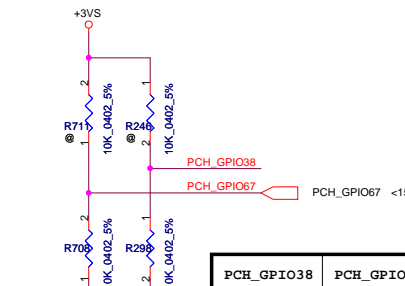


GPIO28
On-Die PLL Voltage Regulator
This signal has a weak internal pull up
* H : On-Die voltage regulator enable
L : On-Die PLL Voltage Regulator disable

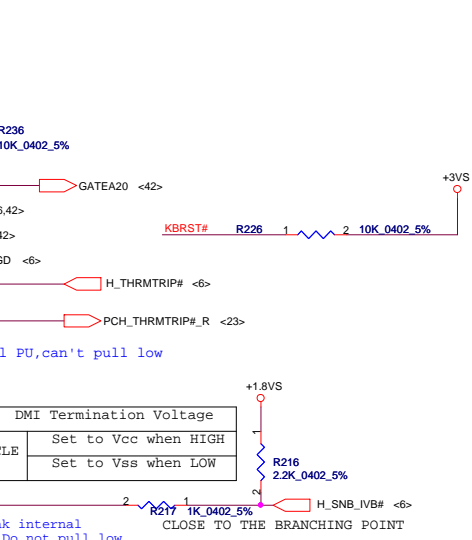
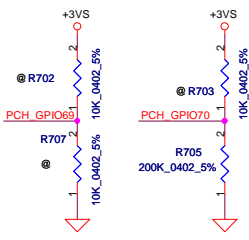
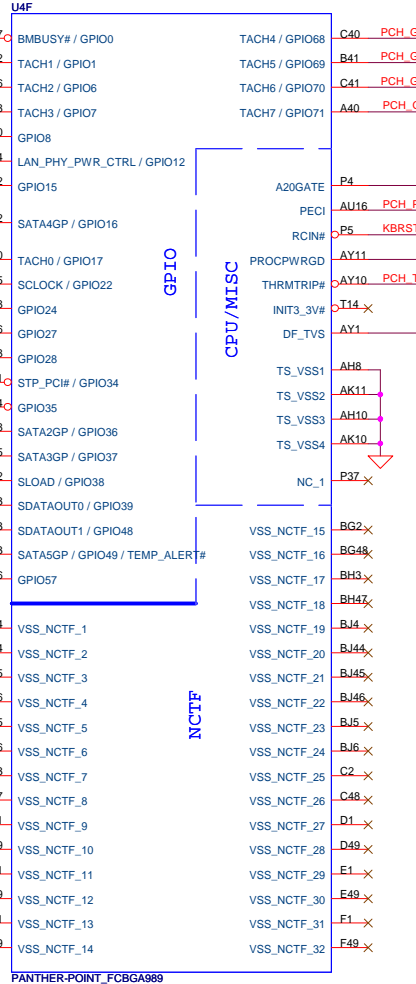
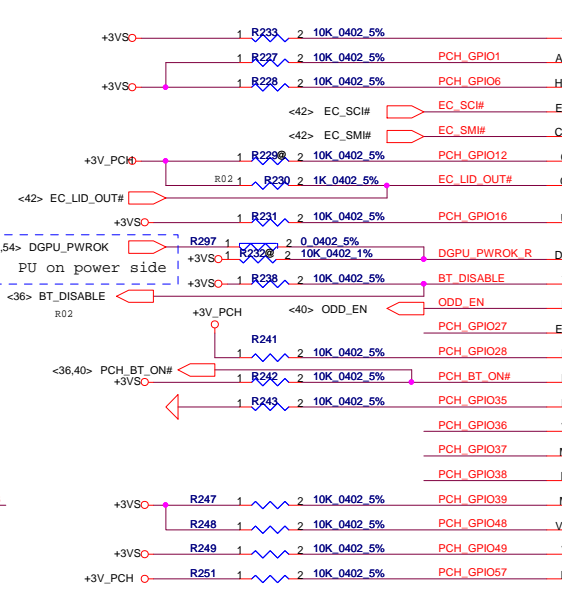
* PCH_GPIO27 (Have internal Pull-High)
High: VCCVRM VR Enable
Low: VCCVRM VR Disable



BIOS Request SKU ID

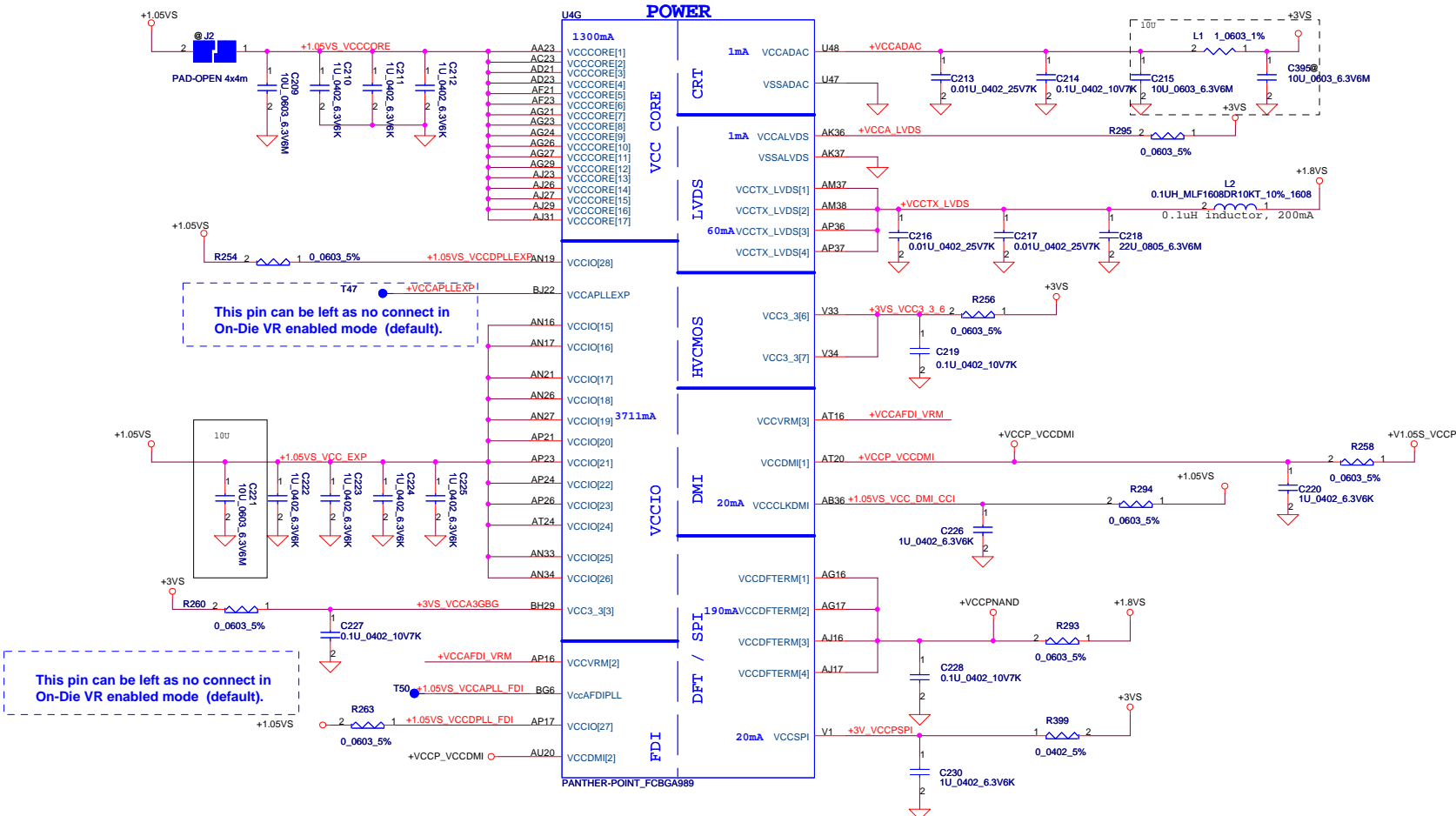


PCH_GPIO38	PCH_GPIO67	Function
0	0	Optimus
0	1	Reserved
1	0	DIS
1	1	UMA



Security Classification		Compal Secret Data		Title		
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Date:	Tuesday, February 14, 2012	Sheet	19	of	60	

L1 Change to 1 ohm P/N
S RES 1/10W 1 +-1% 0603



This pin can be left as no connect in On-Die VR enabled mode (default).

This pin can be left as no connect in On-Die VR enabled mode (default).

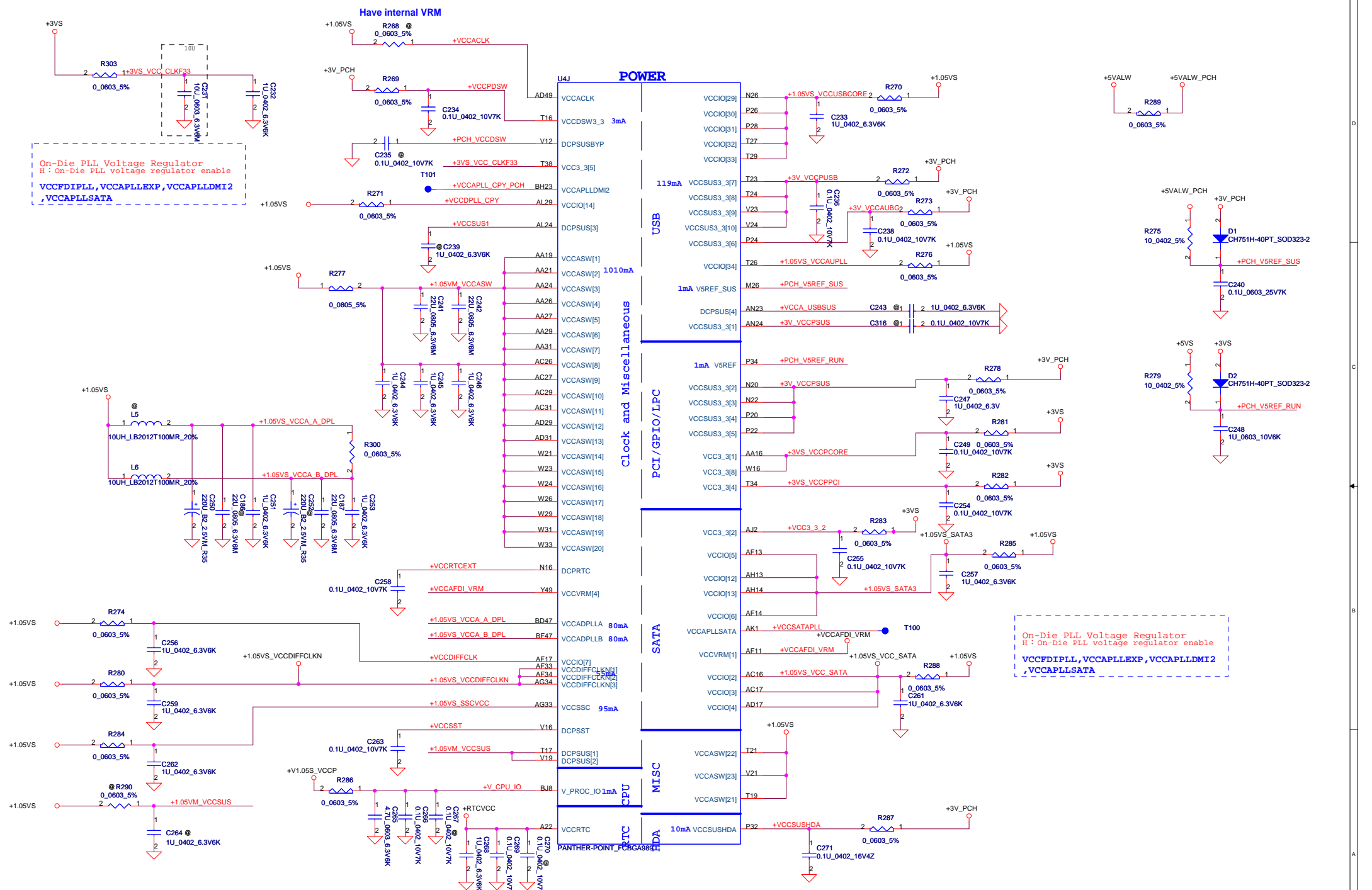
Intel recommend VCCVRM=>1.5V FOR MOBILE
stuff R265 and unstuff R266 VCCVRM=>1.8V FOR DESKTOP
VCCVRM = 160mA detail waiting for newest spec

PCH Power Rail Table Refer to CPU EDS R1.5		
Voltage Rail	Voltage	S0 Iccmax Current (A)
V_PROC_IO	1.05	0.001
V5REF	5	0.001
V5REF_Sus	5	0.001
Vcc3_3	3.3	0.228
VccADAC	3.3	0.001
VccADPLLA	1.05	0.075
VccADPLLB	1.05	0.075
VccCore	1.05	1.3
VccDMI	1.05	0.042
VccIO	1.05	3.709
VccASW	1.05	0.903
VccSPI	3.3	0.01
VccDSW	3.3	0.001
VccDFTERM	1.8	0.002
VccRTC	3.3	6 uA
VccSus3_3	3.3	0.065
VccSusHDA	3.3 / 1.5	0.01
VccVRM	1.8 / 1.5	0.167
VccCLKDMI	1.05	0.075
VccSSC	1.05	0.095
VccDIFFCLKN	1.05	0.055
VccALVDS	3.3	0.001
VccTX_LVDS	1.8	0.04

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Issued Date	2011/06/15	Deciphered Date
		2012/07/11

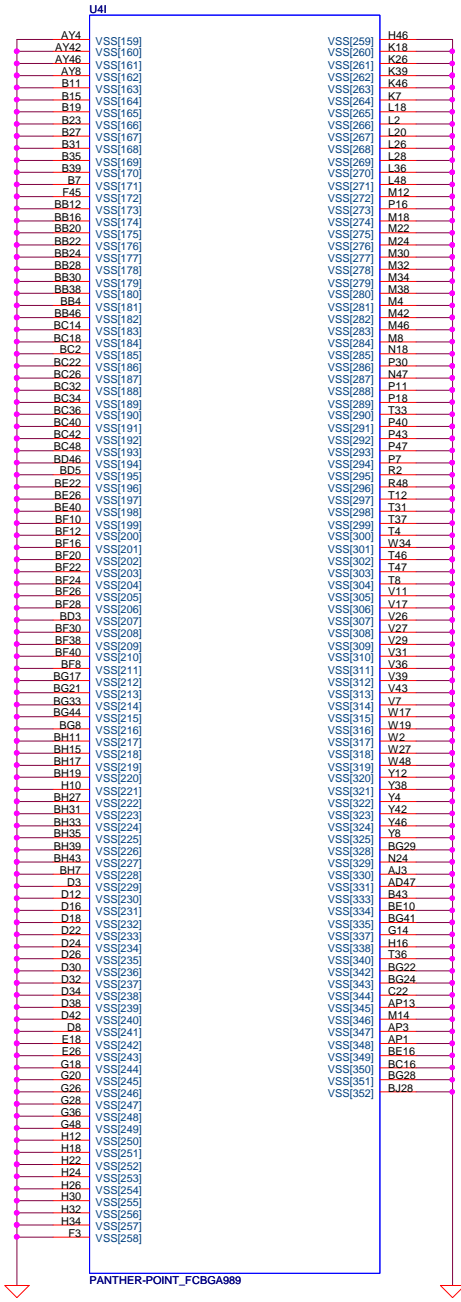
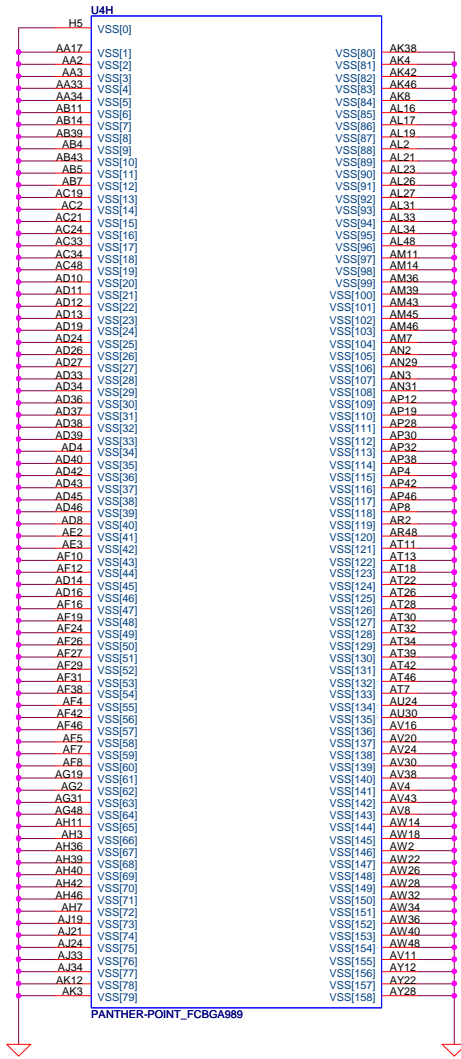
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Title	PCH (7/9) PWR	
Size	Document Number	Rev
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Title			Compal Electronics, Inc.		
Title			PCH (8/9) PWR		
Size	Document Number	Rev			
Custom	LA-7981P	0.2			
Date:	Tuesday, February 14, 2012	Sheet	21	of	60



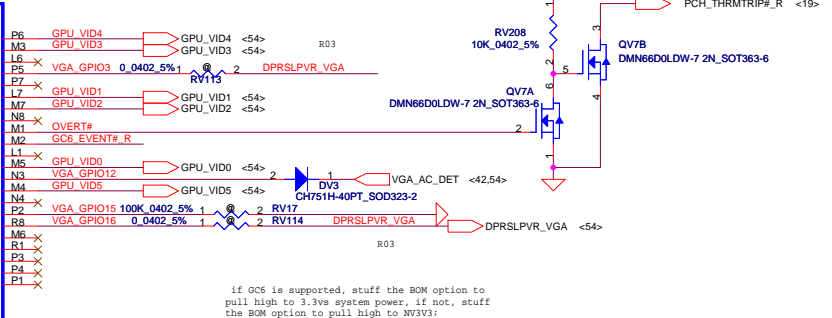
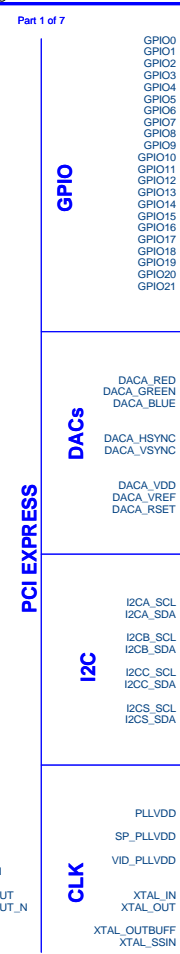
Security Classification		Compal Secret Data		Compal Electronics, Inc. PCH (9/9) VSS	
Issued Date	2011/06/15	Deciphered Date	2012/07/11		
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				Document Number LA-7981P	Rev 0.2
				Date: Tuesday, February 14, 2012	Sheet 22 of 60

- <5> PCIE_CTX_GRX_N[0..15]
- <5> PCIE_CTX_GRX_P[0..15]
- <5> PCIE_CRX_GTX_N[0..15]
- <5> PCIE_CRX_GTX_P[0..15]

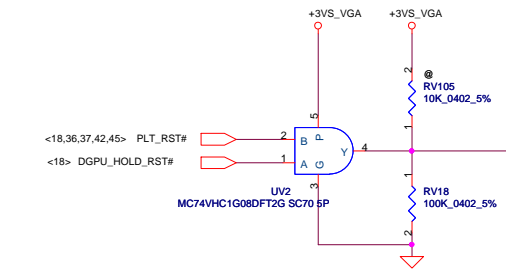
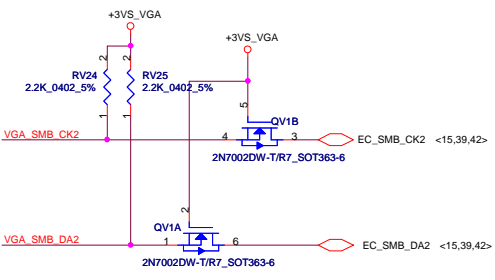
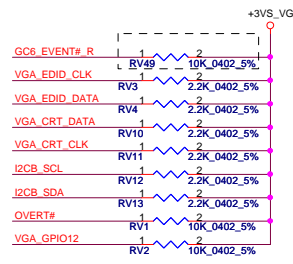
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- PCIE_CTX_GRX_N0 AM12
- PCIE_CTX_GRX_P1 AN14
- PCIE_CTX_GRX_N1 AM14
- PCIE_CTX_GRX_P2 AN14
- PCIE_CTX_GRX_N2 AM14
- PCIE_CTX_GRX_N2 AP15
- PCIE_CTX_GRX_P3 AN15
- PCIE_CTX_GRX_N3 AM15
- PCIE_CTX_GRX_P4 AN17
- PCIE_CTX_GRX_N4 AM17
- PCIE_CTX_GRX_P5 AP17
- PCIE_CTX_GRX_N5 AP19
- PCIE_CTX_GRX_P6 AN18
- PCIE_CTX_GRX_N6 AM18
- PCIE_CTX_GRX_P7 AN20
- PCIE_CTX_GRX_N7 AM20
- PCIE_CTX_GRX_P8 AP20
- PCIE_CTX_GRX_N8 AP21
- PCIE_CTX_GRX_N8 AN21
- PCIE_CTX_GRX_P9 AN21
- PCIE_CTX_GRX_N9 AM21
- PCIE_CTX_GRX_P10 AN23
- PCIE_CTX_GRX_N10 AM23
- PCIE_CTX_GRX_P11 AP23
- PCIE_CTX_GRX_N11 AP24
- PCIE_CTX_GRX_P12 AN24
- PCIE_CTX_GRX_N12 AM24
- PCIE_CTX_GRX_P13 AN26
- PCIE_CTX_GRX_N13 AM26
- PCIE_CTX_GRX_P14 AP26
- PCIE_CTX_GRX_N14 AP27
- PCIE_CTX_GRX_P15 AN27
- PCIE_CTX_GRX_N15 AM27

PCIE_CRX_GTX_P0	CV6	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P0	AK14	PEX_TX0
PCIE_CRX_GTX_N0	CV7	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N0	AJ14	PEX_TX0_N
PCIE_CRX_GTX_P1	CV8	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P1	AH14	PEX_TX1
PCIE_CRX_GTX_N1	CV9	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N1	AG14	PEX_TX1_N
PCIE_CRX_GTX_P2	CV10	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P2	AK15	PEX_TX2
PCIE_CRX_GTX_N2	CV11	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N2	AJ15	PEX_TX2_N
PCIE_CRX_GTX_P3	CV12	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P3	AL16	PEX_TX3
PCIE_CRX_GTX_N3	CV13	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N3	AK16	PEX_TX3_N
PCIE_CRX_GTX_P4	CV15	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P4	AJ17	PEX_TX4
PCIE_CRX_GTX_N4	CV17	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N4	AJ17	PEX_TX4_N
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PCIE_CRX_GTX_N5	CV14	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N5	AG17	PEX_TX5_N
PCIE_CRX_GTX_P6	CV16	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P6	AK18	PEX_TX6
PCIE_CRX_GTX_N6	CV18	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N6	AJ18	PEX_TX6_N
PCIE_CRX_GTX_P7	CV20	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P7	AL19	PEX_TX7
PCIE_CRX_GTX_N7	CV22	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_N7	AK19	PEX_TX7_N
PCIE_CRX_GTX_P8	CV24	1	2	0.1U_0402_10V7K	PCIE_CRX_C_GTX_P8	AK20	PEX_TX7_N
PCIE_CRX_GTX_N8	CV26	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_N8	AJ20	PEX_TX8
PCIE_CRX_GTX_P9	CV21	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_P9	AH20	PEX_TX8_N
PCIE_CRX_GTX_N9	CV23	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_N9	AG20	PEX_TX9
PCIE_CRX_GTX_P10	CV25	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_P10	AK21	PEX_TX9_N
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PCIE_CRX_GTX_N11	CV31	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_N11	AK22	PEX_TX11
PCIE_CRX_GTX_P12	CV33	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_P12	AK23	PEX_TX11_N
PCIE_CRX_GTX_N12	CV28	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_N12	AJ23	PEX_TX12
PCIE_CRX_GTX_P13	CV30	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_P13	AG23	PEX_TX12_N
PCIE_CRX_GTX_N13	CV32	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_N13	AK23	PEX_TX13
PCIE_CRX_GTX_P14	CV36	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_P14	AK24	PEX_TX13_N
PCIE_CRX_GTX_N14	CV41	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_N14	AJ24	PEX_TX14
PCIE_CRX_GTX_P15	CV34	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_P15	AL25	PEX_TX14_N
PCIE_CRX_GTX_N15	CV35	1	1	N13@0.1U_0402_10V7K	PCIE_CRX_C_GTX_N15	AK25	PEX_TX15

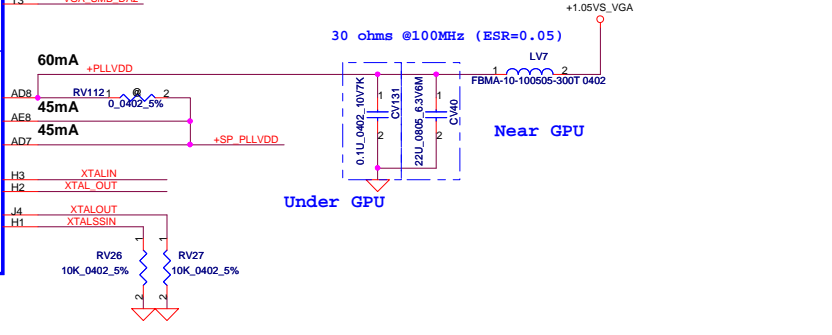
U65A N13P@



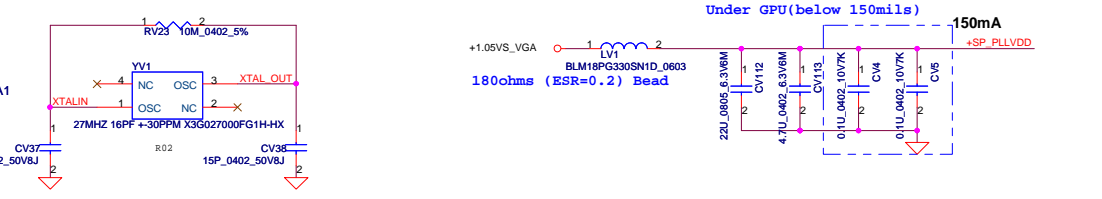
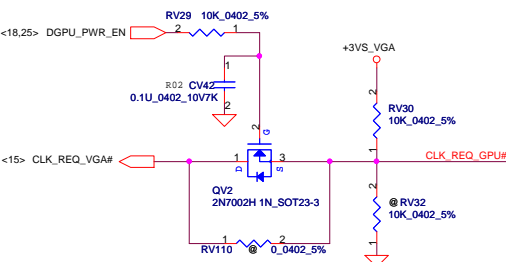
if GC6 is supported, stuff the BOM option to pull high to 3.3vs system power, if not, stuff the BOM option to pull high to NV3vs;



