Compal Confidential

QIQY2 M/B Schematics Document

Intel Sandy Bridge Processor with DDRIII + Cougar Point PCH
ATi Whistler XT+DDR3

2011-05-11

REV:1.0

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Size: Custom	Document Number: QIQY2 LA6884P	Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 1 of 60	

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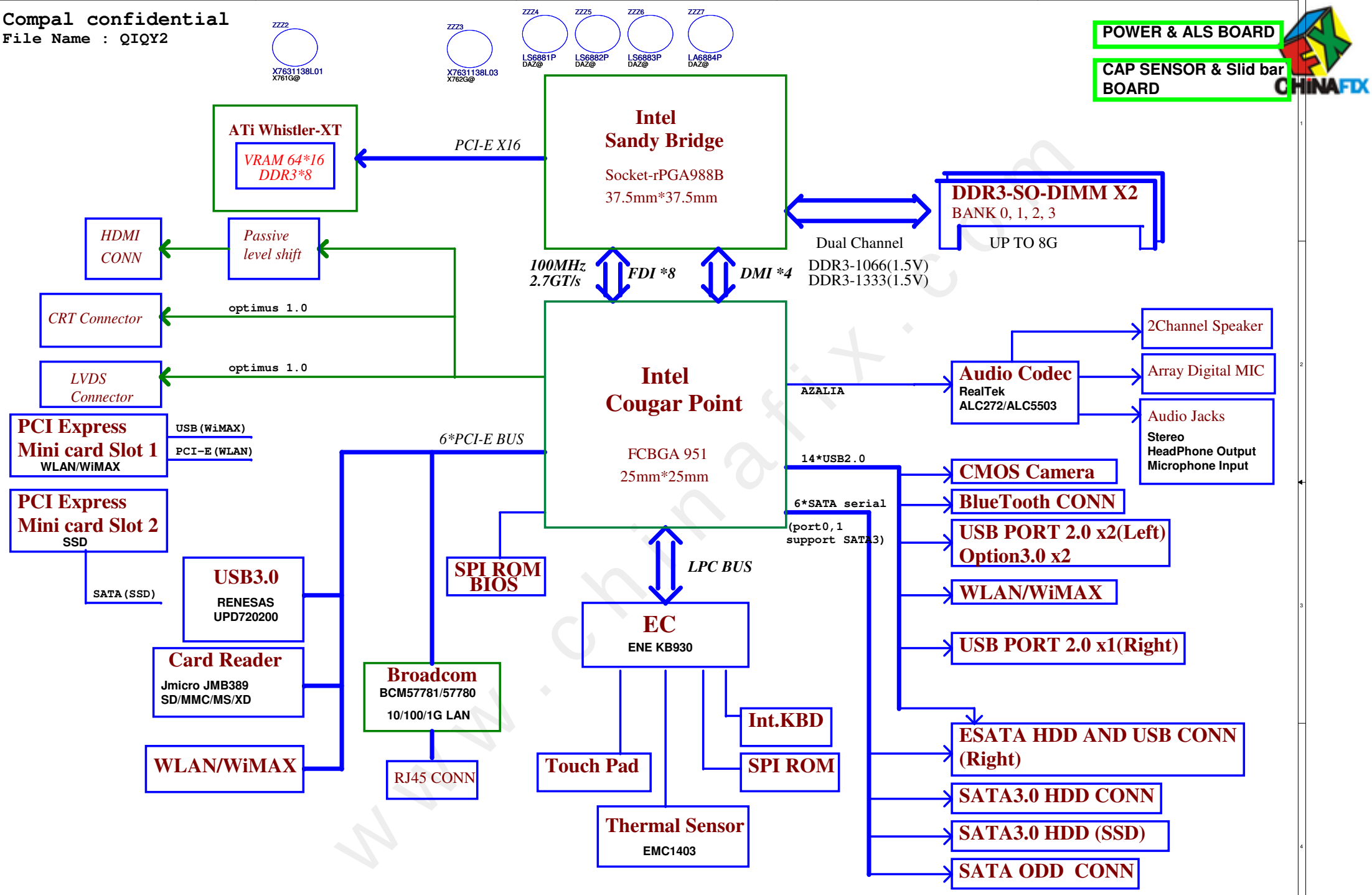
File Name : QIQY2

ZZZ2 X7631138L01 X761G@
ZZZ3 X7631138L03 X762G@
ZZZ4 LS6881P DAZ@
ZZZ5 LS6882P DAZ@
ZZZ6 LS6883P DAZ@
ZZZ7 LA6884P DAZ@

POWER & ALS BOARD
CAP SENSOR & Slid bar BOARD



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Title: MB Block Diagram

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 2 of 60

Voltage Rails

State \ power plane	+B	+5VALW +3VALW	+1.5V	+5VS +3VS +1.5VS +VCCP +CPU_CORE +VGA_CORE +GFX_CORE +1.8VS +0.75VS +1.05VS
S0	O	O	O	O
S3	O	O	O	X
S5 S4/AC	O	O	X	X
S5 S4/ Battery only	O	X	X	X
S5 S4/AC & Battery don't exist	X	X	X	X

SMBUS Control Table

	SOURCE	VGA	BATT	KB930	SODIMM	WLAN WWAN	Thermal Sensor	PCH
SMB_EC_CK1 SMB_EC_DA1	KB930 +3VALW	X	V +3VALW	X	X	X	X	X
SMB_EC_CK2 SMB_EC_DA2	KB930 +3VALW	X	X	X	X	X	X	V +3VS
SMBCLK SMBDATA	PCH +3VALW	X	X	X	V +3VS	V +3VS	X	X
SML0CLK SML0DATA	PCH +3VALW	X	X	X	X	X	X	X
SML1CLK SML1DATA	PCH +3VALW	V +3VS	X	V +3VS	X	X	V +3VS	X

EC SM Bus1 address

Device	Address
Smart Battery	0001 011X b

EC SM Bus2 address

Device	Address
Thermal Sensor EMC1403-2	1001_101xb

PCH SM Bus address

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

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

Board ID / SKU ID Table for AD channel

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

Board ID	Rb / Rd / Rf	V_{AD_BID} min	V_{AD_BID} typ	V_{AD_BID} max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759 V
6	200K +/- 5%	1.935 V	2.200 V	2.341 V
7	NC	2.500 V	3.300 V	3.300 V

BOARD ID Table

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

USB Port Table

USB 2.0	USB 1.1	Port	3 External USB Port
EHCI1	UHCI0	0	USB/Cable (Right Side)
		1	USB Port (Right Side COMBO)
	UHCI1	2	USB/B (Left Side)
		3	USB/B (Left Side)
	UHCI2	4	
		5	Camera
	UHCI3	6	
		7	
EHCI2	UHCI4	8	
		9	Mini Card(WLAN)
	UHCI5	10	
		11	
	UHCI6	12	
		13	Blue Tooth

BOM Structure Table

BTO Item	BOM Structure
UMA	
UMA Only	UMA_ONLY@
Optimus	OPTI@
VRAM	X76@
HDMI	HDMI@
Blue Tooth	BT@
USB3.0	USB30@
ESATA	ESATA@
USB Charger	USB_CHG@
No USB Charger	NO_CHG@
Unpop	@
Codec ALC272	272@
Codec ALC5503	5503@
LAN 57781	57781@
LAN 57780	57780@
Ventura Feature	
Camera	CMOS@

VRAM BOM Config

X761G@:	X7625738L01	Samsung 1GB
Sub:	X7625738L02	Hynix 1GB
X762G@:	X7625738L03	Samsung 2GB
Sub:	X7625738L04	Hynix 2GB

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Size	Document Number	Rev
B	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 | Sheet 3 of 60

Power-Up/Down Sequence

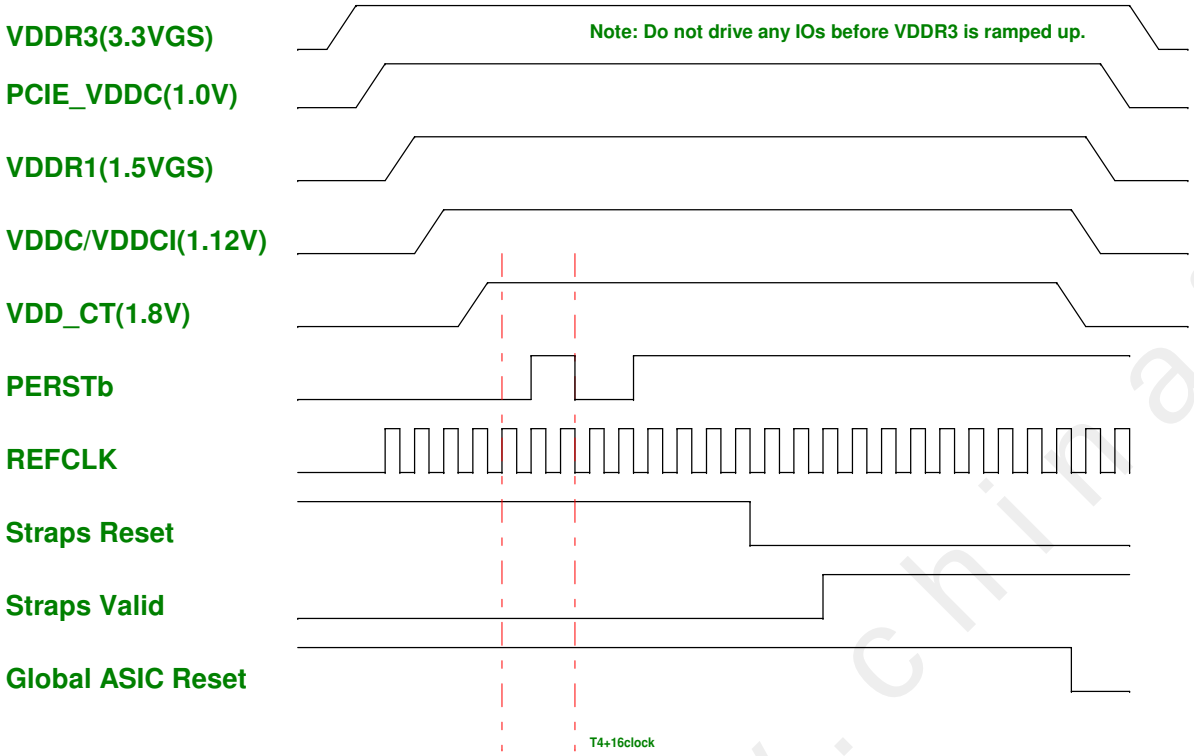
1. All the ASIC supplies must fully reach their respective nominal voltages within 20 ms of the start of the ramp-up sequence, though a shorter ramp-up duration is preferred.

2. VDDR3 should ramp-up before or simultaneously with VDDC.

3. For LVDS, DPx_VDD10 should ramp-up before DPx_VDD18 and the PCIe Reference clock should begin before DPx_VDD18. For power-down, DPx_VDD18 should ramp-down before DPx_VDD10.

4. The external pull-ups on the DDC/AUX signals (if applicable) should ramp-up before or after both VDDC and VDD_CT have ramped up.

5.VDDC and VDD_CT should not ramp-up simultaneously. (e.g., VDDC should reach 90% before VDD_CT starts to ramp-up (or vice versa).)



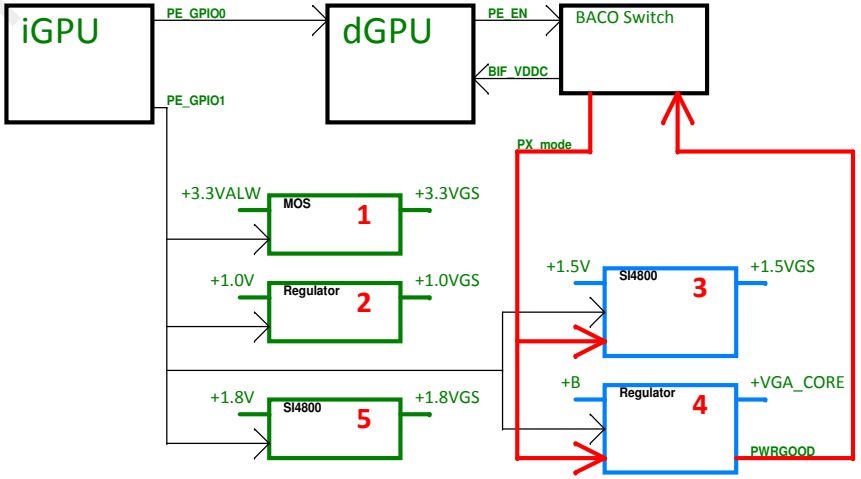
Without BACO option :

PE_GPIO0 : Low -> Reset dGPU ; High ->Normal operation
PE_GPIO1 : Low -> dGPU Power OFF ; High -> dGPU Power ON

BACO option :

PE_GPIO0 : High ->Normal operation (dGPU is not reseton BACO mode)
PE_GPIO1 : Low -> dGPU Power OFF ; High -> dGPU Power ON (always High)

dGPU Power Pins	Voltage	PX 3.0	BACO Mode	Max current
PCIE_PVDD, PCIE_VDDR, TSVDD, VDDR4, VDD_CT, DPE_PVDD, DP[F:E]_VDD18, DP[D:A]_PVDD, DP[D:A]_VDD18, AVDD, VDD1DI, A2VDDQ, VDD2DI, DPLL_PVDD, MPV18, and SPV18	1.8V	OFF	ON	1679mA
DP[F:E]_VDD10, DP[D:A]_VDD10, DPLL_VDDC, and SPV10	1.0V	OFF	ON	575mA
PCIE_VDDC	1.0V	OFF	ON	2A
VDDR3 , and A2VDD	3.3V	OFF	ON	190mA
BIF_VDDC (current consumption = 55mA@1.0V, in BACO mode)	Same as VDDC	OFF	ON Same as PCIE_VDDC	70mA
VDDR1	1.5V	OFF	OFF	2.8A
VDDC/VDDCI	1.12V	OFF	OFF	12.9A



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Title: dGPU Block Diagram

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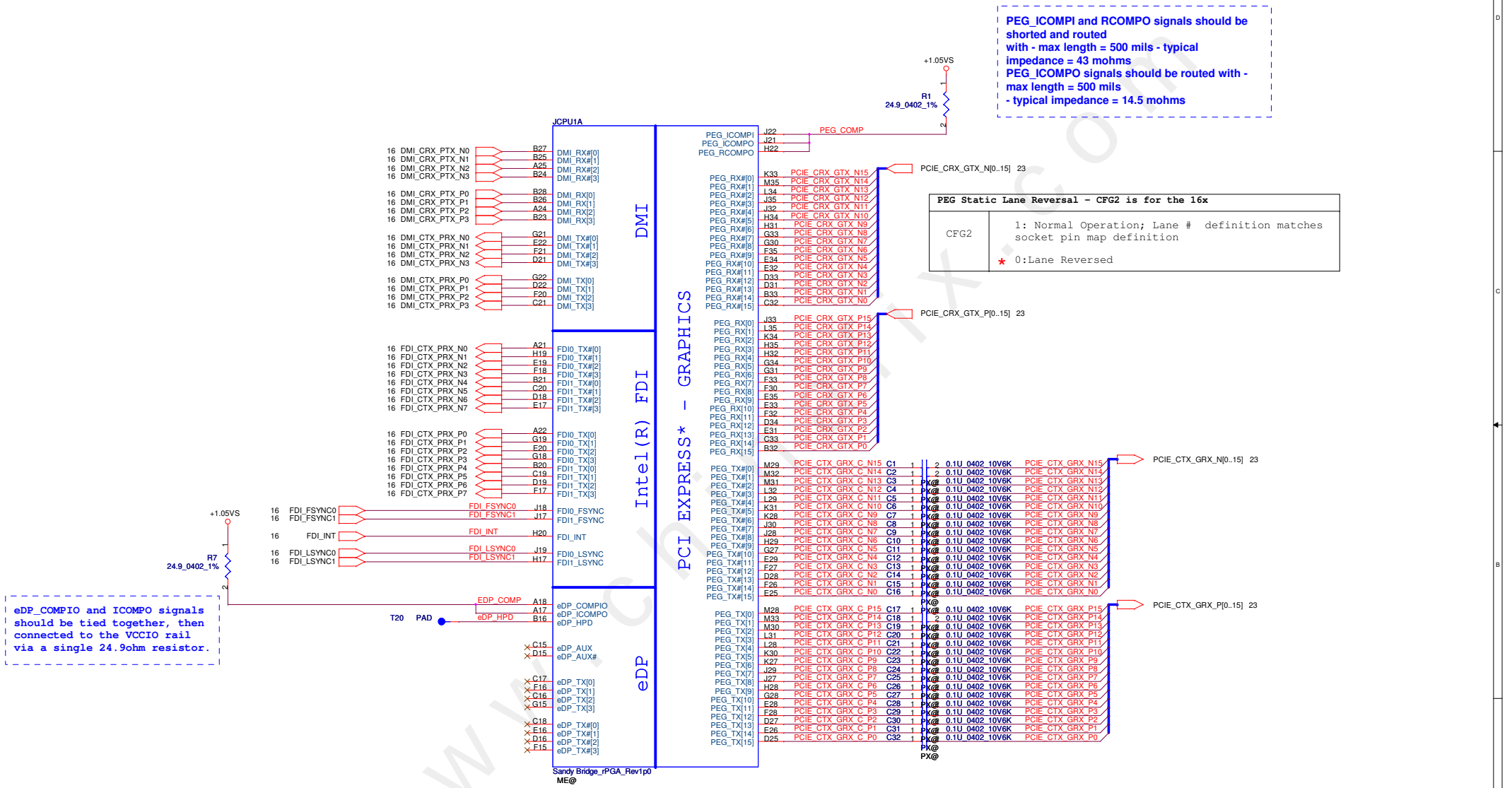
Date: Wednesday, May 11, 2011 Sheet 4 of 57



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Title: PROCESSOR(1/7) DMI,FDI,PEG

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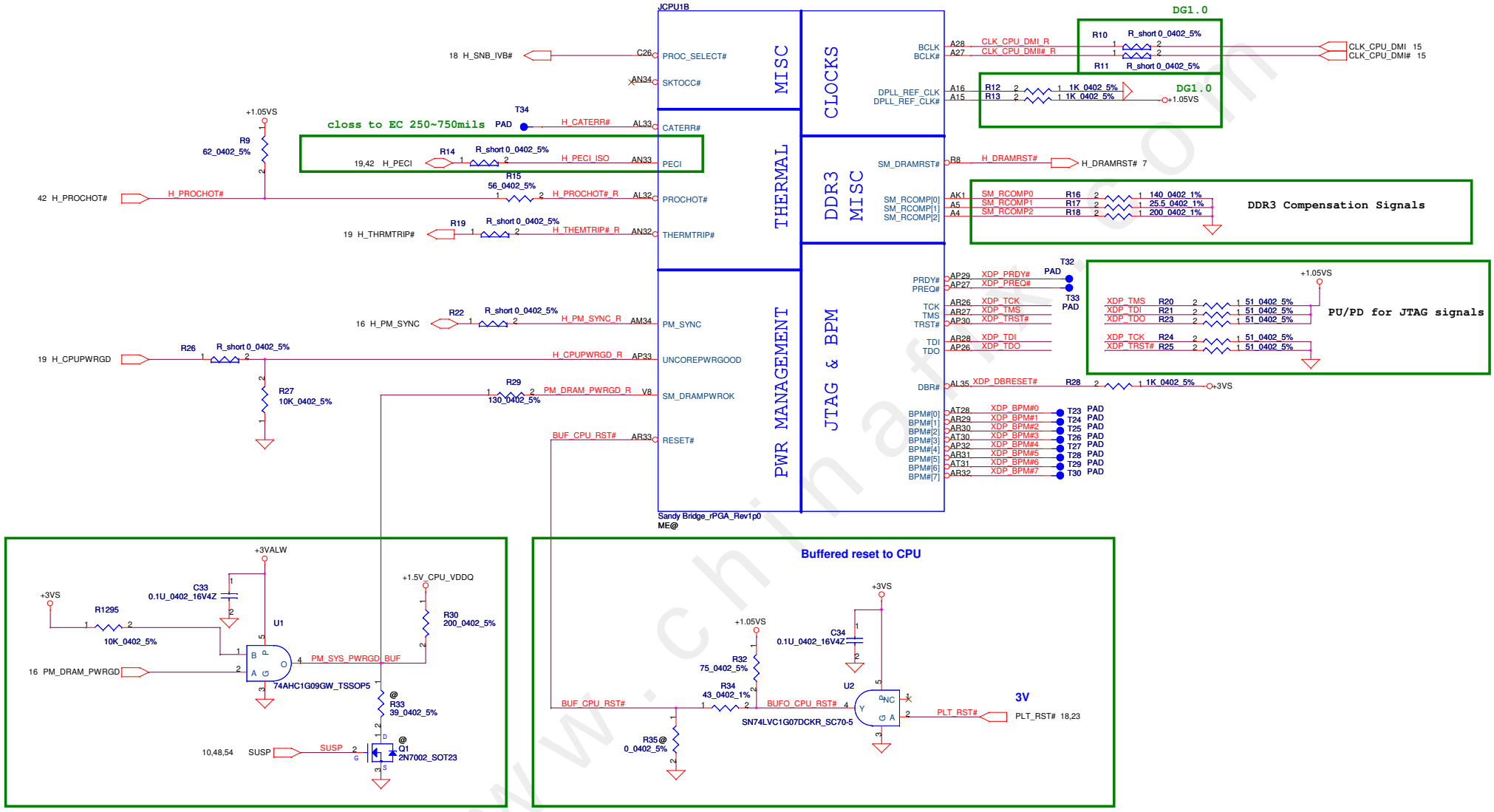
Date: Wednesday, May 11, 2011 Sheet 5 of 60



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Title	PROCESSOR(2/7) PM,XDP,CLK		
Size: Custom	Document Number: QIQY2 LA6884P		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 6 of 60		

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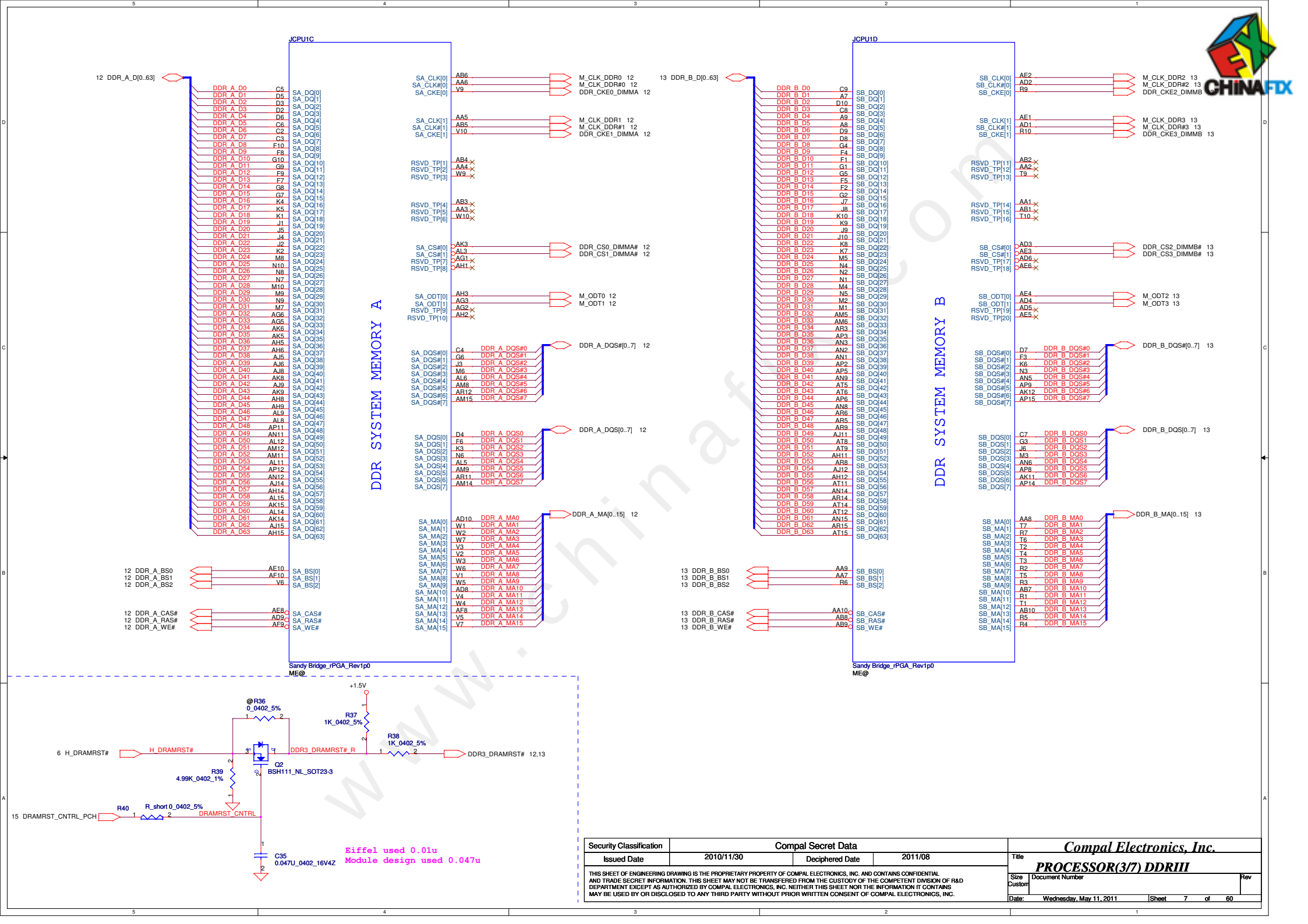

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Title: PROCESSOR(3/7) DDRIII

Size	Document Number	Rev
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Date: Wednesday, May 11, 2011 Sheet 7 of 60

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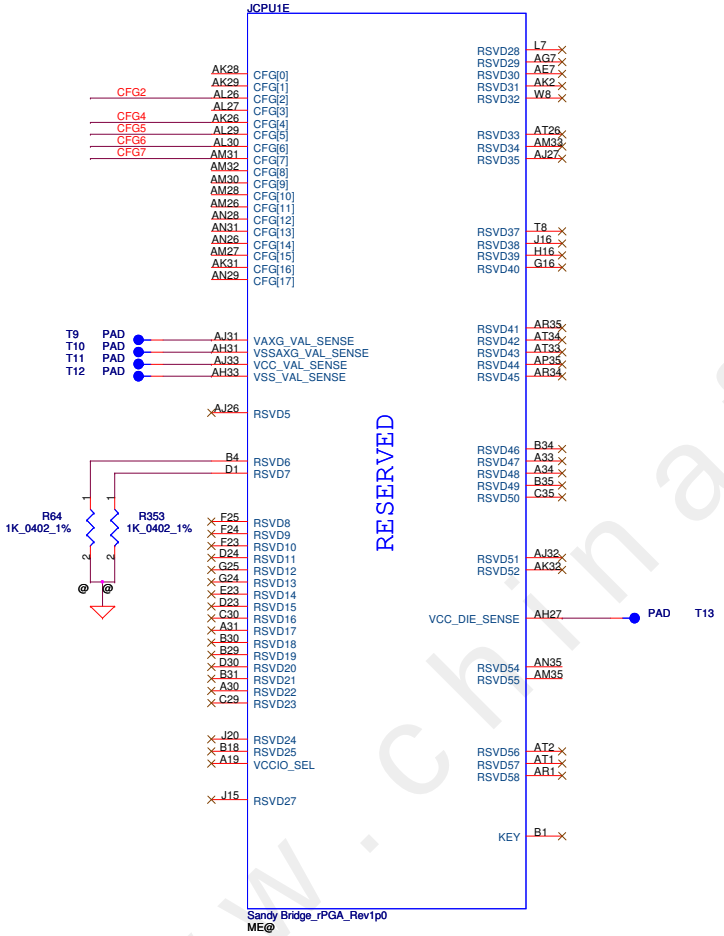
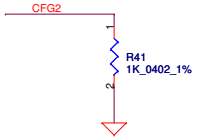
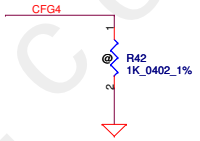
CFG Straps for Processor

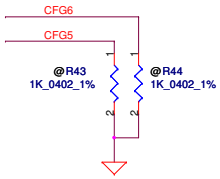




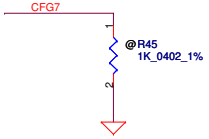
PEG Static Lane Reversal – CFG2 is for the 16x	
CFG2	1: Normal Operation; Lane # definition matches socket pin map definition * 0:Lane Reversed



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

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Size	Document Number		Rev
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Date:	Wednesday, May 11, 2011	Sheet	8 of 60

POWER

JCPU1F

PEG AND DDR

CORE SUPPLY

SVID

SENSE LINES

+CPU_CORE

(6/16 change 10uF_0603_6.3V)*5

QC=94A

DC=53A

(22uF_0805_6.3V)*16

(330uF)*4

DUAL@

Cap quantity follow HR_PDDG_Rev07

22uF*7 NO-STUFF

18A

(22uF_0805_6.3V)*13

+1.05VS

C922 330U_2.5V_M

C918 330U_2.5V_M

R46 75_0402_5%

VR_SVID_CLK series-resistors close to VR

VIDALERT# AJ29 H_CPU_SVIDALRT# R47 43_0402_5%

VIDSCLK AJ30 H_CPU_SVIDCLK R48 0_0402_5%

VIDSOUT AJ28 H_CPU_SVIDDAT R49 0_0402_5%

VR_SVID_ALRT# 57

VR_SVID_CLK 57

VR_SVID_DAT 57

R50 130_0402_5%

8/11 update: Add R1309, R1310.