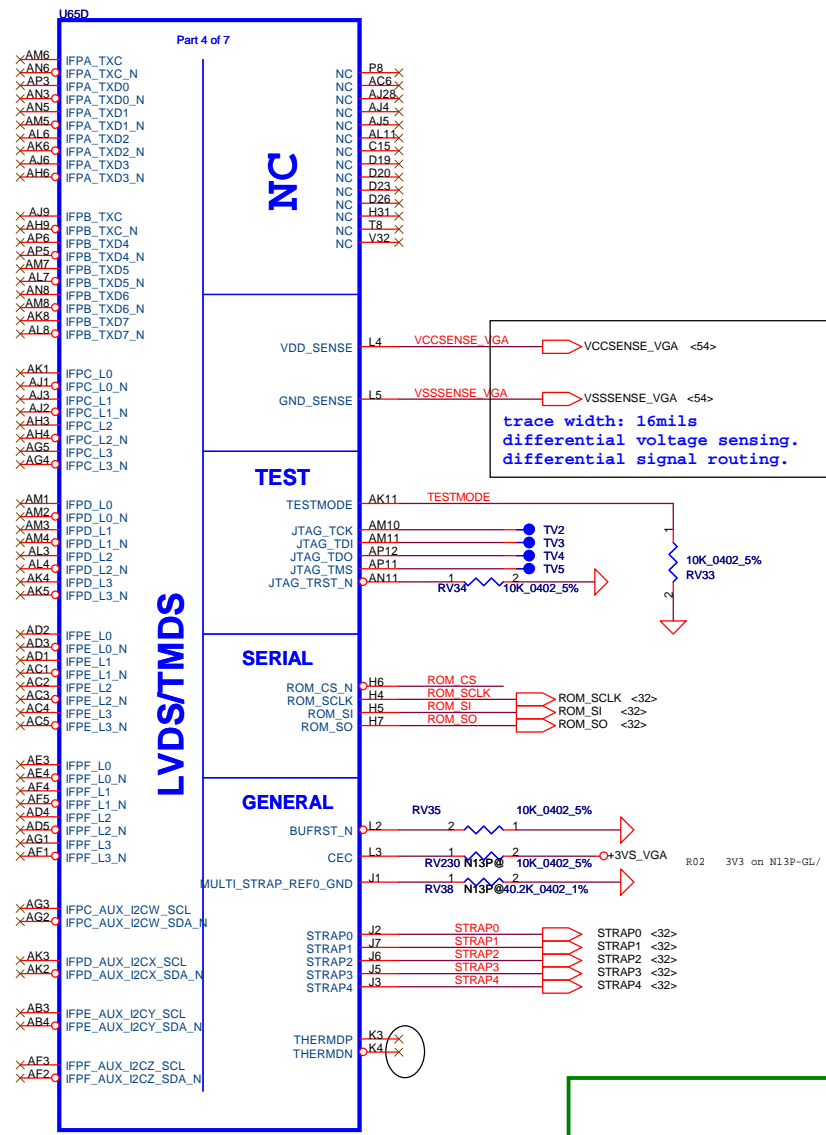
Differential signal



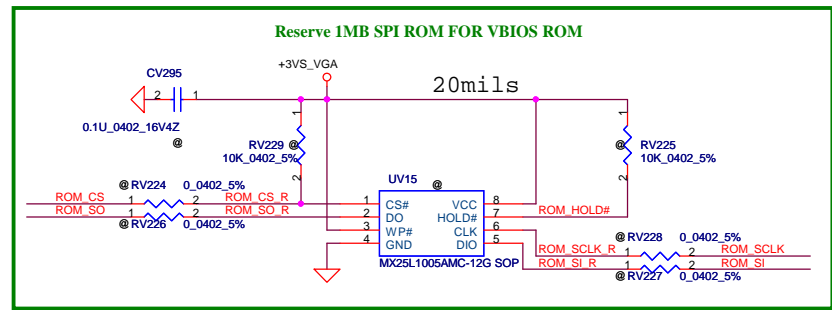
Near GPU
Under GPU
Under GPU (below 150mils)



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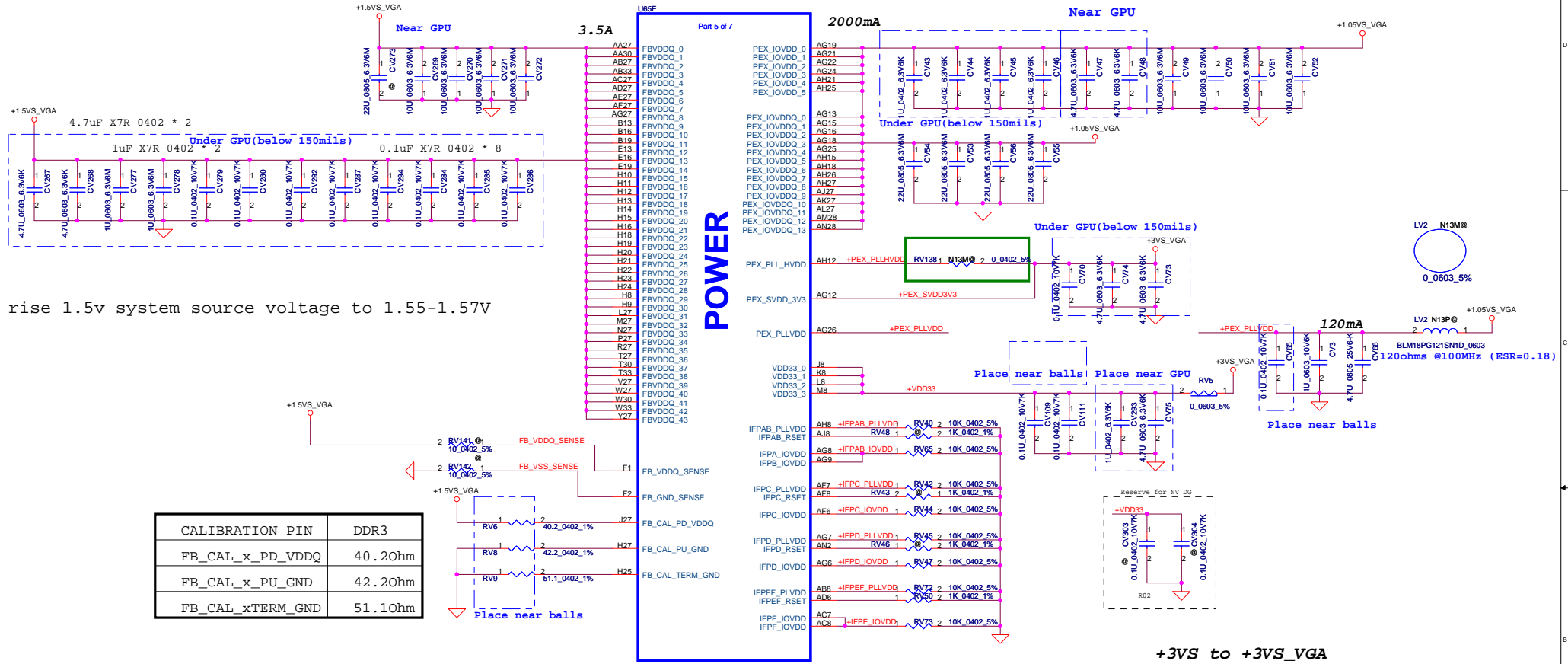


VCCSENSE_VGA <54>
 VSSSENSE_VGA <54>
 trace width: 16mils
 differential voltage sensing.
 differential signal routing.



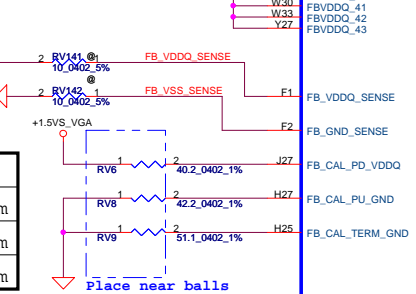
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Title N13X-LVDS/HDMI/DP/THM			
Size	Document Number		Rev
	LA-7981P		0.2
Date:	Tuesday, February 14, 2012	Sheet	24 of 60



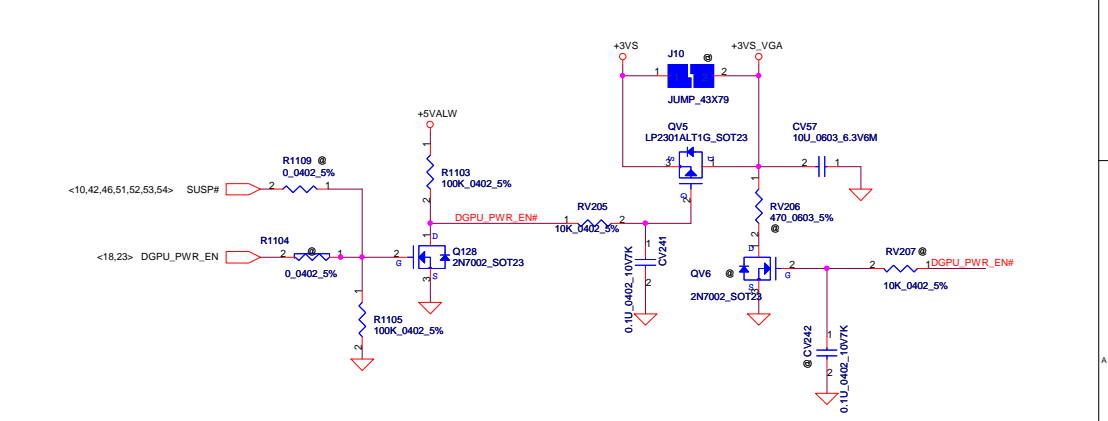
rise 1.5v system source voltage to 1.55-1.57V

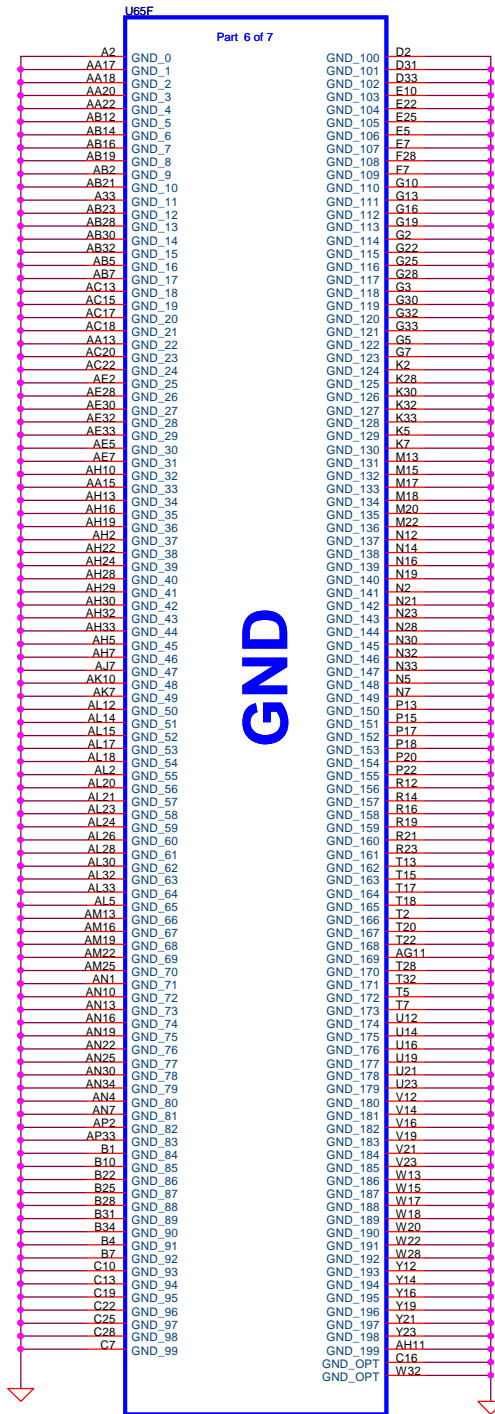
CALIBRATION PIN	DDR3
FB_CAL_x_PD_VDDQ	40.20ohm
FB_CAL_x_PU_GND	42.20ohm
FB_CAL_xTERM_GND	51.10ohm



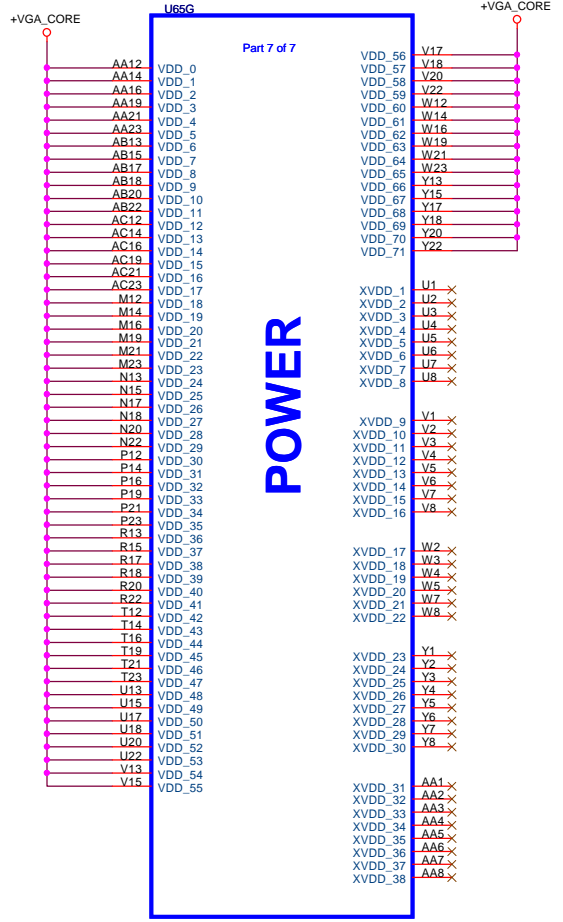
Pin	Signal
AA27	FBVDDQ_0
AA30	FBVDDQ_1
AB27	FBVDDQ_2
AB33	FBVDDQ_3
AC27	FBVDDQ_4
AD27	FBVDDQ_5
AE27	FBVDDQ_6
AF27	FBVDDQ_7
AG27	FBVDDQ_8
B13	FBVDDQ_9
B16	FBVDDQ_10
B19	FBVDDQ_11
E13	FBVDDQ_12
E16	FBVDDQ_13
E19	FBVDDQ_14
H11	FBVDDQ_15
H12	FBVDDQ_16
H13	FBVDDQ_17
H14	FBVDDQ_18
H15	FBVDDQ_19
H16	FBVDDQ_20
H18	FBVDDQ_21
H19	FBVDDQ_22
H20	FBVDDQ_23
H21	FBVDDQ_24
H22	FBVDDQ_25
H23	FBVDDQ_26
H24	FBVDDQ_27
H8	FBVDDQ_28
H9	FBVDDQ_29
L27	FBVDDQ_30
M27	FBVDDQ_31
N27	FBVDDQ_32
R27	FBVDDQ_33
T27	FBVDDQ_34
T33	FBVDDQ_35
V27	FBVDDQ_36
W27	FBVDDQ_37
W30	FBVDDQ_38
W33	FBVDDQ_39
W33	FBVDDQ_40
W33	FBVDDQ_41
W33	FBVDDQ_42
W33	FBVDDQ_43

N13P-GL-A1 MP
N13P@





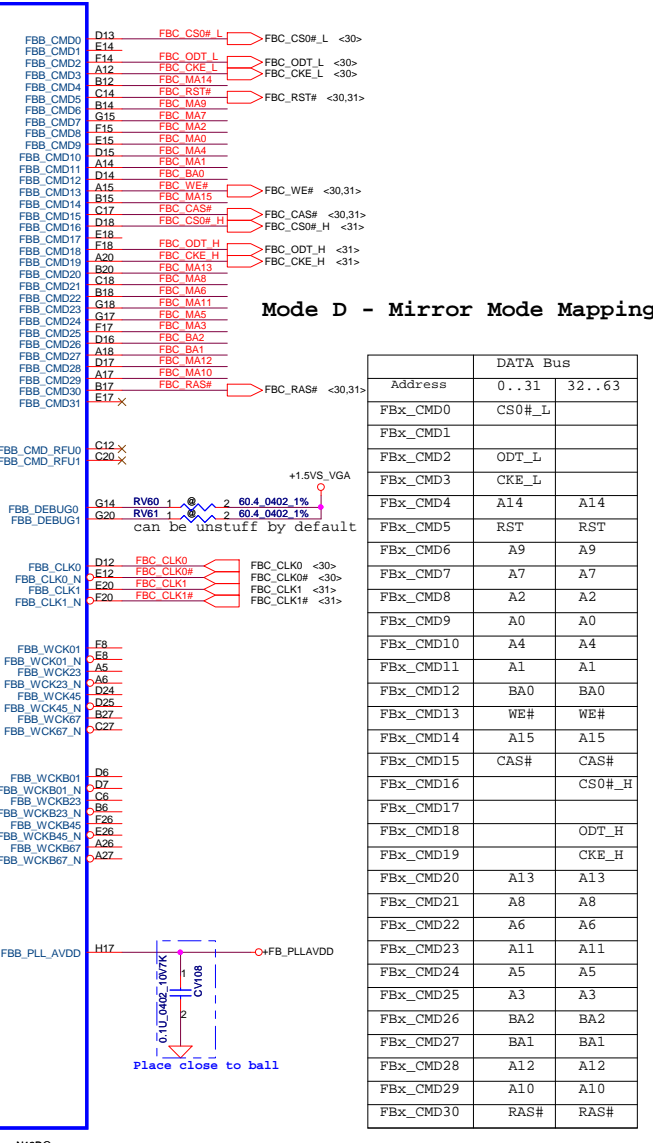
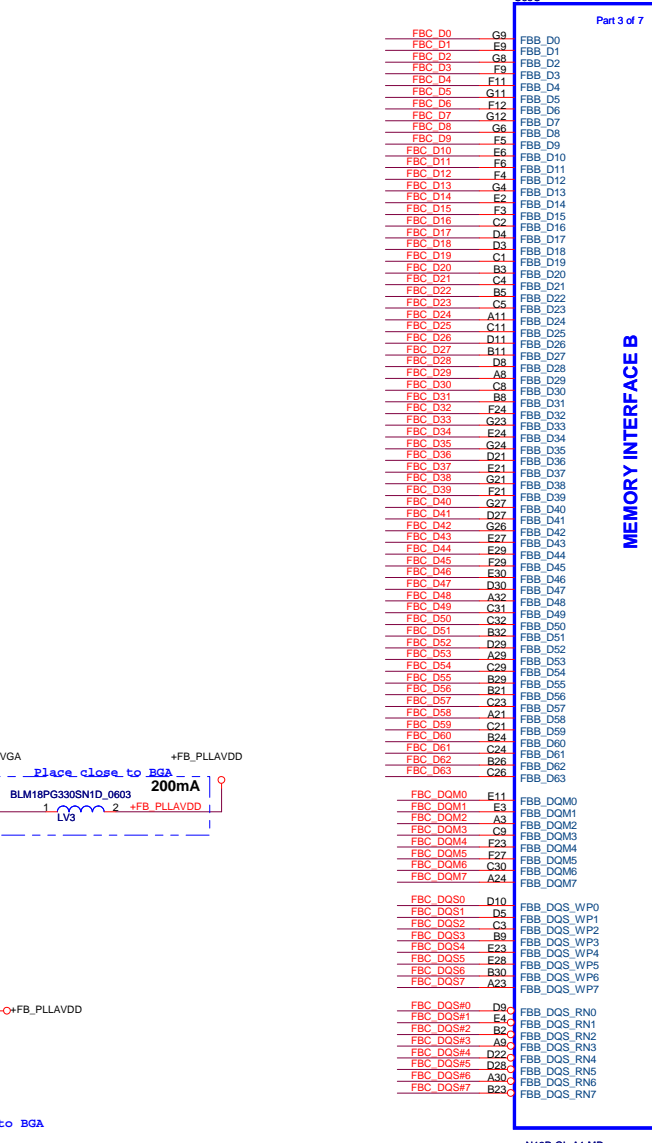
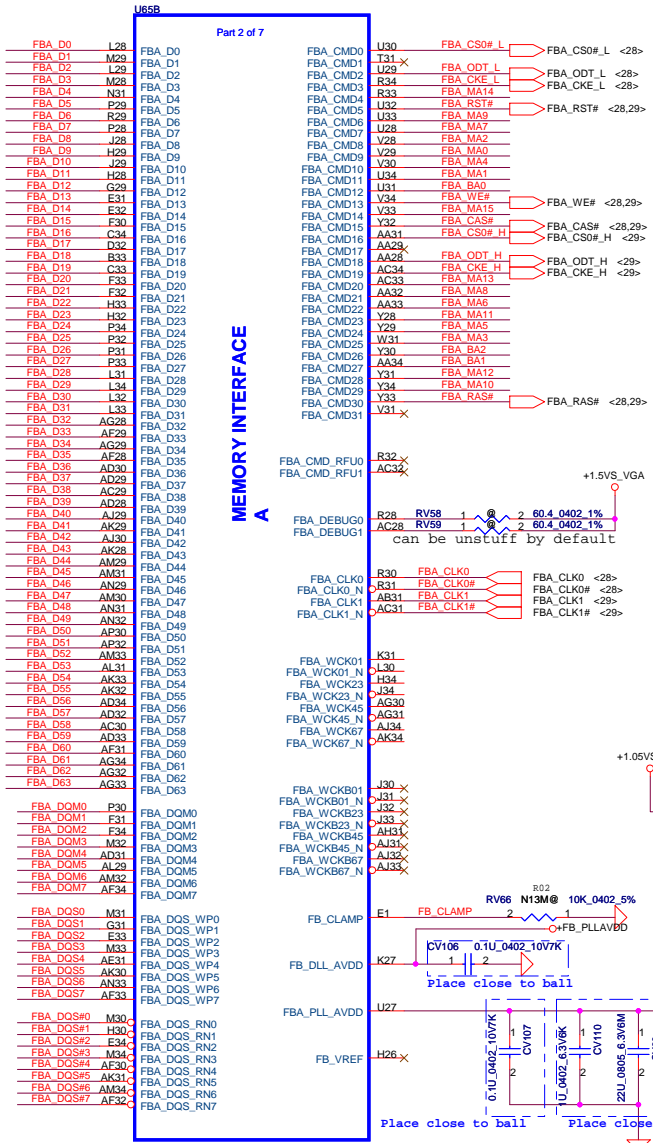
N13P-GL-A1 MP
N13P@



N13P-GL-A1 MP
N13P@

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Compal Electronics, Inc.		
N13-VGA CORE, GND		
Size	Document Number	Rev
	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet 26 of 60



Mode D - Mirror Mode Mapping

	DATA Bus	
	Address 0..31	32..63
FbX_CMD0	CS0#_L	
FbX_CMD1	ODT_L	
FbX_CMD2	ODT_L	
FbX_CMD3	CKE_L	
FbX_CMD4	A14	A14
FbX_CMD5	RST	RST
FbX_CMD6	A9	A9
FbX_CMD7	A7	A7
FbX_CMD8	A2	A2
FbX_CMD9	A0	A0
FbX_CMD10	A4	A4
FbX_CMD11	A1	A1
FbX_CMD12	BA0	BA0
FbX_CMD13	WE#	WE#
FbX_CMD14	A15	A15
FbX_CMD15	CAS#	CAS#
FbX_CMD16	CS0#_H	
FbX_CMD17		
FbX_CMD18	ODT_H	
FbX_CMD19	CKE_H	
FbX_CMD20	A13	A13
FbX_CMD21	A8	A8
FbX_CMD22	A6	A6
FbX_CMD23	A11	A11
FbX_CMD24	A5	A5
FbX_CMD25	A3	A3
FbX_CMD26	BA2	BA2
FbX_CMD27	BA1	BA1
FbX_CMD28	A12	A12
FbX_CMD29	A10	A10
FbX_CMD30	RAS#	RAS#

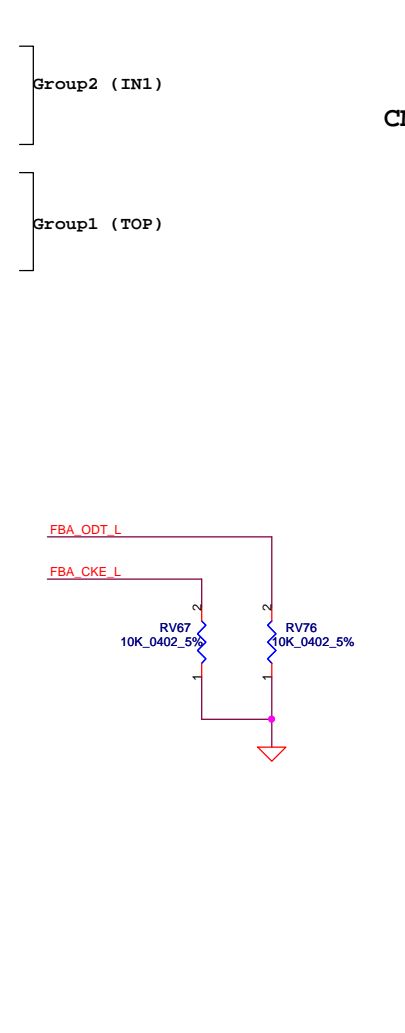
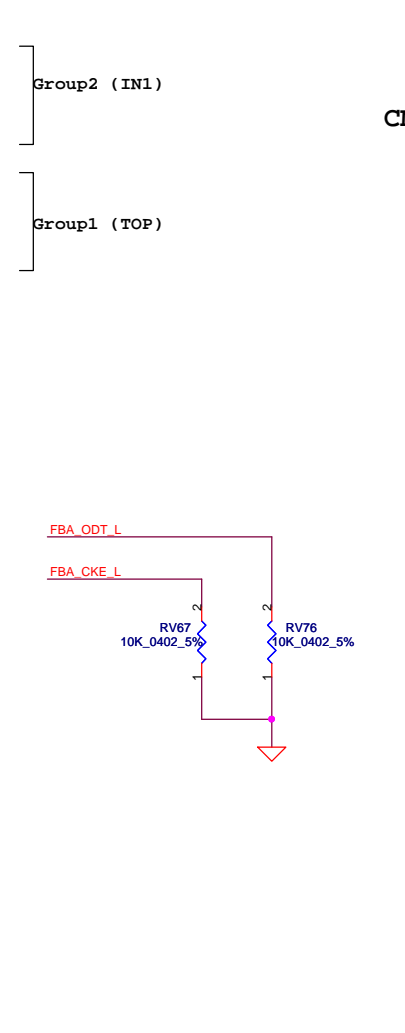
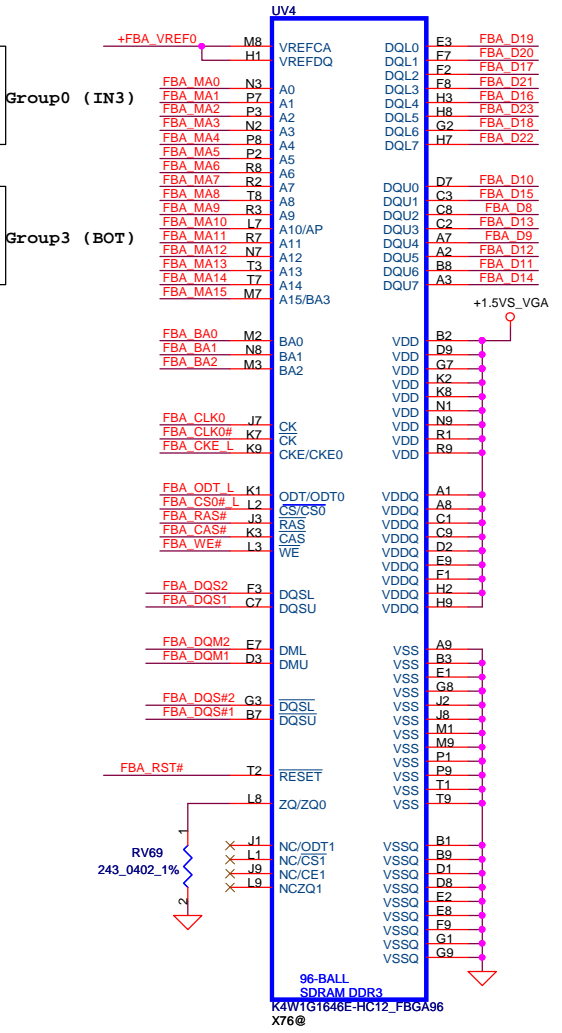
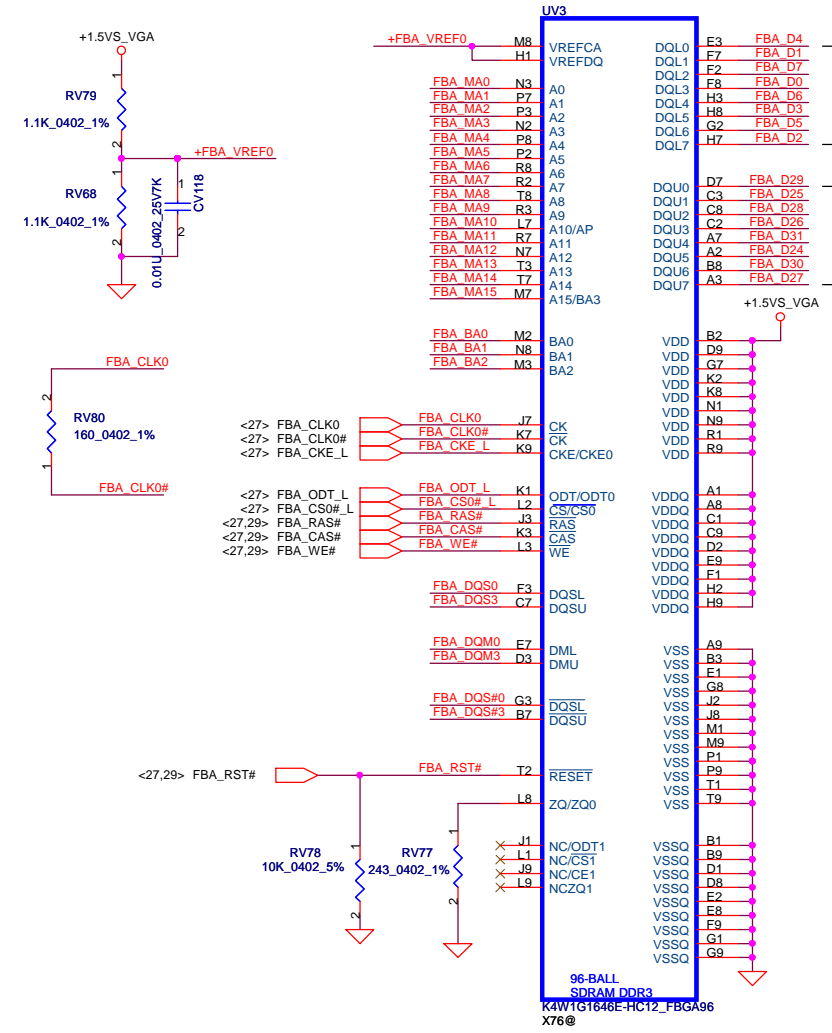
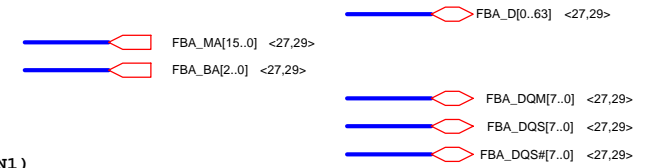