PDDG1.21#439028

R51 100_0402_1%

VCC_SENSE AJ35 VCCSENSE_R

VSS_SENSE AJ34 VSSSENSE_R

R52 R_short 0_0402_5%

R53 R_short 0_0402_5%

VCCSENSE 57

VSSSENSE 57

R1313 10_0402_1%

VCCIO_SENSE B10

VSSIO_SENSE A10 VSSIO_SENSE

R1314 10_0402_1%

VCCIO_SENSE 55

R54 100_0402_1%

R1309 27.4_0402_1%

R1310 27.4_0402_1%

Sandy Bridge_rPGA_Rev1p0

ME@

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Title: PROCESSOR(5/7) PWR,BYPASS

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Date: Wednesday, May 11, 2011 | Sheet 9 of 60

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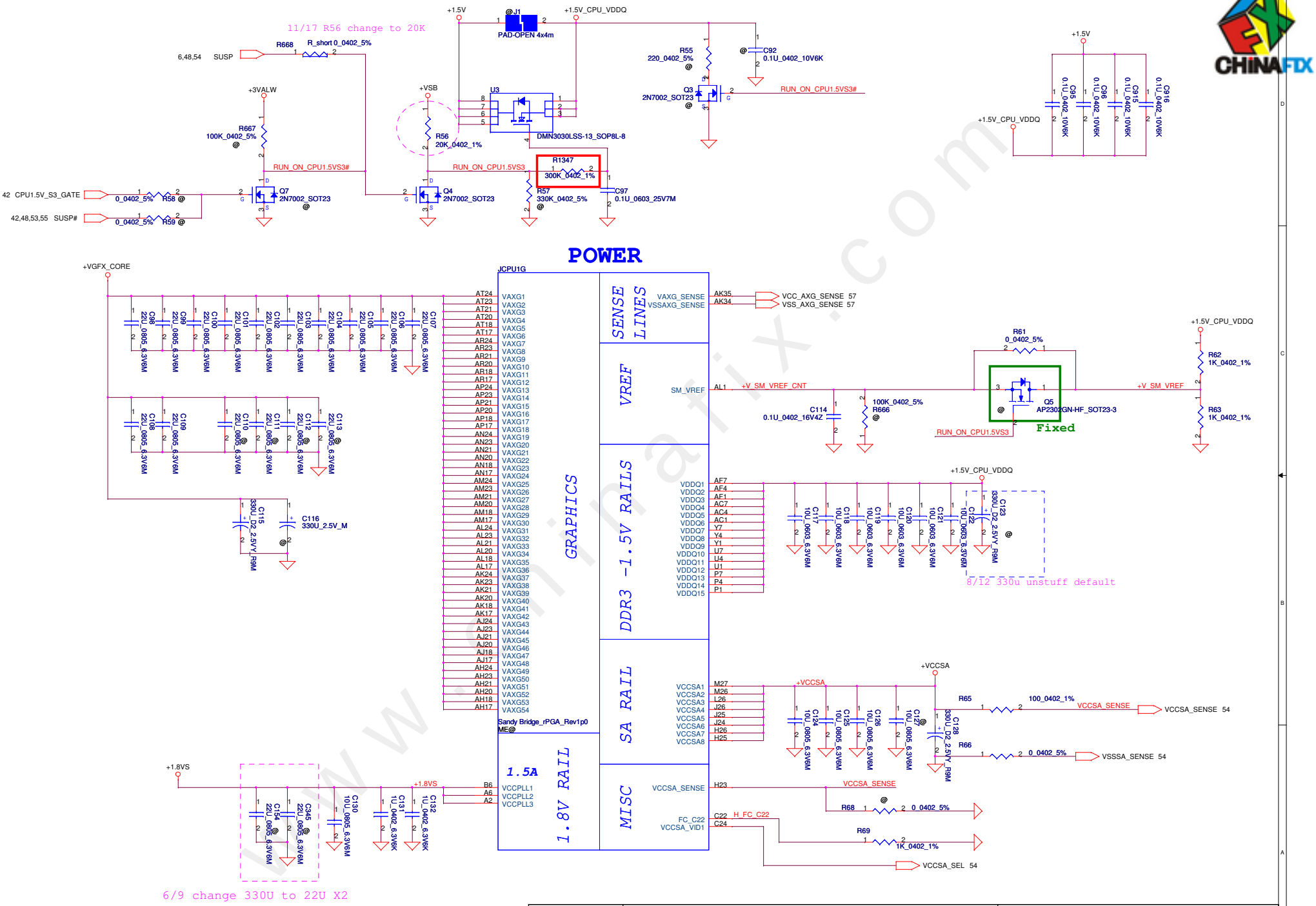

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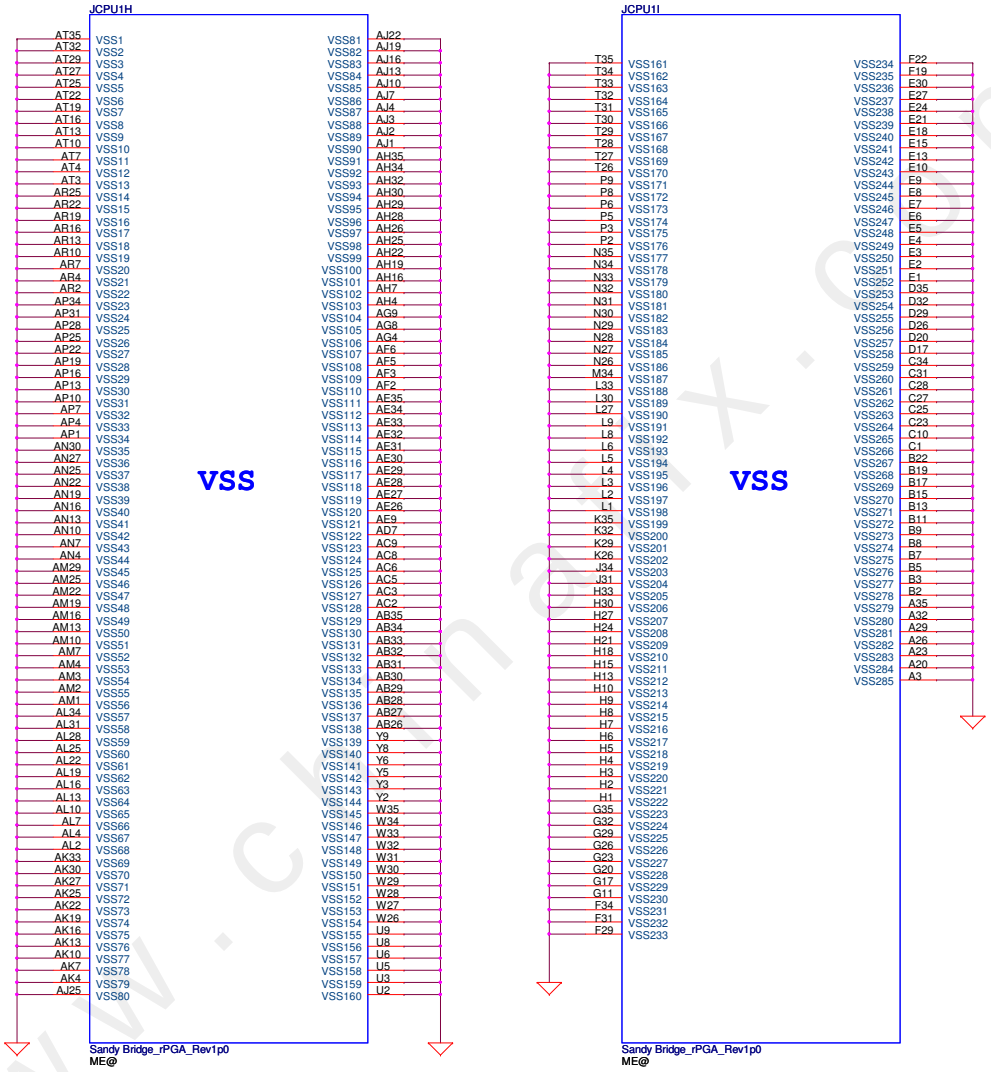
Size	Document Number		Rev
Custom	QIQY2 LA6884P		1.0
Date:	Wednesday, May 11, 2011	Sheet	10 of 60



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Title: PROCESSOR(7/7) VSS

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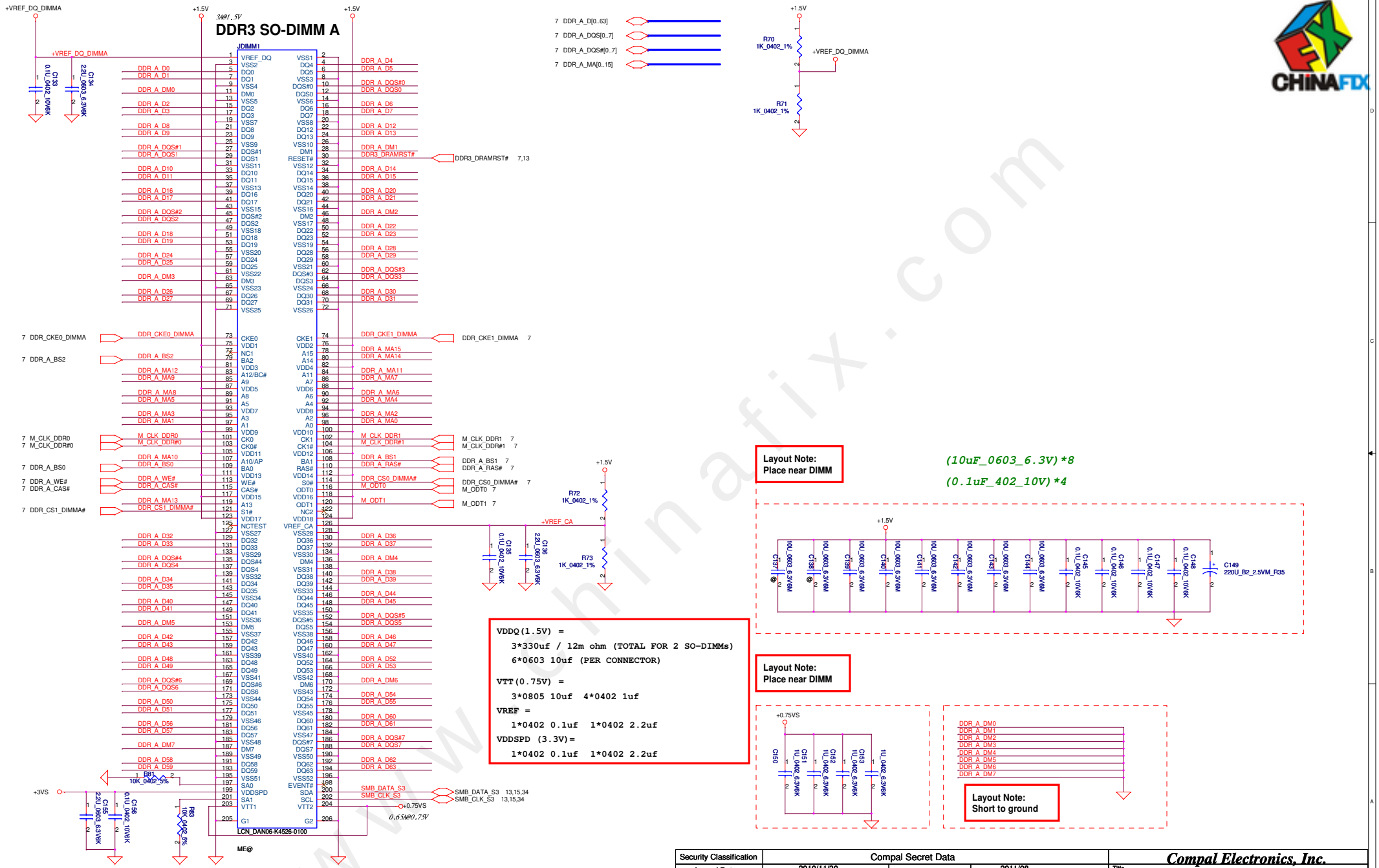
Date: Wednesday, May 11, 2011 Sheet 11 of 60



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Title: **DDRIII-SODIMM SLOT1**

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Date: Wednesday, May 11, 2011 | Sheet 12 of 60

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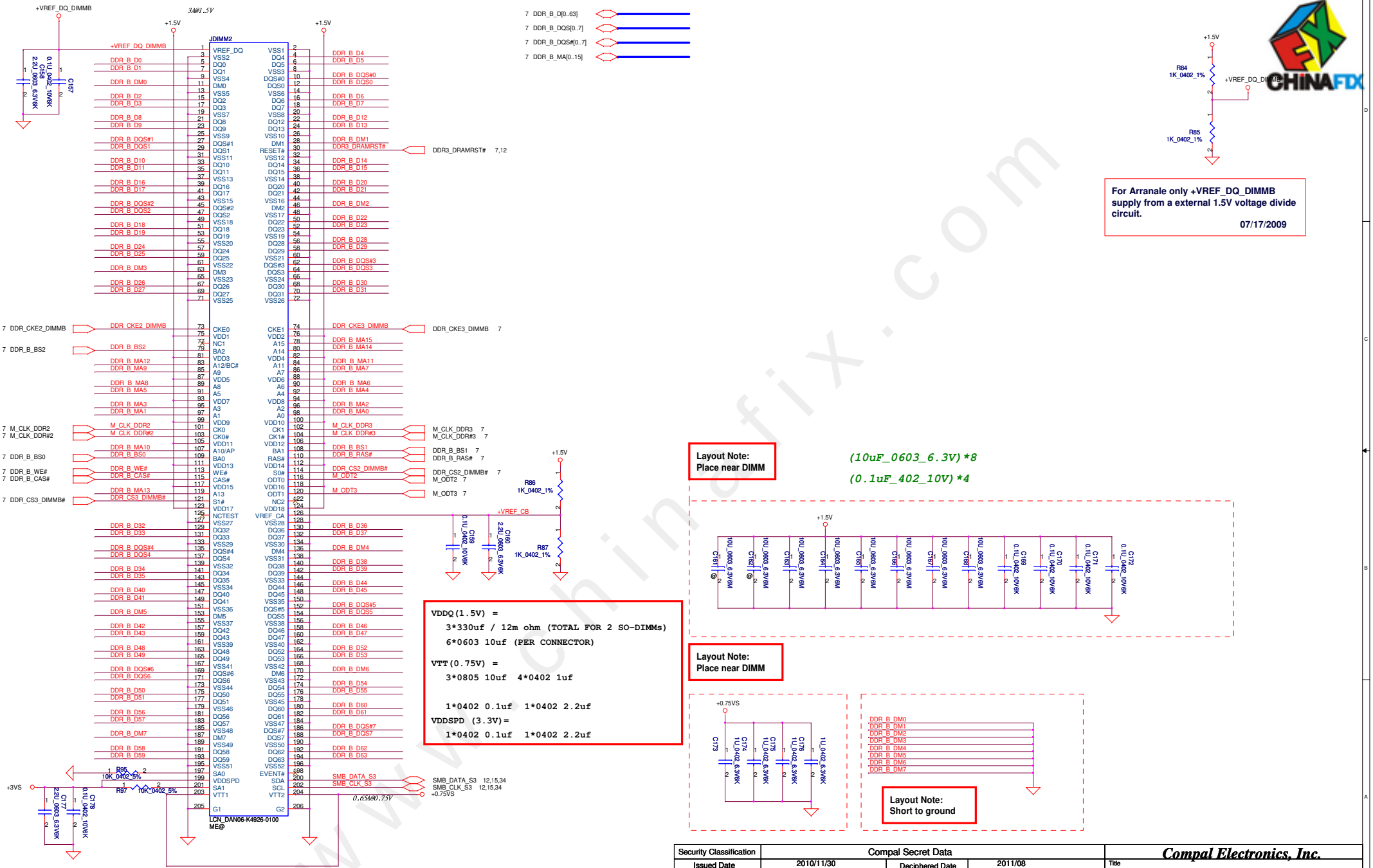

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Size	Document Number	Rev
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Date: Wednesday, May 11, 2011 Sheet 13 of 60

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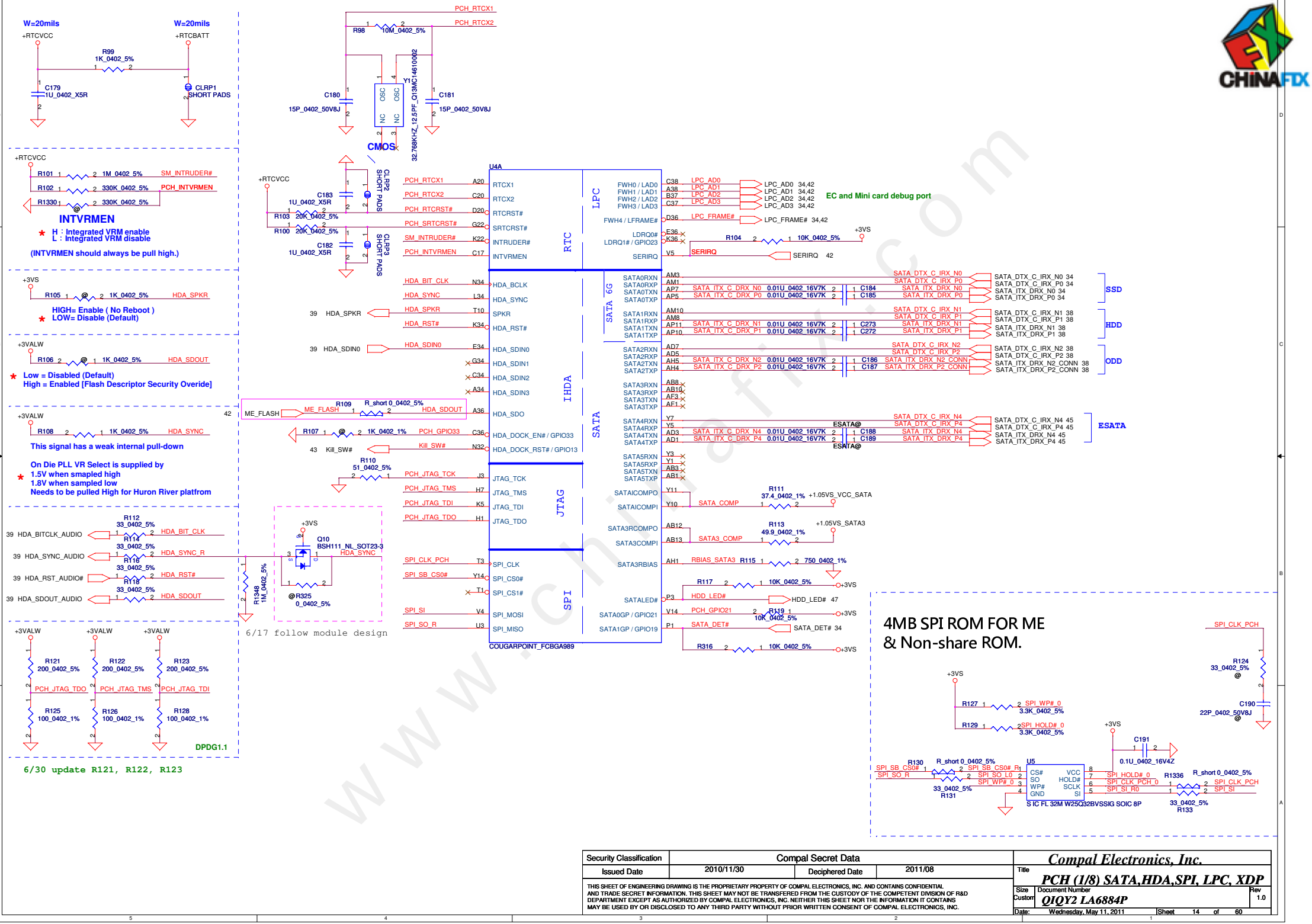

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Issued Date	2010/11/30	Deciphered Date	2011/08

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Compal Electronics, Inc.