30ohms (ESR=0.01) Bead
P/N:SM010007W00

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Compal Electronics, Inc.		
Title		
N13X-MEM Interface		
Size	Document Number	Rev
	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet 27 of 60

Memory Partition A - Lower 32 bits



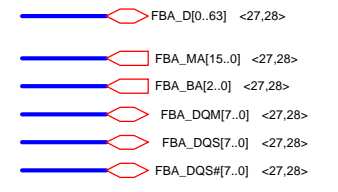
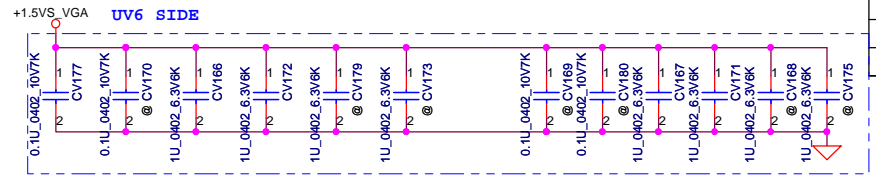
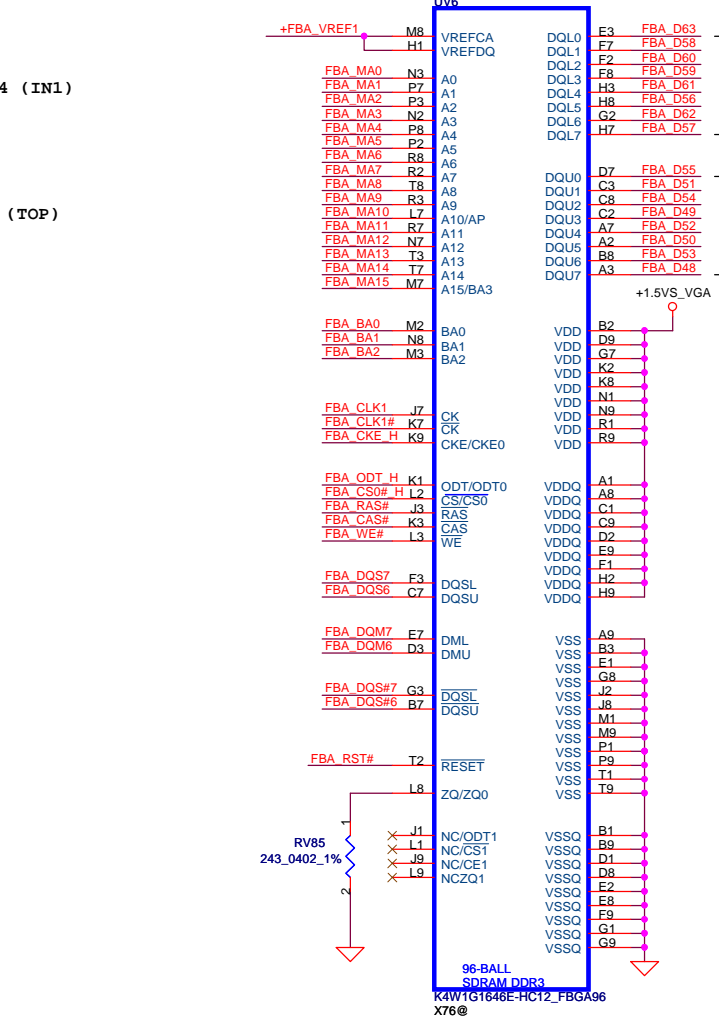
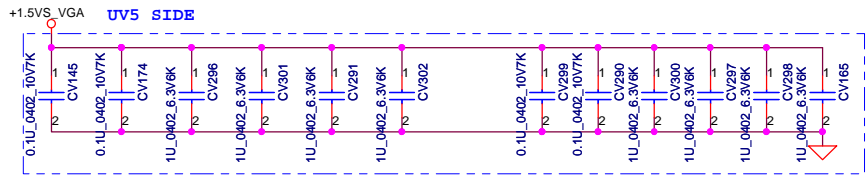
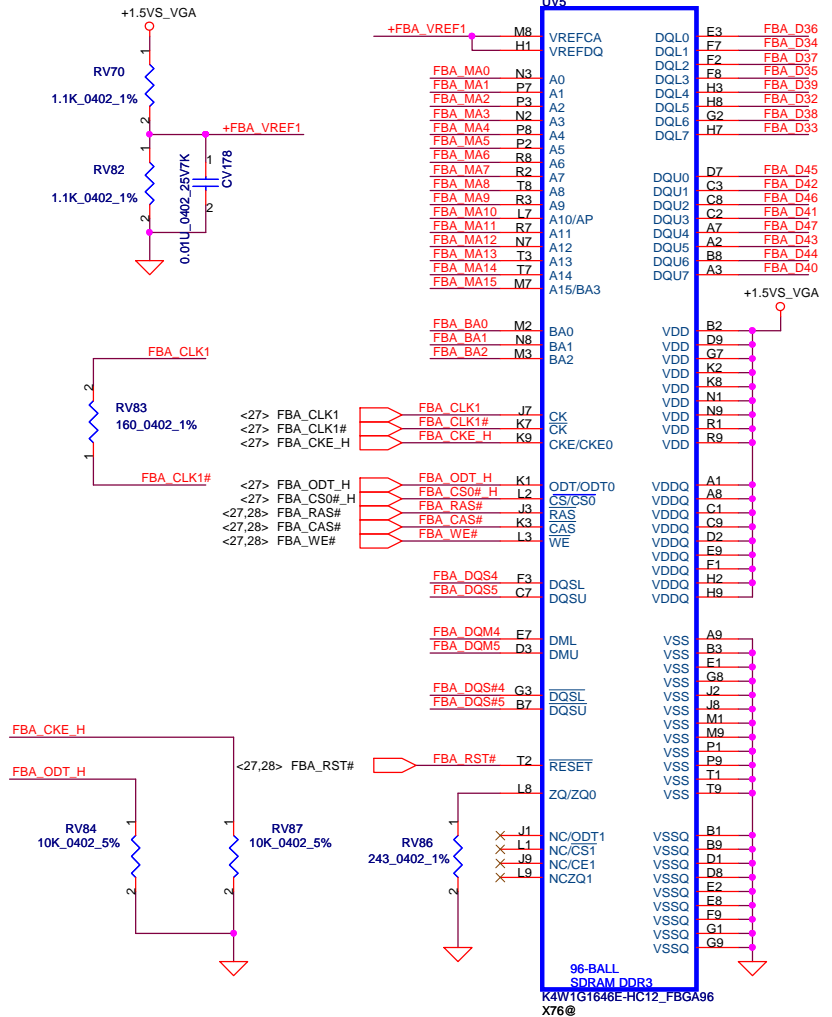
CMD mapping mod Mode D

	DATA Bus	
Address	0..31	32..63
FBx_CMD0	CS0#_L	
FBx_CMD1		
FBx_CMD2	ODT_L	
FBx_CMD3	CKE_L	
FBx_CMD4	A14	A14
FBx_CMD5	RST	RST
FBx_CMD6	A9	A9
FBx_CMD7	A7	A7
FBx_CMD8	A2	A2
FBx_CMD9	A0	A0
FBx_CMD10	A4	A4
FBx_CMD11	A1	A1
FBx_CMD12	BA0	BA0
FBx_CMD13	WE#	WE#
FBx_CMD14	A15	A15
FBx_CMD15	CAS#	CAS#
FBx_CMD16		CS0#_H
FBx_CMD17		
FBx_CMD18		ODT_H
FBx_CMD19		CKE_H
FBx_CMD20	A13	A13
FBx_CMD21	A8	A8
FBx_CMD22	A6	A6
FBx_CMD23	A11	A11
FBx_CMD24	A5	A5
FBx_CMD25	A3	A3
FBx_CMD26	BA2	BA2
FBx_CMD27	BA1	BA1
FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#

Security Classification	Compal Secret Data		
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Title N13X-VRAM A Lower		
Size	Document Number LA-7981P	Rev 0.2
Date	Tuesday, February 14, 2012	Sheet 28 of 60

Memory Partition A - Upper 32 bits



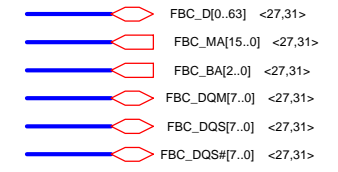
CMD mapping mod Mode D

Address	DATA Bus	
	0..31	32..63
FBx_CMD0	CS0#_L	
FBx_CMD1		
FBx_CMD2	ODT_L	
FBx_CMD3	CKE_L	
FBx_CMD4	A14	A14
FBx_CMD5	RST	RST
FBx_CMD6	A9	A9
FBx_CMD7	A7	A7
FBx_CMD8	A2	A2
FBx_CMD9	A0	A0
FBx_CMD10	A4	A4
FBx_CMD11	A1	A1
FBx_CMD12	BA0	BA0
FBx_CMD13	WE#	WE#
FBx_CMD14	A15	A15
FBx_CMD15	CAS#	CAS#
FBx_CMD16		CS0#_H
FBx_CMD17		
FBx_CMD18		ODT_H
FBx_CMD19		CKE_H
FBx_CMD20	A13	A13
FBx_CMD21	A8	A8
FBx_CMD22	A6	A6
FBx_CMD23	A11	A11
FBx_CMD24	A5	A5
FBx_CMD25	A3	A3
FBx_CMD26	BA2	BA2
FBx_CMD27	BA1	BA1
FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#

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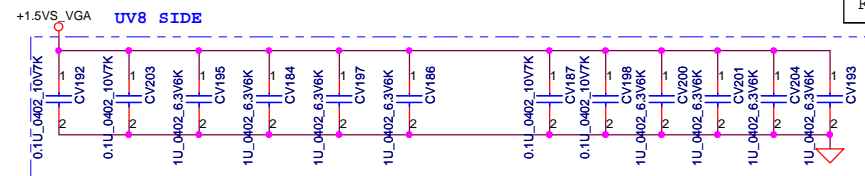
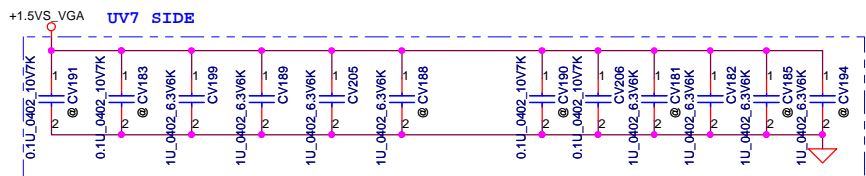
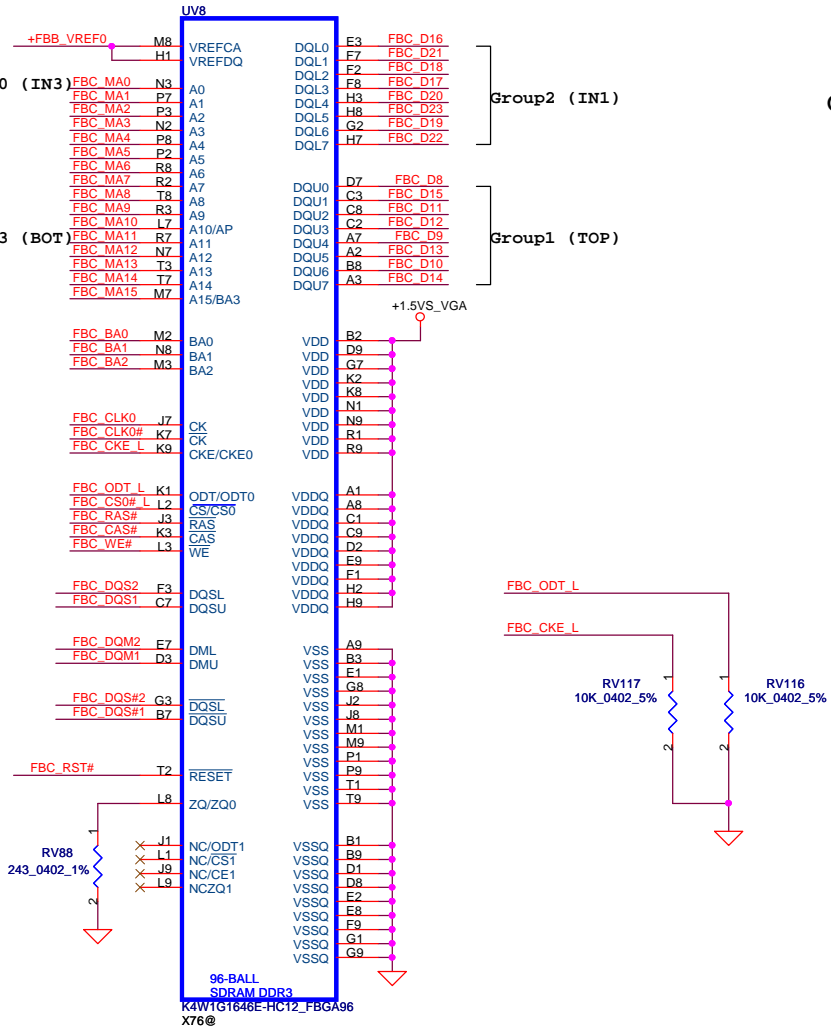
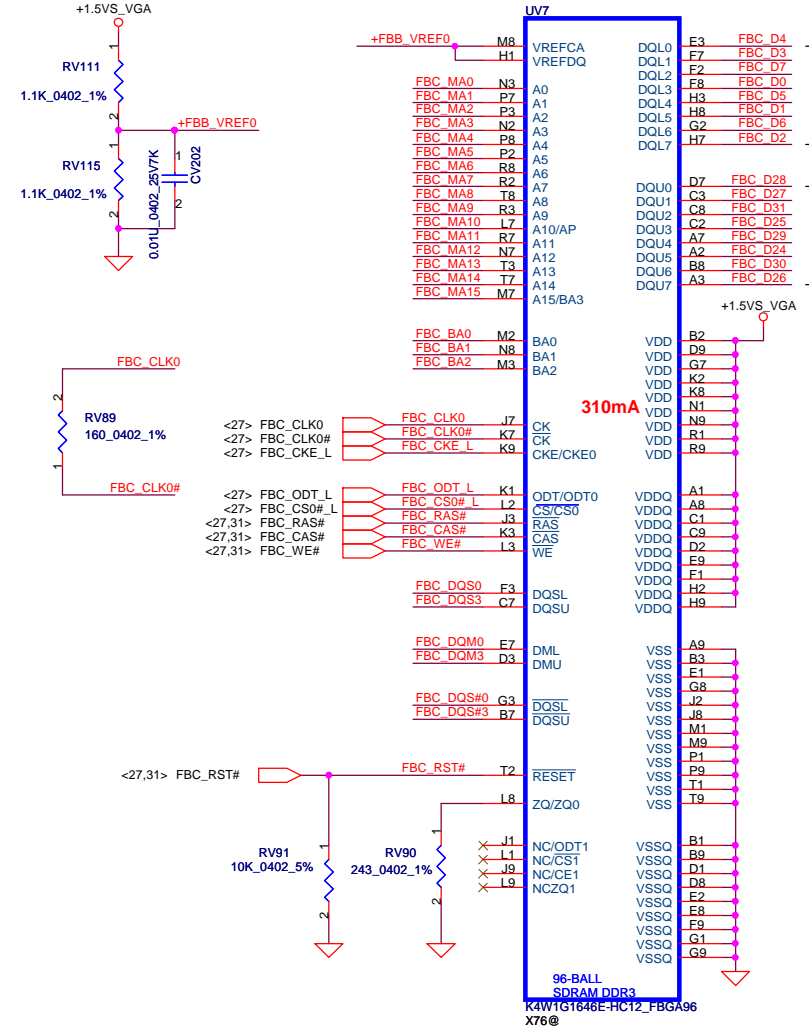
Compal Electronics, Inc.		
N13X-VRAM A Upper		
Size	Document Number	Rev 0.2
LA-7981P		
Date:	Tuesday, February 14, 2012	Sheet 29 of 60

Memory Partition C - Lower 32 bits



CMD mapping mod Mode D

Address	DATA Bus	
	0..31	32..63
FBx_CMD0	CS0#_L	
FBx_CMD1		
FBx_CMD2	ODT_L	
FBx_CMD3	CKE_L	
FBx_CMD4	A14	A14
FBx_CMD5	RST	RST
FBx_CMD6	A9	A9
FBx_CMD7	A7	A7
FBx_CMD8	A2	A2
FBx_CMD9	A0	A0
FBx_CMD10	A4	A4
FBx_CMD11	A1	A1
FBx_CMD12	BA0	BA0
FBx_CMD13	WE#	WE#
FBx_CMD14	A15	A15
FBx_CMD15	CAS#	CAS#
FBx_CMD16		CS0#_H
FBx_CMD17		
FBx_CMD18		ODT_H
FBx_CMD19		CKE_H
FBx_CMD20	A13	A13
FBx_CMD21	A8	A8
FBx_CMD22	A6	A6
FBx_CMD23	A11	A11
FBx_CMD24	A5	A5
FBx_CMD25	A3	A3
FBx_CMD26	BA2	BA2
FBx_CMD27	BA1	BA1
FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#



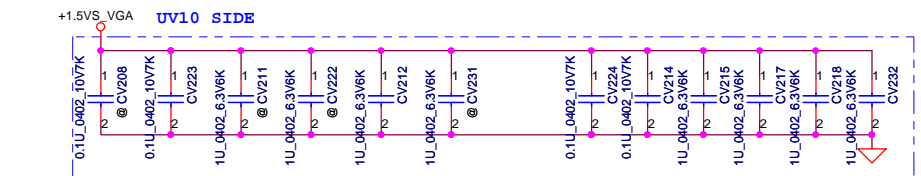
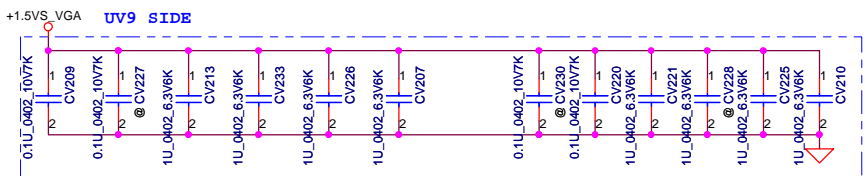
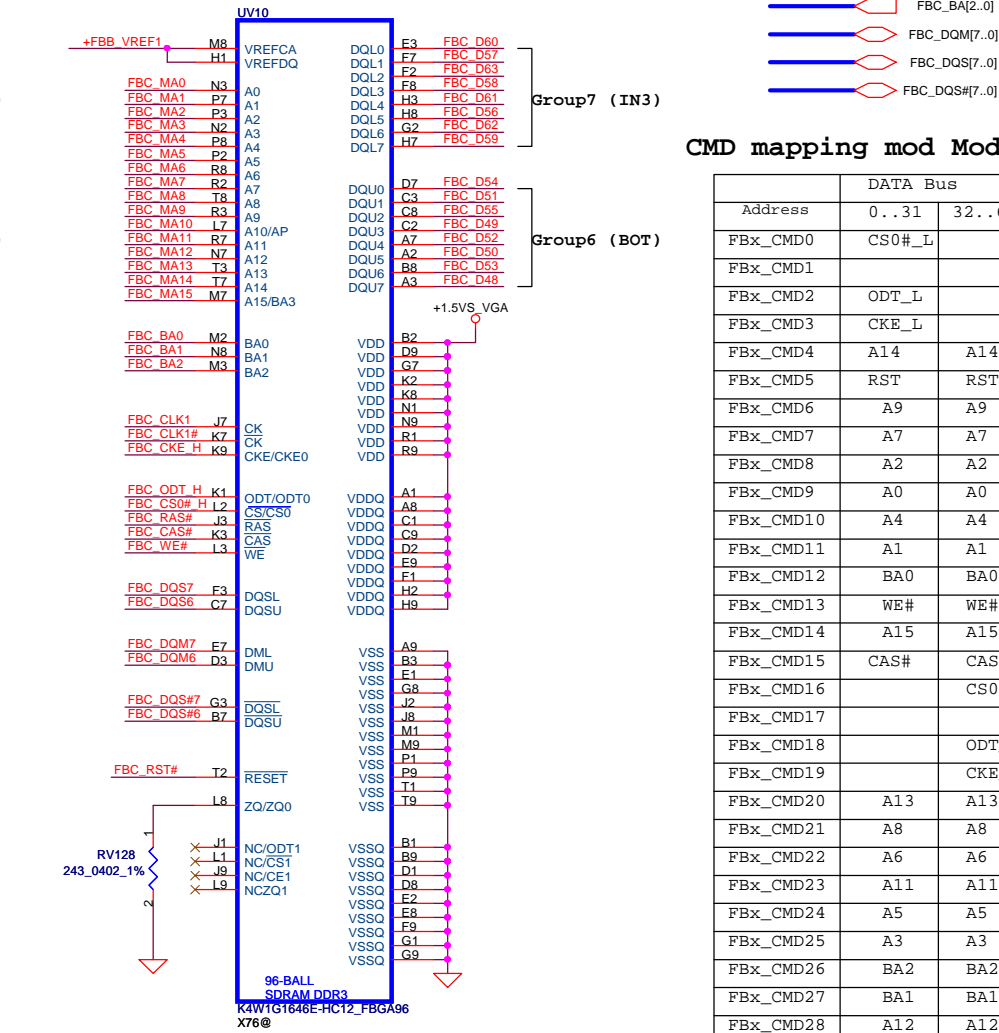
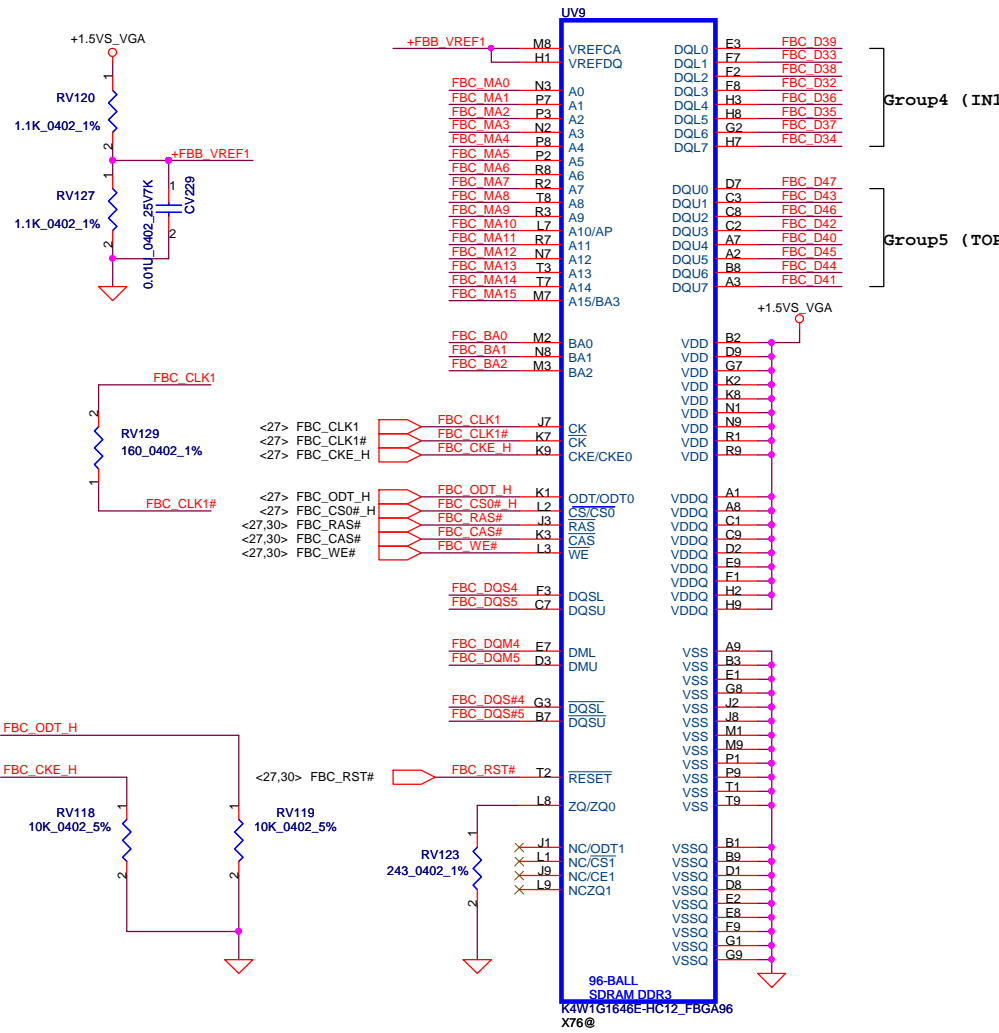
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				LA-7981P	
				Date	Tuesday, February 14, 2012
				Sheet	30 of 60
				Rev	0.2