Title: PCH (1/8) SATA,HDA,SPI, LPC, XDP

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 14 of 60

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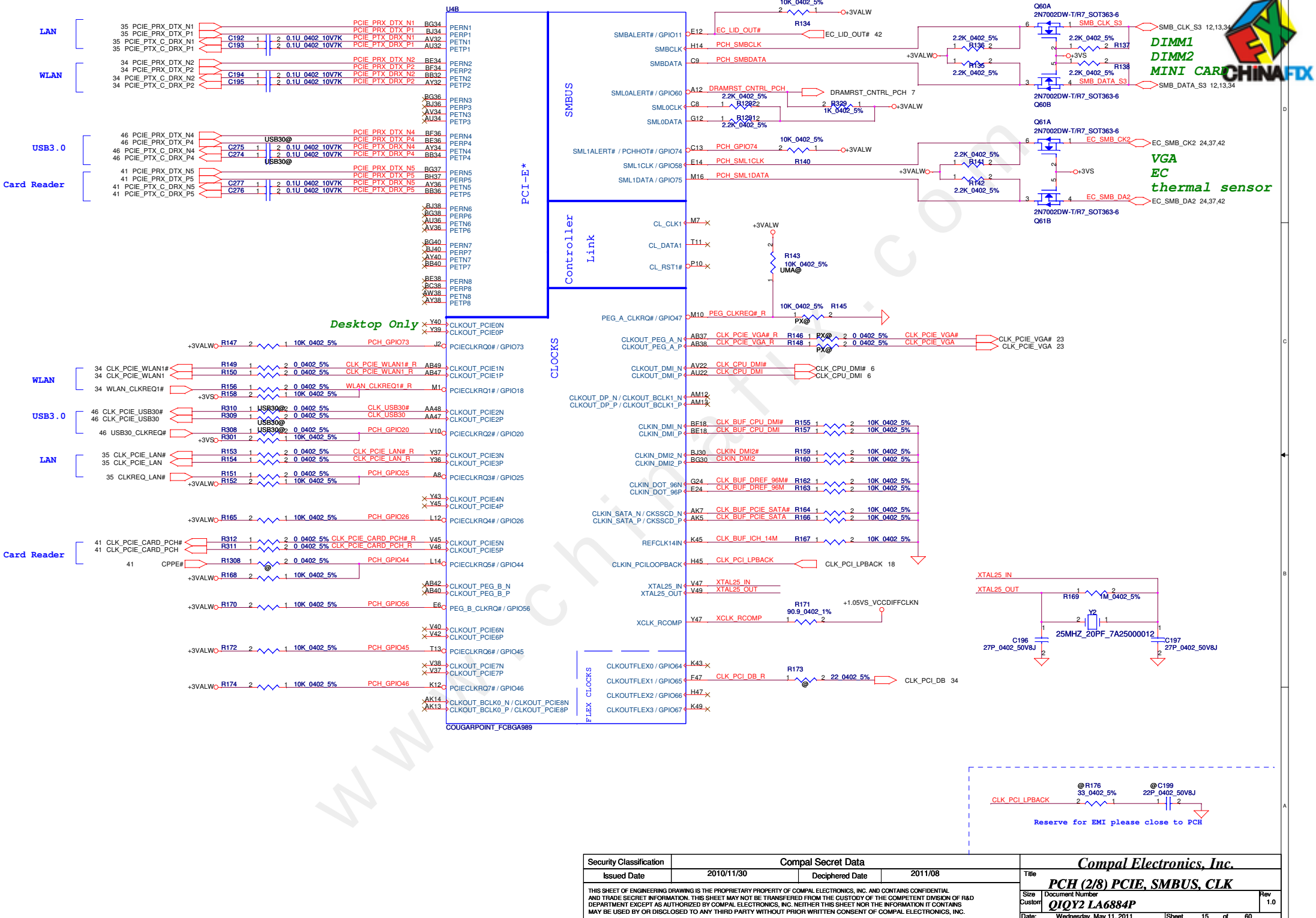
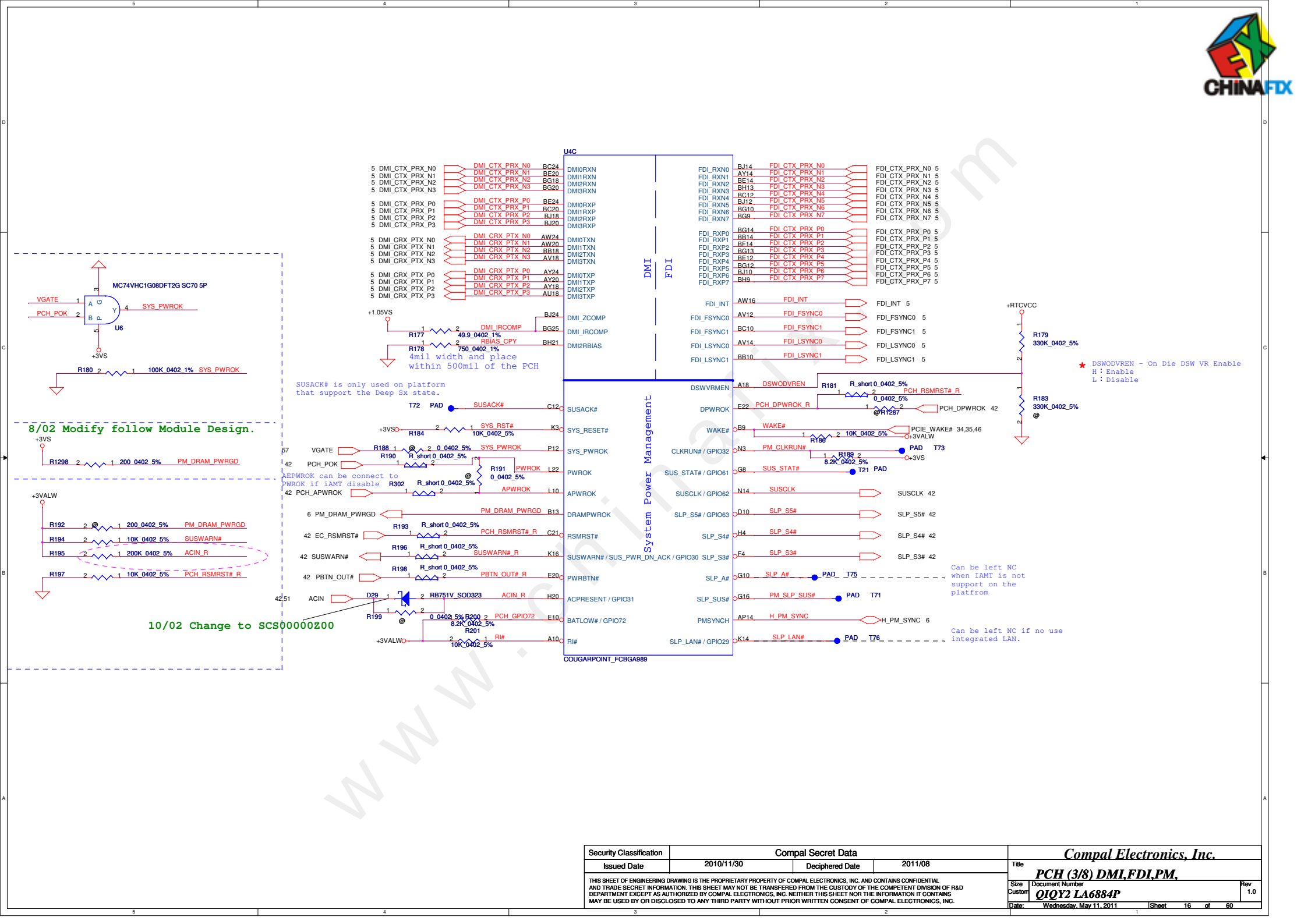

U4B
PCI-E*
SMBUS
Controller Link
CLOCKS
FLEX CLOCKS
COUGARPOINT_FCBGA989
LAN
WLAN
USB3.0
Card Reader
Desktop Only
DIMM1
DIMM2
MINI CARD
VGA
EC
thermal sensor
Reserve for EMI please close to PCH
Security Classification
Compal Secret Data
Issued Date
2010/11/30
Deciphered Date
2011/08
Compal Electronics, Inc.
PCH (2/8) PCIE, SMBUS, CLK
QIQY2 LA6884P
Rev 1.0
Wednesday, May 11, 2011
Sheet 15 of 60



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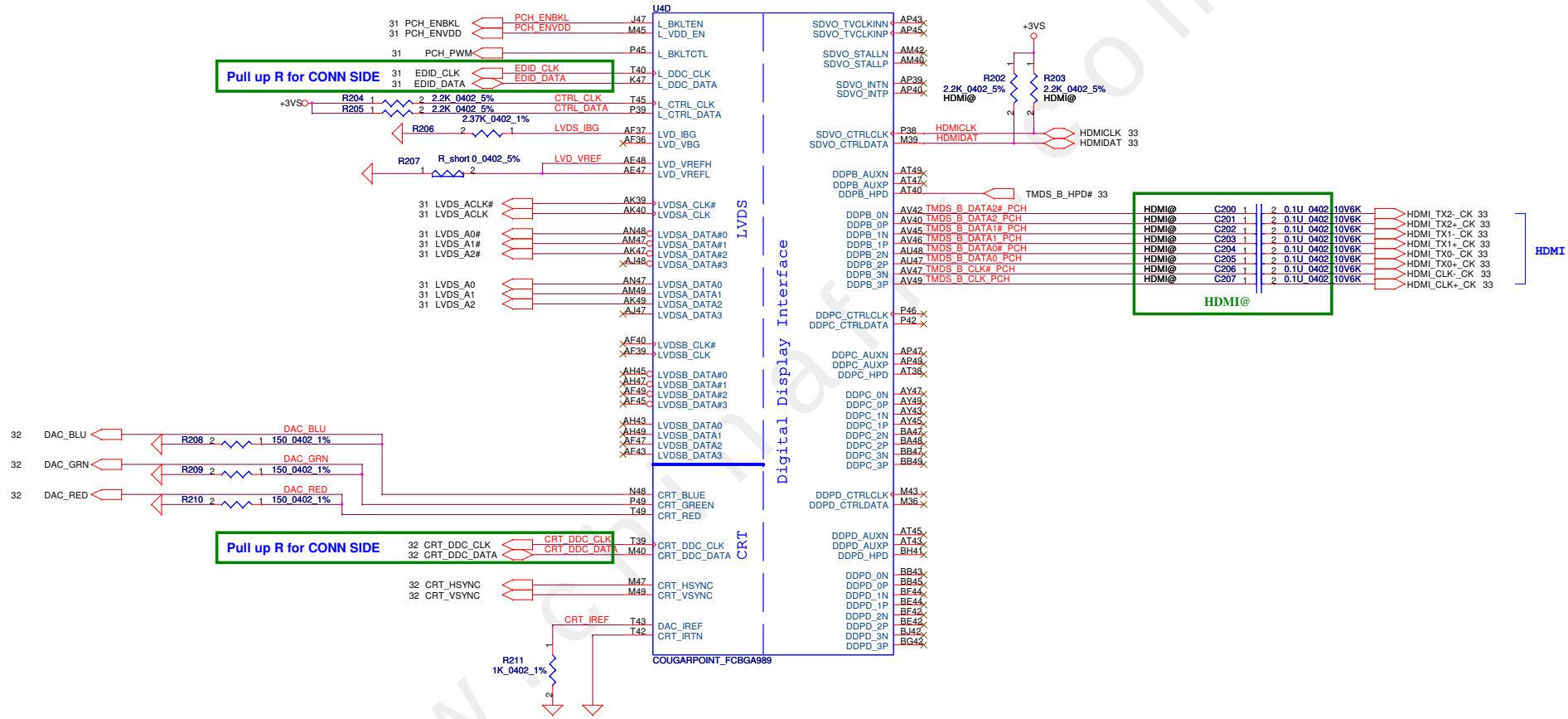
Compal Electronics, Inc.			
Title	PCH (3/8) DMI,FDI,PM,		
Size: Custom	Document Number: QIQY2 LA6884P		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 16 of 60		



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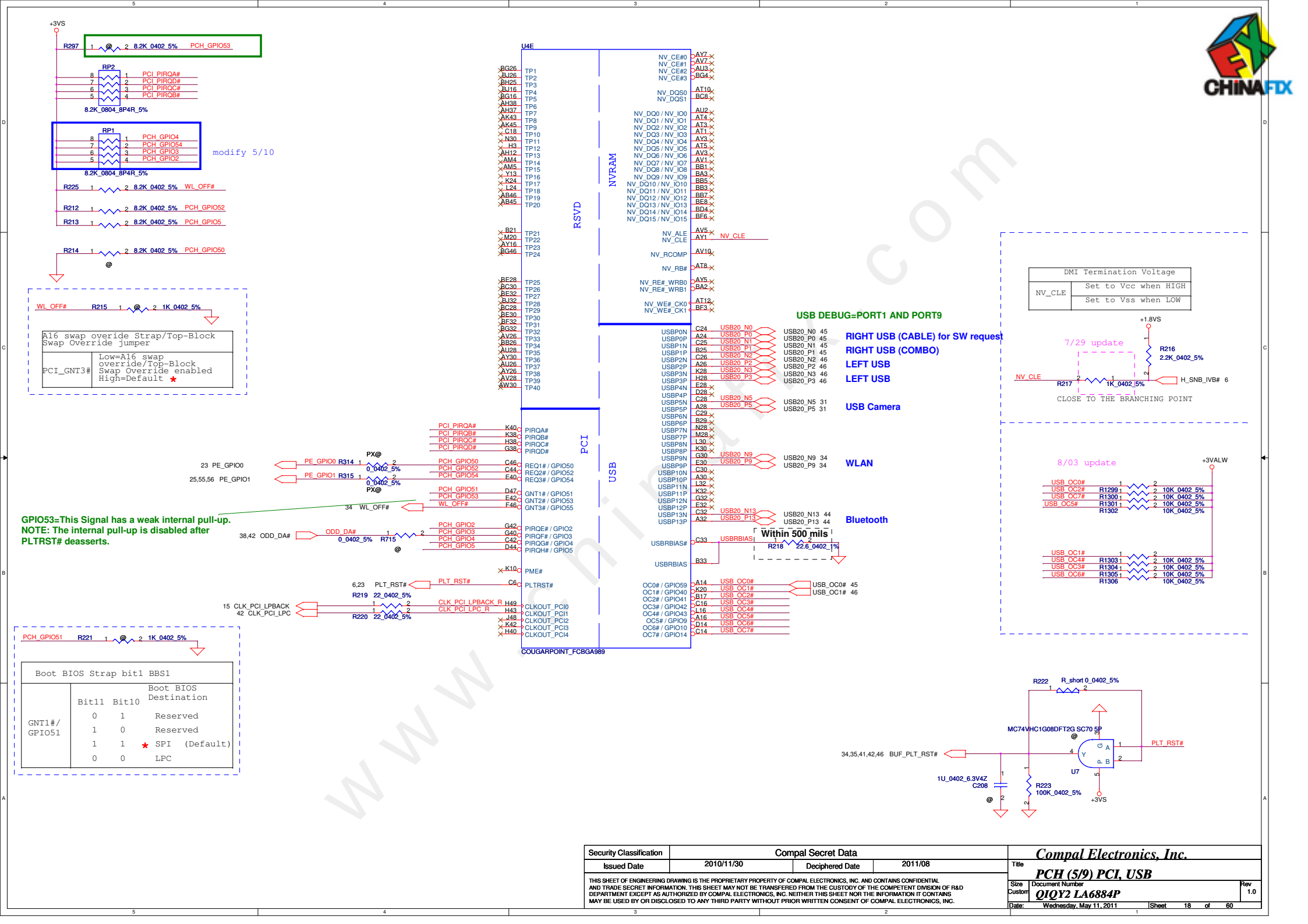
Compal Electronics, Inc.

Title: PCH (4/9) LVDS,CRT,DP,HDMI

Size: Custom | Document Number: QIQY2 LA6884P | Rev: 1.0

Date: Wednesday, May 11, 2011 | Sheet 17 of 60



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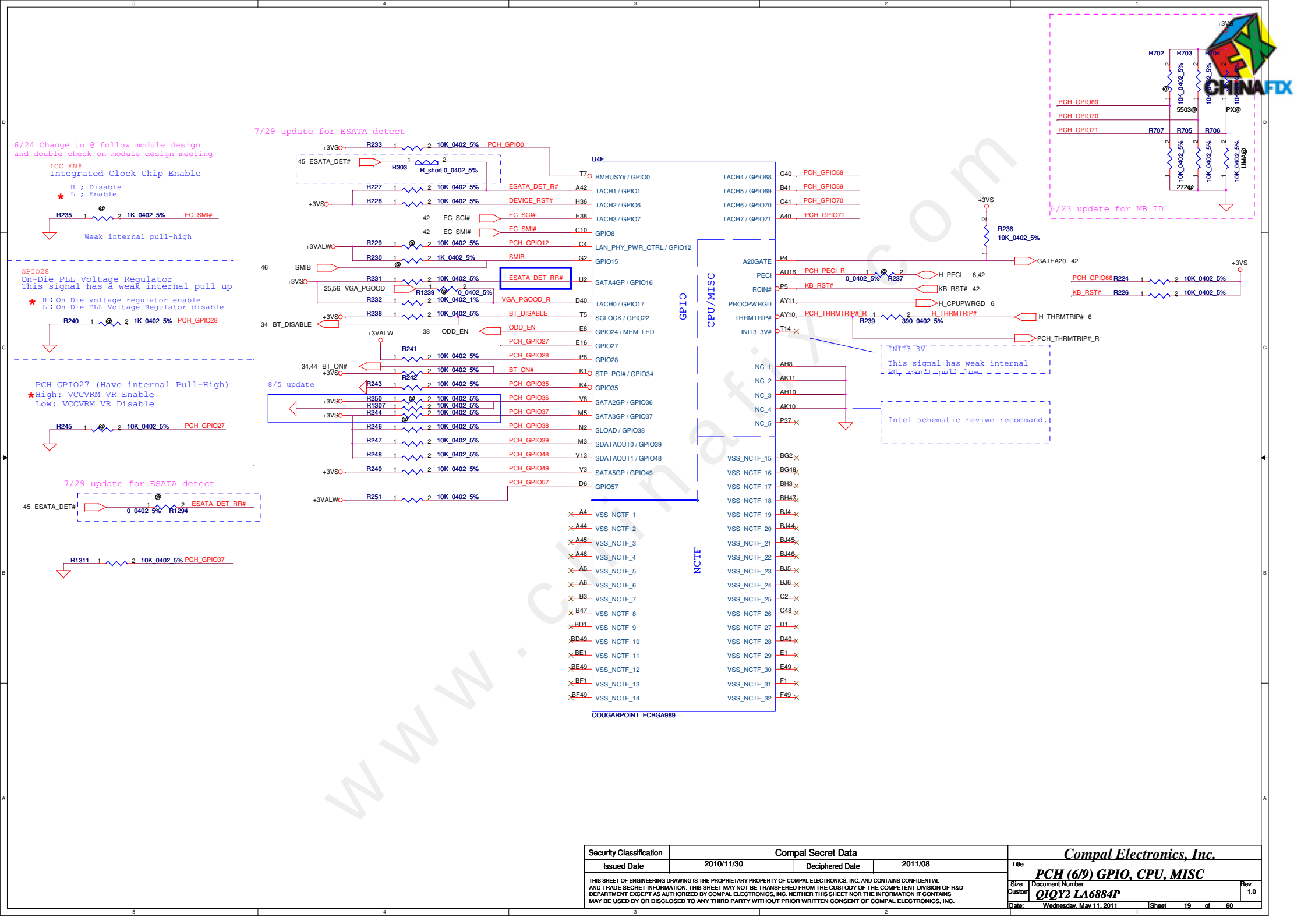
Compal Electronics, Inc.			
Title: PCH (5/9) PCI, USB			
Size: Custom	Document Number: QIQY2 LA6884P		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 18 of 60		



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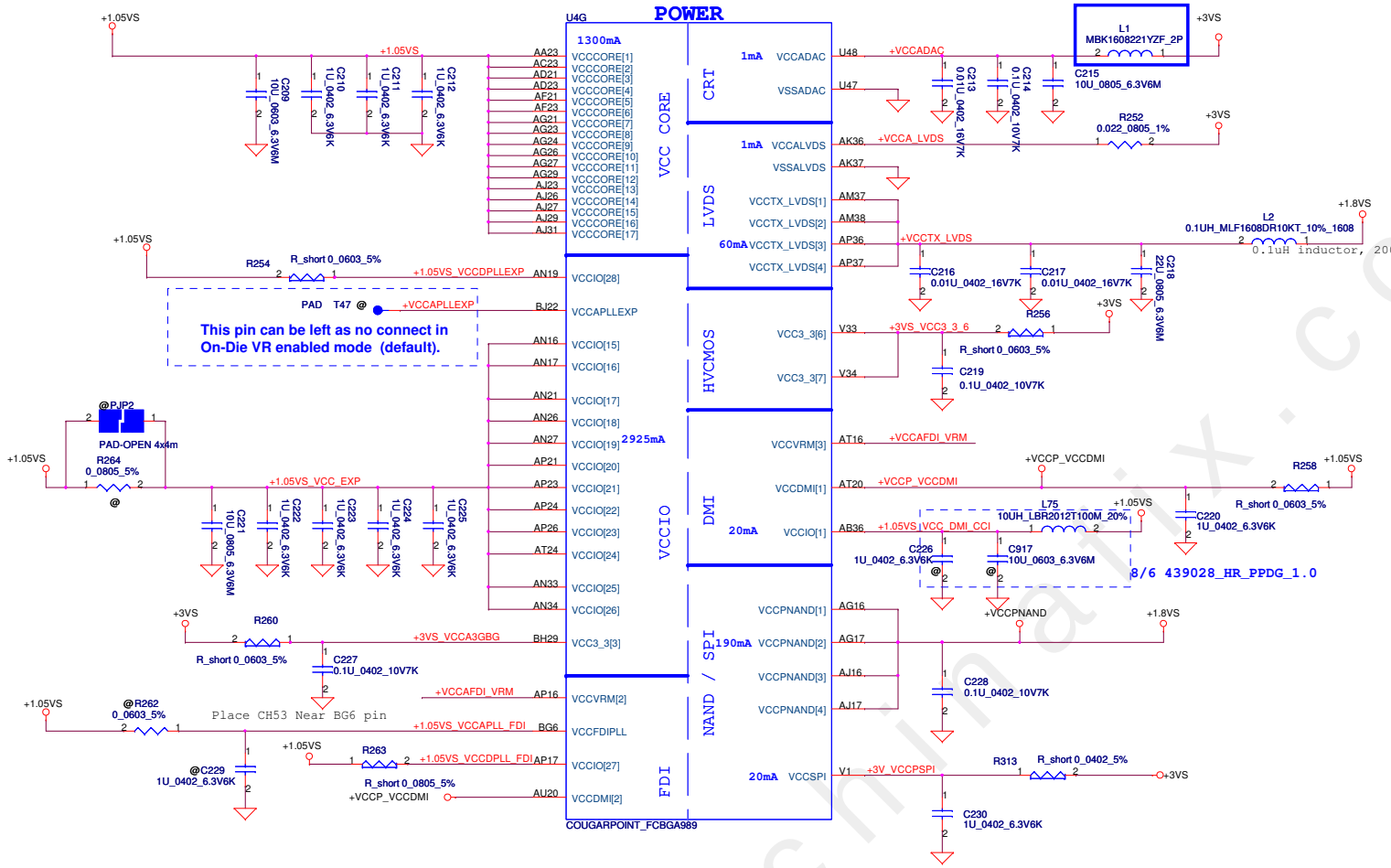
Compal Electronics, Inc.

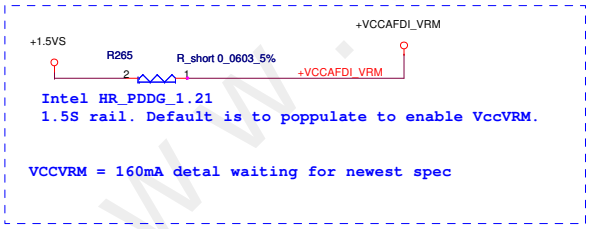
Title: PCH (6/9) GPIO, CPU, MISC

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 19 of 60

modify 5/02 from bead SM01000AX00
change to 1 ohm SD014100B80





PCH Power Rail Table

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	0.266
VccADAC	3.3	0.001
VccADPLLA	1.05	0.08
VccADPLLB	1.05	0.08
VccCore	1.05	1.3
VccDMI	1.05	0.042
VccIO	1.05	2.925
VccASW	1.05	1.01
VccSPI	3.3	0.02
VccDSW	3.3	0.003
VccpNAND	1.8	0.19
VccRTC	3.3	6 uA
VccSus3_3	3.3	0.119
VccSusHDA	3.3 / 1.5	0.01
VccVRM	1.8 / 1.5	0.16
VccCLKDMI	1.05	0.02
VccSSC	1.05	0.095
VccDIFFCLKN	1.05	0.055
VccALVDS	3.3	0.001
VccTX_LVDS	1.8	0.06

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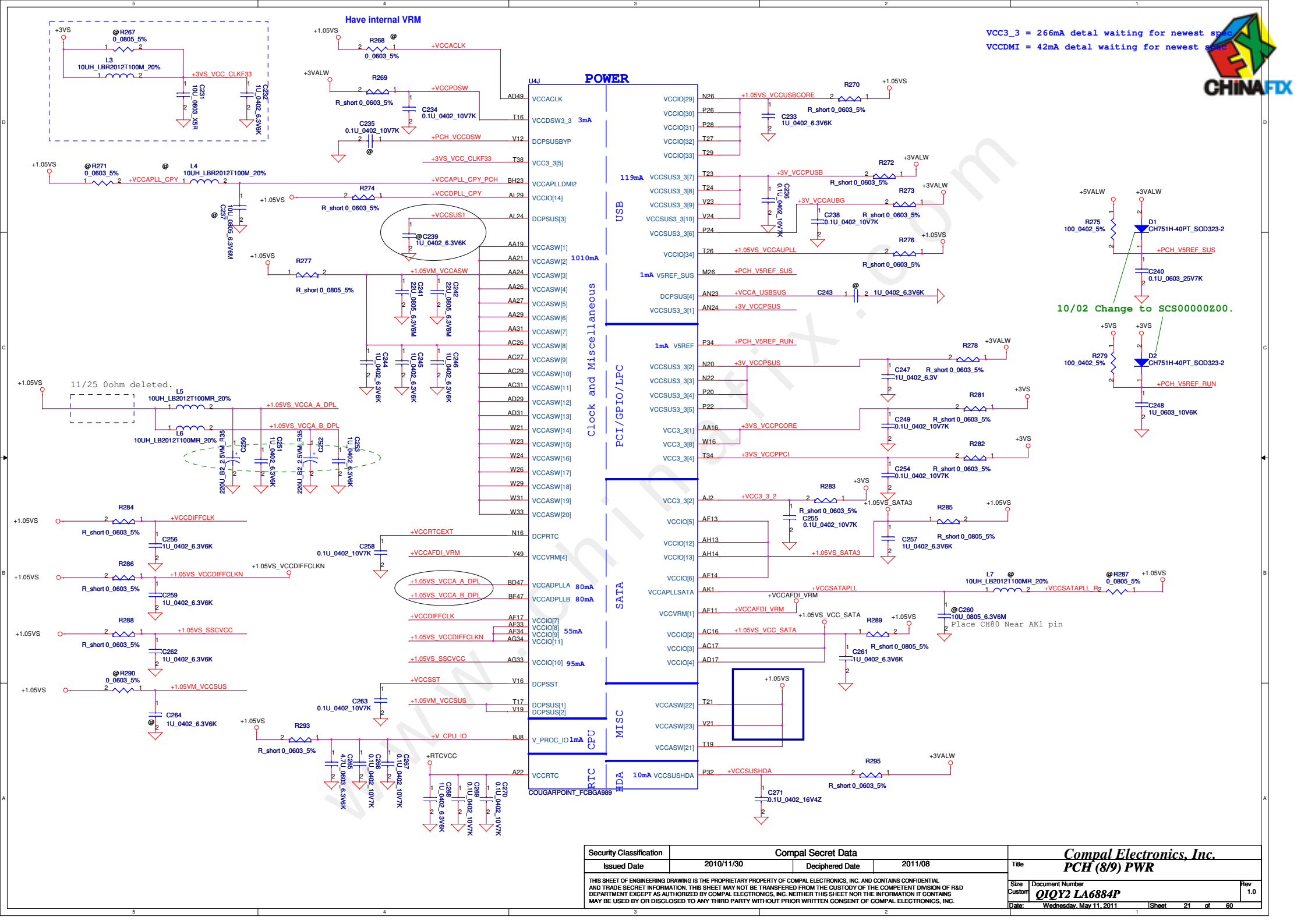
Compal Electronics, Inc.

Title: PCH (7/9) PWR

Size: Custom | Document Number: QIQY2 LA6884P | Rev: 1.0

Date: Wednesday, May 11, 2011 | Sheet 20 of 60



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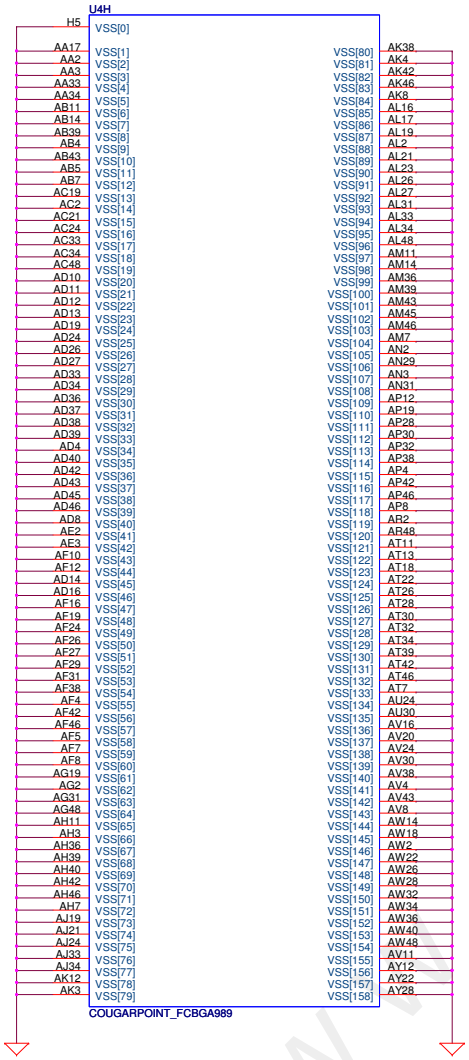
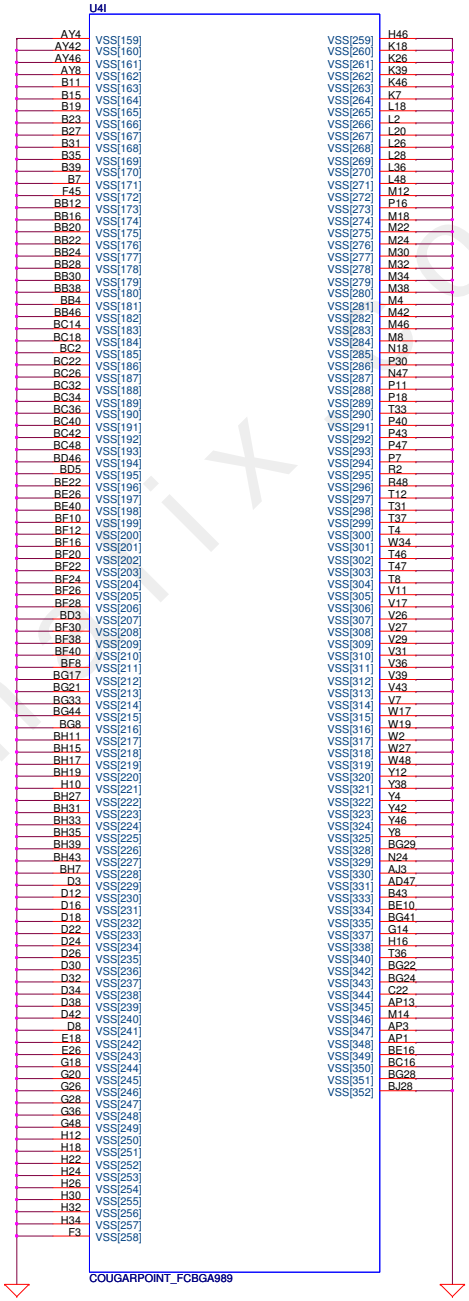
Title	Compal Electronics, Inc. PCH (8/9) PWR		
Size: Custom	Document Number: QIQY2 LA6884P		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 21 of 60		





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Compal Electronics, Inc.

Title: PCH (9/9) VSS

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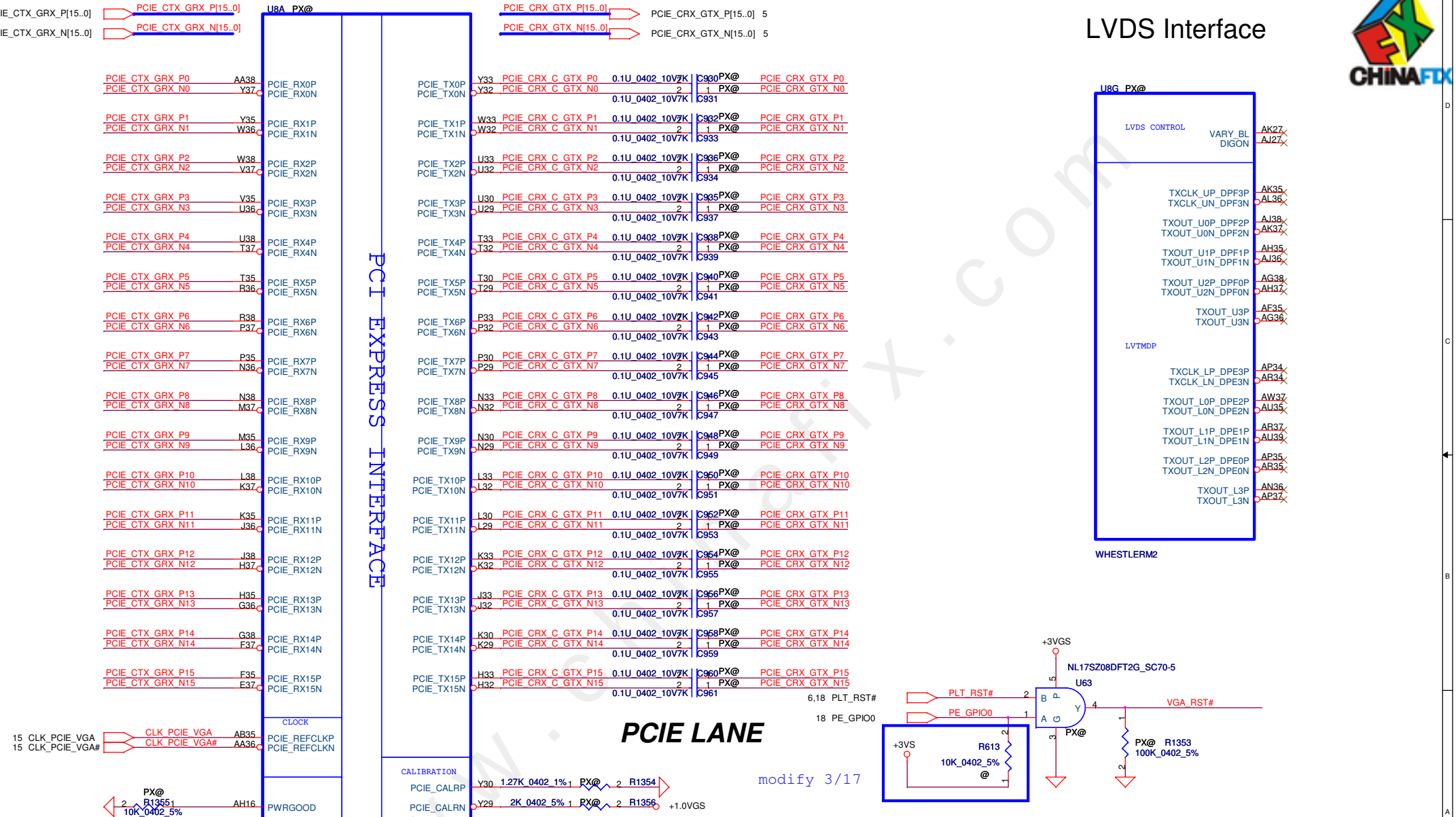
Date: Wednesday, May 11, 2011 Sheet 22 of 60

LVDS Interface



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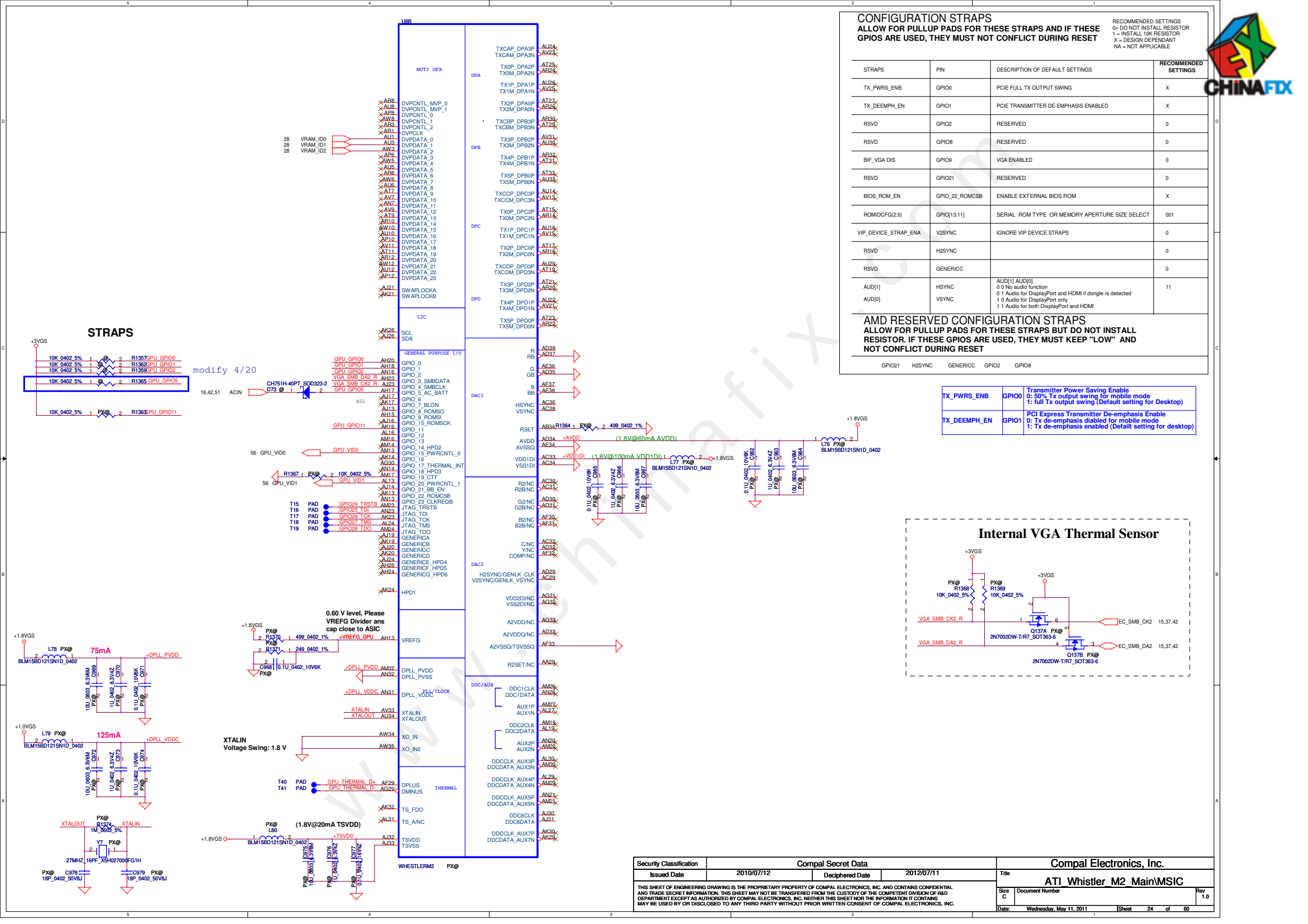
Title: ATI_Whistler_M2_PEG & LVDS

Size	Document Number	Rev
B		1.0

Date: Wednesday, May 11, 2011 Sheet 23 of 60



CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

RECOMMENDED SETTINGS
0= DO NOT INSTALL RESISTOR
1 = INSTALL 10K RESISTOR
X = DESIGN DEPENDANT
NA = NOT APPLICABLE

STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	RECOMMENDED SETTINGS
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING	X
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED	X
RSVD	GPIO2	RESERVED	0
RSVD	GPIO8	RESERVED	0
BIF_VGA DIS	GPIO9	VGA ENABLED	0
RSVD	GPIO21	RESERVED	0
BIOS_ROM_EN	GPIO_22_ROMCSB	ENABLE EXTERNAL BIOS ROM	X
ROMIDCFG(2:0)	GPIO[13:11]	SERIAL ROM TYPE OR MEMORY APERTURE SIZE SELECT	001
VIP_DEVICE_STRAP_ENA	V2SYNC	IGNORE VIP DEVICE STRAPS	0
RSVD	H2SYNC		0
RSVD	GENERICC		0
AUD[1] AUD[0]	HSYNC VSYNC	AUD[1] AUD[0] 0 0 No audio function 0 1 Audio for DisplayPort and HDMI if dongle is detected 1 0 Audio for DisplayPort only 1 1 Audio for both DisplayPort and HDMI	11

AMD RESERVED CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS BUT DO NOT INSTALL RESISTOR. IF THESE GPIOS ARE USED, THEY MUST KEEP "LOW" AND NOT CONFLICT DURING RESET

GPIO21 H2SYNC GENERICC GPIO2 GPIO8

TX_PWRS_ENB	GPIO0	Transmitter Power Saving Enable 0: 50% Tx output swing for mobile mode 1: full Tx output swing (Default setting for Desktop)
TX_DEEMPH_EN	GPIO1	PCI Express Transmitter De-emphasis Enable 0: Tx de-emphasis diabled for mobile mode 1: Tx de-emphasis enabled (Defailt setting for desktop)

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Date: Wednesday, May 11, 2011 | Sheet 24 of 60

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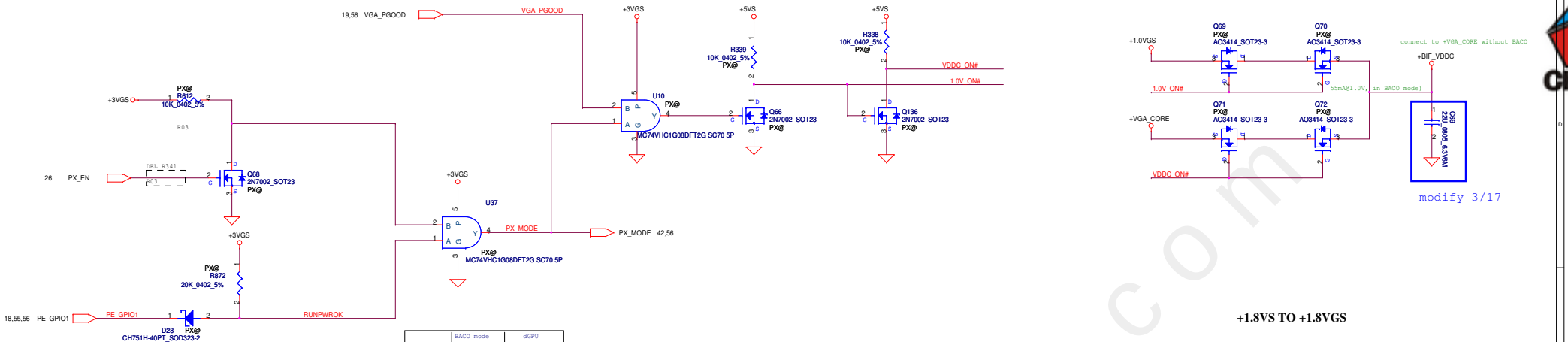
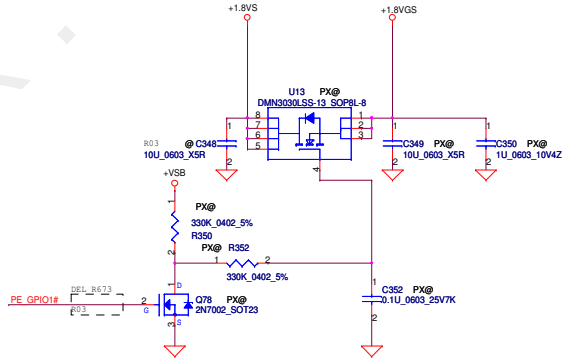


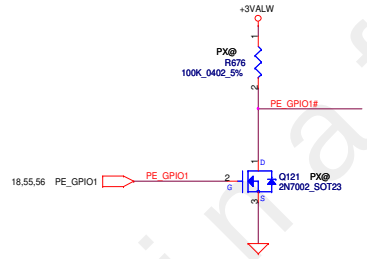
D28 with leakage need to check

	BACO mode	dGPU
PX_EN	1	0
PE_GPIO1	0	1
PX_MODE	0	1
VGA_PGOOD	0	1
VDDC_ON#	0	1
1.0V_ON#	1	0
+BIF_VDDC	+1.0VGS	VGA_CORE

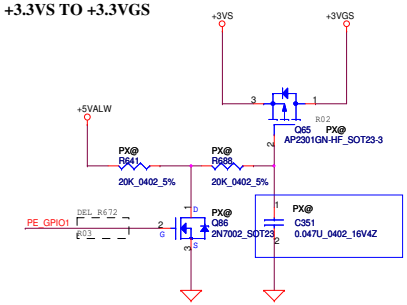
modify 3/17

+1.8VS TO +1.8VGS

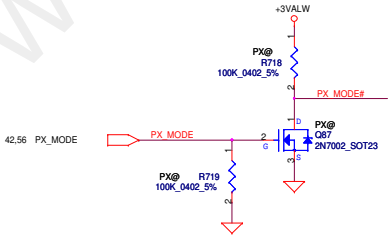




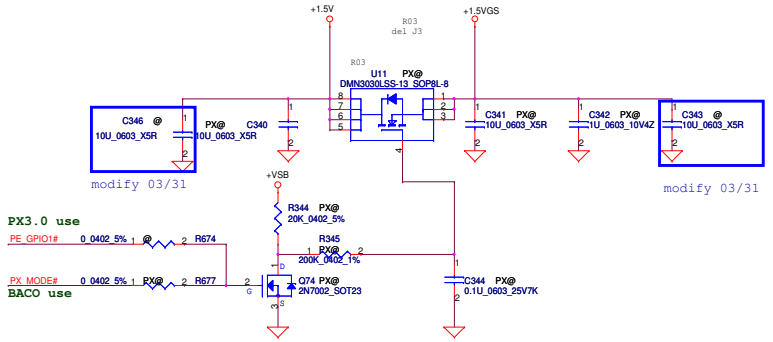
+3.3VS TO +3.3VGS



modify 03/25



+1.5VS TO +1.5VGS



modify 03/31

modify 03/31

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Title: ATI_Whistler_M2_BACO

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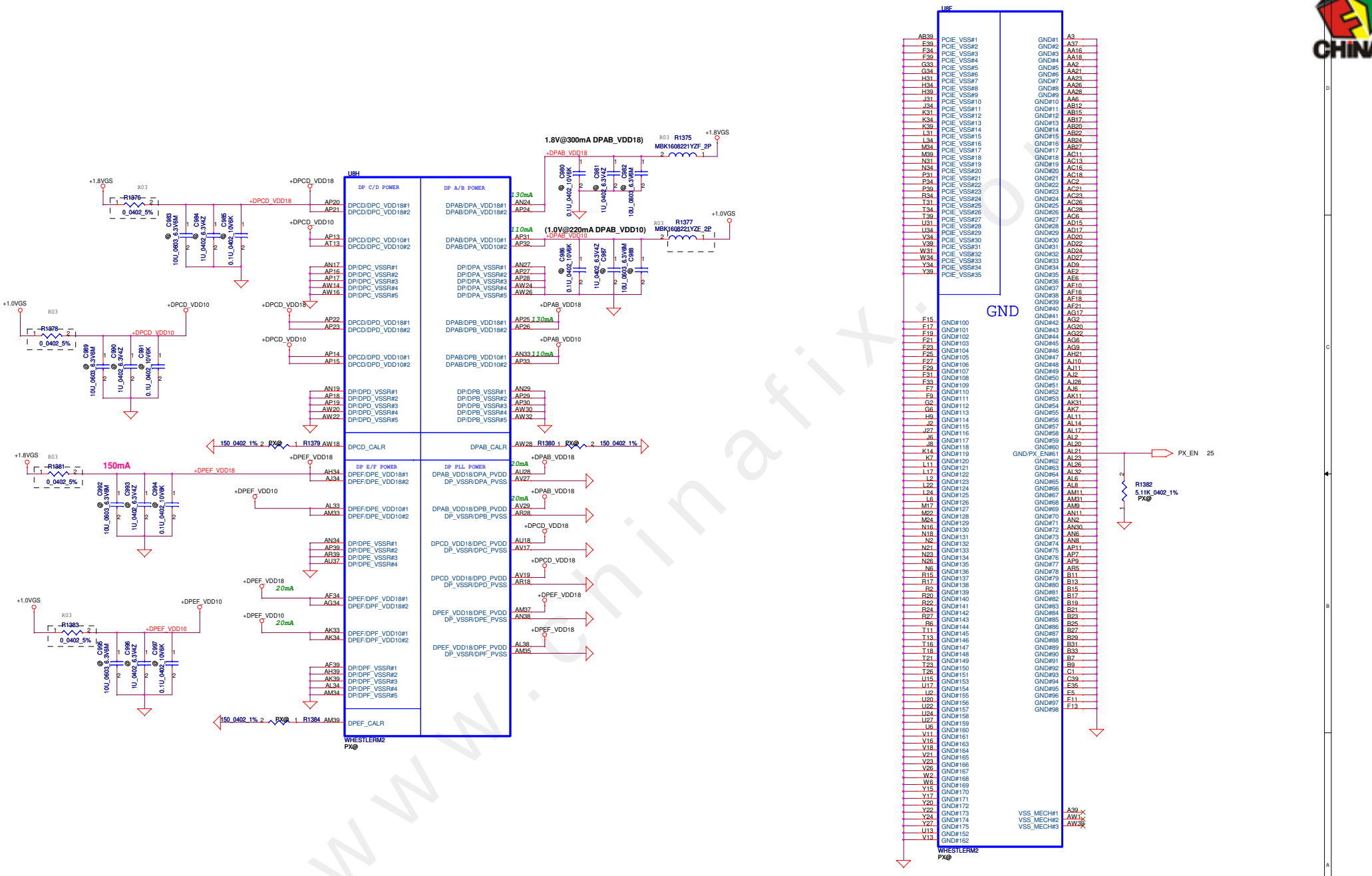
Date: Wednesday, May 11, 2011 Sheet 25 of 60



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Compal Electronics, Inc.