Memory Partition C - Upper 32 bits

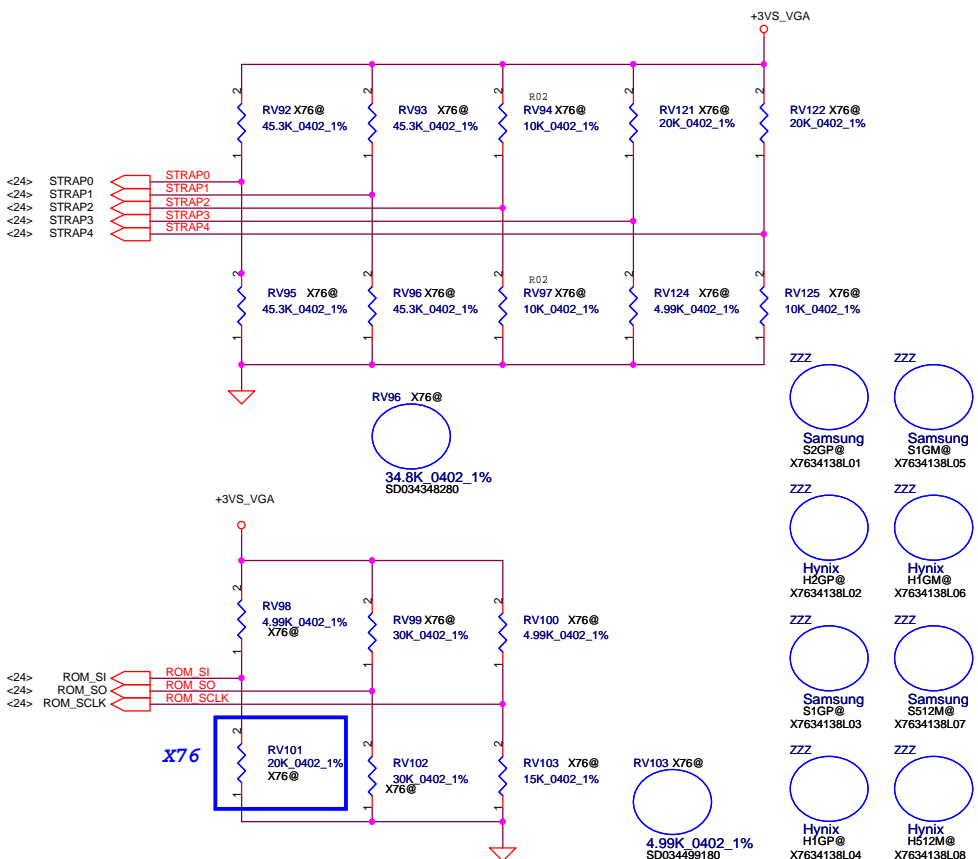
- FBC_D[0..63] <27,30>
- FBC_MA[15..0] <27,30>
- FBC_BA[2..0] <27,30>
- FBC_DQM[7..0] <27,30>
- FBC_DQS[7..0] <27,30>
- FBC_DQS# [7..0] <27,30>

CMD mapping mod Mode D

Address	DATA Bus	
FBx_CMD0	0..31	32..63
FBx_CMD1	CS0#_L	
FBx_CMD2	ODT_L	
FBx_CMD3	CKE_L	
FBx_CMD4	A14	A14
FBx_CMD5	RST	RST
FBx_CMD6	A9	A9
FBx_CMD7	A7	A7
FBx_CMD8	A2	A2
FBx_CMD9	A0	A0
FBx_CMD10	A4	A4
FBx_CMD11	A1	A1
FBx_CMD12	BA0	BA0
FBx_CMD13	WE#	WE#
FBx_CMD14	A15	A15
FBx_CMD15	CAS#	CAS#
FBx_CMD16		CS0#_H
FBx_CMD17		
FBx_CMD18		ODT_H
FBx_CMD19		CKE_H
FBx_CMD20	A13	A13
FBx_CMD21	A8	A8
FBx_CMD22	A6	A6
FBx_CMD23	A11	A11
FBx_CMD24	A5	A5
FBx_CMD25	A3	A3
FBx_CMD26	BA2	BA2
FBx_CMD27	BA1	BA1
FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#



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					Custom	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet	31	of	60		



Physical Strapping pin	Power Rail	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0
ROM_SCLK	+3VS_VGA	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM
ROM_SI	+3VS_VGA	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]
ROM_SO	+3VS_VGA	FB[1]	FB[0]	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	+3VS_VGA	USER[3]	USER[2]	USER[1]	USER[0]
STRAP1	+3VS_VGA	3GIO_PAD_CFG_ADR[3]	3GIO_PAD_CFG_ADR[2]	3GIO_PAD_CFG_ADR[1]	3GIO_PAD_CFG_ADR[0]
STRAP2	+3VS_VGA	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP3	+3VS_VGA	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
STRAP4	+3VS_VGA	RESERVED	PCIE_SPEED_CHANGE_GEN3	PCIE_MAX_SPEED	DP_PLL_VDD33V

Resistor Values	Pull-up to +3VS_VGA	Pull-down to Gnd
5K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
25K	1100	0100
30K	1101	0101
35K	1110	0110
45K	1111	0111

For N13P-GL strap table

GPU	Frenq.	Memory Size	Memory Config	strap0	strap1	strap2	strap3	strap4	ROM_SI	ROM_SO	ROM_SCLK
N13P-GL	900 MHz	128M* 16* 8	Samsung (2Gb)	R	R	R	R	R	R	R	R
			K4W2G1646C-HC11	PU 45K	PD 45K	PU 10K	n/a	n/a	PD 45K	PD 10K	PD 15K
N13P-GL	900 MHz	128M* 16* 8	Hynix (2Gb)	R	R	R	R	R	R	R	R
			H5TQ1G63DFR-11C	PU 45K	PD 45K	PU 10K	n/a	n/a	PD 35K	PD 10K	PD 15K
N13P-GL	900 MHz	64M* 16* 8	Samsung (1Gb)	R	R	R	R	R	R	R	R
			K4W1G1646G-BC11	PU 45K	PD 45K	PU 10K	n/a	n/a	PD 20K	PD 10K	PD 15K
N13P-GL	900 MHz	64M* 16* 8	Hynix (1Gb)	R	R	R	R	R	R	R	R
			H5TQ1G63DFR-11C	PU 45K	PD 45K	PU 10K	n/a	n/a	PD 15K	PD 10K	PD 15K

For N13M-GE strap table

GPU	Frenq.	Memory Size	Memory Config	strap0	strap1	strap2	strap3	strap4	ROM_SI	ROM_SO	ROM_SCLK
N13M-GE	900 MHz	128M* 16* 4	Samsung (2Gb)	R	R	R	R	R	R	R	R
			K4W2G1646C-HC11	PU 10K	PD 10K	PU 10K	PD 10K	PD 10K	PD 10K	PD 10K	PD 10K
N13M-GE	900 MHz	128M* 16* 4	Hynix (2Gb)	R	R	R	R	R	R	R	R
			H5TQ1G63DFR-11C	PD 10K	PU 10K	PU 10K	PD 10K	PD 10K	PD 10K	PD 10K	PD 10K
N13M-GE	900 MHz	64M* 16* 4	Samsung (1Gb)	R	R	R	R	R	R	R	R
			K4W1G1646G-BC11	PU 10K	PU 10K	PU 10K	PD 10K	PD 10K	PD 10K	PD 10K	PD 10K
N13M-GE	900 MHz	64M* 16* 4	Hynix (1Gb)	R	R	R	R	R	R	R	R
			H5TQ1G63DFR-11C	PD 10K	PD 10K	PU 10K	PD 10K	PD 10K	PD 10K	PD 10K	PD 10K

SUB_VENDOR	
0	No VBIOS ROM
1	BIOS ROM is present (Default)

3GIO_PADCFG	
3GIO_PADCFG[3:0]	
0110	Notebook Default

XCLK_417	
0	277MHz (Default)
1	Reserved

FB_0_BAR_SIZE	
0	Reserved
1	Reserved
2	256MB (Default)
3	Reserved

SLOT_CLK_CFG	
0	GPU and MCH don't share a common reference clock
1	GPU and MCH share a common reference clock (Default)

SMBUS_ALT_ADDR	
0	0x9E (Default)
1	0x9C (Multi-GPU usage)

VGA_DEVICE	
0	3D Device (Class Code 302h)
1	VGA Device (Default)

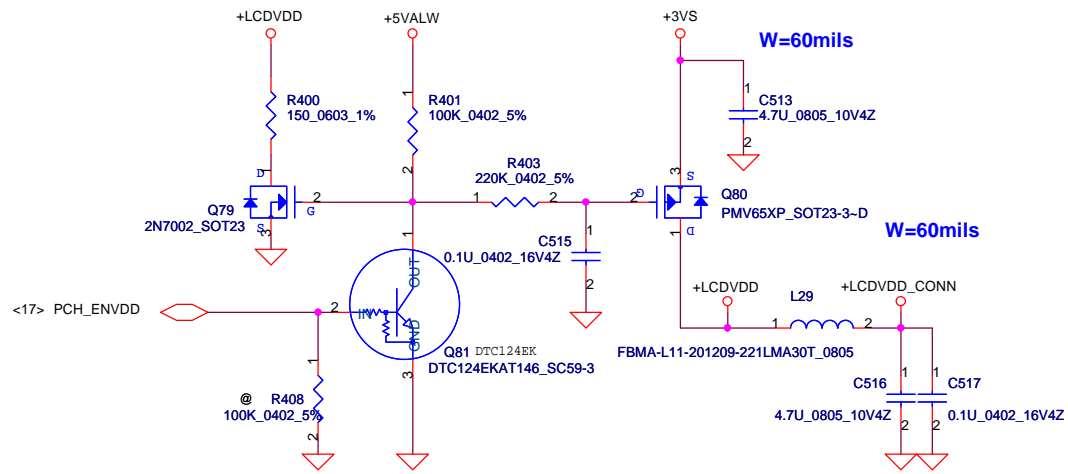
USER Straps	
User[3:0]	
1000-1100	Customer defined

PEX_PLL_EN_TERM	
0	Disable (Default)
1	Enable

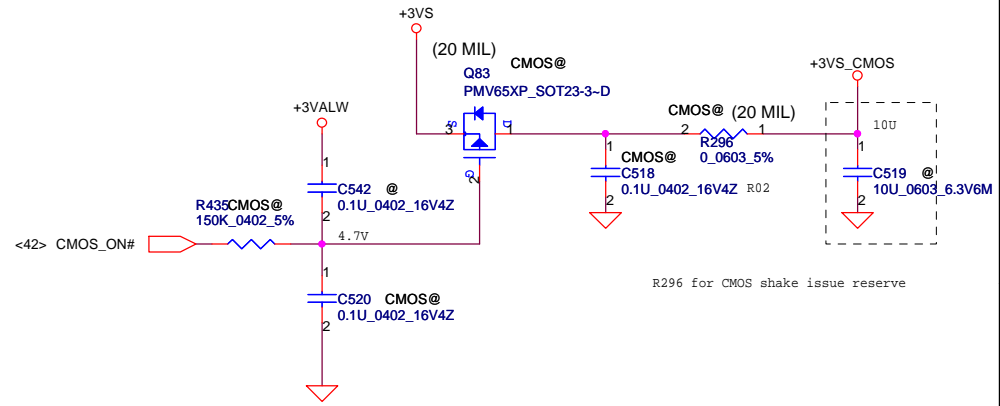
PCIE_MAX_SPEED	
0	Limit to PCIe Gen1
1	PCIe Gen 2/3 Capable

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Issued Date	2011/06/15	Deciphered Date		
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Size Custom	Document Number	LA-7981P		Rev 0.2
Date:	Tuesday, February 14, 2012	Sheet	32 of 60	

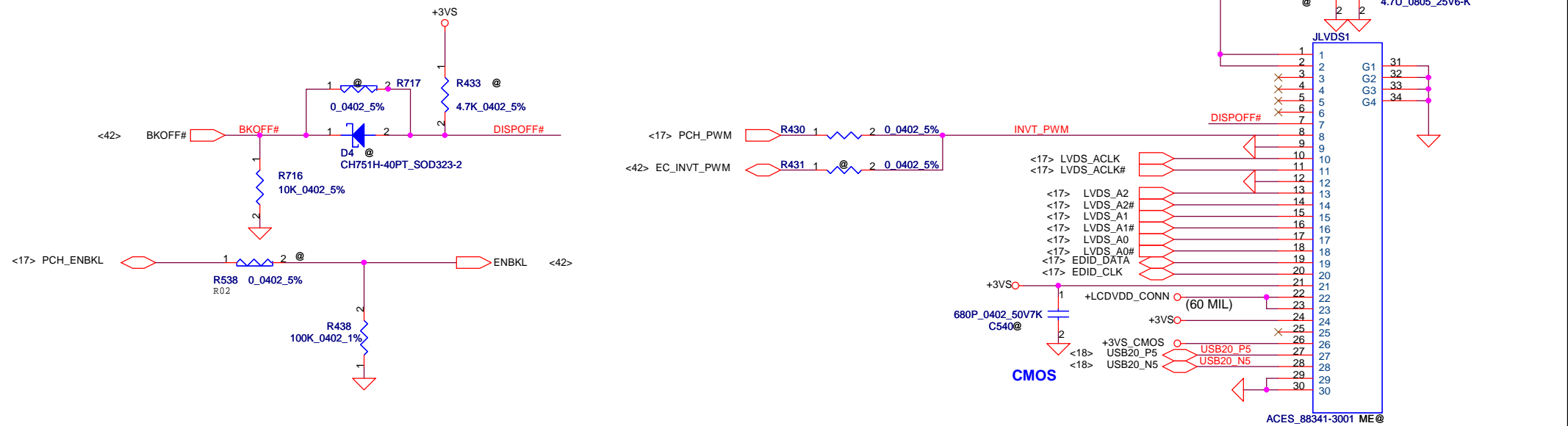
LCD POWER CIRCUIT



CMOS Camera

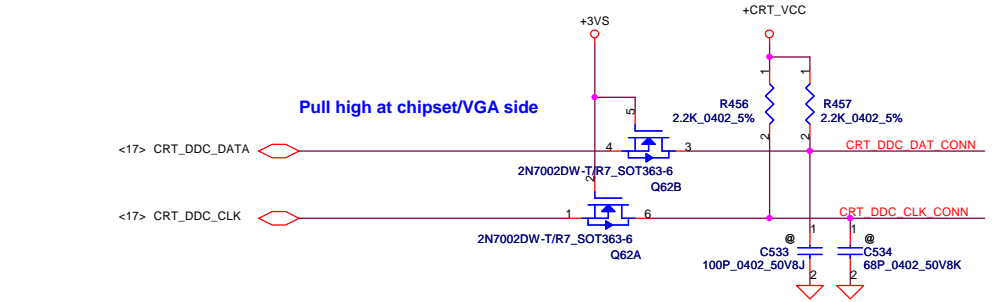
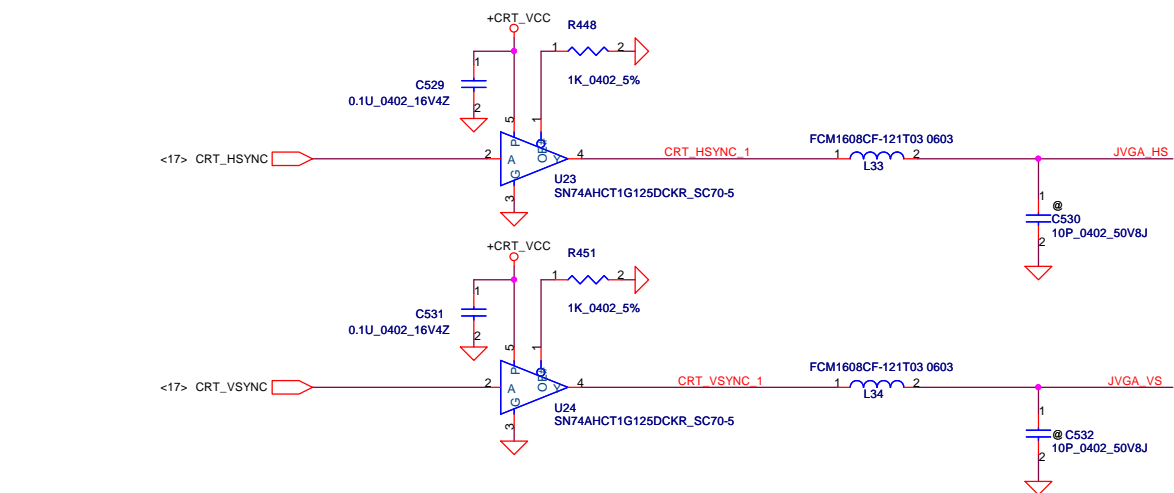
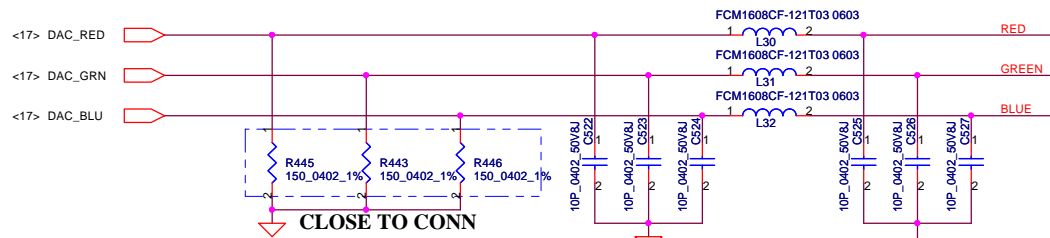
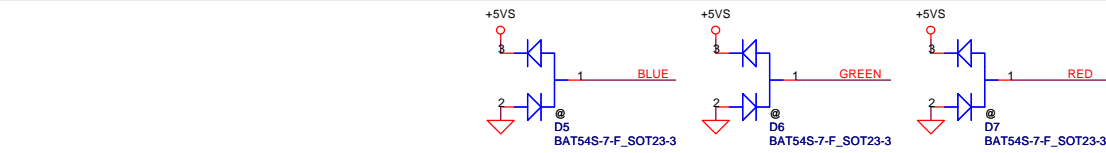


VGA LCD/PANEL BD. Conn.

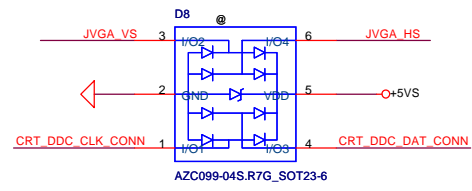
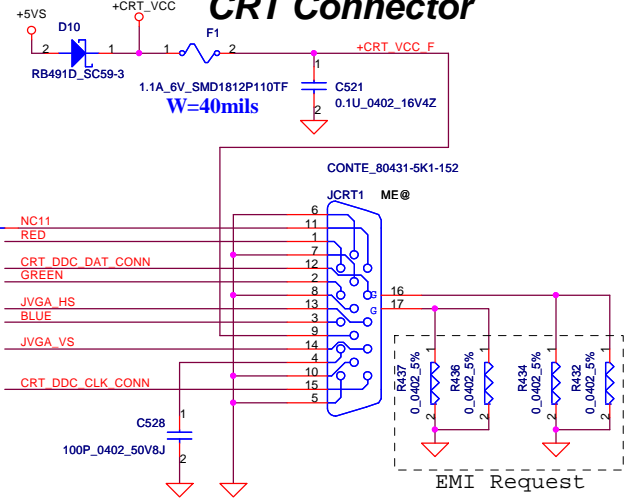


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		LVDS/CAMERA	
Size	Document Number	Rev	
Custom	LA-7981P	0.2	
Date:	Tuesday, February 14, 2012	Sheet	33 of 60

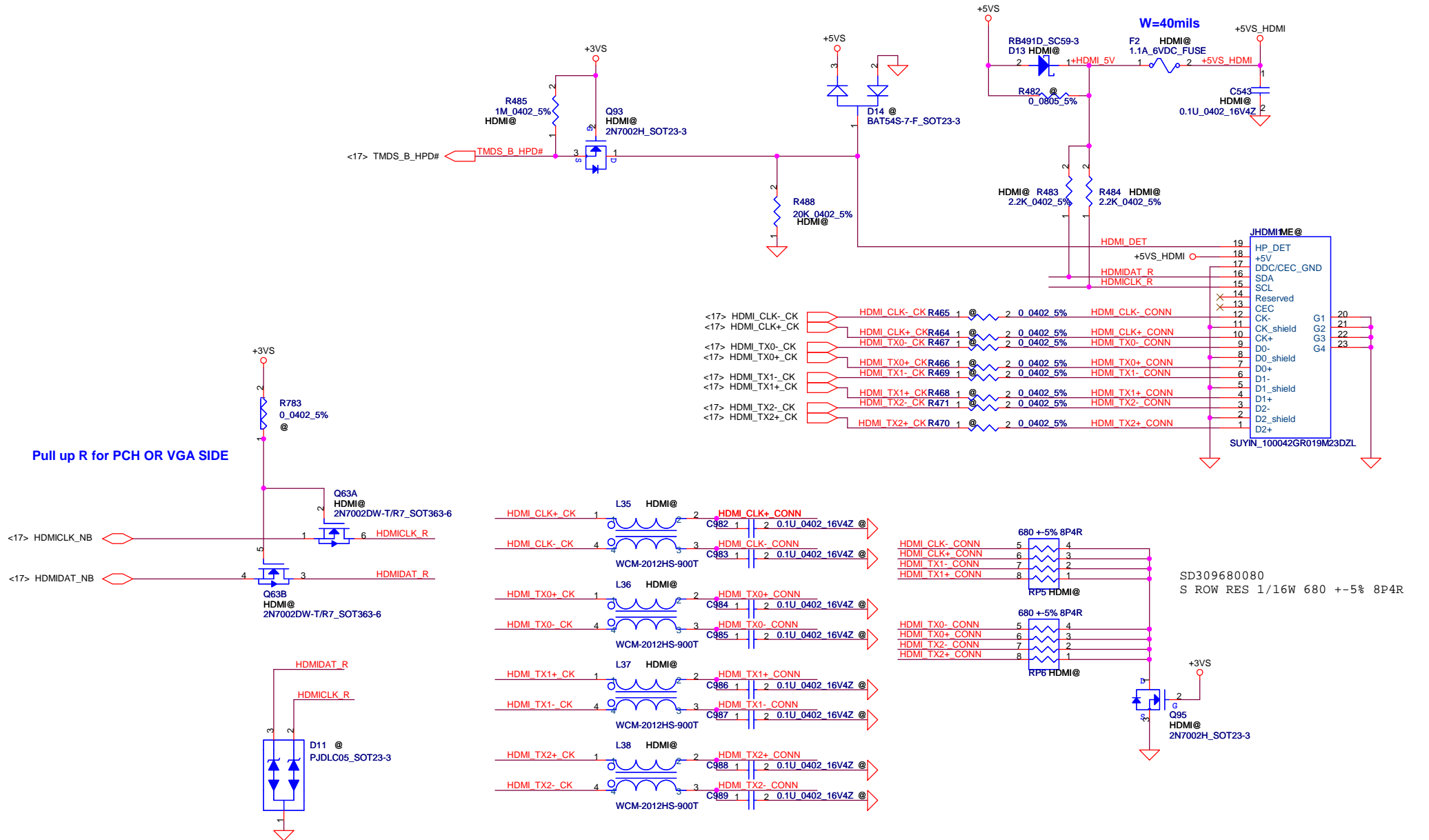


CRT Connector



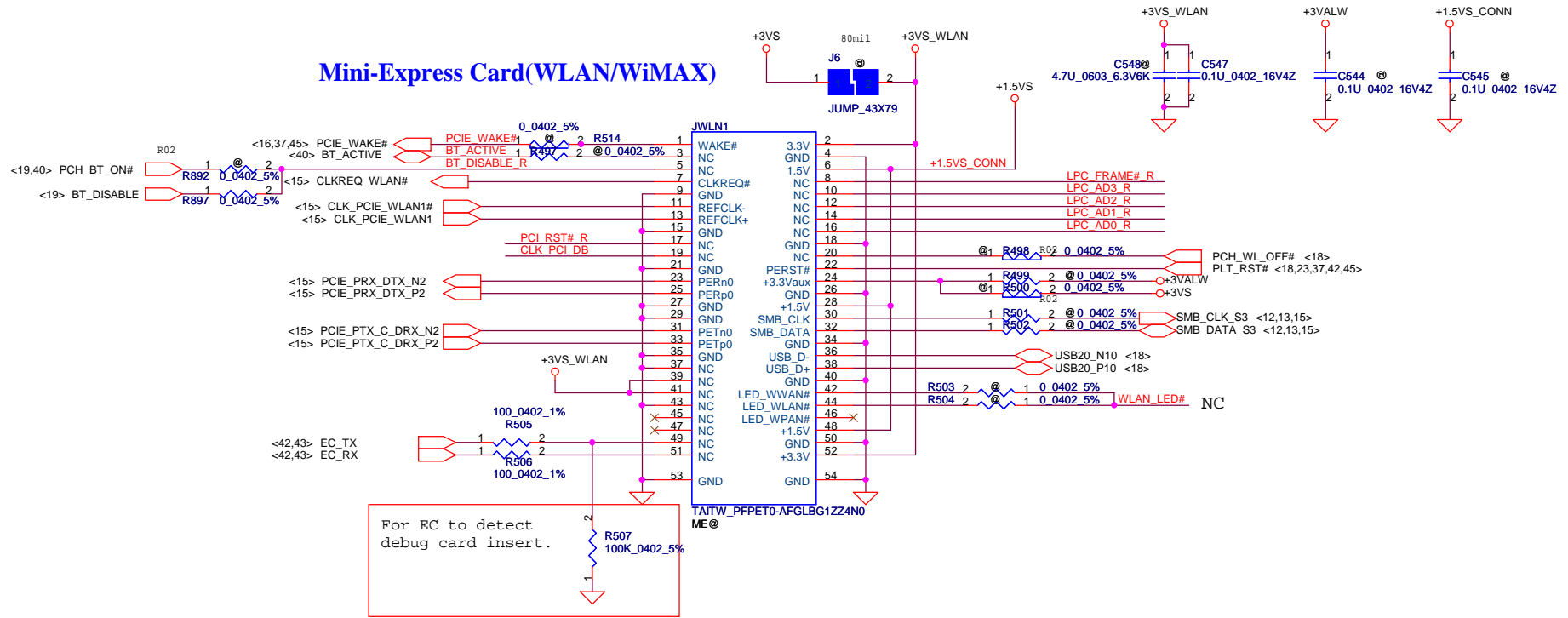
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Issued Date	2011/06/15	Deciphered Date	2012/07/11
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CRT Connector		
Size	Document Number	Rev
Custom	LA-7981P	0.2
Date:	Tuesday, February 14, 2012	Sheet 34 of 60



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				LA-7981P	
				Date: Tuesday, February 14, 2012	Sheet 35 of 60

Mini-Express Card for WLAN/WiMAX(Half)



Reserve for SW mini-pcie debug card.
Series resistors closed to KBC side.

LPC_FRAME# R	R508	1	@	2	0.0402 5%	LPC_FRAME#	LPC_FRAME# <14,42>
LPC_AD3 R	R509	1	@	2	0.0402 5%	LPC_AD3	LPC_AD3 <14,42>
LPC_AD2 R	R510	1	@	2	0.0402 5%	LPC_AD2	LPC_AD2 <14,42>
LPC_AD1 R	R511	1	@	2	0.0402 5%	LPC_AD1	LPC_AD1 <14,42>
LPC_AD0 R	R512	1	@	2	0.0402 5%	LPC_AD0	LPC_AD0 <14,42>
PCI_RST# R	R513	1	@	2	0.0402 5%	PLT_RST#	PLT_RST# <18,23,37,42,45>
CLK_PCI_DB						CLK_PCI_DB	CLK_PCI_DB <18>

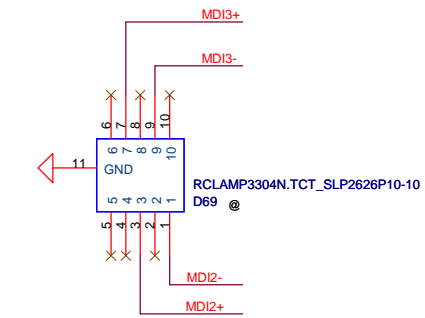
Security Classification		Compal Secret Data		Title	
Issued Date	2011/06/15	Deciphered Date	2012/07/11	Mini-Card/NEW Card/SIM	
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				Date	Tuesday, February 14, 2012

Compal Electronics, Inc.

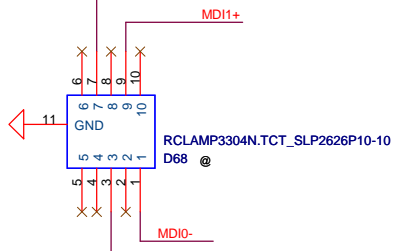
Mini-Card/NEW Card/SIM

LA-7981P

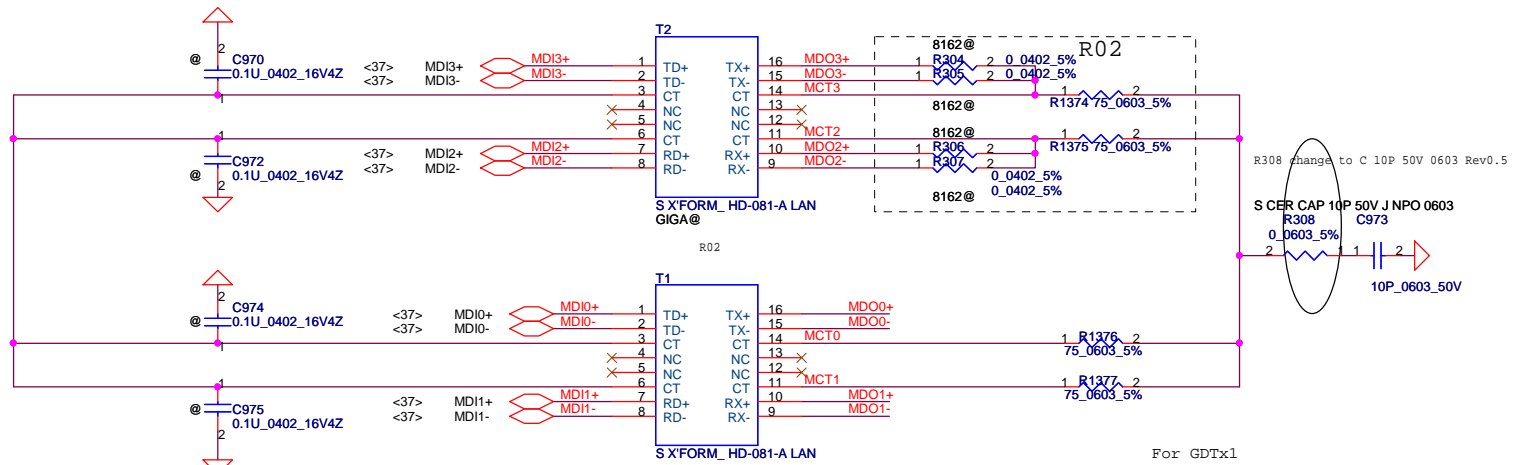
Rev 0.2



Place Close to T2
MDI1-

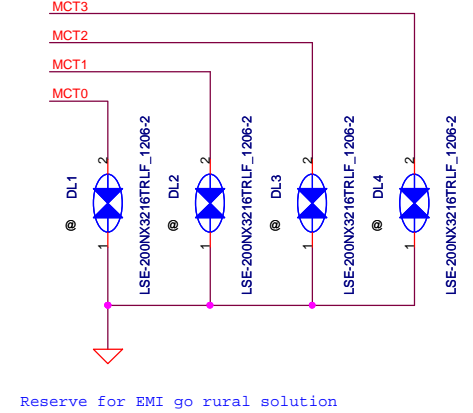
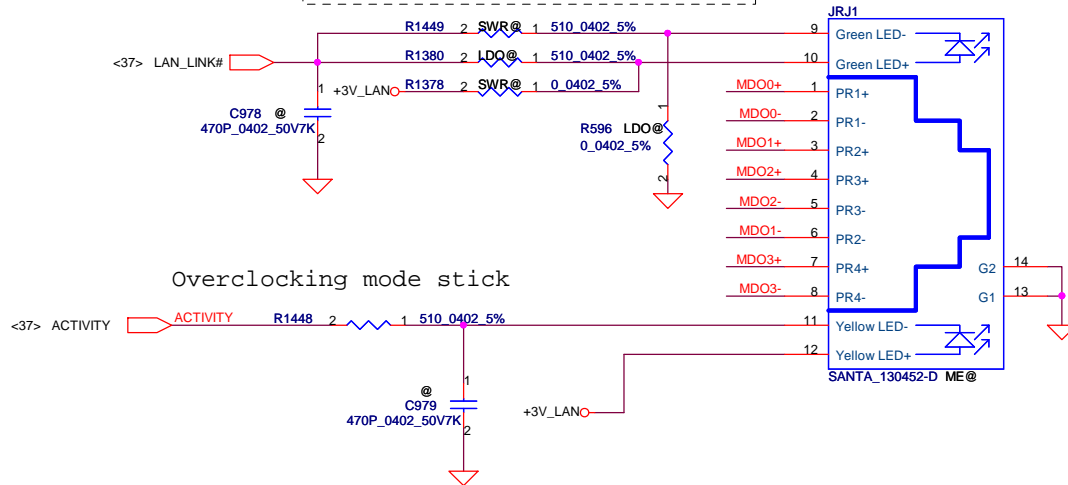


Place Close to T1
MDI0+



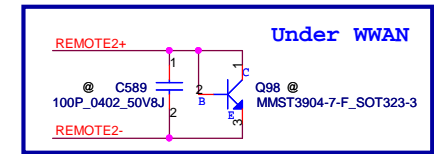
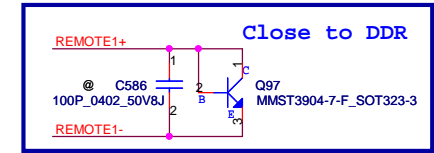
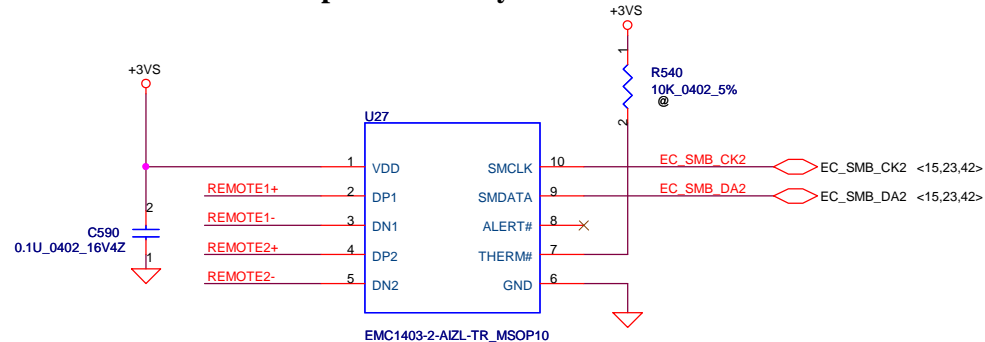
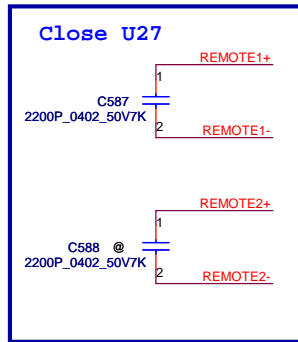
For GDTx1
DL1- Mount
DL2/DL3/DL4- NC
R308- 75 ohm
R1374/R1375/R1376/R1377- 0 ohm

LDO Mode: pop R1380;R596
SWR Mode: pop R1449;R1378



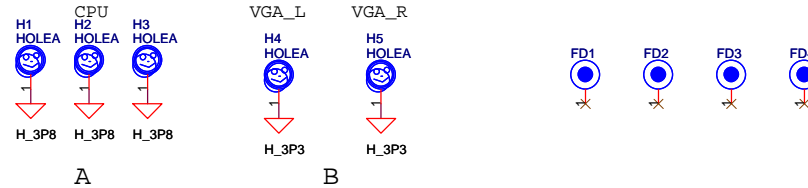
Security Classification				Compal Secret Data				Compal Electronics, Inc.			
Issued Date		2011/06/15		Deciphered Date		2012/07/11		Title			
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								LA-7981P		0.2	
								Date: Tuesday, February 14, 2012		Sheet 38 of 60	

SMSC thermal sensor placed near by VRAM

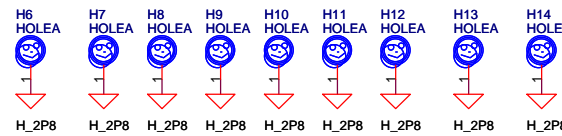
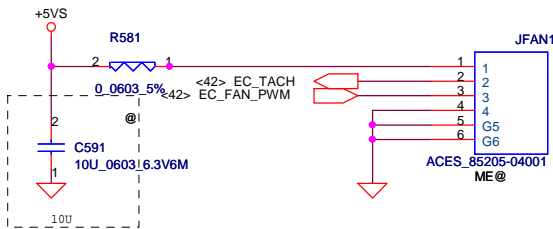


Address 1001_101xb

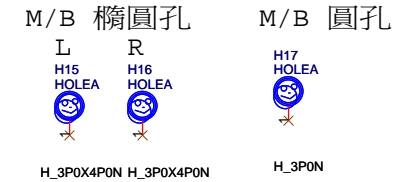
REMOTE1,2+/-:
Trace width/space:10/10 mil
Trace length:<8"



FAN1 Conn



D
2P8 * 9 pcd

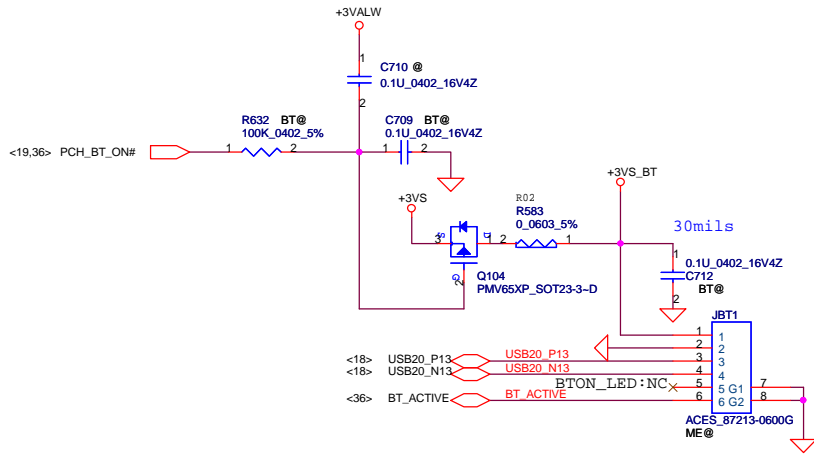


E

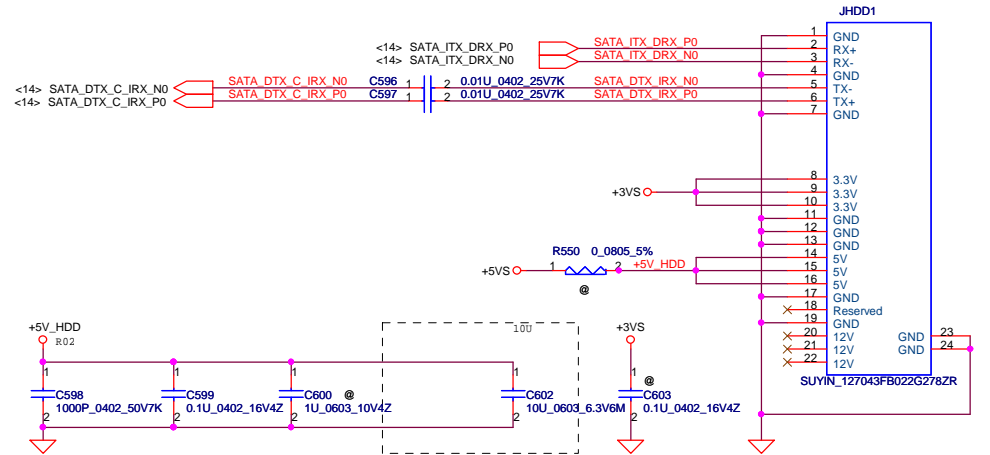
Security Classification	Compal Secret Data			Compal Electronics, Ltd.	
Issued Date	2011/06/15	Deciphered Date	2012/07/11	Title	Fintek-Thermal IC/FAN/screw
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					LA-7981P
				Date:	Tuesday, February 14, 2012
				Sheet	39 of 60

Rev 0.2

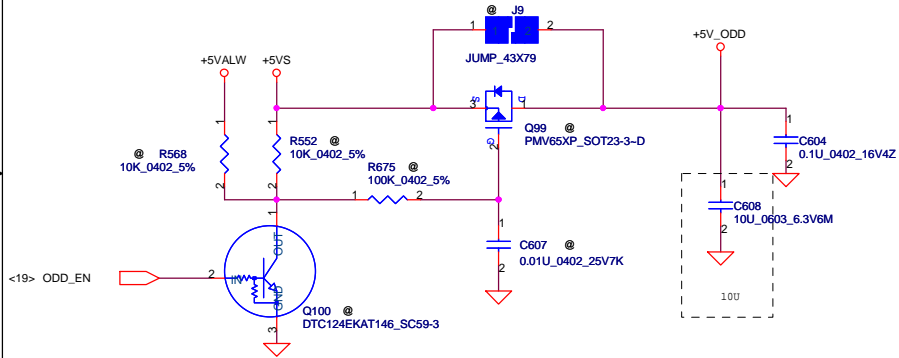
BT MODULE CONN



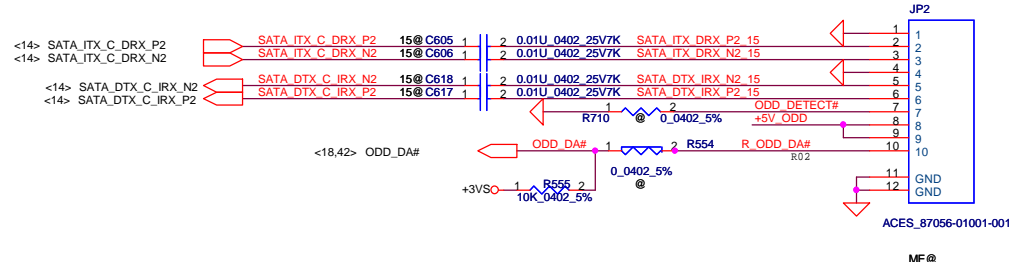
SATA HDD Conn.



ODD Power Control

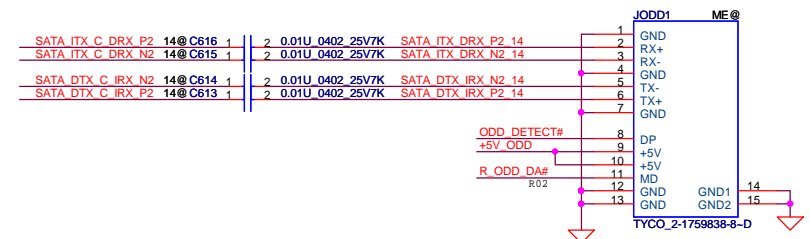


FOR 15" SATA ODD FFC Conn.



Co-lay

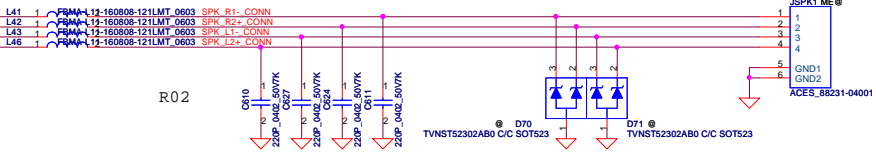
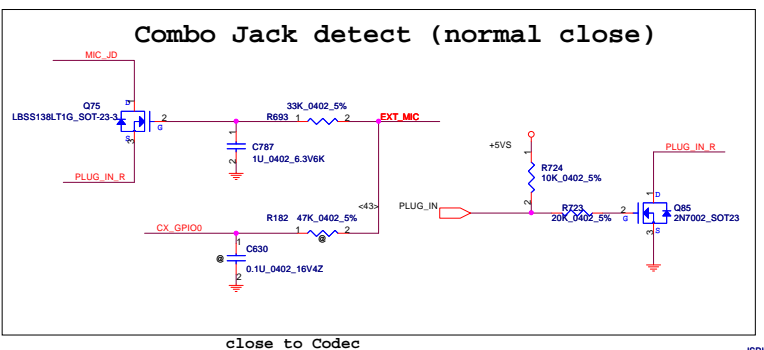
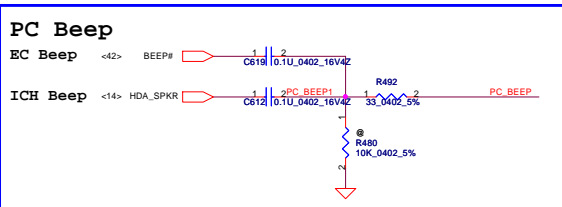
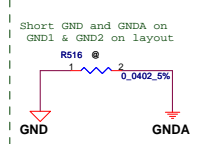
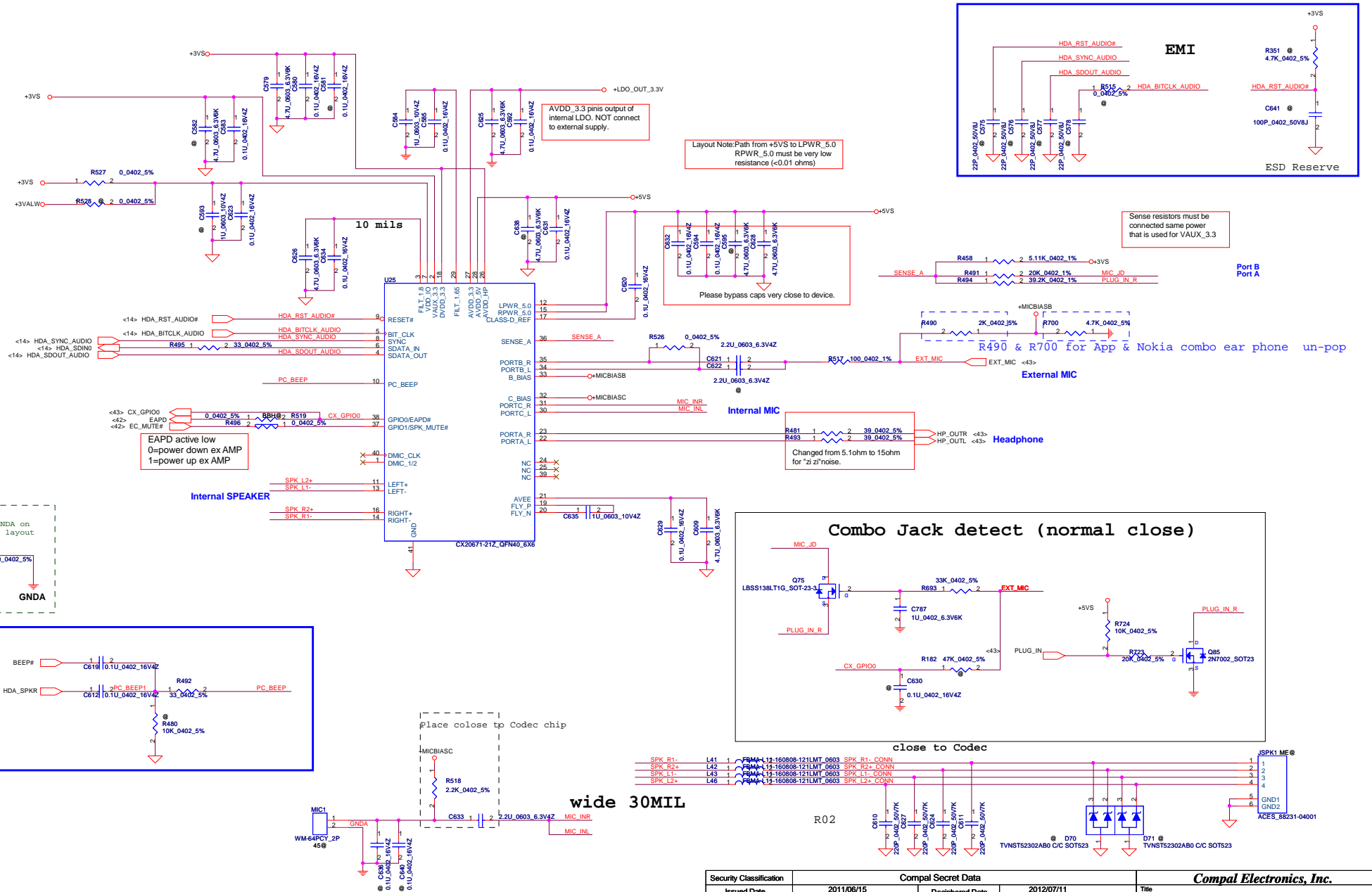
FOR 14" SATA ODD Conn.



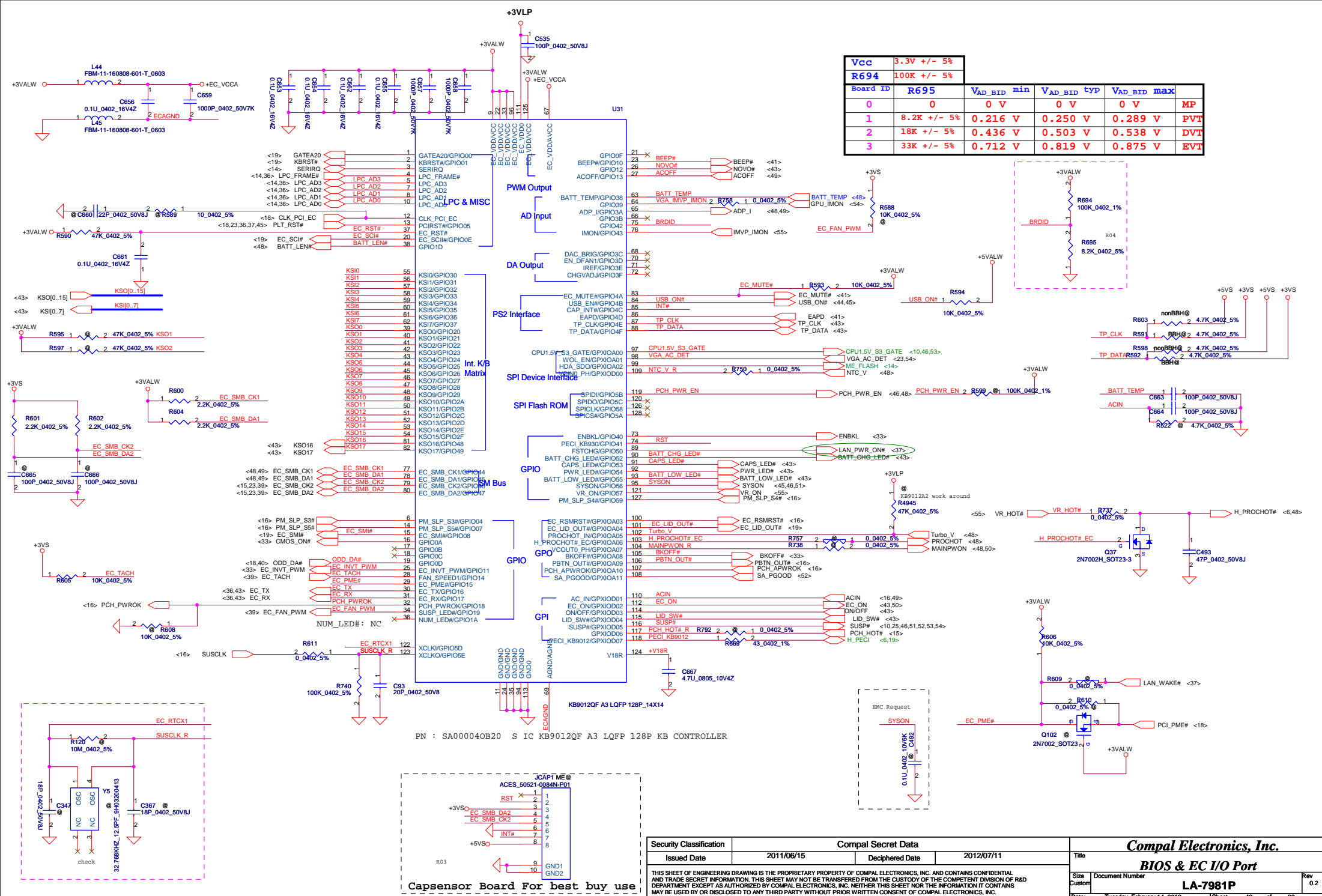
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Issued Date	2011/06/15	Deciphered Date	2012/07/11
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Compal Electronics, Inc.		
Title HDD/ODD/BT Connector		
Size Custom	Document Number LA-7981P	Rev 0.2
Date: Tuesday, February 14, 2012	Sheet 40	of 60

CX20671
 High Definition Audio Codec SoC
 With Integrated Class-D Stereo
 Amplifier.
 An integrated 5 V to 3.3 V Low-dropout
 voltage regulator (LDO).
 An integrated 3.3 V to 1.8V Low-dropout
 voltage regulator (LDO).