Title: ATI_Whistler_M2_DPX PWR_GND

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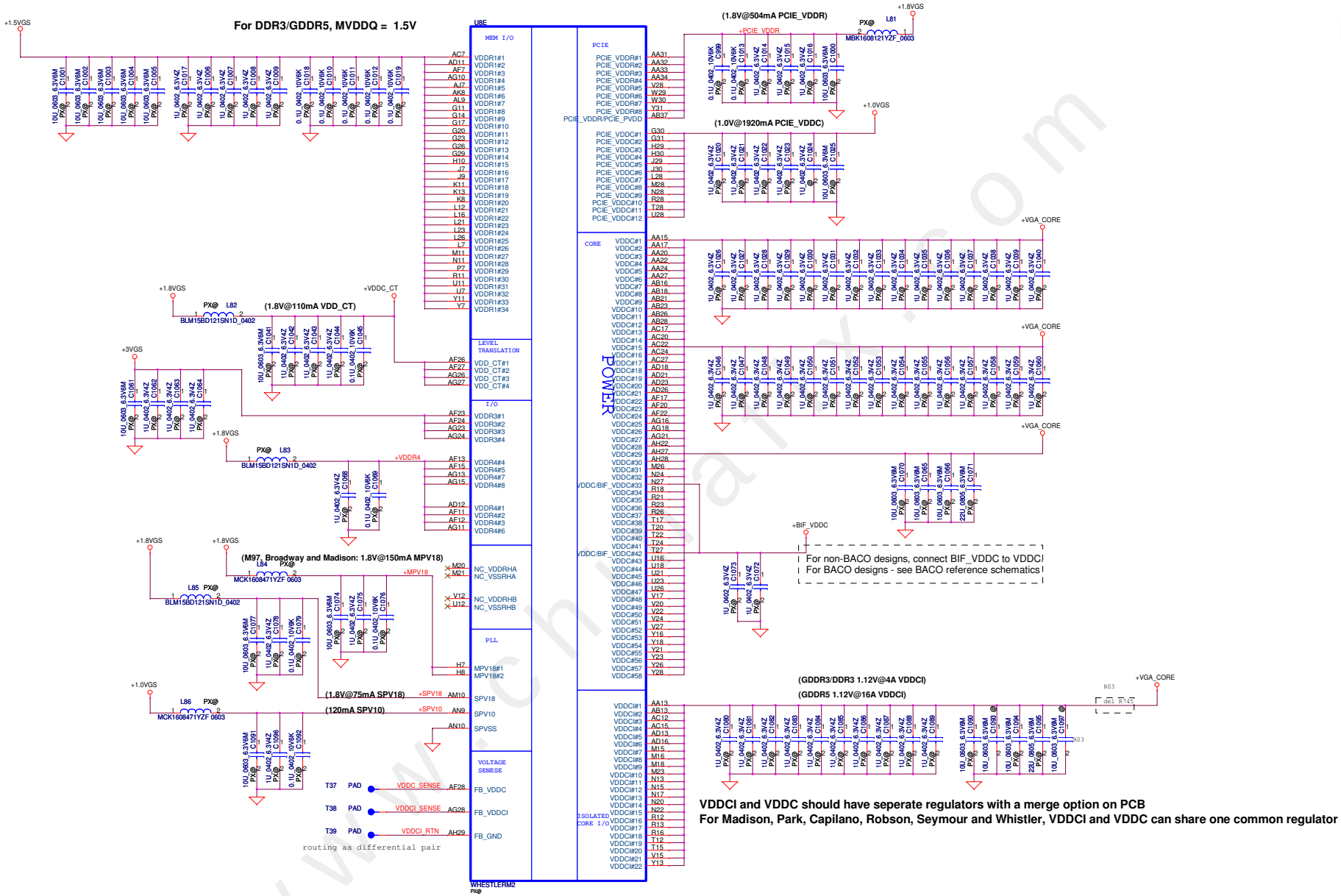
C		1.0

Date: Wednesday, May 11, 2011 | Sheet 26 of 60



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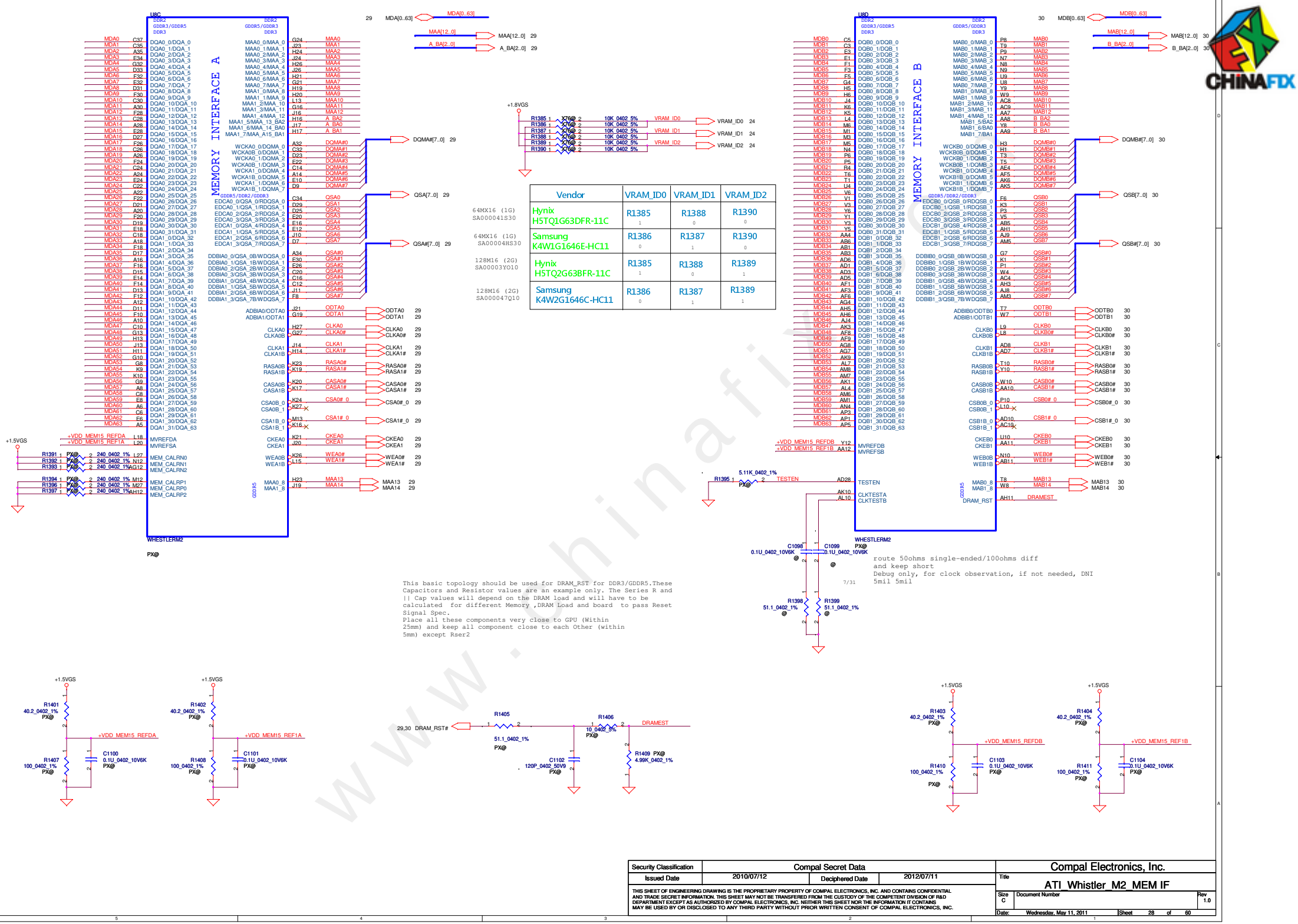
Compal Electronics, Inc.			
Title	ATI_Whistler_M2_Power		
Size C	Document Number		Rev 1.0
Date: Wednesday, May 11, 2011	Sheet 27 of 60		



Vendor	VRAM_ID0	VRAM_ID1	VRAM_ID2
Hynix H5TQ1G63DFR-11C	R1385 1	R1388 0	R1390 0
Samsung K4W1G1646E-HC11	R1386 0	R1387 1	R1390 0
Hynix H5TQ2G63BFR-11C	R1385 1	R1388 0	R1389 1
Samsung K4W2G1646C-HC11	R1386 0	R1387 1	R1389 1

64MX16 (1G) SA000041S30
64MX16 (1G) SA00004HS30
128M16 (2G) SA00003YO10
128M16 (2G) SA000047Q10

This basic topology should be used for DRAM_RST for DDR3/GDDR5.These Capacitors and Resistor values are an example only. The Series R and || Cap values will depend on the DRAM load and will have to be calculated for different Memory ,DRAM Load and board to pass Reset Signal Spec.
Place all these components very close to GPU (Within 25mm) and keep all component close to each Other (within 5mm) except Rser2

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Title: ATI_Whistler_M2_MEM IF

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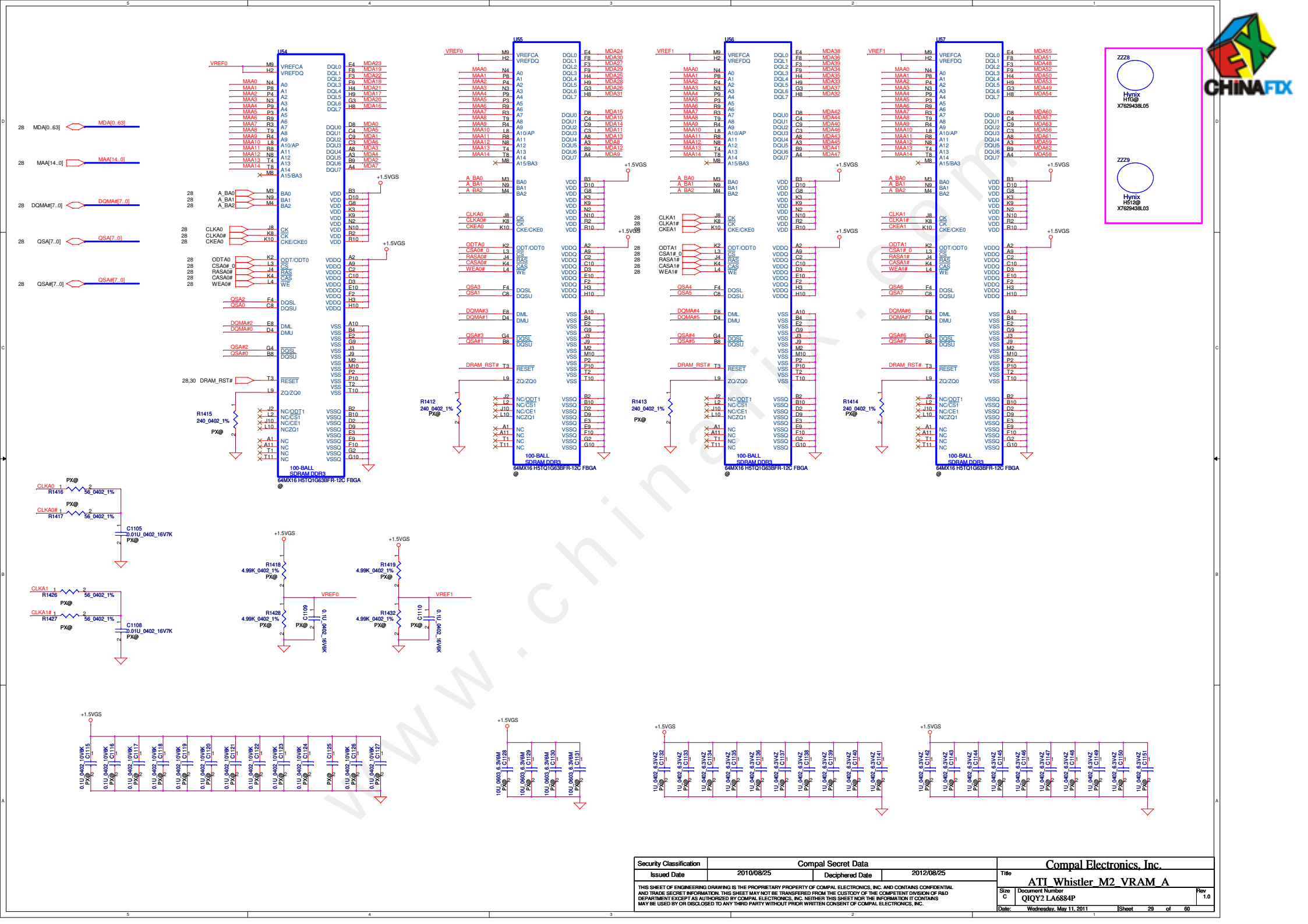
C		1.0

Date: Wednesday, May 11, 2011 Sheet 28 of 60



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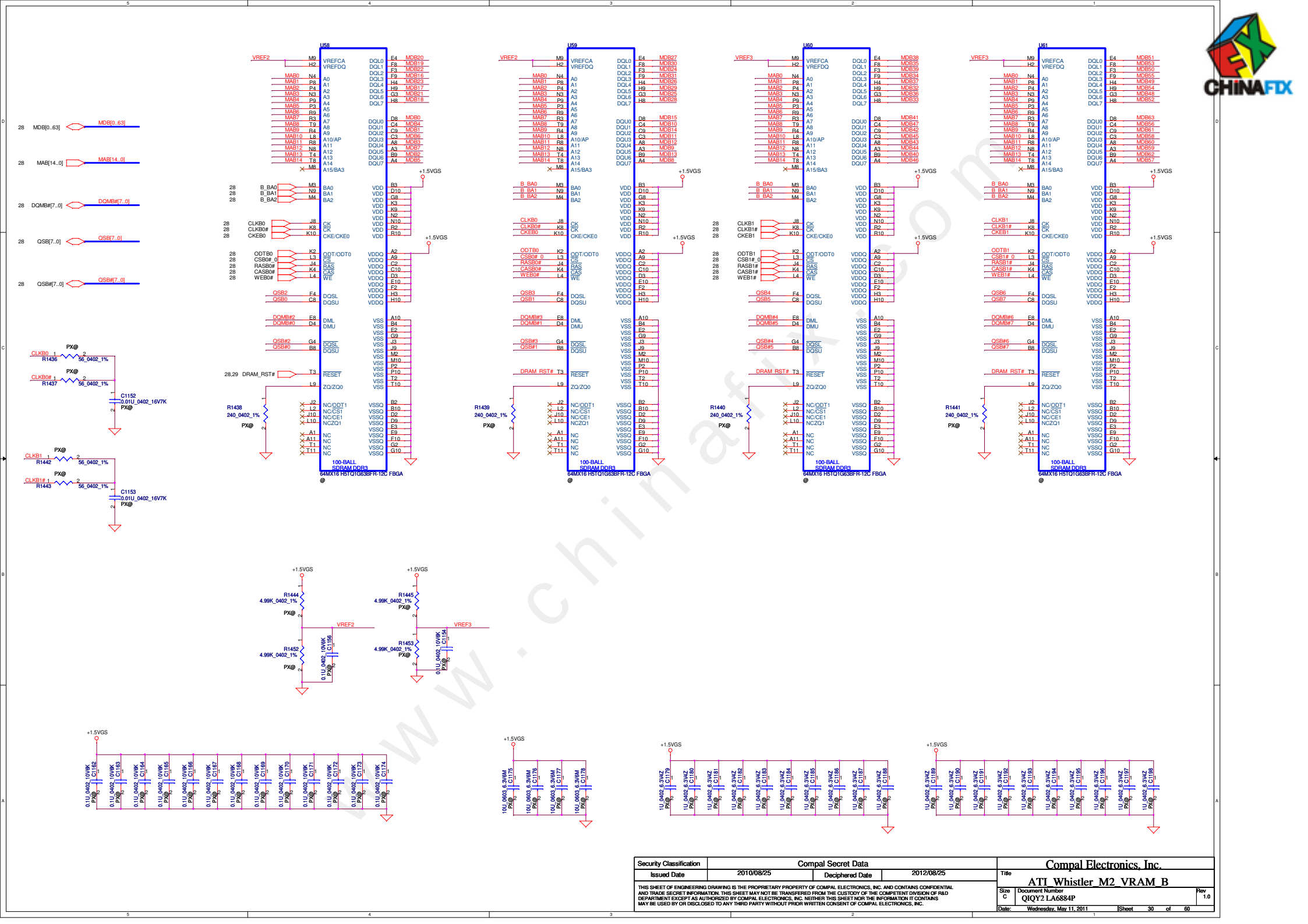

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Issued Date	2010/08/25	Deciphered Date	2012/08/25

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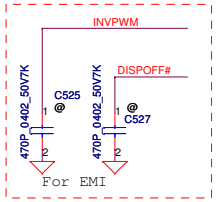
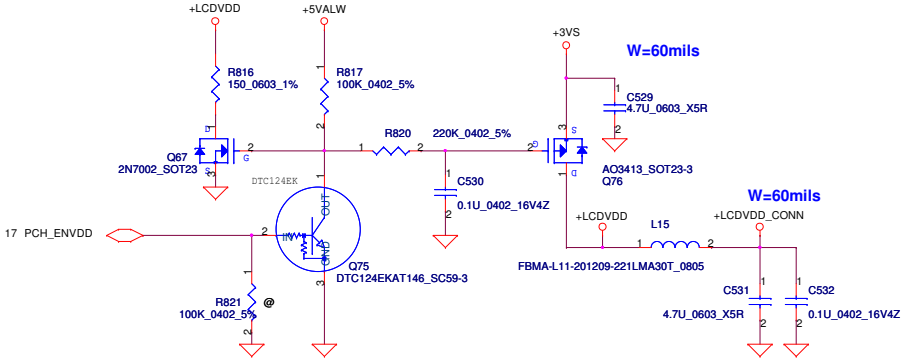
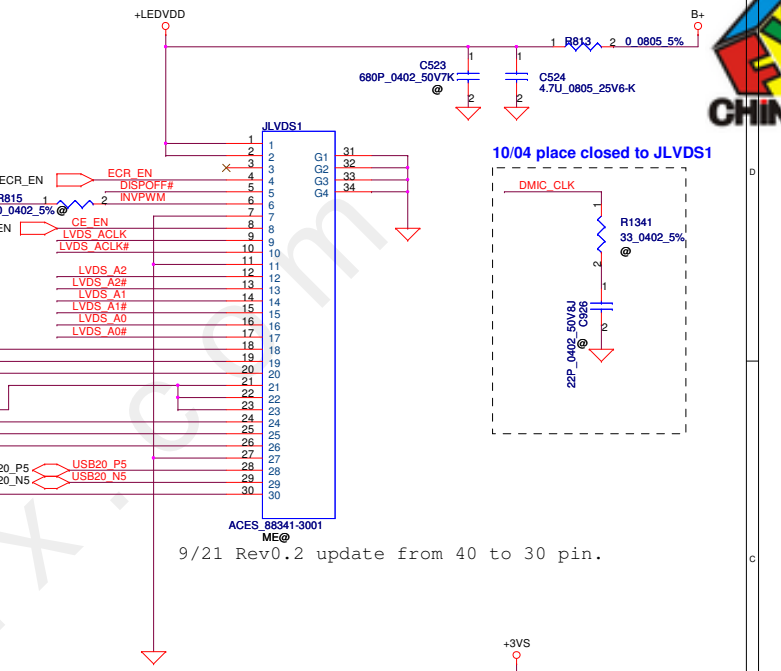
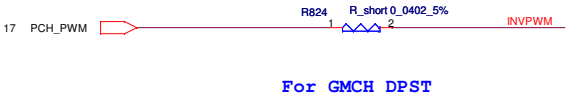
Compal Electronics, Inc.			
Title	ATI_Whistler_M2_VRAM_B		
Size C	Document Number QIQY2 LA6884P		Rev 1.0
Date: Wednesday, May 11, 2011	Sheet 30 of 60		



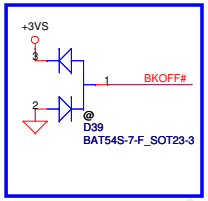
LCD POWER CIRCUIT





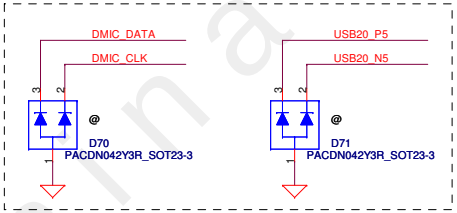


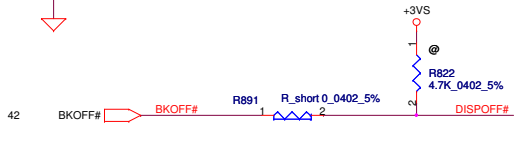
For GMCH DPST



modify 4/20

8/4 add ESD request





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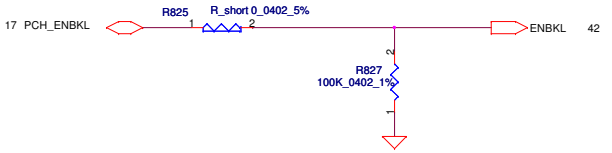

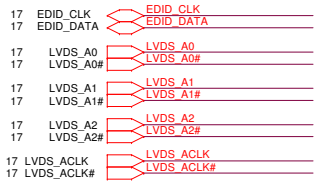

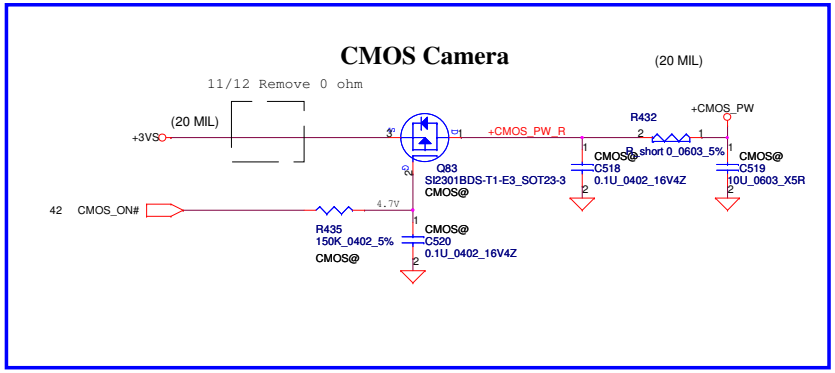

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Issued Date	2010/11/30	Deciphered Date	2011/08

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Compal Electronics, Inc.			
Title: LVDS/CAMERA			
Size: B	Document Number: QIQY2 LA6884P		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 31 of 60		

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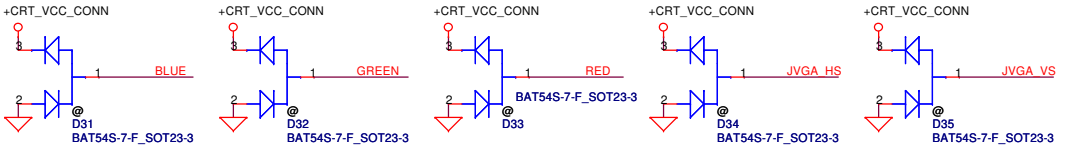
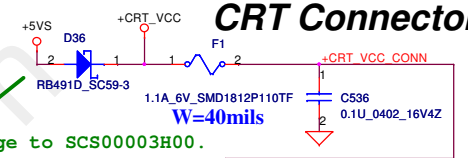
CRT Connector





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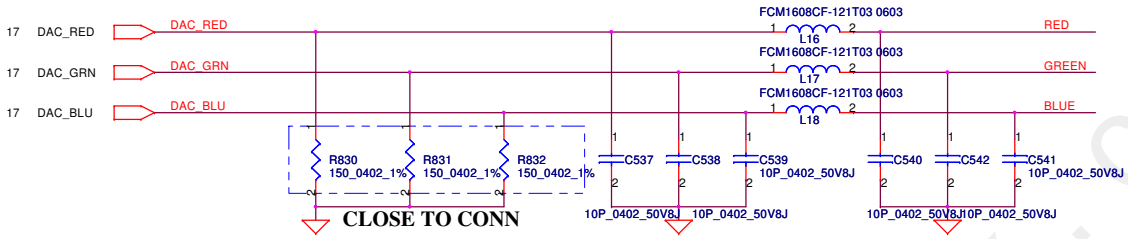

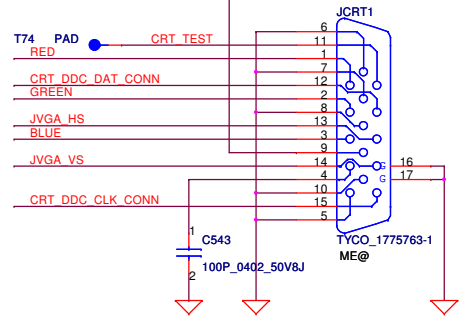

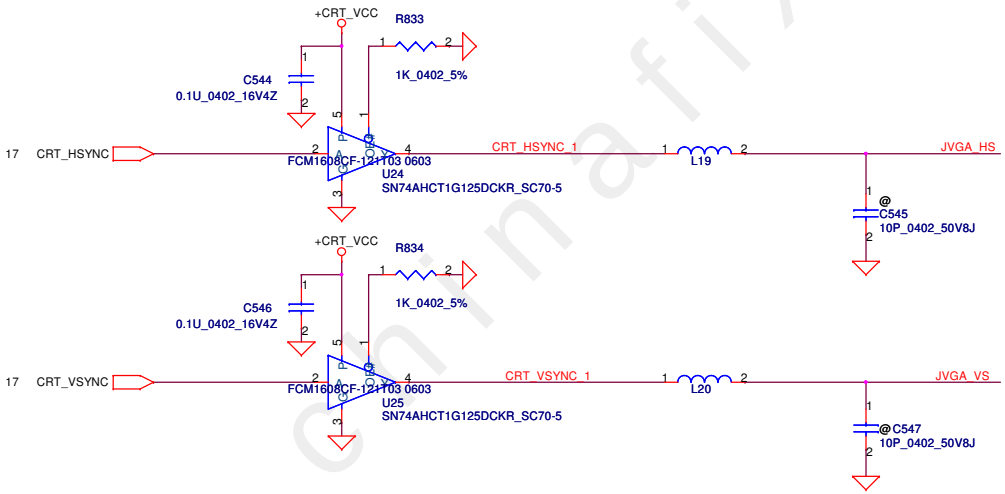

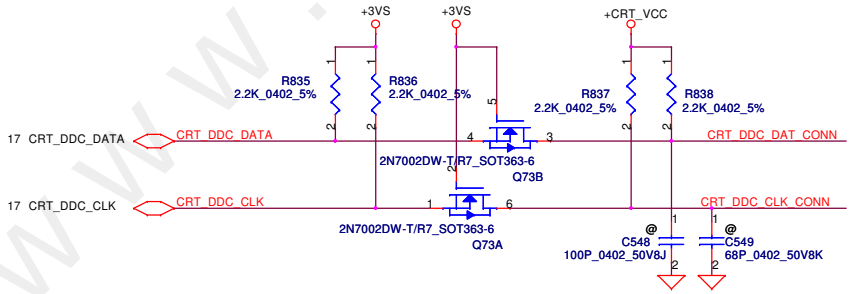

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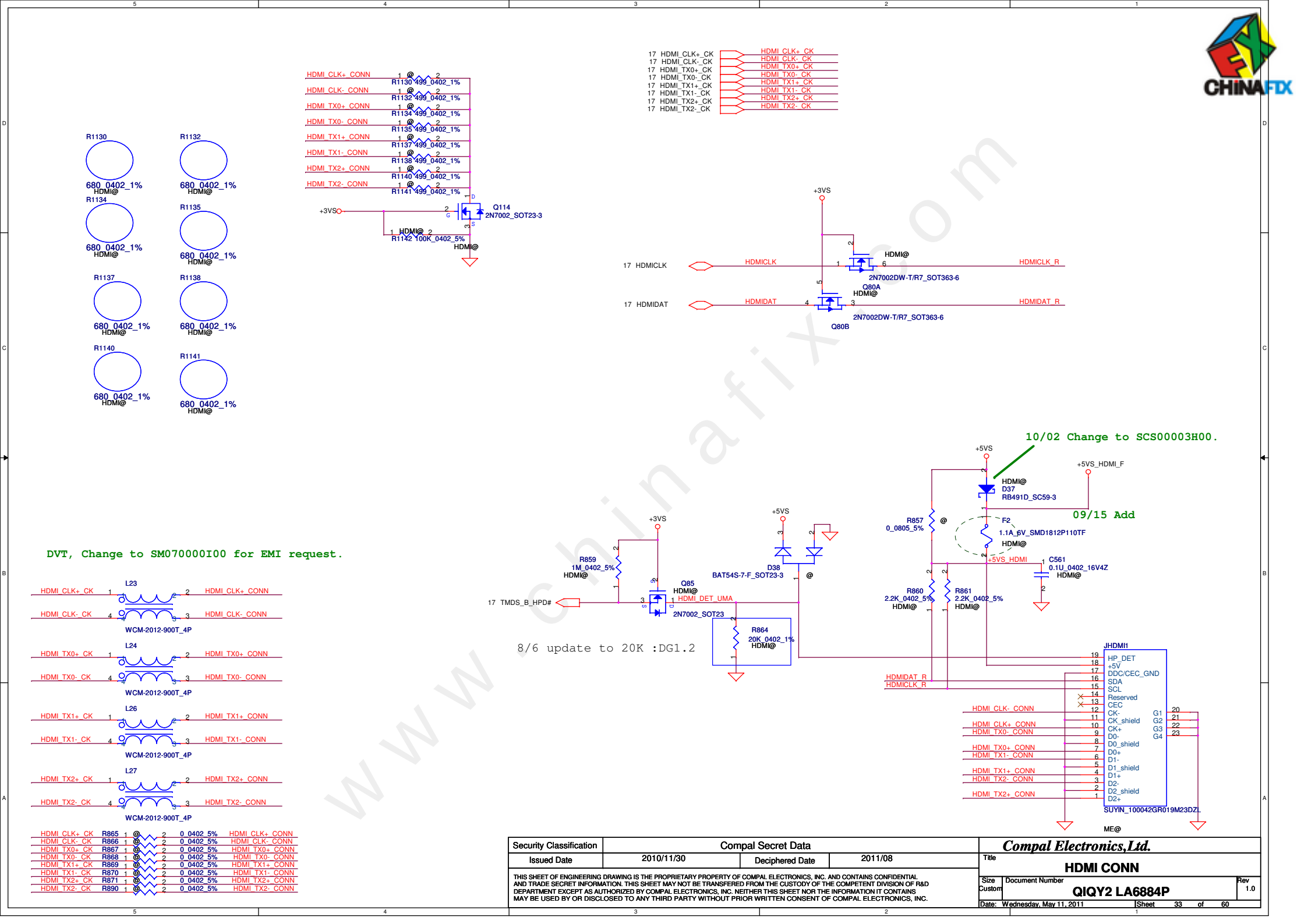
Compal Electronics, Inc.