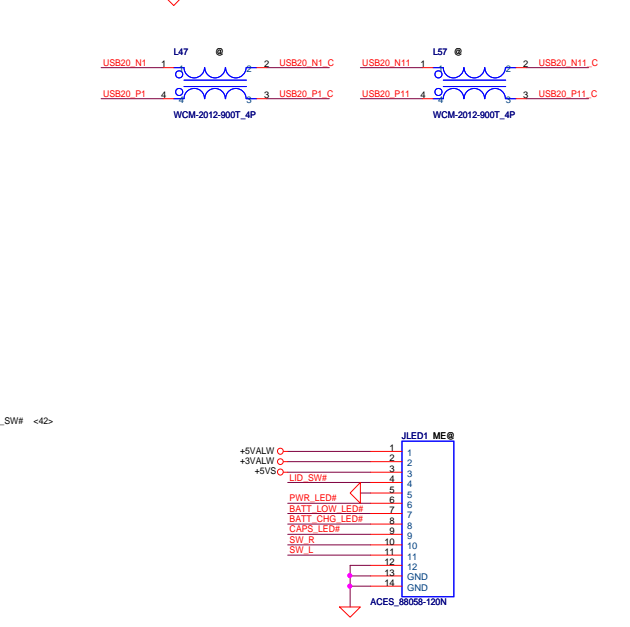
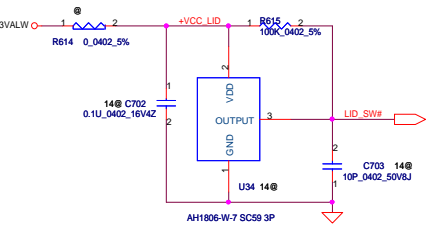
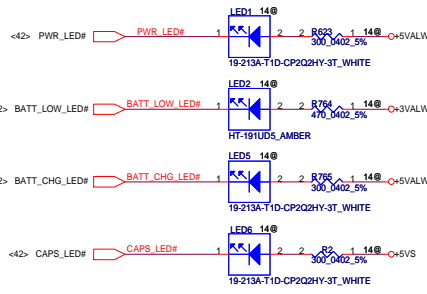
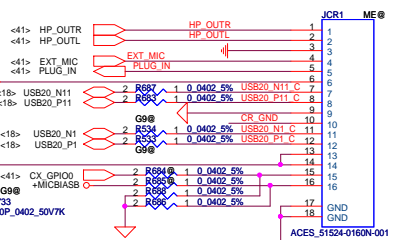
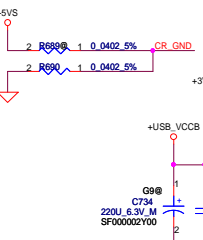
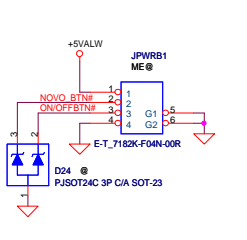
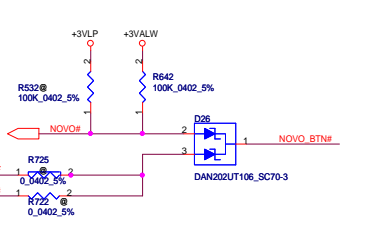
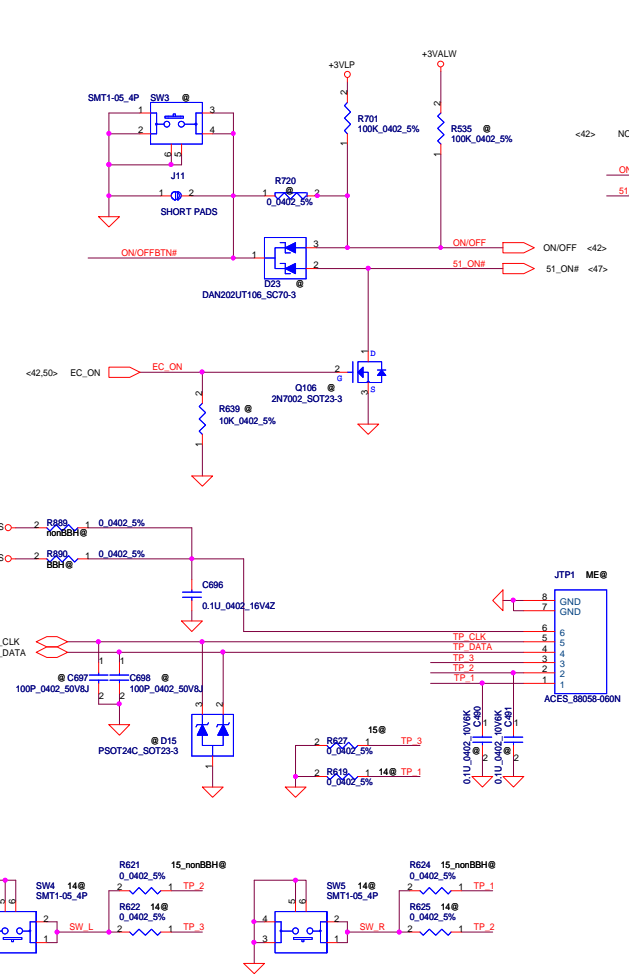
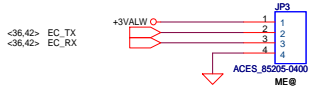
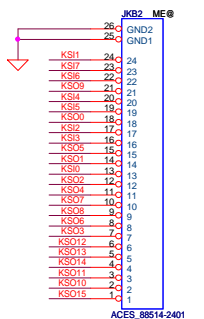
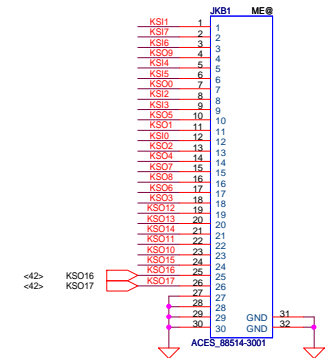
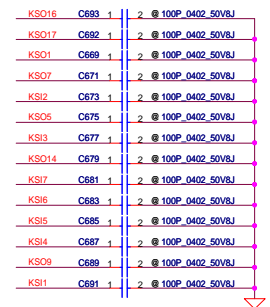
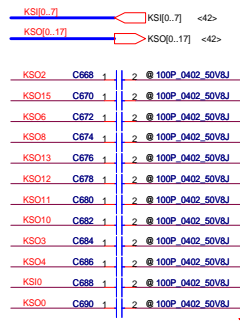


Security Classification	Compal Secret Data		Title	
Issued Date	2011/06/15	Deciphered Date	2012/07/11	CX20671 Codec
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Size	Document Number	Rev	Rev	
Custom	LA-7981P	0.2	0.2	
Date:	Tuesday, February 14, 2012	Sheet	41	of 60



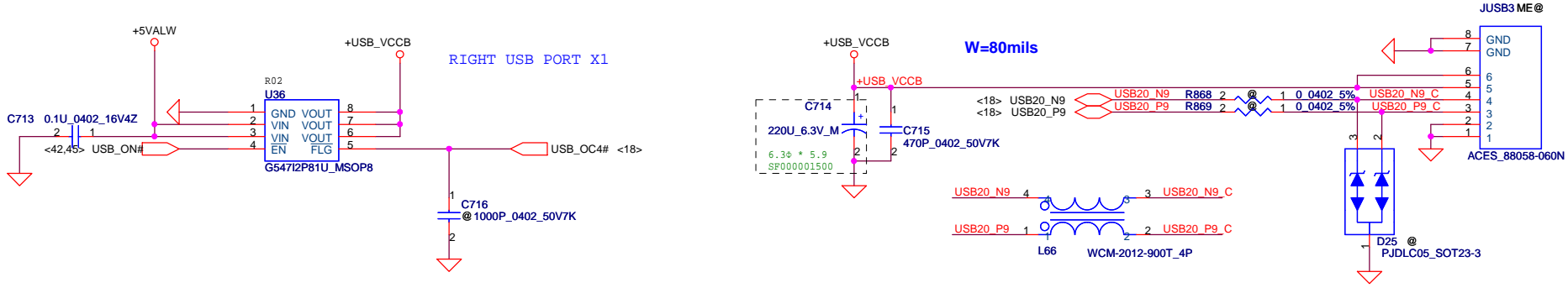
Vcc	3.3V +/- 5%				
R694	100K +/- 5%				
Board ID	R695	VAD_BID min	VAD_BID typ	VAD_BID max	
0	0	0 V	0 V	0 V	MP
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V	PVT
2	18K +/- 5%	0.436 V	0.503 V	0.538 V	DVT
3	33K +/- 5%	0.712 V	0.819 V	0.875 V	EVT

Security Classification	Compal Secret Data		Title	
Issued Date	2011/06/15	Deciphered Date	2012/07/11	BIOS & EC I/O Port
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Size	Document Number	Rev	Date: Tuesday, February 14, 2012 Sheet 42 of 60	
Custom	LA-7981P	0.2		

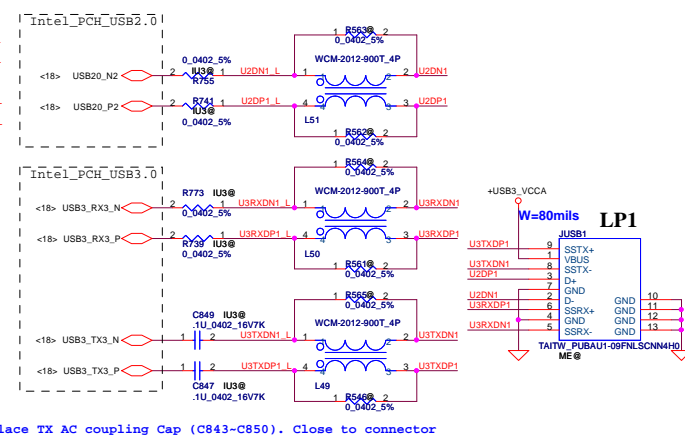
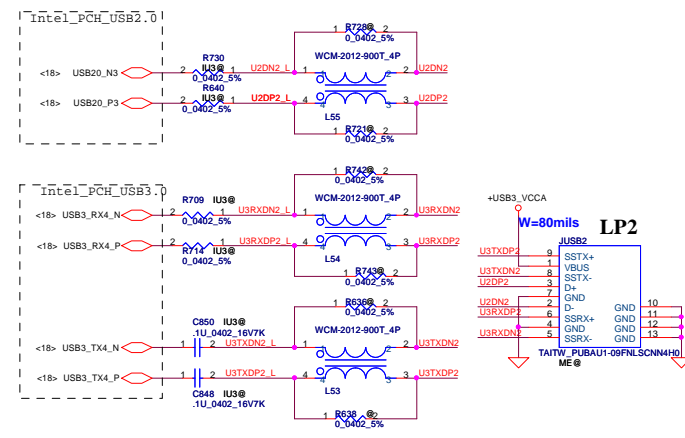
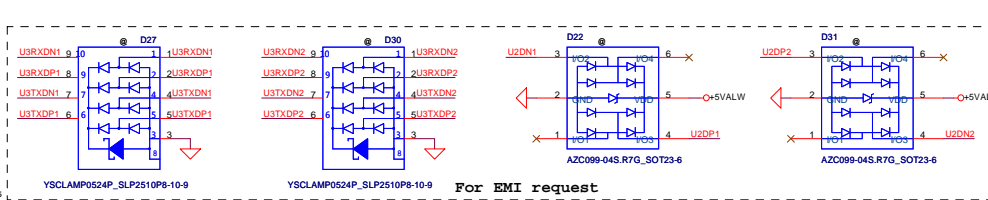
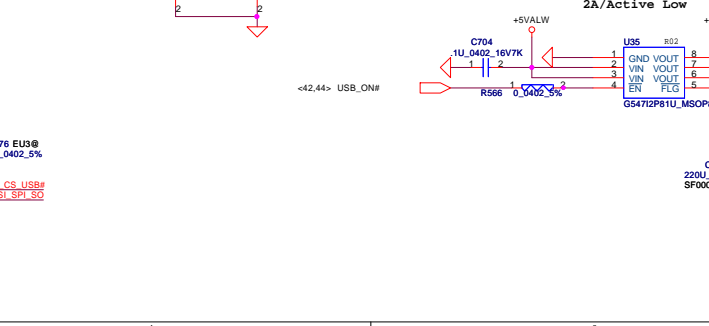
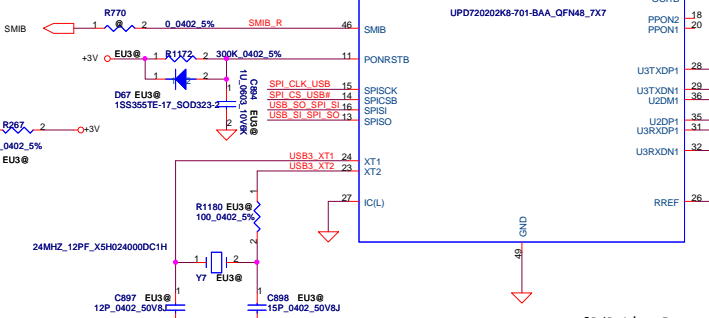
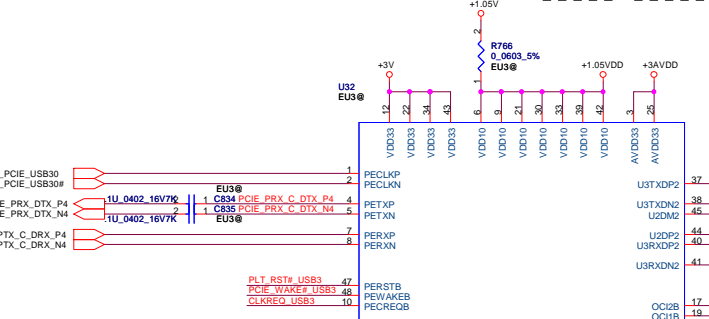
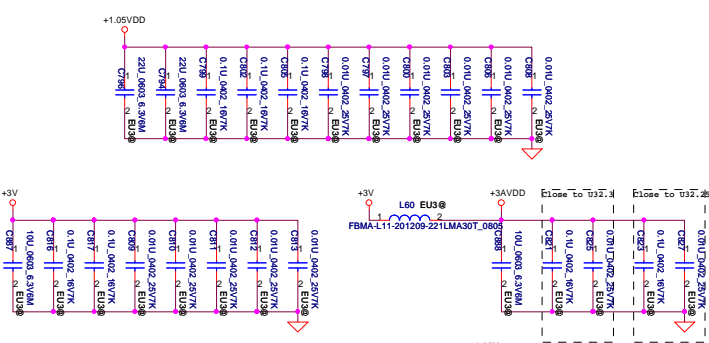
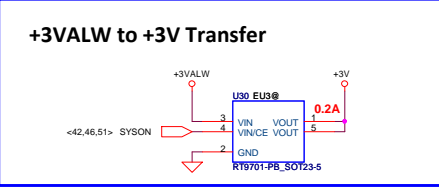
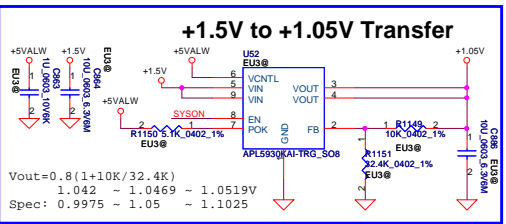


Security Classification		Compal Secret Data		Title	
Issued Date		Deciphered Date		ROM/KBD/PWR/CR/LED/TP Conn.	
2011/06/15		2012/07/11		Rev 0.2	
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Right Ext.USB Conn.



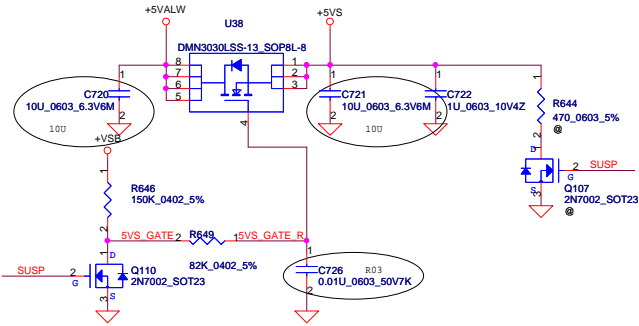
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Issued Date	2011/06/15	Deciphered Date	2012/07/11	Title USB ext. ports		
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				LA-7981P		Date: Tuesday, February 14, 2012



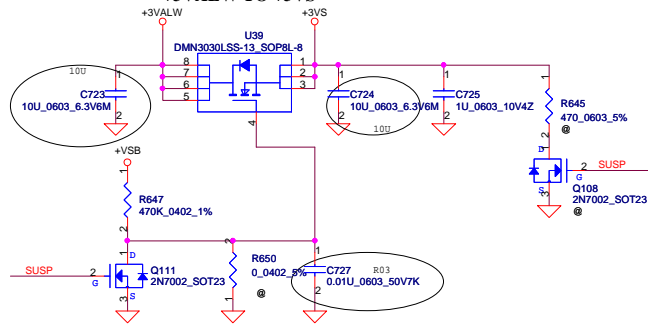
Place TX AC coupling Cap (C843-C850). Close to connector

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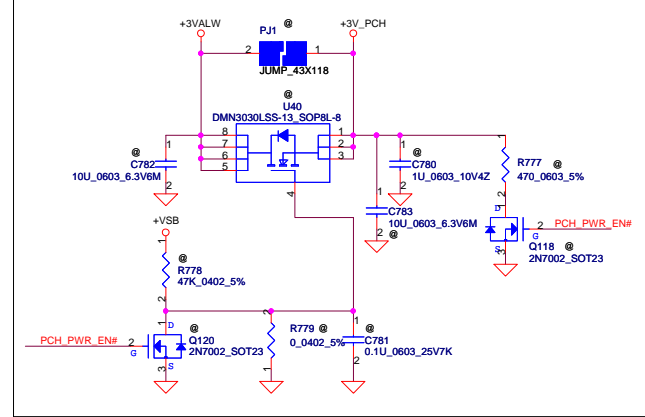
+5VALW TO +5VS



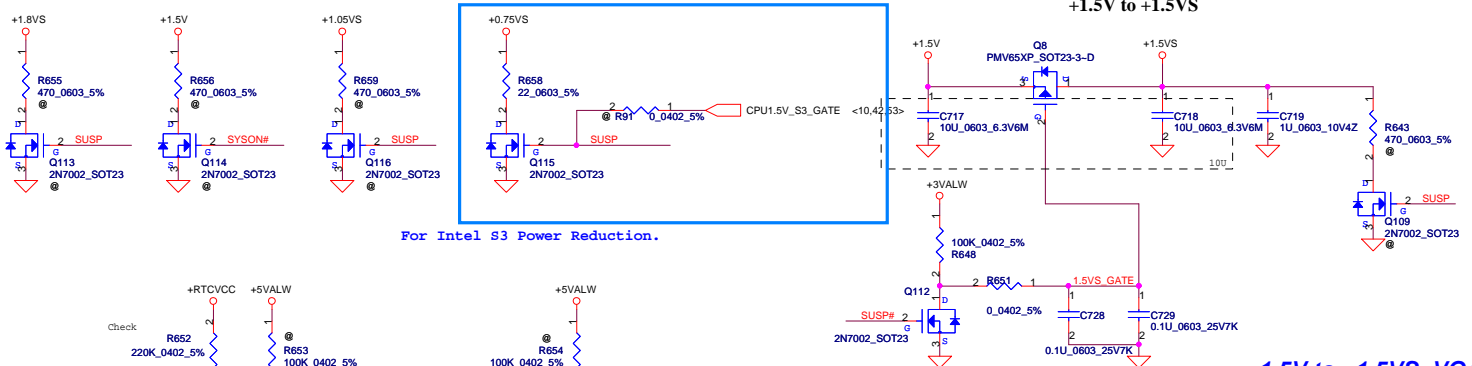
+3VALW TO +3VS



+3VALW TO +3VALW(PCH AUX Power)

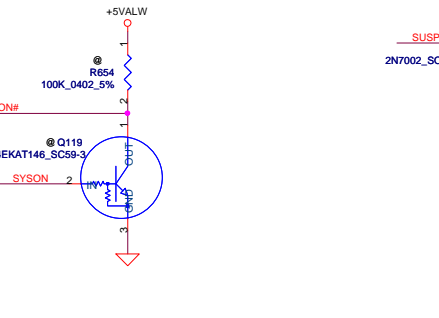
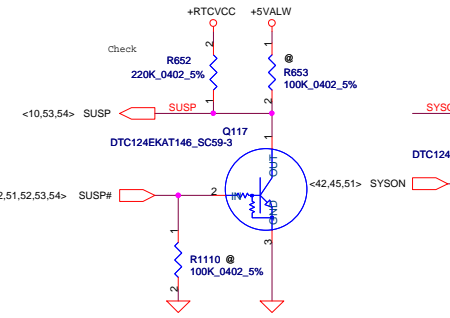
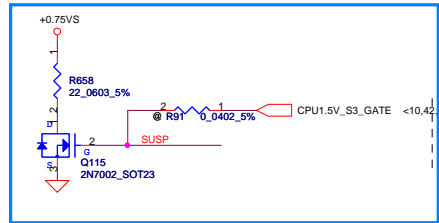
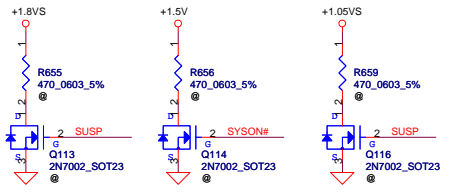
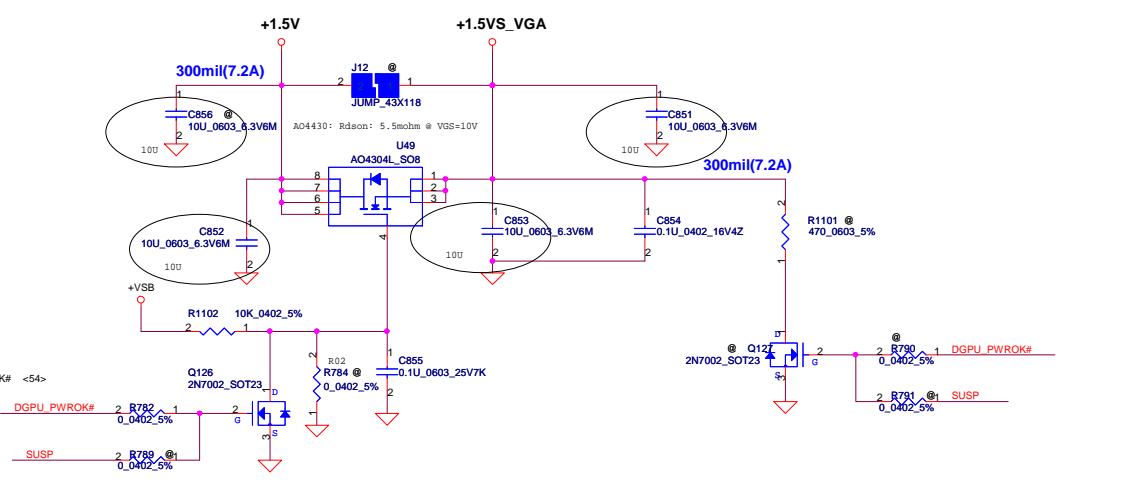


+1.5V to +1.5VS



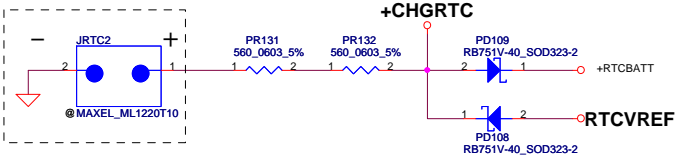
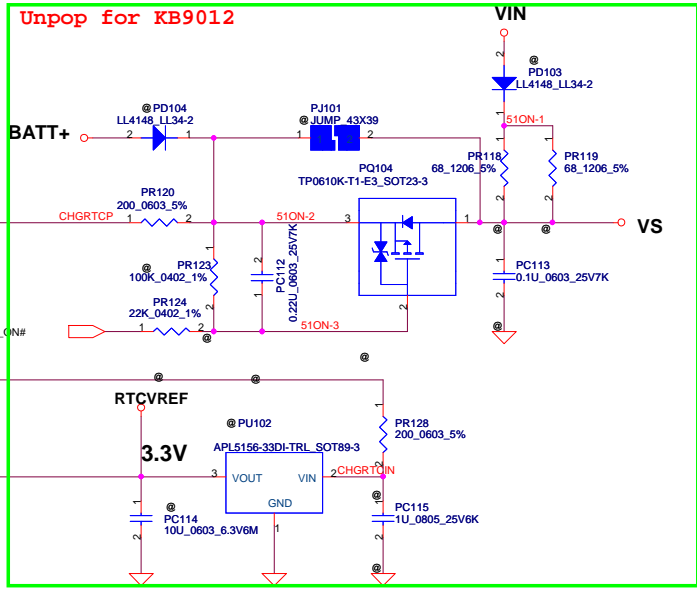
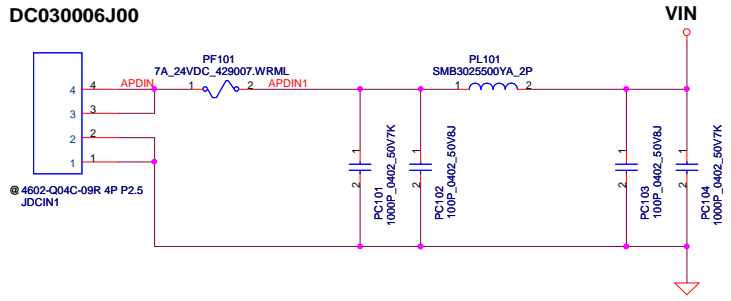
For Intel S3 Power Reduction.