Title: CRT Connector

Size: Custom | Document Number: QIQY2 LA6884P | Rev: 1.0

Date: Wednesday, May 11, 2011 | Sheet 32 of 60



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Compal Electronics, Ltd.

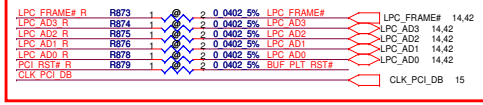
Title: HDMI CONN

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

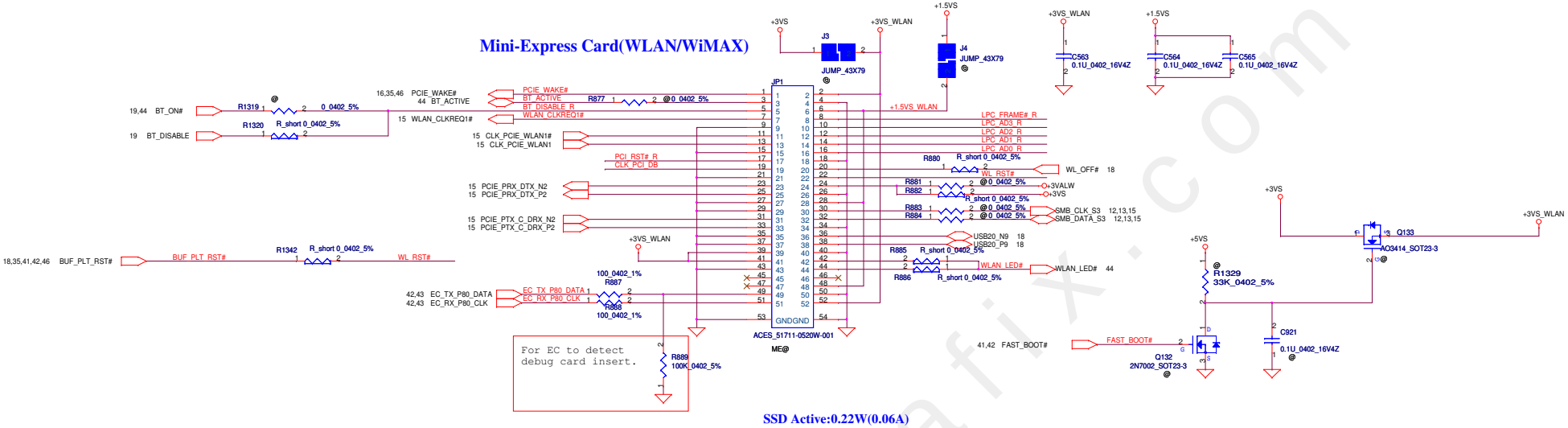
Date: Wednesday, May 11, 2011 Sheet 33 of 60

Mini-Express Card for WLAN/WiMAX(Half)
Mini-Express Card for SSD(Full)

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

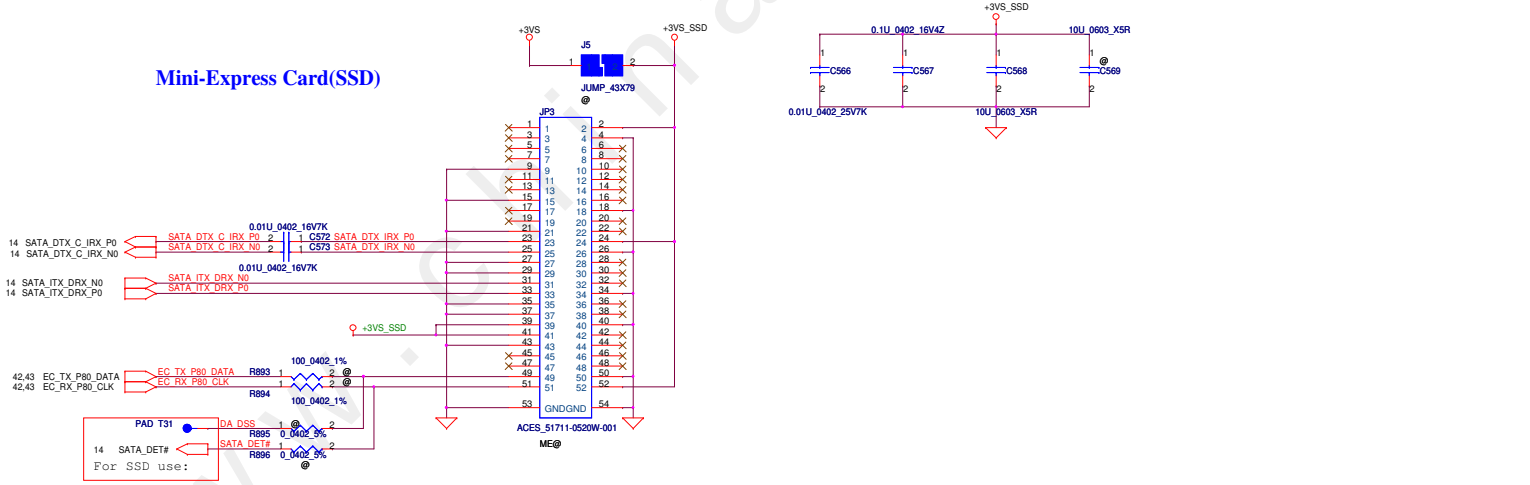


Mini-Express Card(WLAN/WiMAX)



SSD Active:0.22W(0.06A)

Mini-Express Card(SSD)



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Issued Date	2010/11/30	Deciphered Date	2011/08

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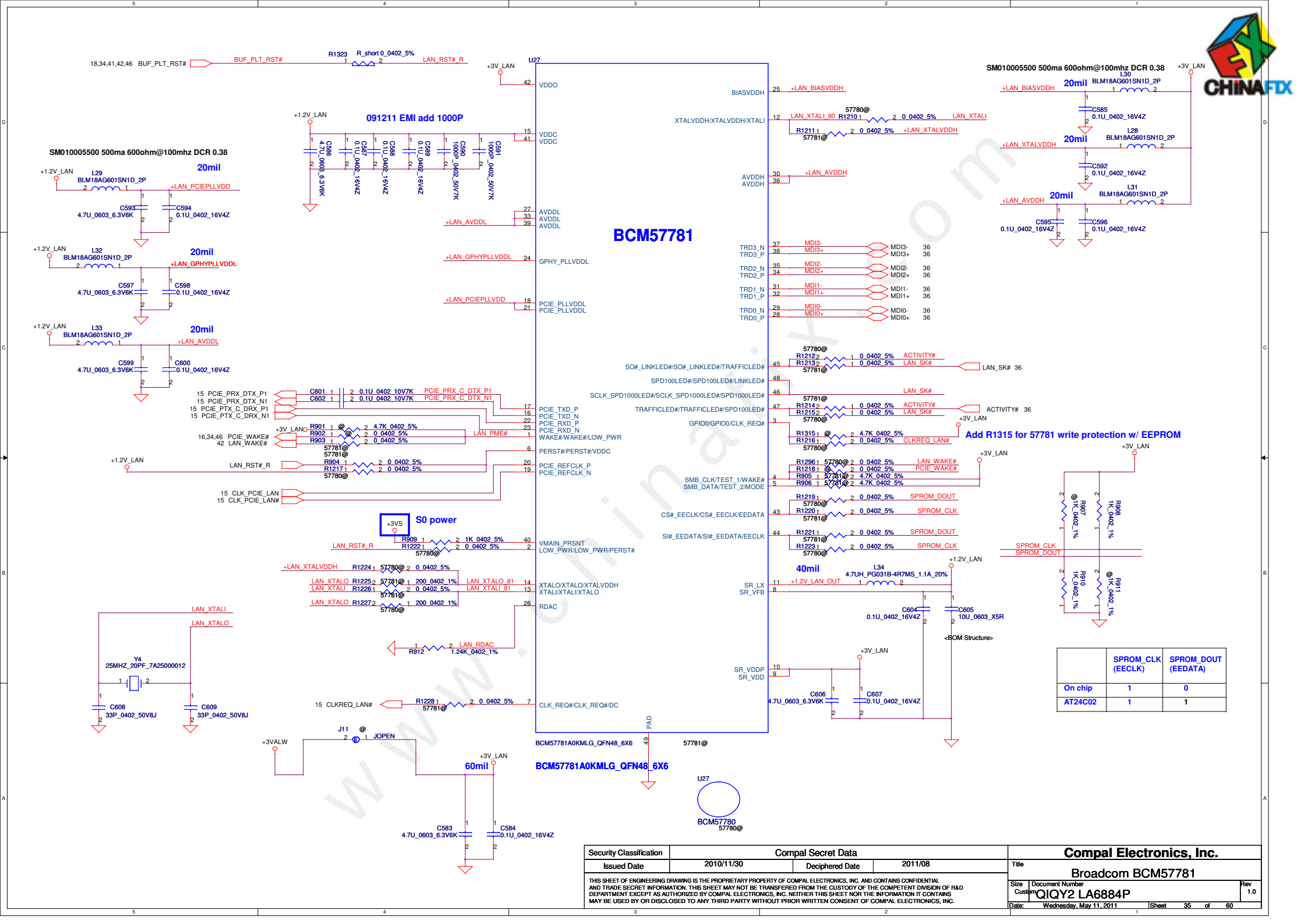
Compal Electronics, Inc.			
Title: Mini-Card			
Size	Document Number: QIQY2 LA6884P		Rev: 1.0
Date: Wednesday, May 11, 2011		Sheet 34 of 60	



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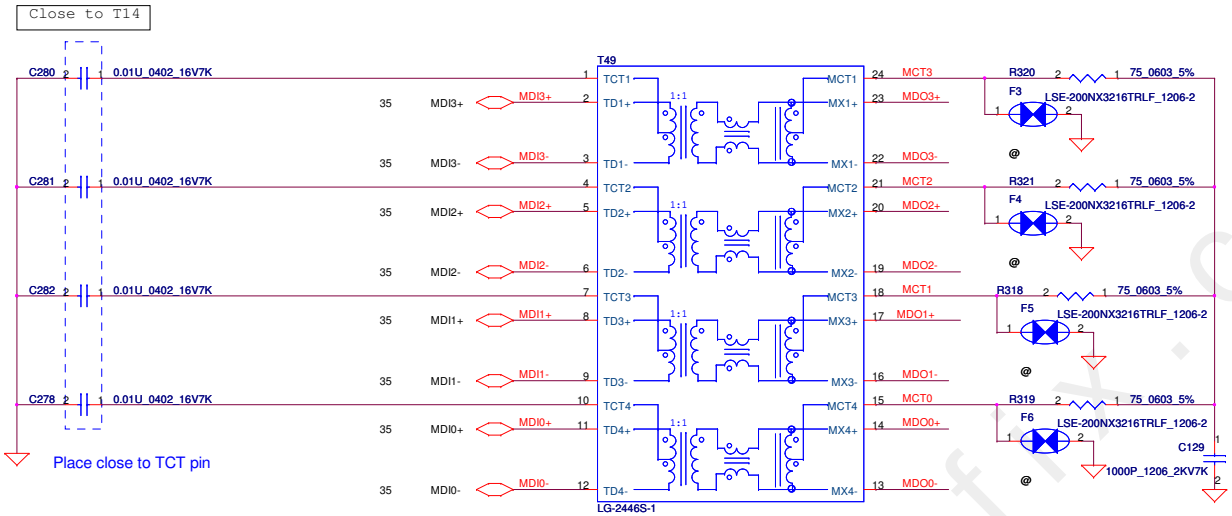
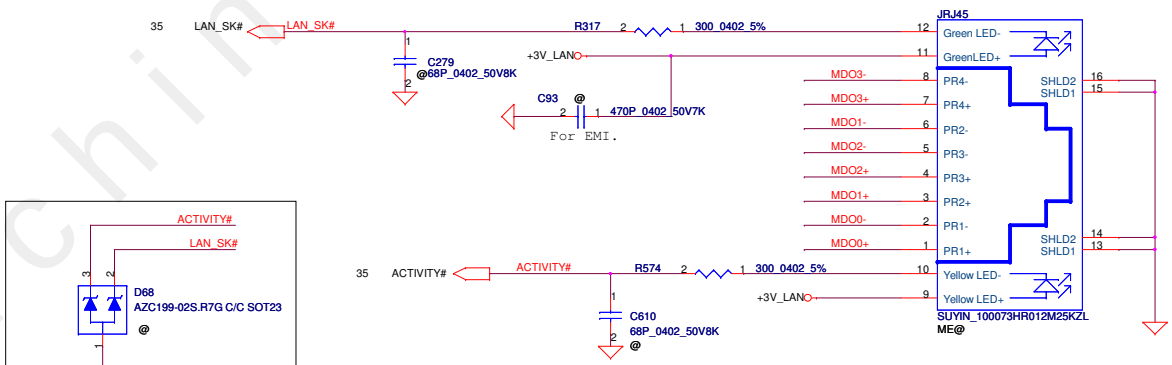


RJ45 Conn.



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Issued Date	2010/11/30	Deciphered Date	2011/08

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Compal Electronics, Inc.

Title: LAN Magnetic & RJ45

Size: Custom | Document Number: QIQY2 LA6884P | Rev: 1.0

Date: Wednesday, May 11, 2011 | Sheet 36 of 60

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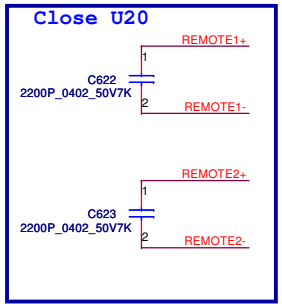
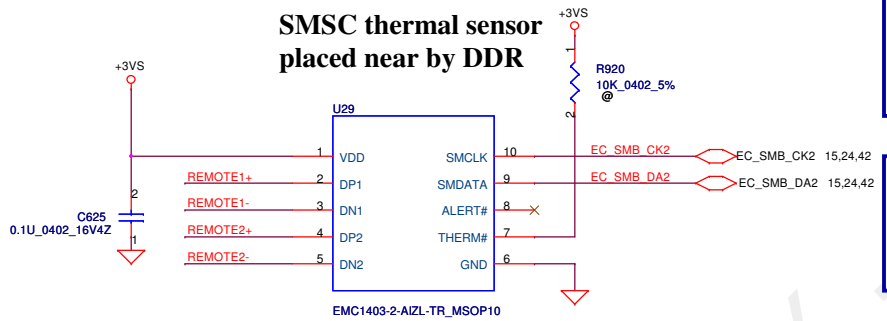
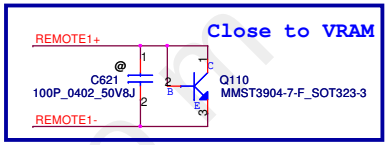
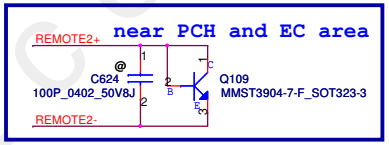




Address 1001_101xb

8/02 Change PN to SA000046C00, Fintek.





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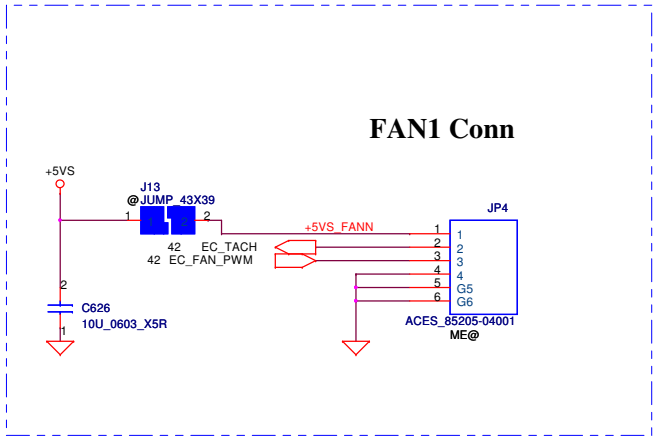

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Issued Date	2010/11/30	Deciphered Date	2011/08

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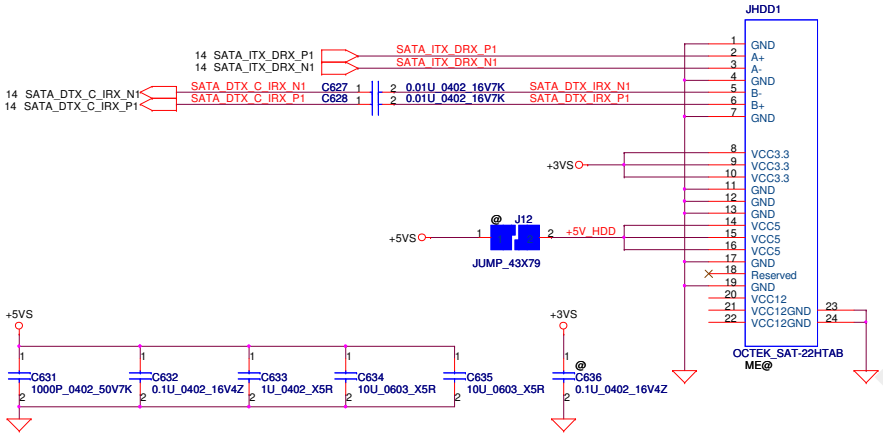
Compal Electronics,Ltd.

Title: EMC1403_Thermal sensor/FAN

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 37 of 60

SATA HDD Conn.



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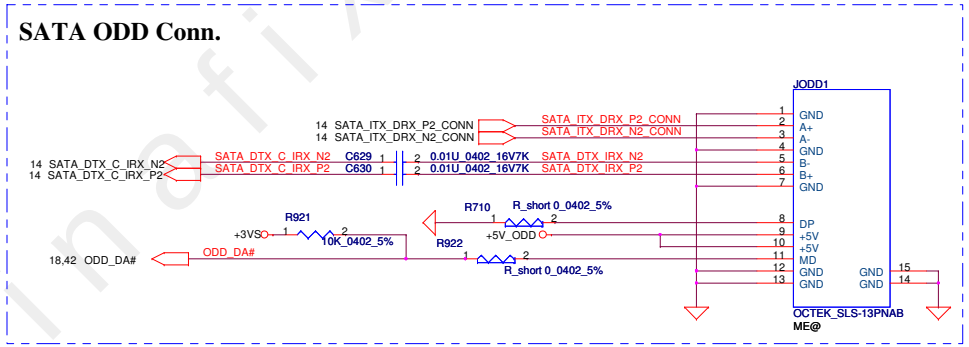
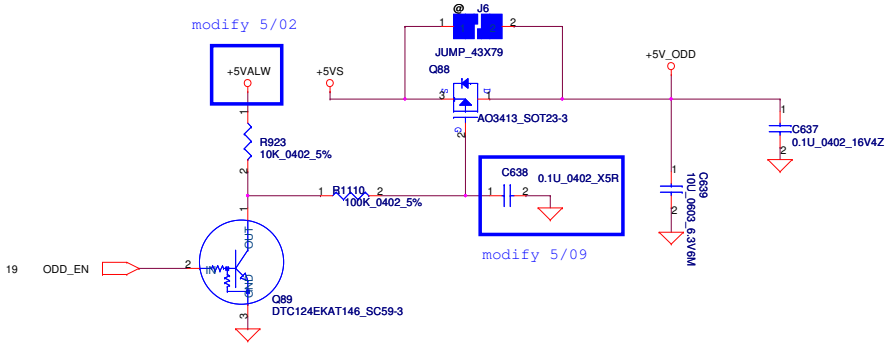


ODD Power Control



Security Classification	Compal Secret Data		
Issued Date	2010/11/30	Deciphered Date	2011/08

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Compal Electronics, Inc.			
Title: HDD/ODD Connector			
Size: B	Document Number: QIQY2 LA6884P		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 38 of 60		

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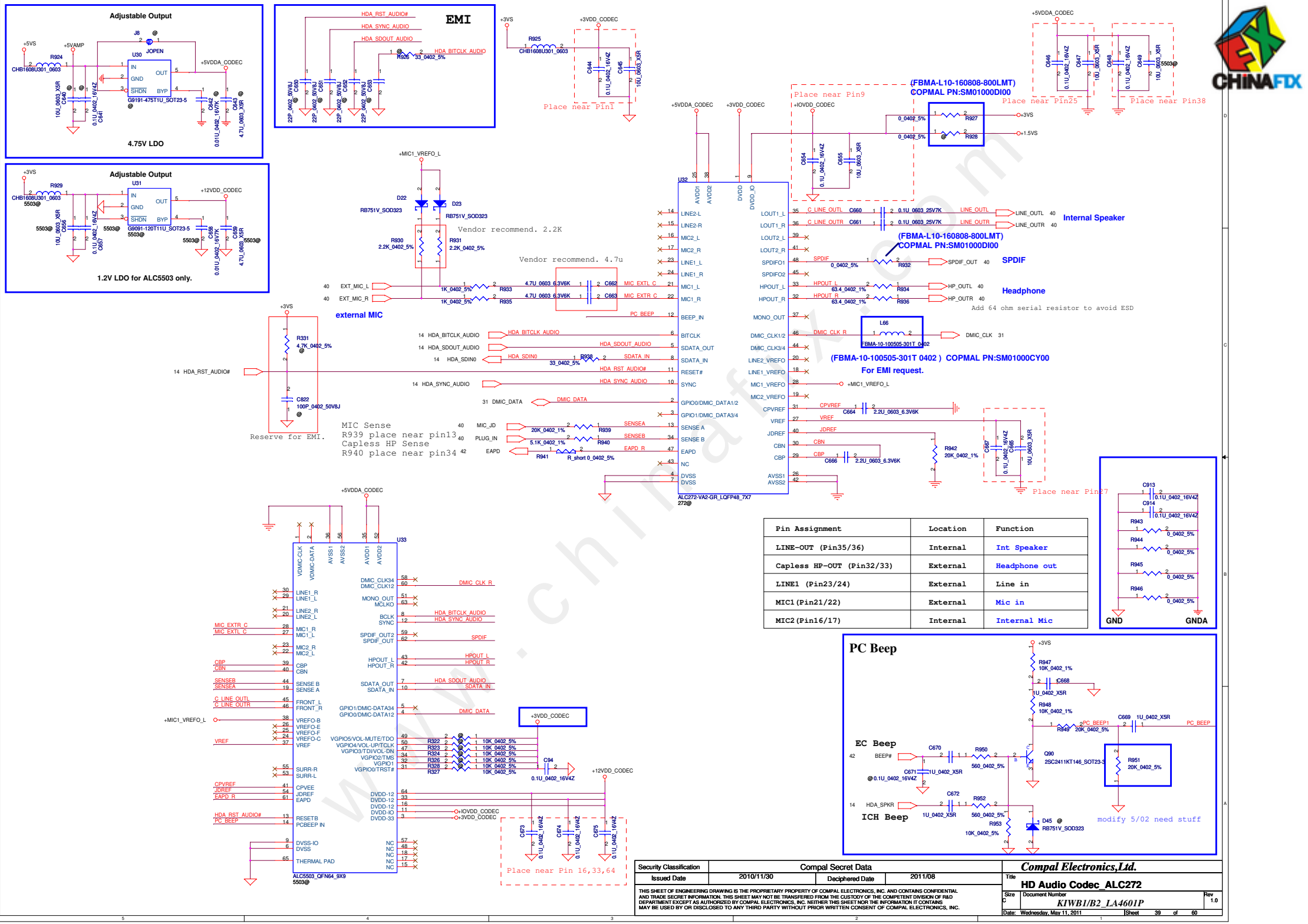

Pin Assignment	Location	Function
LINE-OUT (Pin35/36)	Internal	Int Speaker
Capless HP-OUT (Pin32/33)	External	Headphone out
LINE1 (Pin23/24)	External	Line in
MIC1(Pin21/22)	External	Mic in
MIC2(Pin16/17)	Internal	Internal Mic

Security Classification	Compal Secret Data		
Issued Date	2010/11/30	Deciphered Date	2011/08

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Compal Electronics,Ltd.