+1.5V to +1.5VS_VGA Transfer



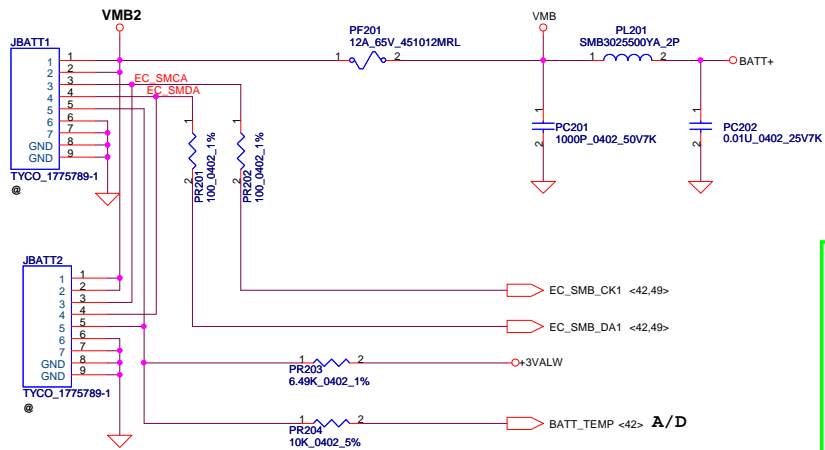
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2011/06/15	Deciphered Date	2012/07/11	Title	DC Interface
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Size	Document Number	Rev		Date	
Custom	LA-7981P	0.2		Tuesday, February 14, 2012	
				Sheet	46 of 60

DC030006J00



RTC Battery

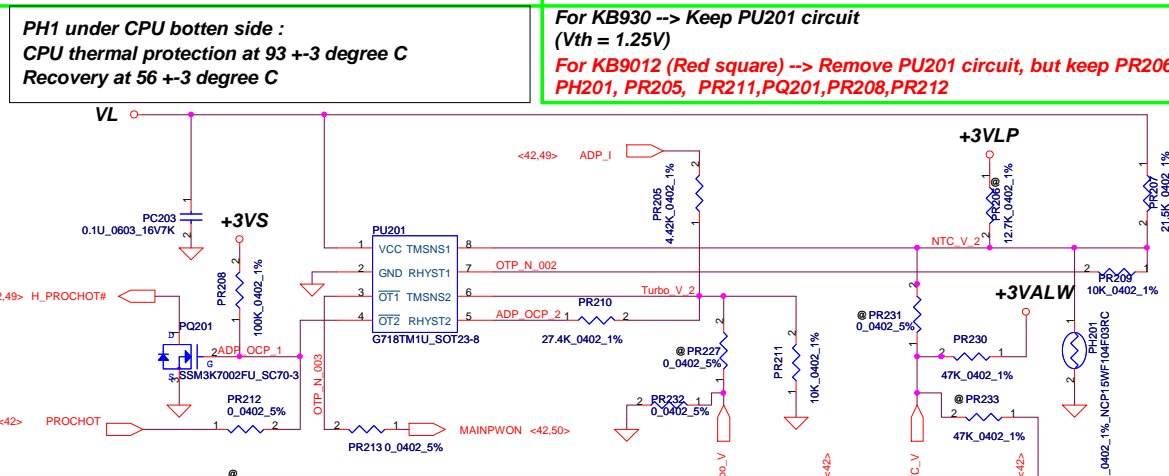
Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2010/01/25	Deciphered Date	2012/07/11	Title PWR DCIN / Vin Detector /Pre-charge	
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				Customer	Document Number
				C38-G series Chief River Schematic 0.1	
				Date:	Tuesday, February 14, 2012 Sheet 47 of 60



ADP_I need to write Charge Options Register (0x12H)=> bit6=1

0: IOUT is the 20x current amplifier output <default @ POR>

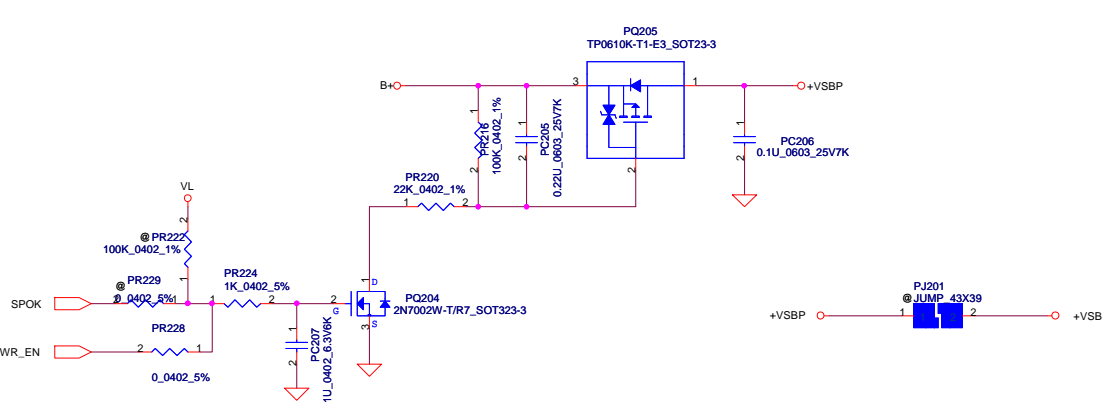
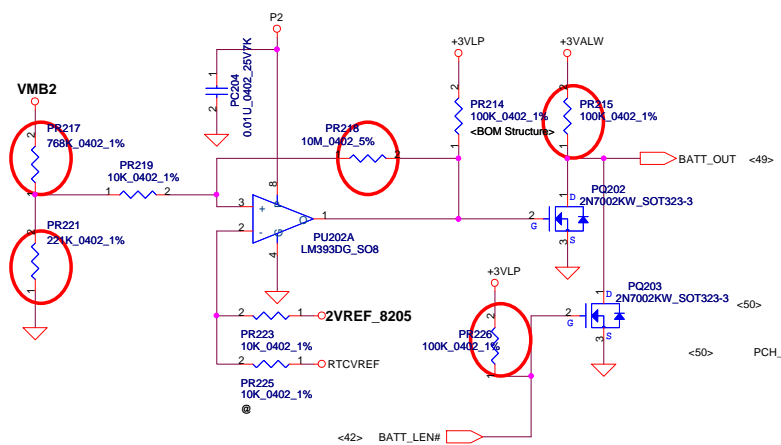
1: IOUT is the 40x current amplifier output



PH1 under CPU bottom side :
CPU thermal protection at 93 +/-3 degree C
Recovery at 56 +/-3 degree C

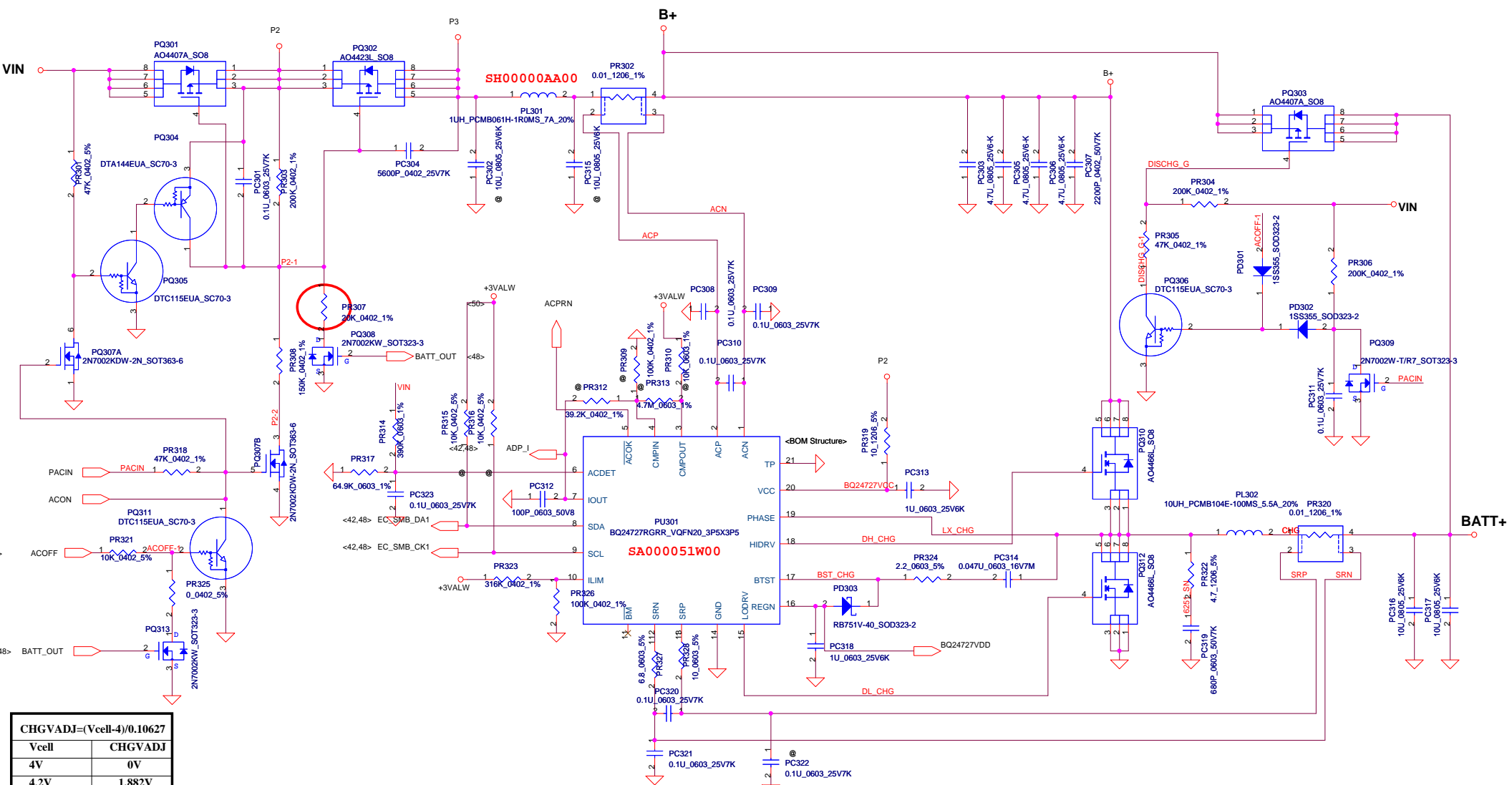
For KB930 --> Keep PU201 circuit (Vth = 1.25V)
For KB9012 (Red square) --> Remove PU201 circuit, but keep PR205, PR210, PR211, PR212, PR208, PR212

90W(DIS) : PR205=4.42K
PR210=27.4K
65W(UMA) : PR205=402(SD034020080)
PR210=5.11K



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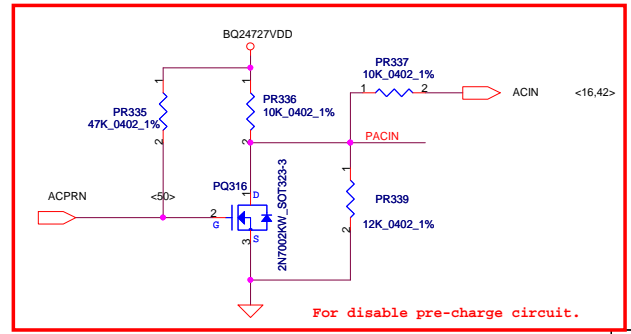
Compal Electronics, Inc.		
Title PWR-BATTERY CONN/OTP		
Size	Document Number	Rev
Custom	C38-G series Chief River Schematic	0.1
Date:	Tuesday, February 14, 2012	Sheet 48 of 60



CHGVADJ=(Vcell-4)/0.10627

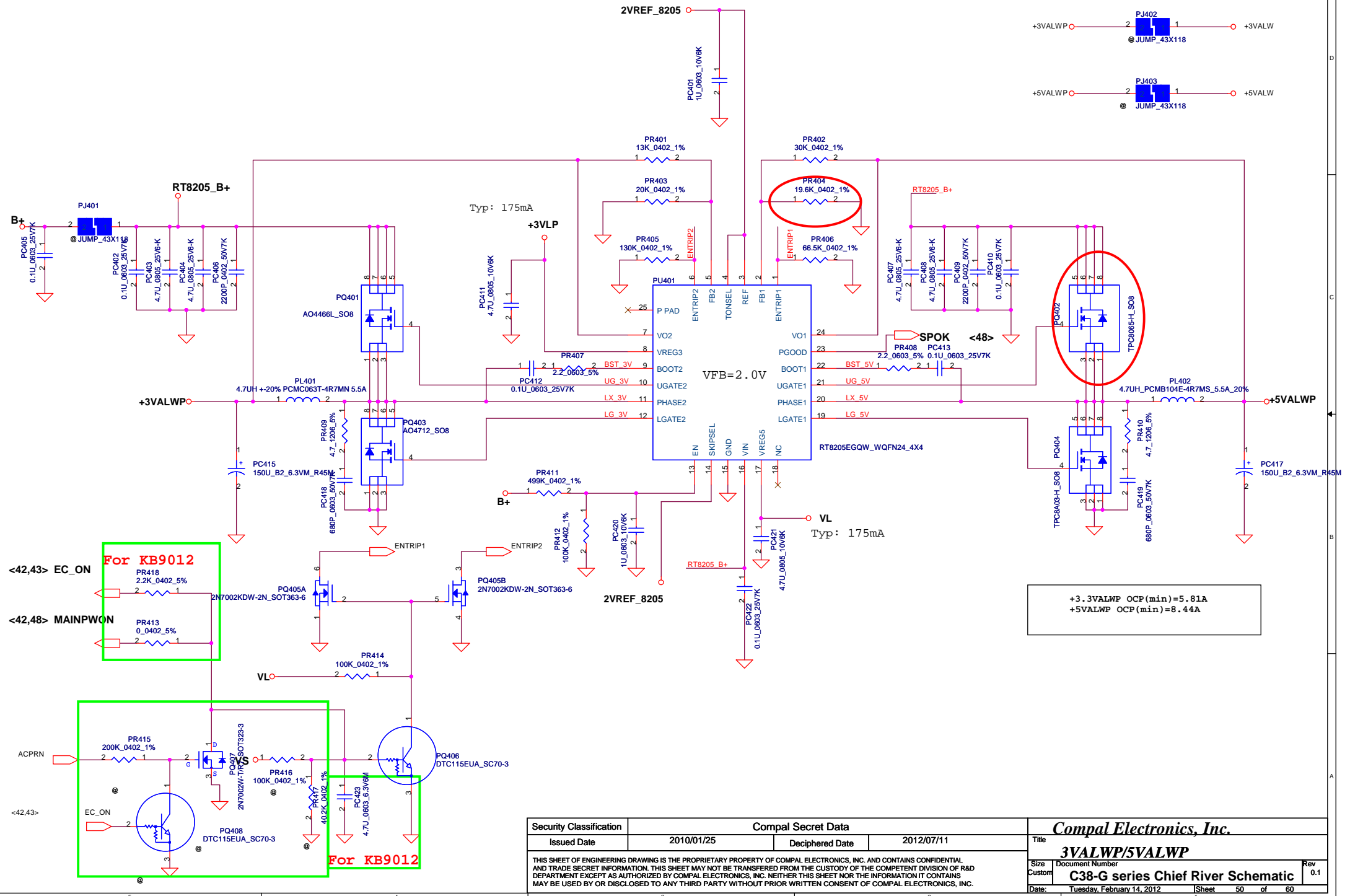
Vcell	CHGVADJ
4V	0V
4.2V	1.882V
4.35V	3.2935V

CC=0.25A-3A
IREF=1.016*Icharge
IREF=0.254V-3.048V
VCHLIM need over 95mV



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Date:	Tuesday, February 14, 2012	Sheet:	49	of	60

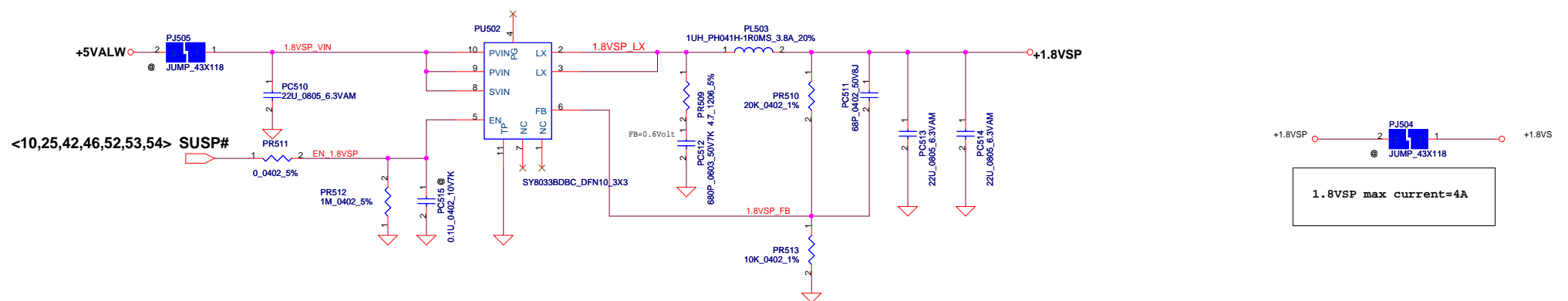
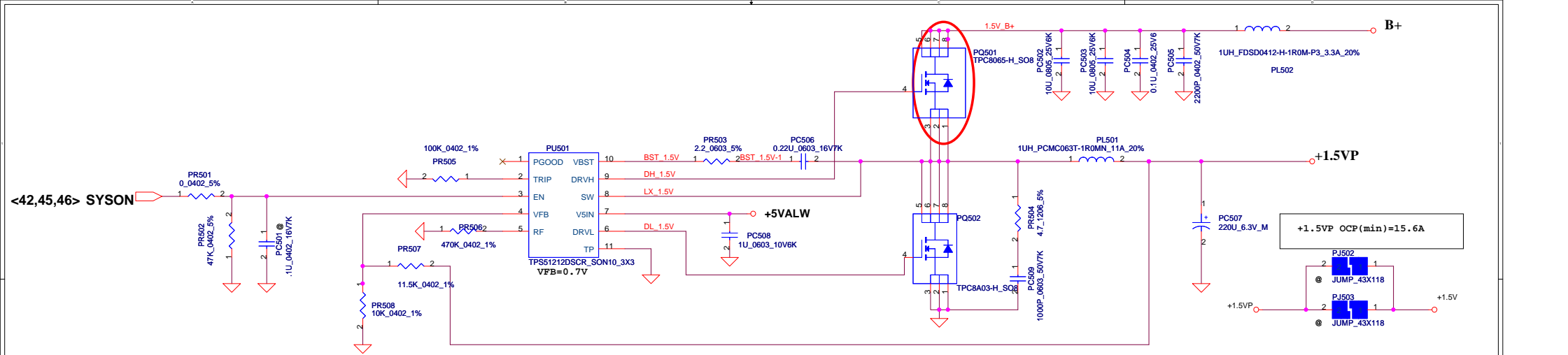
Note:
 Use TPS51125 IC can remove RTC refernece LDO
 Use TPS51427 IC must keep RTC refernece LDO



+3.3VALWP OCP (min)=5.81A
 +5VALWP OCP (min)=8.44A

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Compal Electronics, Inc.		
Title	3VALWP/5VALWP	
Size	Document Number	Rev
Custom	C38-G series Chief River Schematic	0.1
Date:	Tuesday, February 14, 2012	Sheet 50 of 60



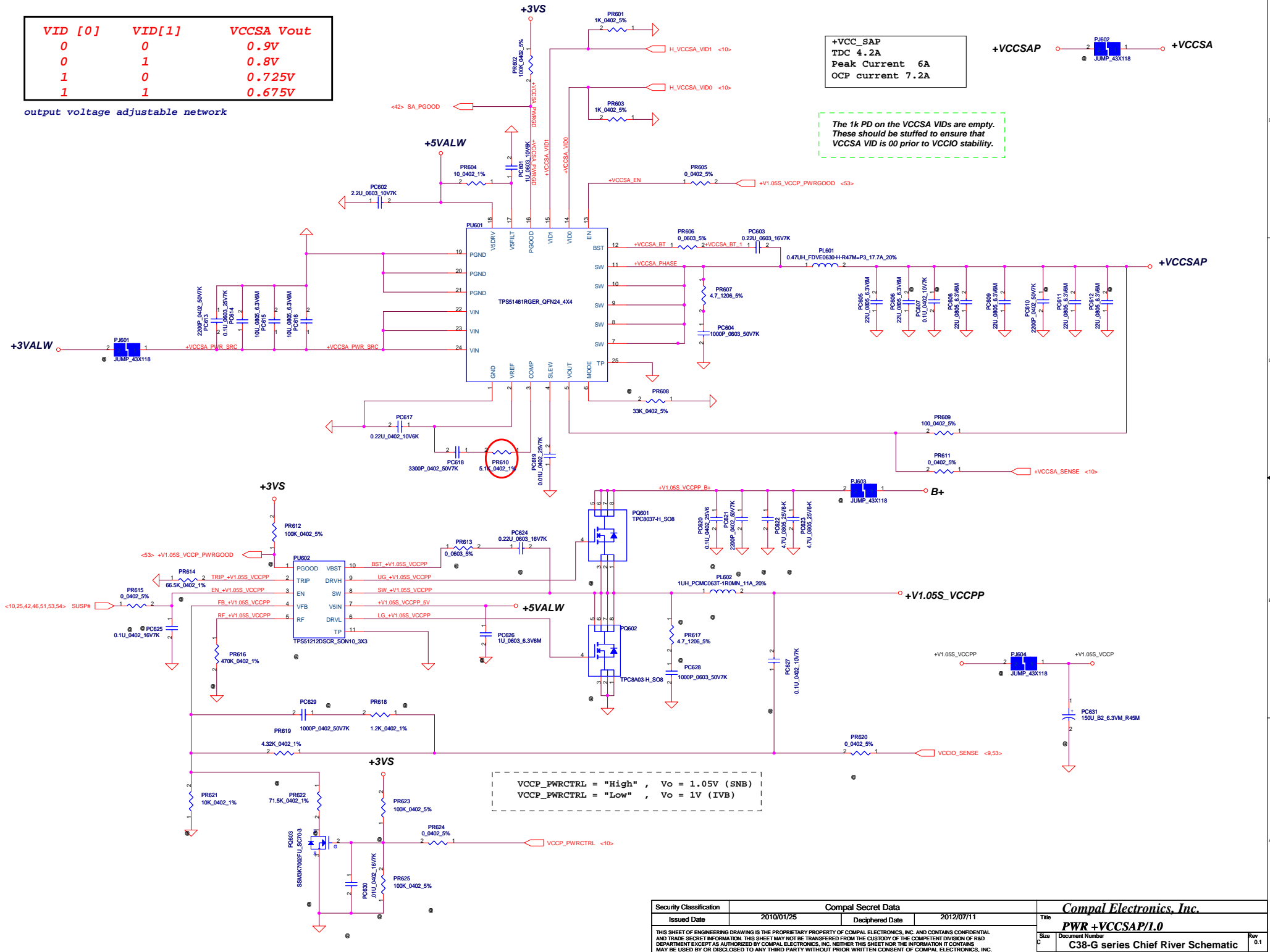
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2010/01/25	Deciphered Date	2012/07/11	Title	PWR-+1.5VP/+1.8VSP
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Size	Document Number	Rev			0.1
Custom	C38-G series Chief River Schematic	Date:			Tuesday, February 14, 2012 Sheet 51 of 60

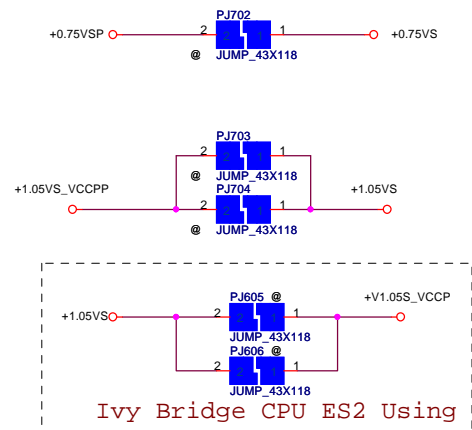
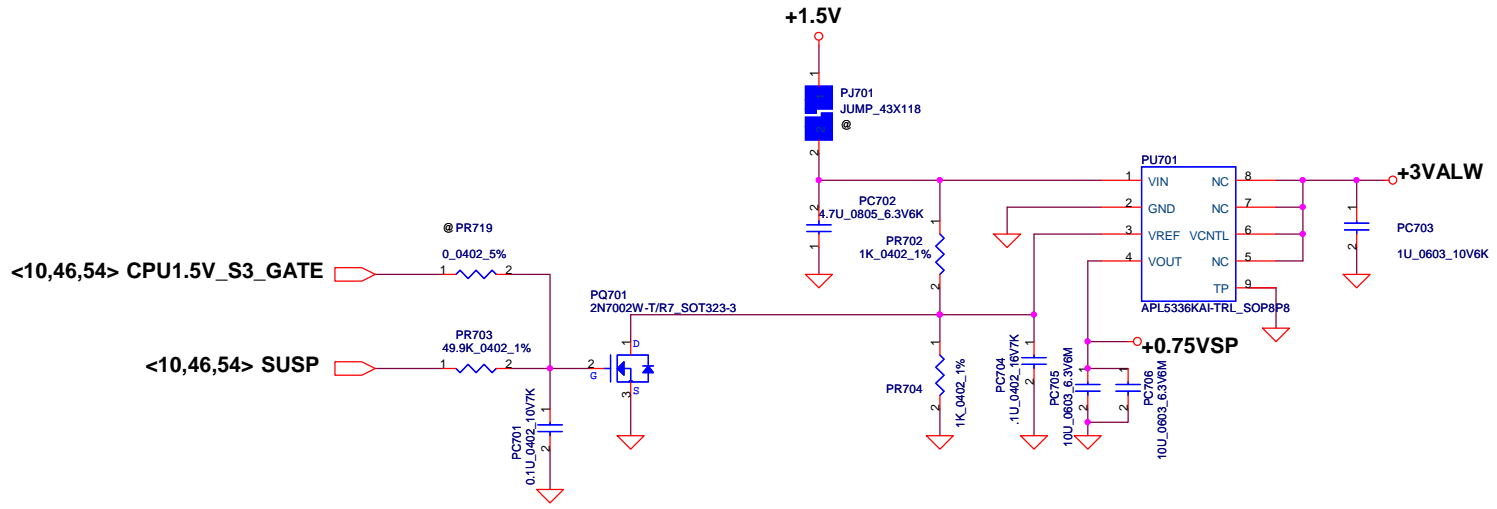
VID [0]	VID[1]	VCCSA Vout
0	0	0.9V
0	1	0.8V
1	0	0.725V
1	1	0.675V

output voltage adjustable network

+VCC_SAP
TDC 4.2A
Peak Current 6A
OCP current 7.2A

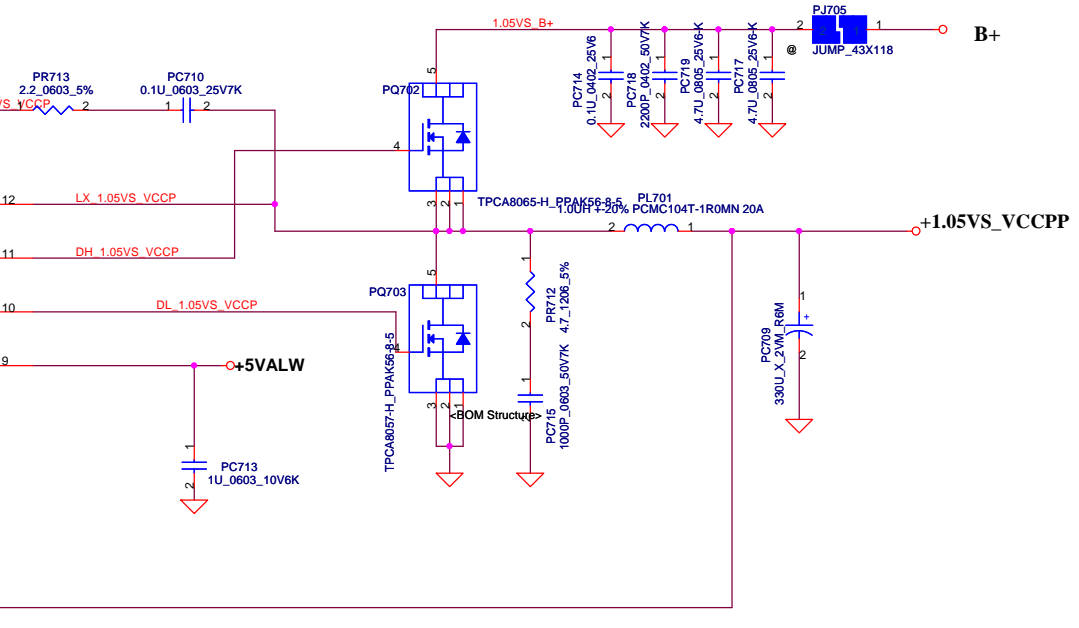
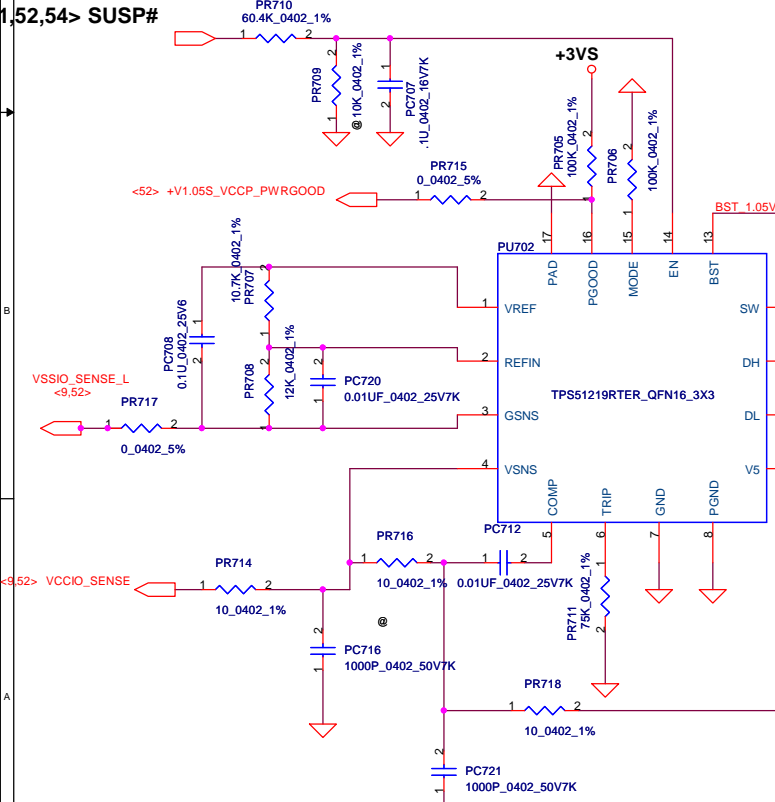
The 1k PD on the VCCSA VIDs are empty.
These should be stuffed to ensure that
VCCSA VID is 00 prior to VCCIO stability.