Title: HD Audio Codec_ALC272

Size: C | Document Number: KIWB1/B2_LA4601P | Rev: 1.0

Date: Wednesday, May 11, 2011 | Sheet 39 of 60

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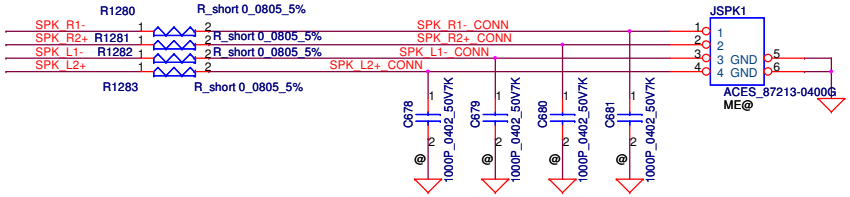
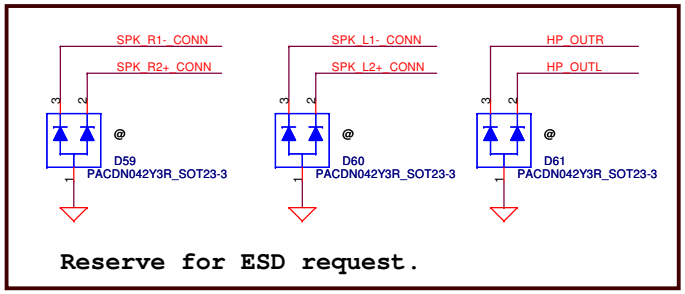
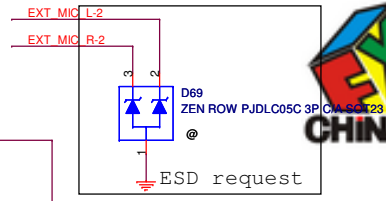
wide 20MIL

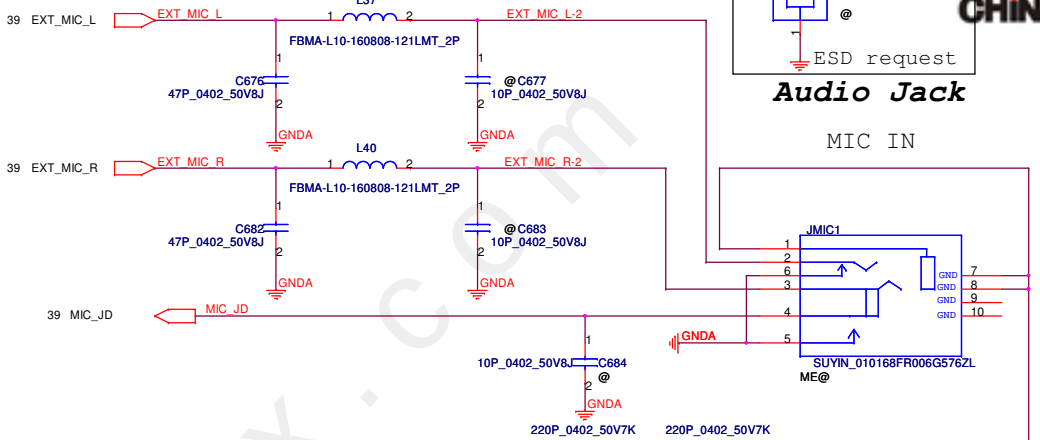




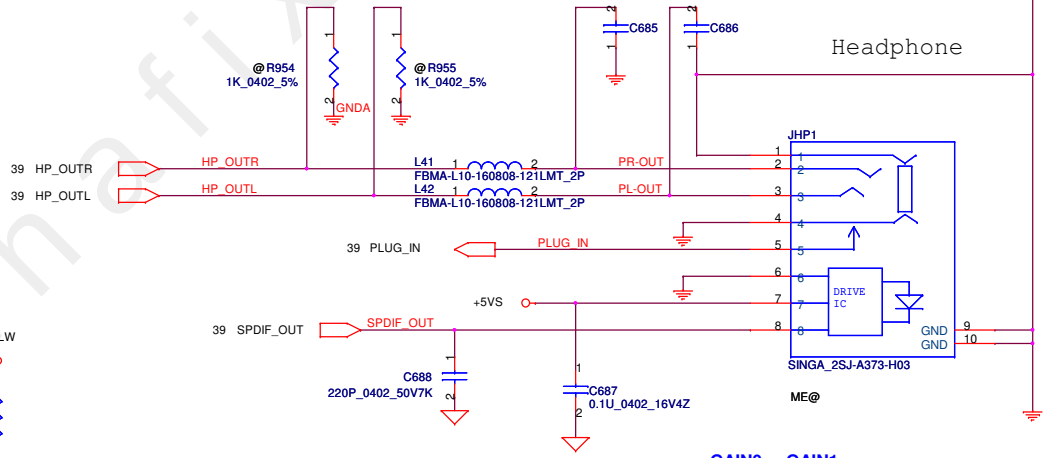


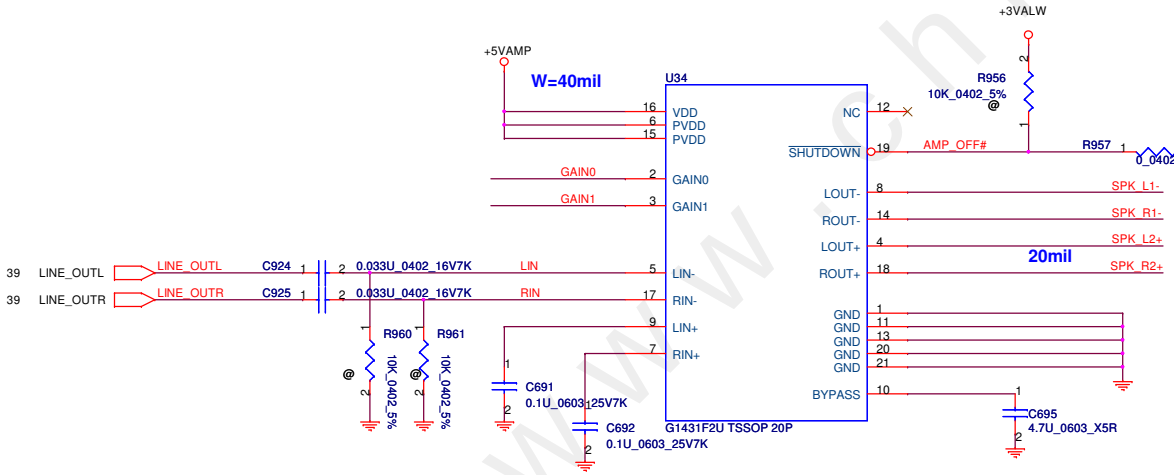
Audio Jack

MIC IN

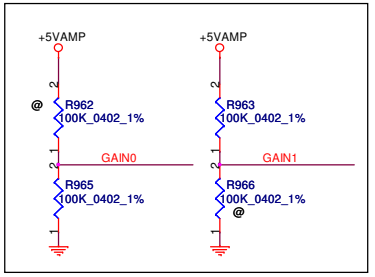


Headphone





GAIN0	GAIN1	
0	0	6dB
0	1	10dB
1	0	15.6dB
1	1	21.6dB



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Issued Date	2010/11/30	Deciphered Date	2011/08

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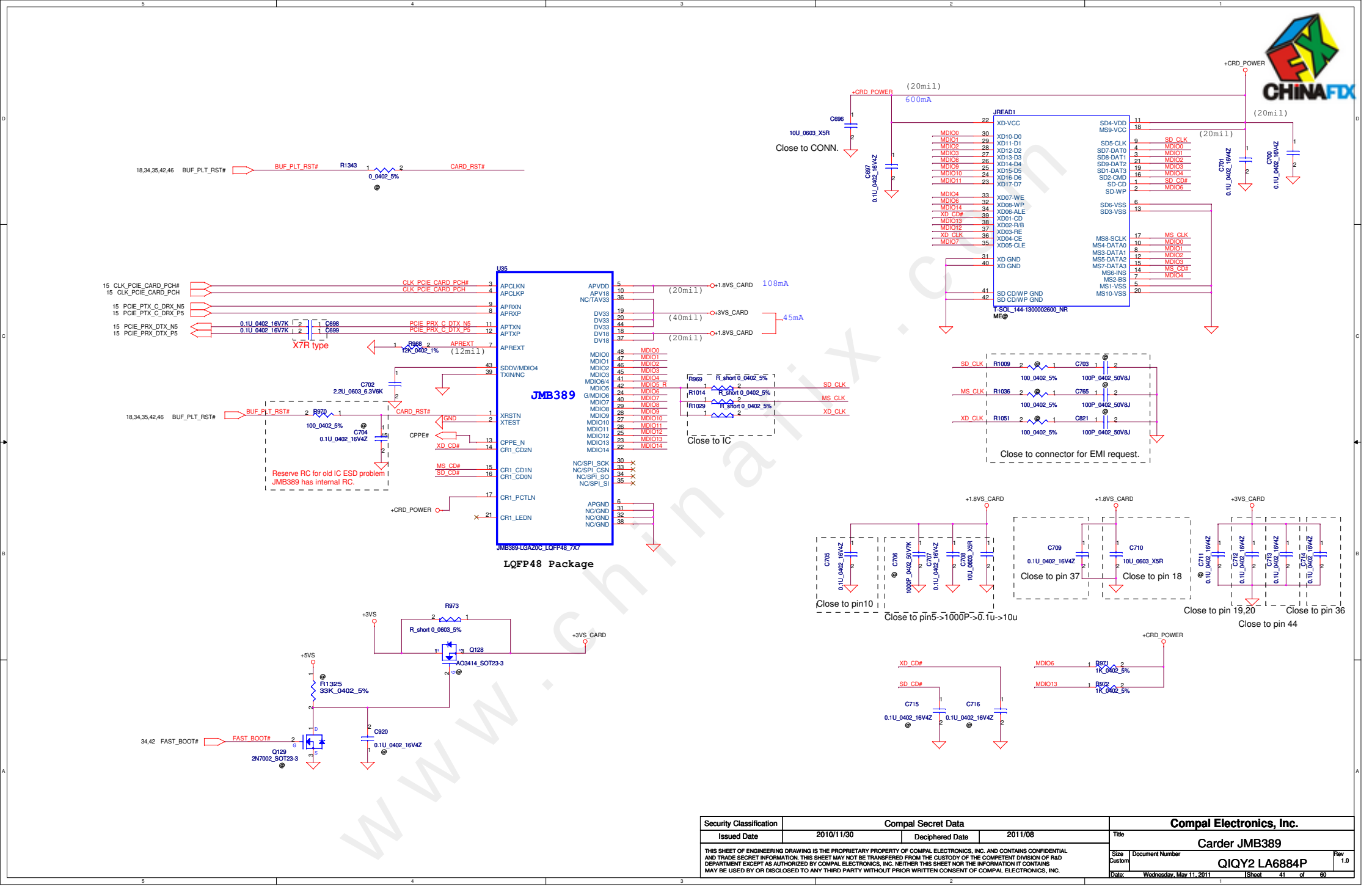
Compal Electronics,Ltd.

Title: AMP,Audio speaker CONN

Size	Document Number	Rev
Custom	KIWB1/B2_LA4601P	1.0

Date: Wednesday, May 11, 2011 Sheet 40 of 60



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Issued Date	2010/11/30	Deciphered Date	2011/08

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Compal Electronics, Inc.

Title: Carder JMB389

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 41 of 60

10/02 Change to SM010005500.

ENE UPDATE 08/10/21

6/19 Add BRDID

11/12 update to +5VALW

11/15 Add inverter, H_PROCHOT#_EC changed to H_PROCHOT_EC high active.

6/15 add XTAL

U36

KB930QF A0 LQFP 128P

Security Classification	Compal Secret Data		
Issued Date	2010/11/30	Deciphered Date	2011/08

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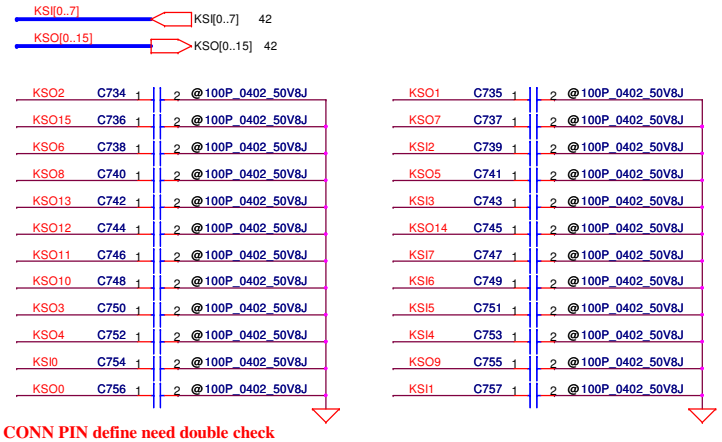
Compal Electronics, Inc.

Title: BIOS & EC I/O Port

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

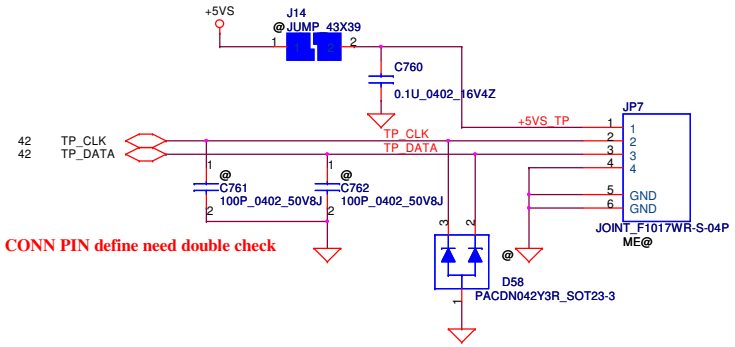
Date: Wednesday, May 11, 2011 Sheet 42 of 60

INT_KBD Conn.

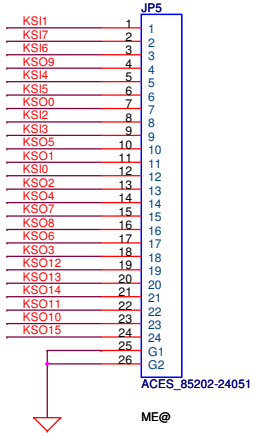


CONN PIN define need double check

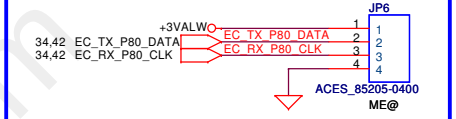
To TP/B Conn.



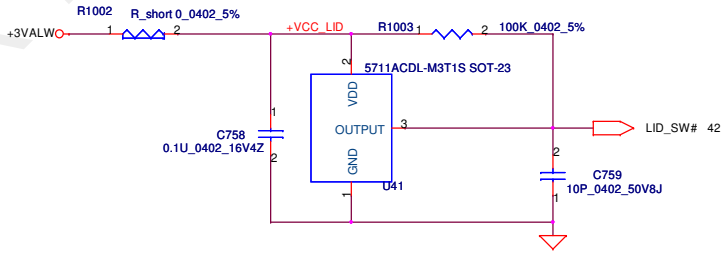
CONN PIN define need double check



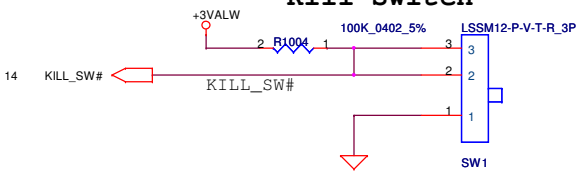
EC DEBUG PORT



Lid Switch

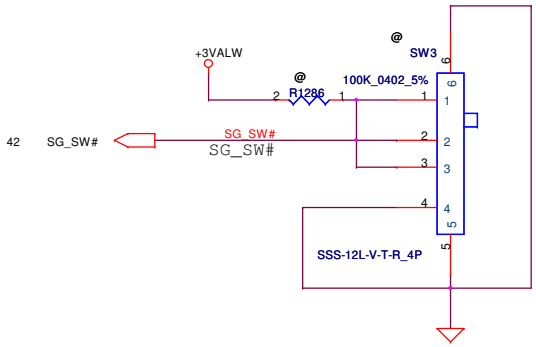


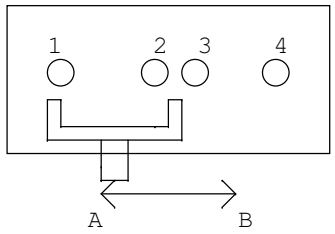
Kill Switch



Kill

STATUS	
1,2(LOW)	OFF
2,3(HI)	ON





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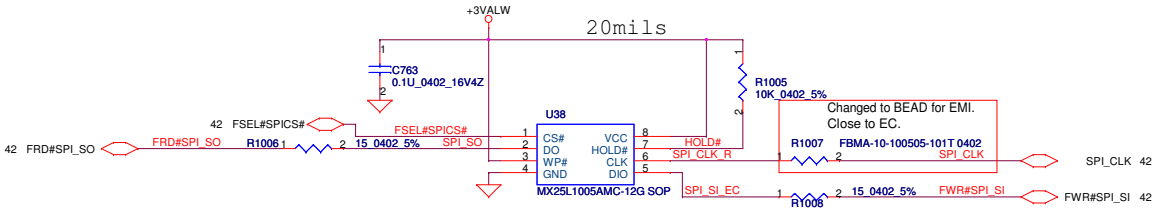
Compal Electronics, Inc.

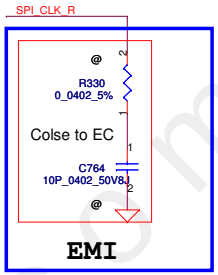
Title: KB /SW /LPC Debug Conn.

Size	Document Number	Rev
B	QIQY2 LA6884P	1.0

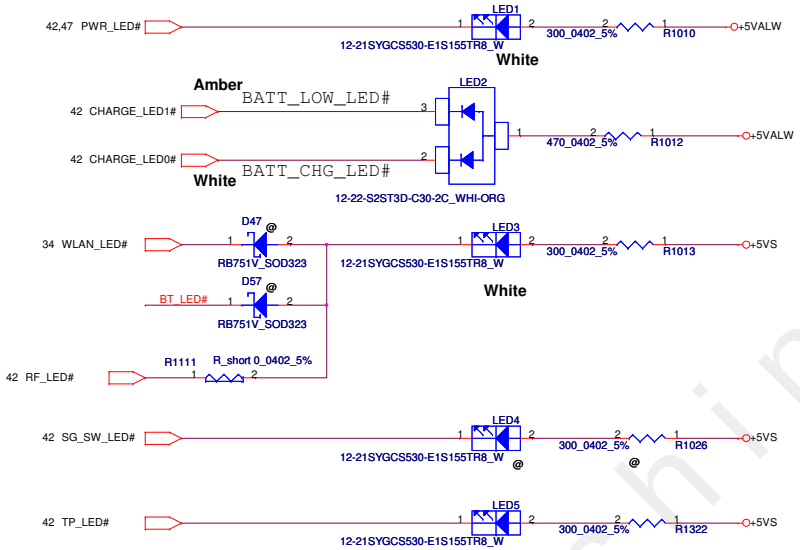
Date: Wednesday, May 11, 2011 Sheet 43 of 60

FOR EC 128KB SPI ROM
(150mil PACKAGE)
P/N : SA00002C100

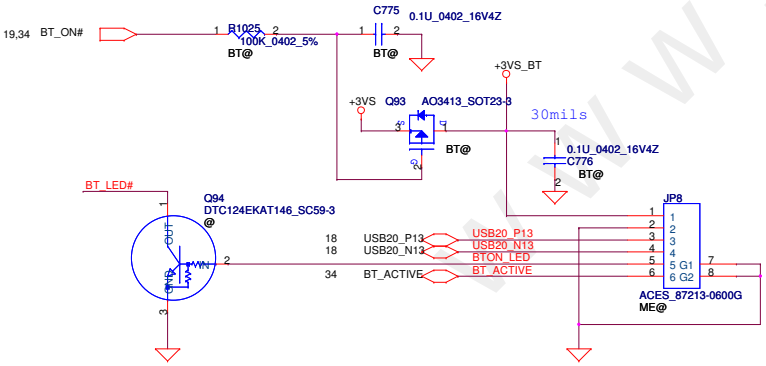


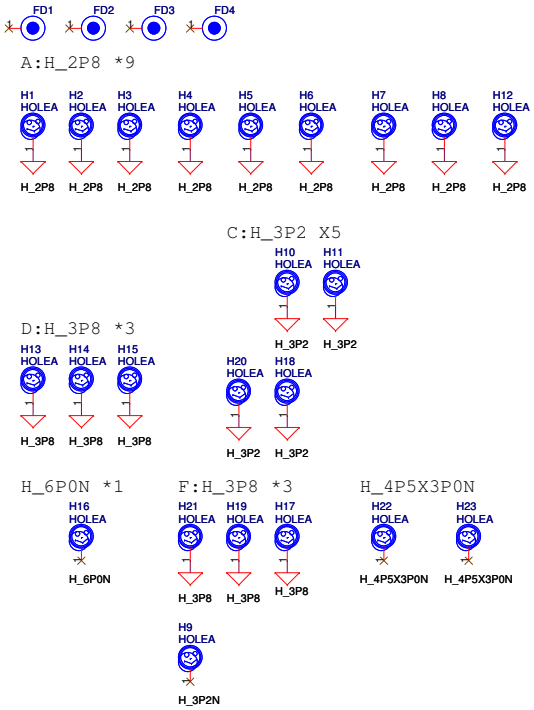


LED



BT MODULE CONN





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Issued Date	2010/11/30	Deciphered Date	2011/08

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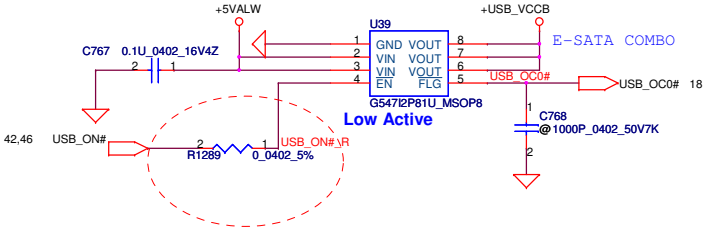
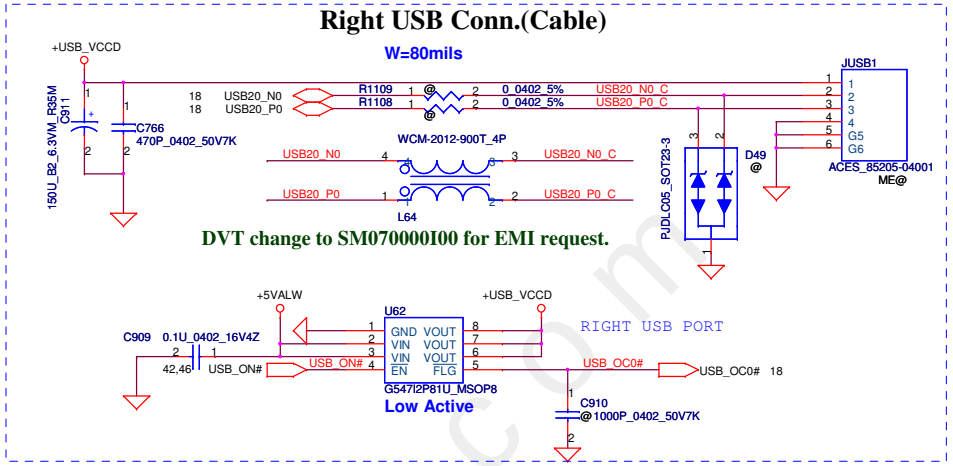
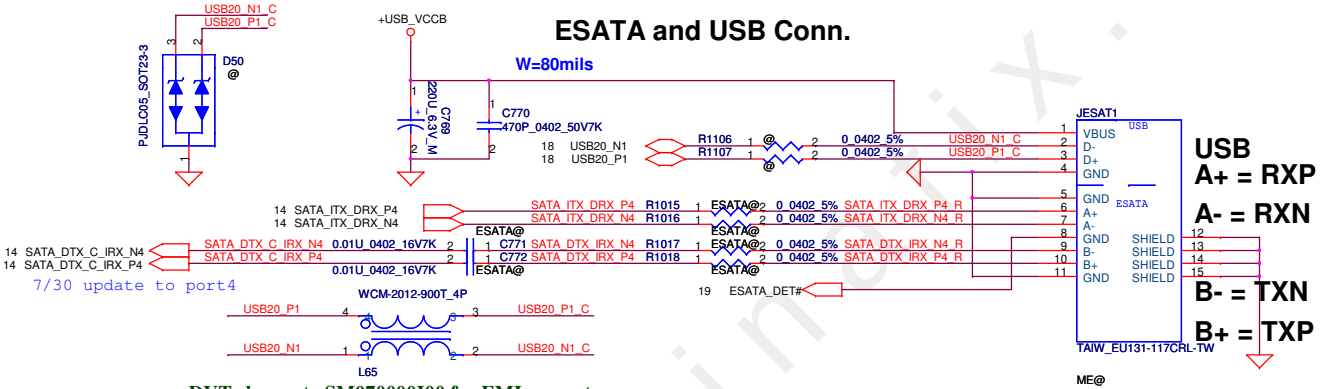
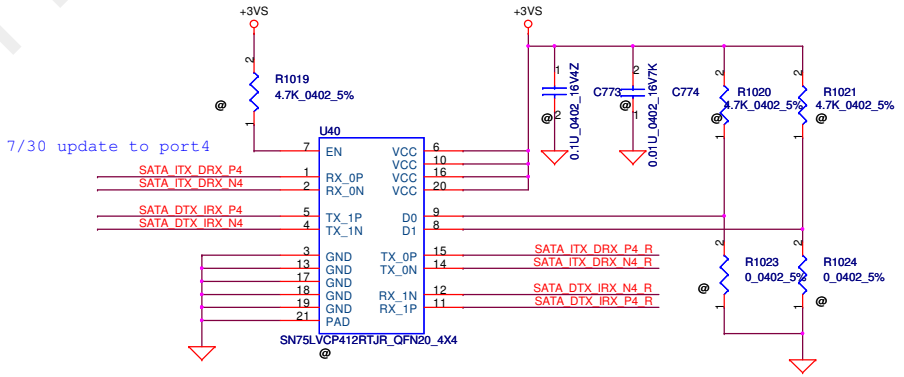
Compal Electronics, Inc.			
Title	LED/EC SPI ROM/BT		
Size B	Document Number QIQY2 LA6884P		Rev 1.0
Date: Wednesday, May 11, 2011	Sheet 44 of 60		









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Issued Date	2010/11/30	Deciphered Date	2011/08

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Compal Electronics, Inc.