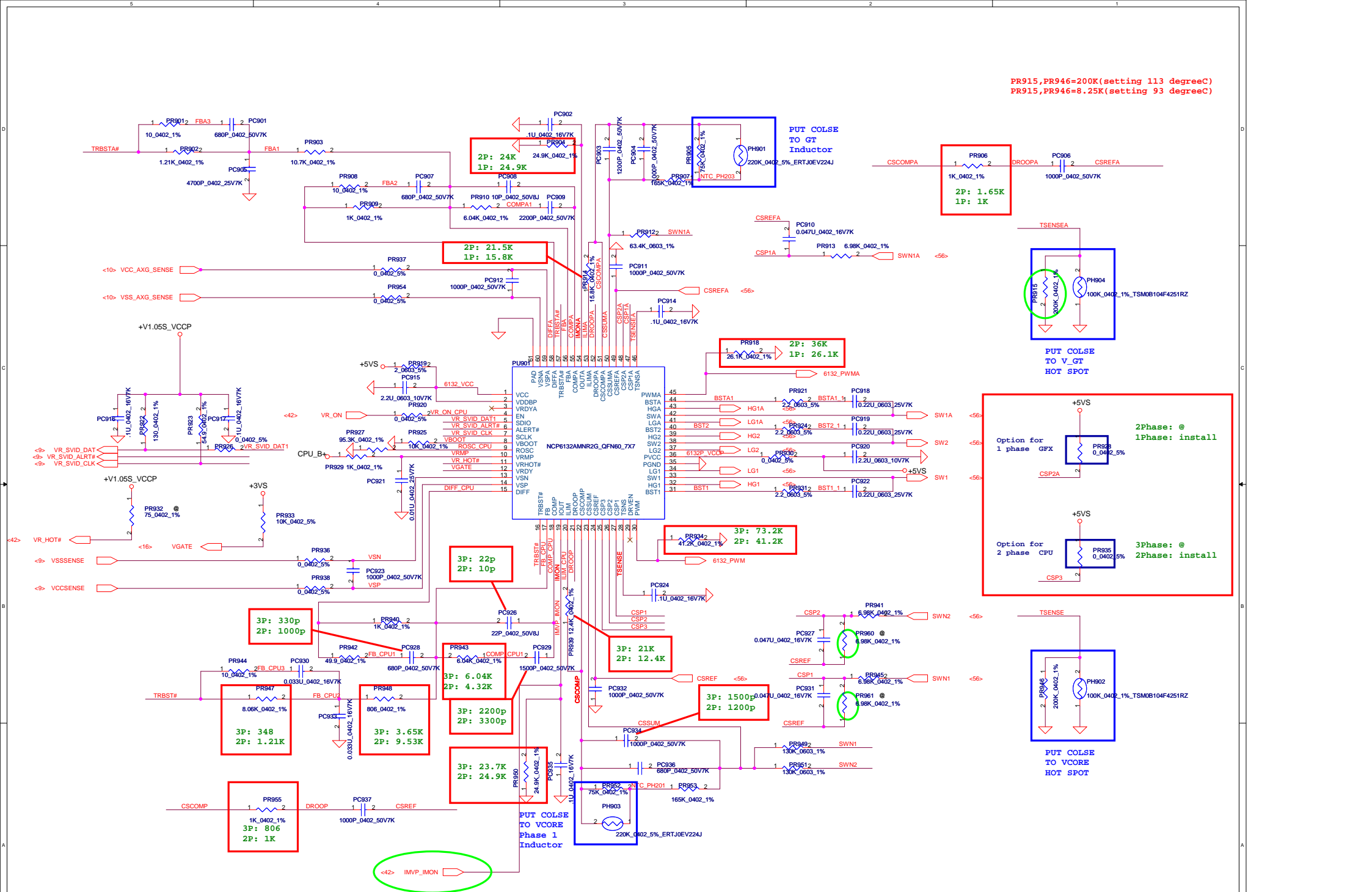


Ivy Bridge CPU ES2 Using

+1.05VS_VCCPP OCP(min)=20.75A



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Issued Date	2010/01/25	Deciphered Date	2012/07/11	Title	PWR +1.05VS_VCCPP/+0.75VSP
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Size Custom	Document Number	C38-G series Chief River Schematic			Rev 0.1
Date:	Tuesday, February 14, 2012	Sheet	53	of	60



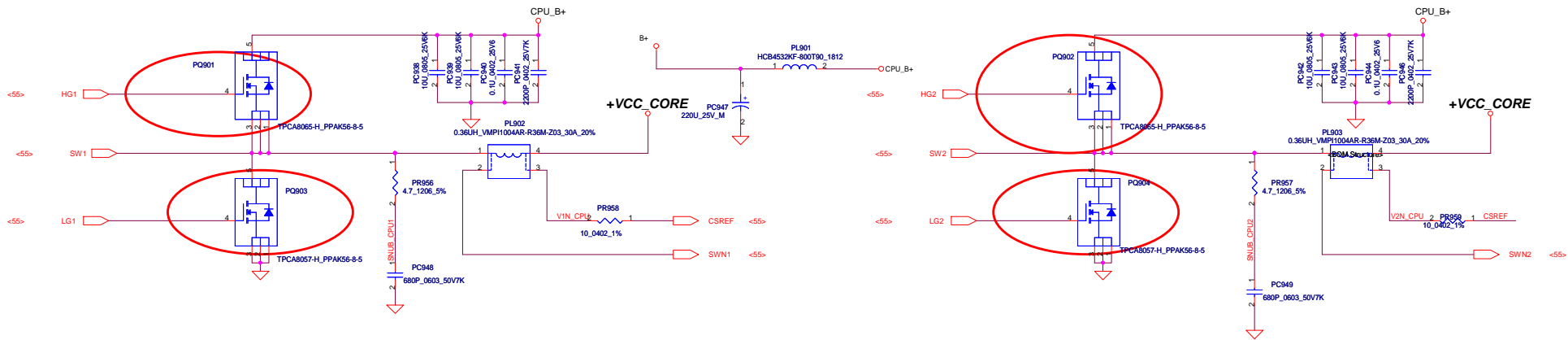
PR915,PR946=200K(setting 113 degreeC)
 PR915,PR946=8.25K(setting 93 degreeC)

Option for 1 phase GFX
 2Phase: @
 1Phase: install

Option for 2 phase CPU
 3Phase: @
 2Phase: install

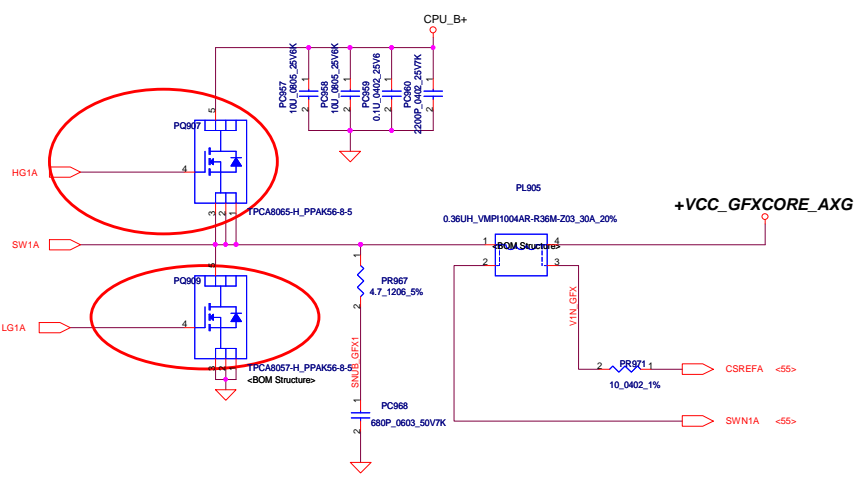
Security Classification		Compal Secret Data	
Issued Date	2009/12/01	Deciphered Date	2012/07/11
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Compal Electronics, Inc.		
Title PWR-CPU_CORE		
Size Custom	Document Number C38-G series Chief River Schematic	Rev 0.1
Date Tuesday, February 14, 2012	Sheet 55 of 60	



QC 45W CPU
 VID1=0.9V
 IccMax=94A
 Icc_Dyn=66A
 Icc_TDC=52A
 R_LL=1.9m ohm
 OCP-110A

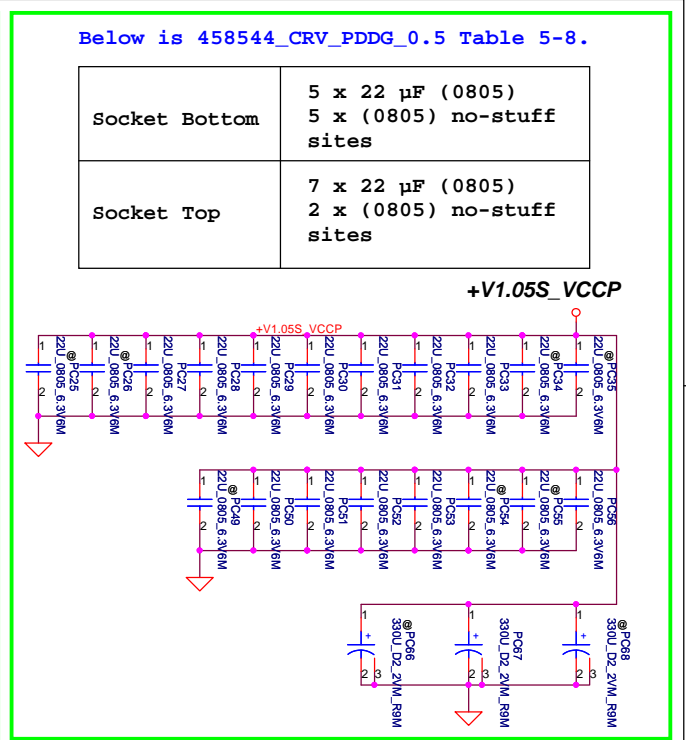
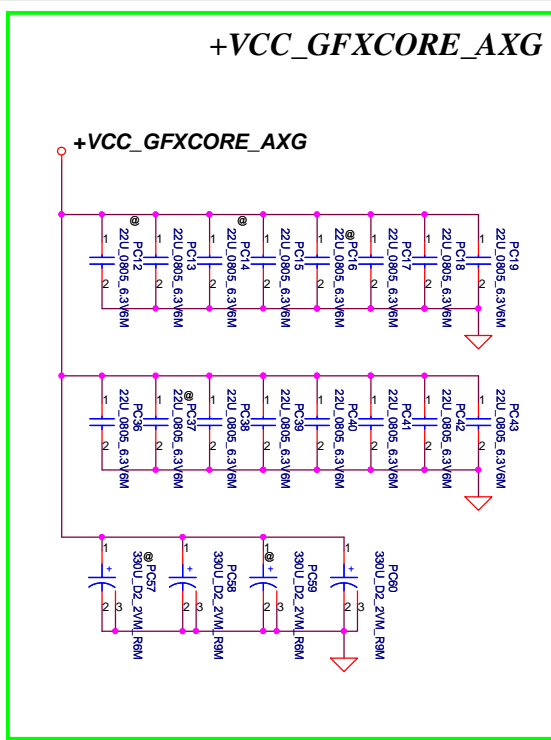
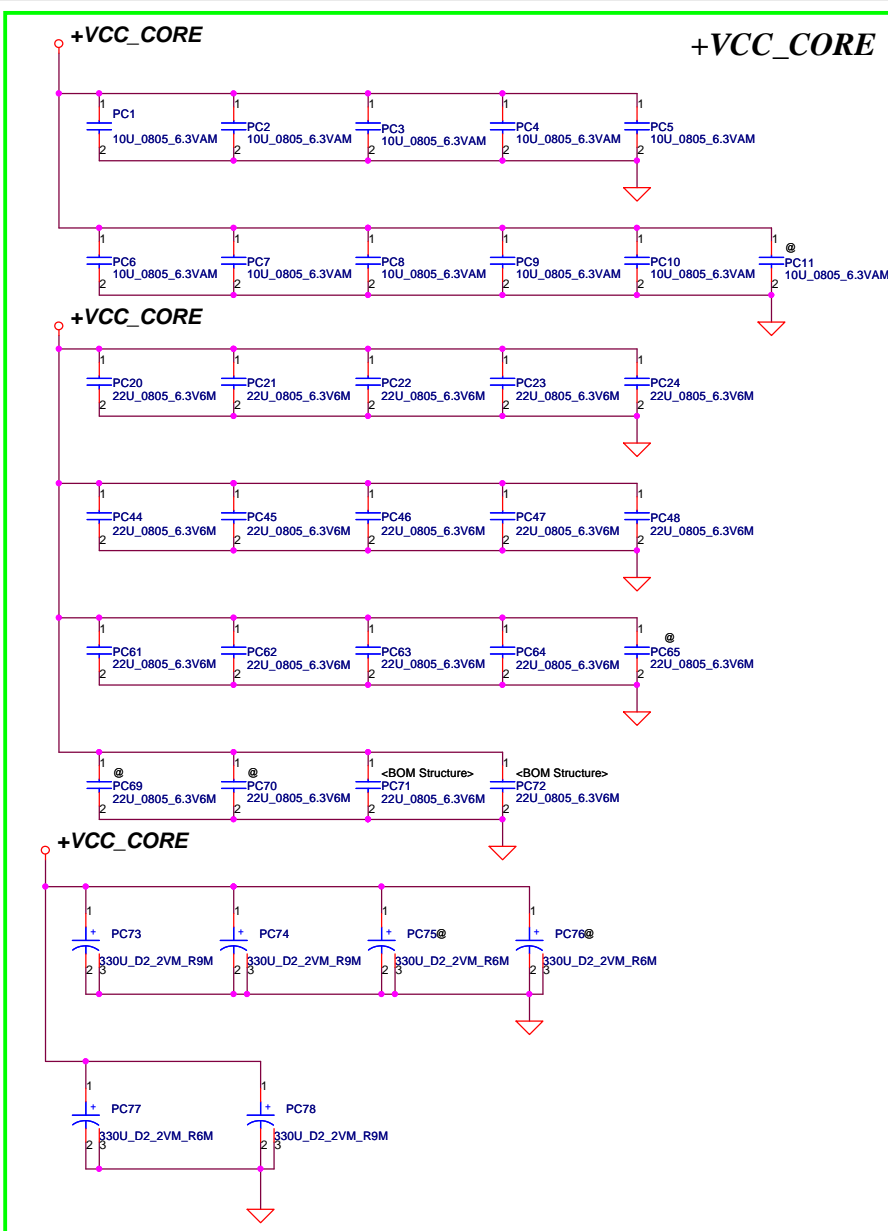
DC 35W CPU
 VID1=1.05V
 IccMax=53A
 Icc_Dyn=43A
 Icc_TDC=36A
 R_LL=1.9m ohm
 OCP-65A



QC 45W GT2
 VID1=1.23V
 IccMax=46A
 Icc_Dyn=37A
 Icc_TDC=38A
 R_LL=3.9m ohm
 OCP-55A

DC 35W GT2
 VID1=1.23V
 IccMax=33A
 Icc_Dyn=20.2A
 Icc_TDC=21.5A
 R_LL=3.9m ohm
 OCP-40A

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Issued Date	2008/09/15	Deciphered Date	2012/07/11	PWR - PROCESSOR DECOUPLING	
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Date:	Tuesday, February 14, 2012	Sheet	57	of	60

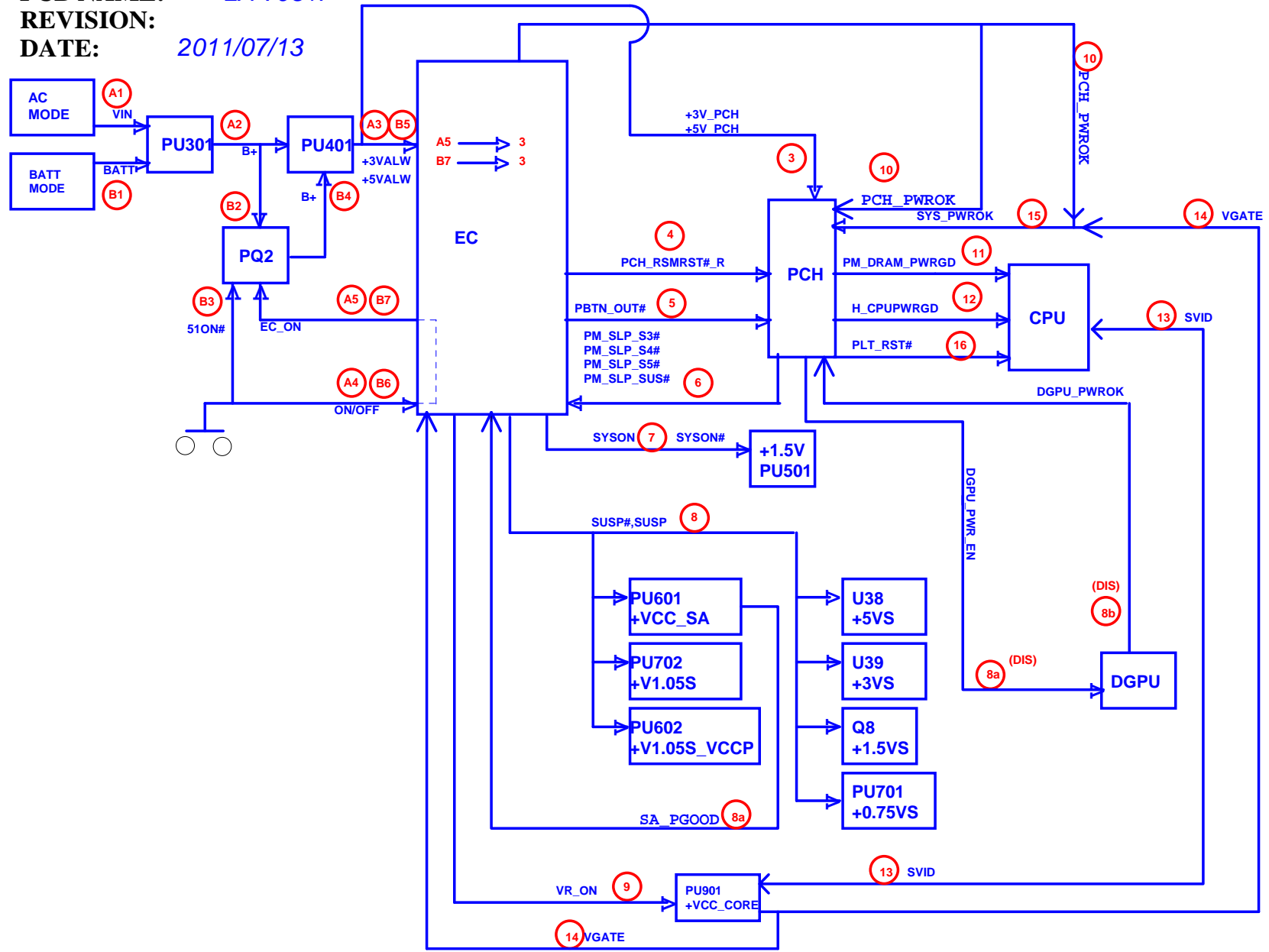
Version change list (P.I.R. List)

Item	Reason for change	PG#	Modify List	Date	Phase
1	add PR865 for ISL62883 one phase solution and unpop for two phase solution.	P54	add PR865	2011.08.29	DVT
2	unpop PR315,PR316 for SMBus SPEC.	P49	unpop PR315,PR316	2011.08.29	DVT
3	delet PSI#_VGA for NV chip.	P54		2011.10.14	DVT2
4	change NTC_V pull high voltage from +3VLP to +3VALW	P48			
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

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				Size	Document Number
Custom	C38-G series Chief River Schematic	0.1			
Date:	Tuesday, February 14, 2012	Sheet	58	of	60

COMPAL CONFIDENTIAL

MODEL NAME: *Power Sequence Block Diagram*
PCB NAME: *LA-7981P*
REVISION:
DATE: *2011/07/13*



Security Classification		Compal Secret Data		Title	
Issued Date	2011/06/15	Deciphered Date	2012/07/11	Compal Electronics, Inc.	
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Size	Document Number	Rev		Date	
Custom	LA-7981P	0.2		Tuesday, February 14, 2012	
Date		Sheet		of	
Tuesday, February 14, 2012		59		60	

Item	Reason for change	PG#	Modify List	Date	Phase
1	GPU 13M GPU Device loss (Pcie lan x8 issue)	8	Add R43		DVT
2	HDD no function	40	Add R550		DVT
3	10/100 lan no function & change to overclocking mode	37	ADD R1372 ; DEL R31		DVT
4	For DGPU_PWROK leakage issue.(Let timing +5VS > +3VS)	46	Change C726 from 0.1uF to 0.01uF		DVT
5	For S3 can't wake up	10	Change R56 from 15K to 4.7K change R885 from 0 ohm to 15K		DVT
6	Can unstuff RV66 for N13P-GL & as NV DG	27	RV66 change to N13M@		DVT
7	GPU N13P-GL QS sample change strap	32	RV94 change from 45.3K to 10K		DVT
8	PCH 25Mhz for vender crystal test report change CL to 12pF	15	C196;C197		DVT
9	GPU 27Mhz for vender crystal test report change CL to 15pF	23	CV37;CV38		DVT
10	EC_LID_OUT# internal PD 20K, follow ORB change R230 from 10k to 1K	19	R230		DVT
11	For GPIO70;GPIO71 voltage level issue (internal Pull High 20k)	19	R705;R706 Change from 10K to 200K		DVT
12	for DVT board ID Change R695 from 33k to 18k	42	R695		DVT
13	LAN Surge test fail change P/N from SP050006E00 to SP050006W00	27	T1;T2		DVT
14	Del ODD Power Control function component	40	R568;Q100;R675;C607;Q99		DVT
15	AO4430L(SB000007010)EOL Change to AO4304 (SB00000RV00)	46	U49		DVT
16	Del (PCH AUX Power) Reserve component no use	46	C780;C781;C782;C783;R778;Q120;U40		DVT
17	PCH(U4) P/N Change from SA00004NQ30 to SA00004NQ80	14	U4		DVT
18	NV-GPU (U65)P/N change N13M from SA00004V000 to SA00004V010 N13P Keep SA000051A00	23	U65		DVT
19	EXT USB 3.0 IC PCIE_WAKE# ; CLKREQ_USB30# leakage on S4	45	Swap Q125;Q121 pin1 & pin3		DVT
20	No function	45	DEL R769		DVT
21	add LAN LDO mode function	37;38	ADD R65;R596;R1449;R1380		DVT
22	USB_OC0# Share with USB_OC4# due to same power switch	18	short USB_OC0#;USB_OC4# ; del R267		DVT
23	Add Capsensor B/D Conn. For best buy use	42	ADD JCAP1 Conn.		DVT

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				Custom	LA-7981P
				Date:	Tuesday, February 14, 2012
				Rev	0.1
				Sheet	60 of 60

Item	Reason for change	PG#	Modify List	Date	Phase
24	L1 change to 1 ohm R	20	L1 change to R footprint		DVT
25	Reserve 0 ohm for CMOS Camera shake	33	add R296 0 ohm		DVT
26	Reserve 0 ohm for U49 MOS VGS 20V will burn out issue	46	add R784 0 ohm		DVT
27	For HDD +5VS Power plant del C601; change C598 pin1 power name for good power plant	40	change from +5VS to +5V_HDD ;DEL C601		DVT
28	For Audio jack support APPLE and NOKIA function Reserve	43	add R684;R685;R688;R686 0ohm R		DVT
29	For standard part cost down change 10uF 0805 type to 0603 type	10,20 21,33 37,39 40,46	C124;C125;C126;C127;C130;C221;C215;C395; C231;C519;C937;C953;C954;C591;C608;C602; C720;C721;C723;C724;C782;C783;C717;C718; C856;C852;C851;C853		DVT
30	change Crystal foot print follow standard parts from 5032 to 3225 package	15;23; 37	Y2;Y6;YV1		DVT
31	change 0ohm to short-pad (R0402_0ohm)	7;8; 10;15 16;20; 33;36; 40;43	R40;R60;R77;R144;R190;R193;R198;R181;R185; R265;R538;R498;R500;R583;R614		DVT
32	Reserve BT_DISABLE (GPI022) for combo card(BT+WLAN)	19	ADD R892;R897		DVT
33	U35;U36 Change footprint without thermal PAD type	44;45	U35;U36		DVT
34	PU 10K with 3V3 on N13P-GL/ for CEC signal	24	RV230		DVT
35	VGA_GPIO3;VGA_GPIO16 change connect DPRSLPVR_VGA to PSI#_VGA	23;54	RV113;RV114		DVT
36	Fix VGA power on CLKREQ has drop (QV2 gate add 0.1uF)	23	CV42		DVT
37	LED5 和LED2 Location sawp ; Location name D9 change to LED6	43	LED2;LED5;LED6		DVT
38	For Lan surge fail add 0 ohm on MDO2-;MDO2+;MDO3-;MDO3+	38	R304;R305;R306;R307		DVT
39	Change UV2 PN from SA007080B90 to SA000000H00	23	UV2	09/28	DVT
40	Change 2M BIOS ROM from SA00003FO00 to SA00003FO10	14	U6	09/29	DVT
41	Correct PCIE_PRX_DTX_P4/N4 of U32 (SWAP)	45	U32	10/03	DVT
42	Reserve +5VS to JCR1, add R689 ,R690	43	R689 (@),R690	10/03	DVT
43	Update Power sheet of 1003 version	47~58		10/04	

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				Size	Document Number
				LA-7981P	0.1
				Date: Tuesday, February 14, 2012	Sheet 61 of 60

Item	Reason for change	PG#	Modify List	Date	Phase
44	CPU Symbol Update	5,6,7, 8,9,10,11	Location : Jcpul		PVT
45	Change 10P 50V Cap from 1206 to 0603	38	Location : C973		PVT
46	S3 Reduction	53	Reserve PR719 for 0.75V		PVT
47	LAN CO-lay x1 GDT & 75ohm	38	Location : R308,R304,R305,R306,R307,DL1,DL2,DL3,DL4		PVT
48	R750 for Power request	42	Location :R750		PVT
49	JUSB3 From 4PIN TO 6 PIN FOR VOLTAGE DROP	44	Location : JUSB3		PVT
50	Add C535 100pF on +3VLP for ESD request - Pony	42	Location : C535		PVT
51	FOR TP POWER SOLUTION	42	Location : R598.R603		PVT2
52	FOR POWER REQUEST	42	Location : R738		PVT2
52	Change C from 0.22uF to 0.11uF	5 23	Location : C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, CV6, CV7, CV8, CV9, CV10, CV11, CV12, CV13, CV15, CV17, CV19, CV14, CV16, CV18, CV20, CV22, CV24, CV26, CV21, CV23, CV25, CV27, CV29, CV31, CV33, CV28, CV30, CV32, CV36, CV41, CV34, CV35,		SVT

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				Size	Document Number
				LA-7981P	0.1
Date:				Tuesday, February 14, 2012	Sheet 62 of 60