Title: USB ports/E-SATA

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 45 of 60

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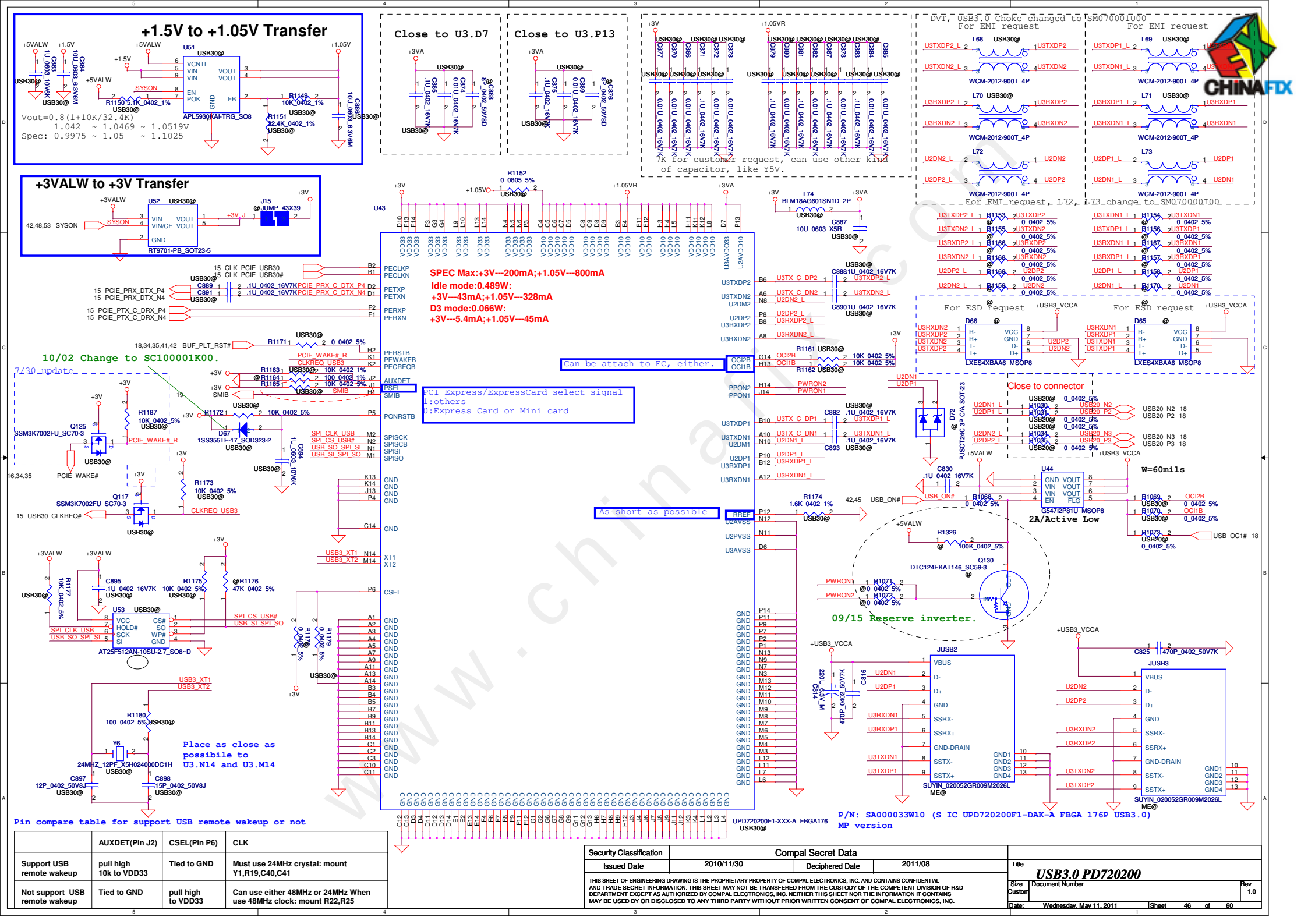

	AUXDET(Pin J2)	CSEL(Pin P6)	CLK
Support USB remote wakeup	pull high 10k to VDD33	Tied to GND	Must use 24MHz crystal: mount Y1,R19,C40,C41
Not support USB remote wakeup	Tied to GND	pull high to VDD33	Can use either 48MHz or 24MHz When use 48MHz clock: mount R22,R25

Security Classification	Compal Secret Data		
Issued Date	2010/11/30	Deciphered Date	2011/08

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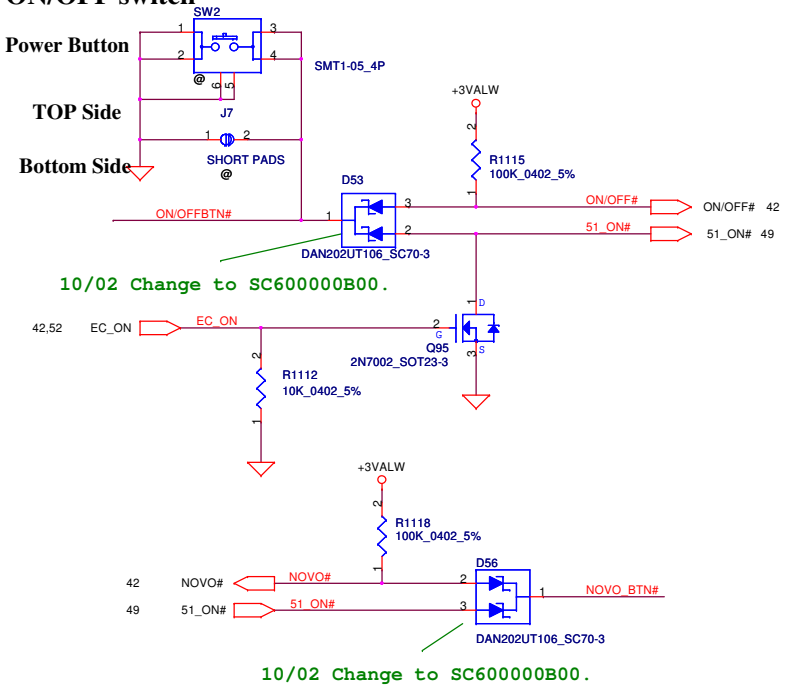
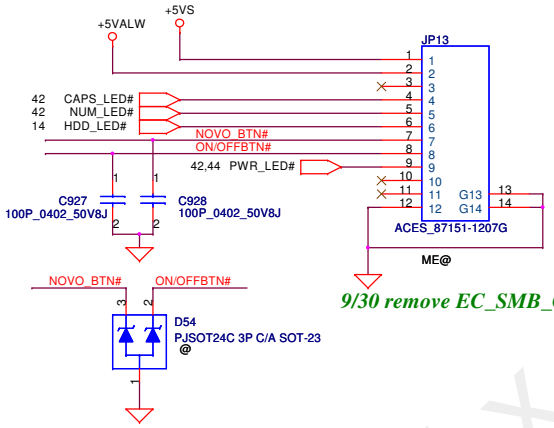
Size	Document Number		Rev
Custom			1.0
Date:	Wednesday, May 11, 2011	Sheet	46 of 60

ON/OFF switch



Power Bottom Board Conn. 10pin



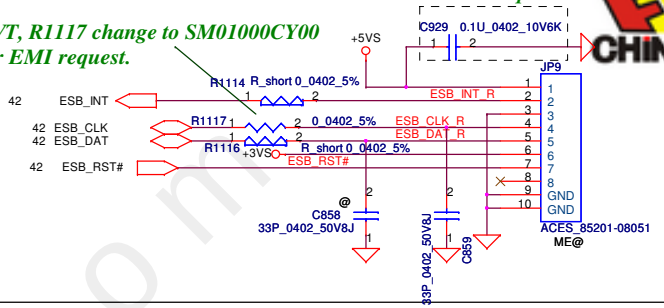
9/30 remove EC_SMB_CK2, EC_SMB_DA2

EMI REQUEST 1ST = SCA00000E00
2ST = SCA00000R00

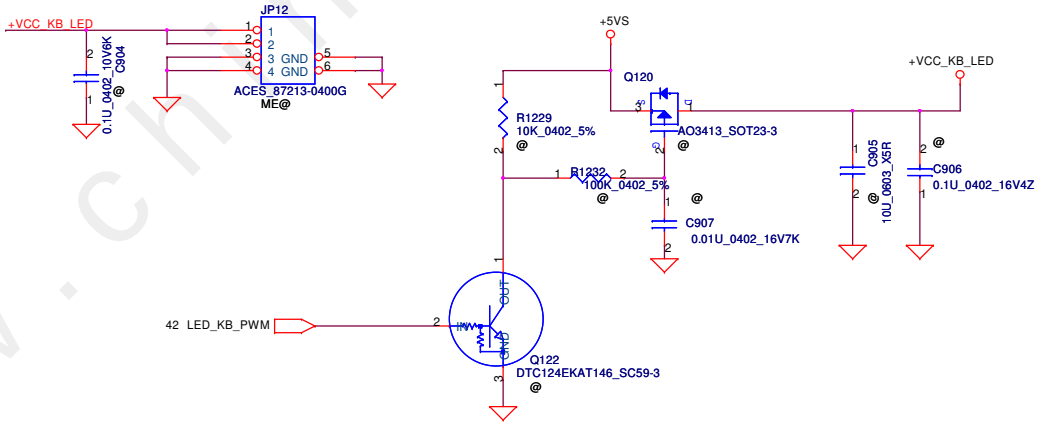
Silder Bar Board Mdule Conn. 6pin

12/29 EMI request

DVT, R1117 change to SM01000CY00 for EMI request.



KB Lighting CONN.4pin



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Compal Electronics,Ltd.

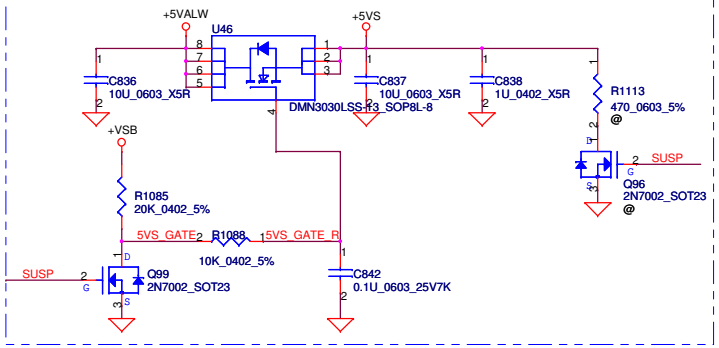
Title: **other IO connector**

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

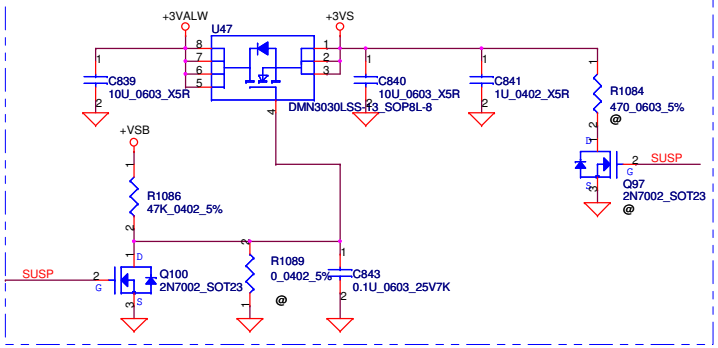
Date: Wednesday, May 11, 2011 Sheet 47 of 60

5/10 change SI2301 to AP2301 GN-RH

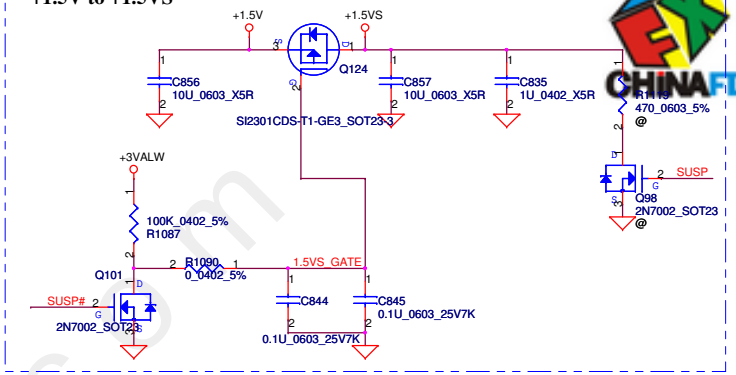
+5VALW TO +5VS

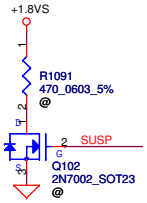


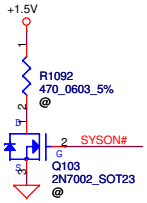
+3VALW TO +3VS

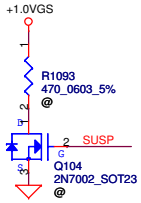


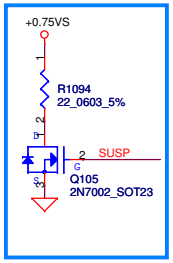
+1.5V to +1.5VS



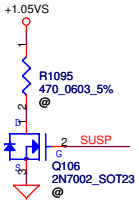


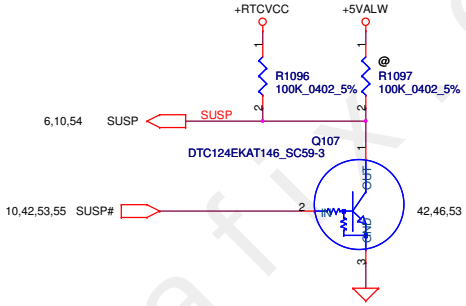


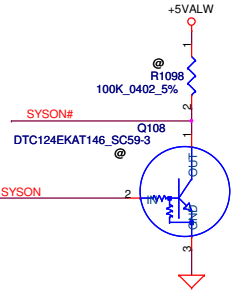




For Intel S3 Power Reduction.







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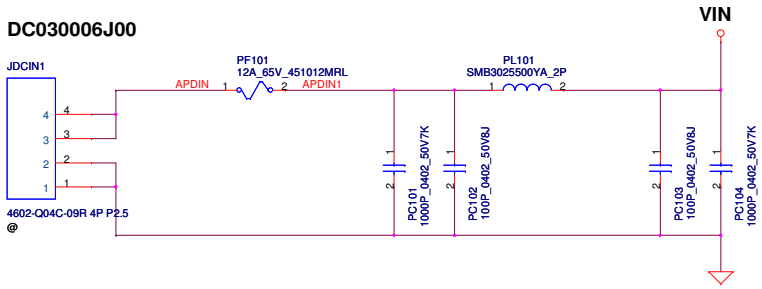
Compal Electronics, Inc.

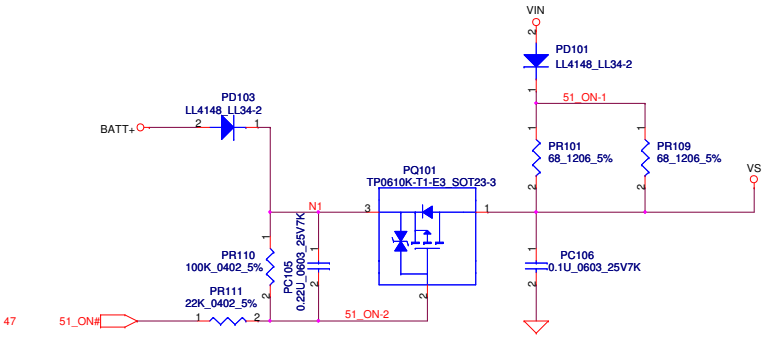
Title: DC Interface

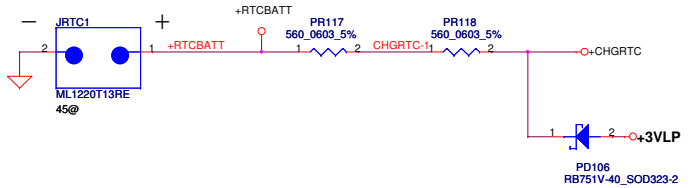
Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 48 of 60

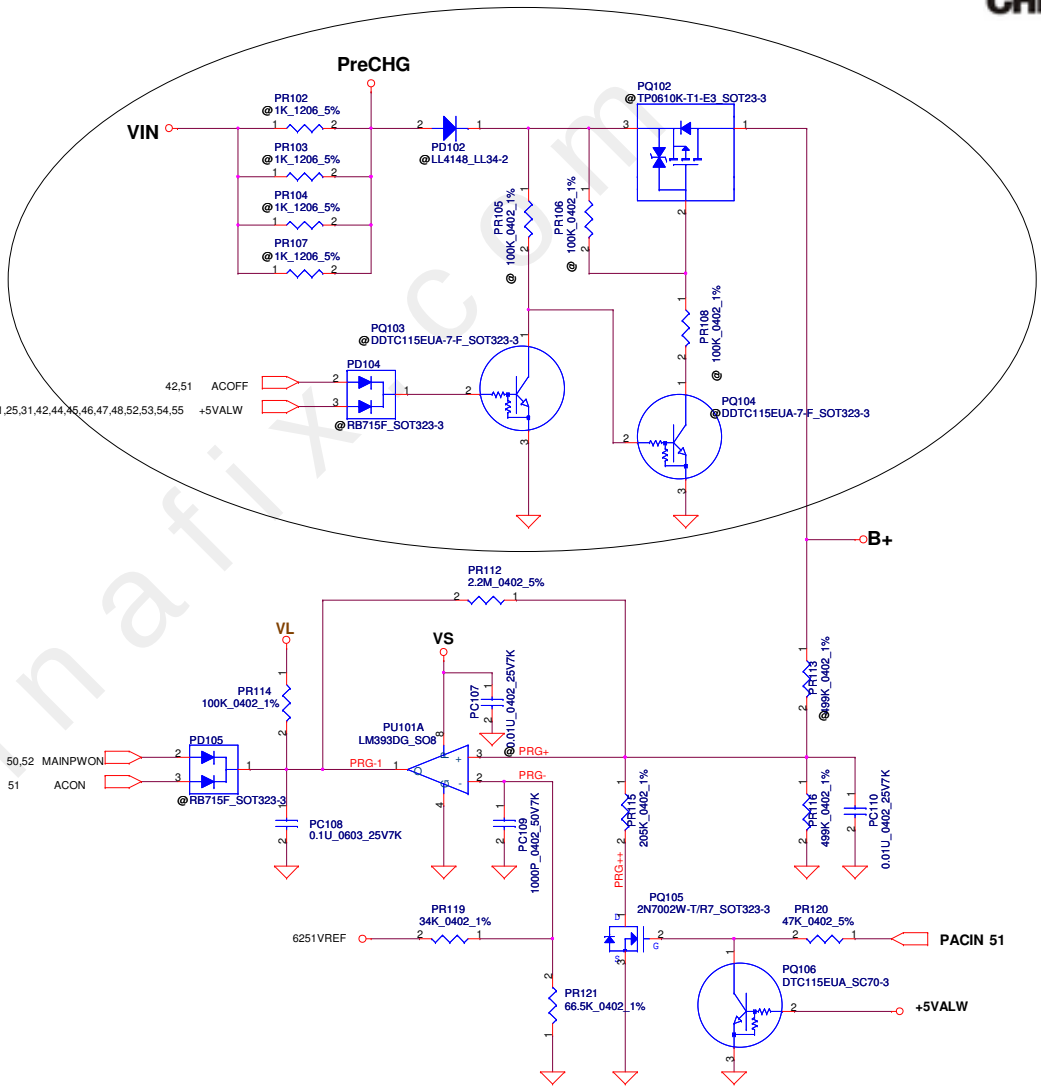
DC030006J00







Precharge detector
15.97V/14.84V FOR ADAPTOR



ACIN

Precharge detector	Min.	typ.	Max.
L-->H	14.991V	15.381V	15.782V
H-->L	13.860V	14.247V	14.621V

BATT ONLY

Precharge detector	Min.	typ.	Max.
L-->H	7.196V	7.349V	7.505V
H-->L	6.138V	6.214V	6.056V

Security Classification	Compal Secret Data		
Issued Date	2010/01/25	Deciphered Date	2010/12/31

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Compal Electronics, Inc.

Title: PWR DCIN / Vin Detector /Pre-charge

Size: Custom | Document Number: PIQY0/Y1 | Rev: 1.0

Date: Wednesday, May 11, 2011 | Sheet 49 of 63

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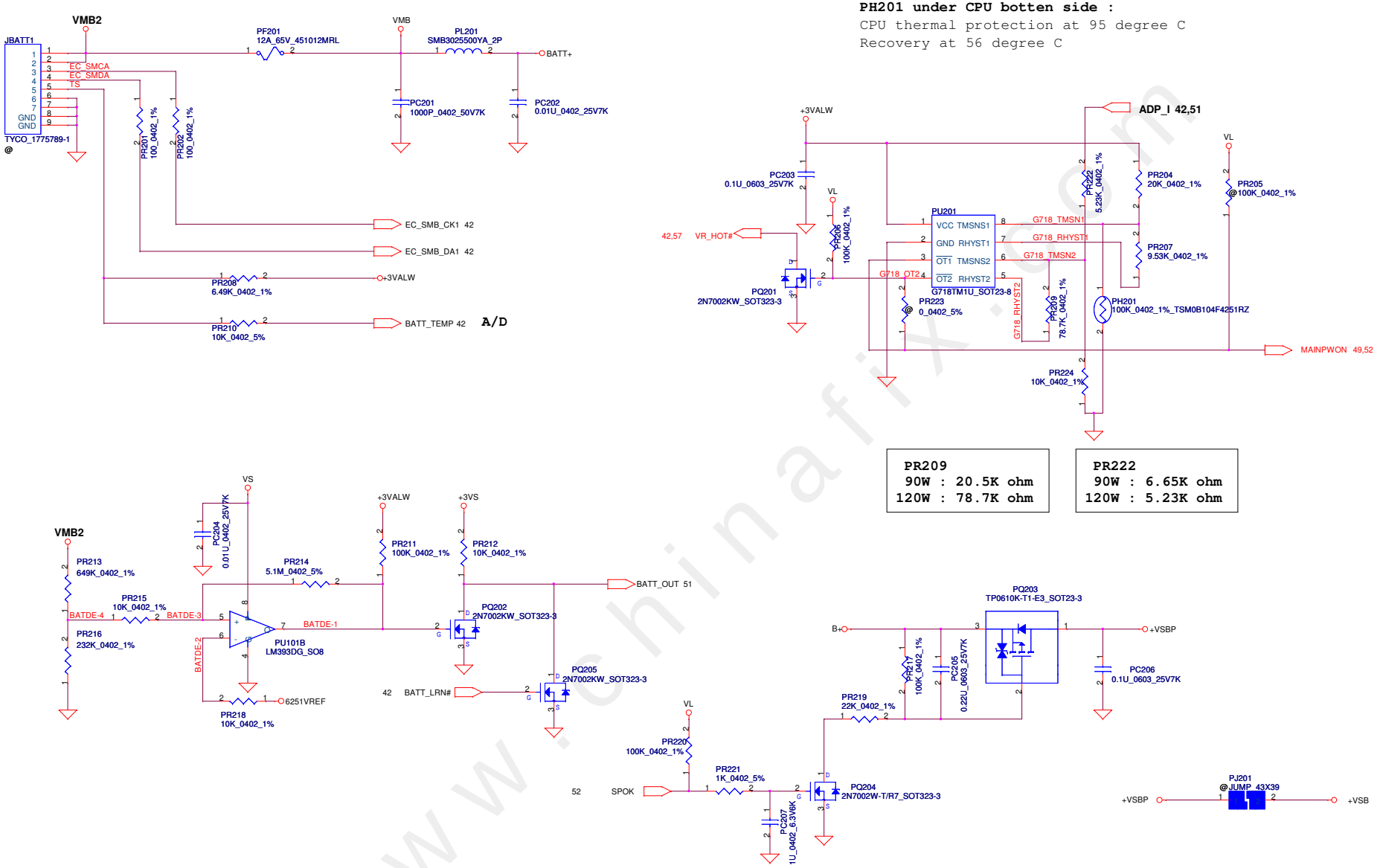

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Issued Date	2010/01/25	Deciphered Date	2010/12/31

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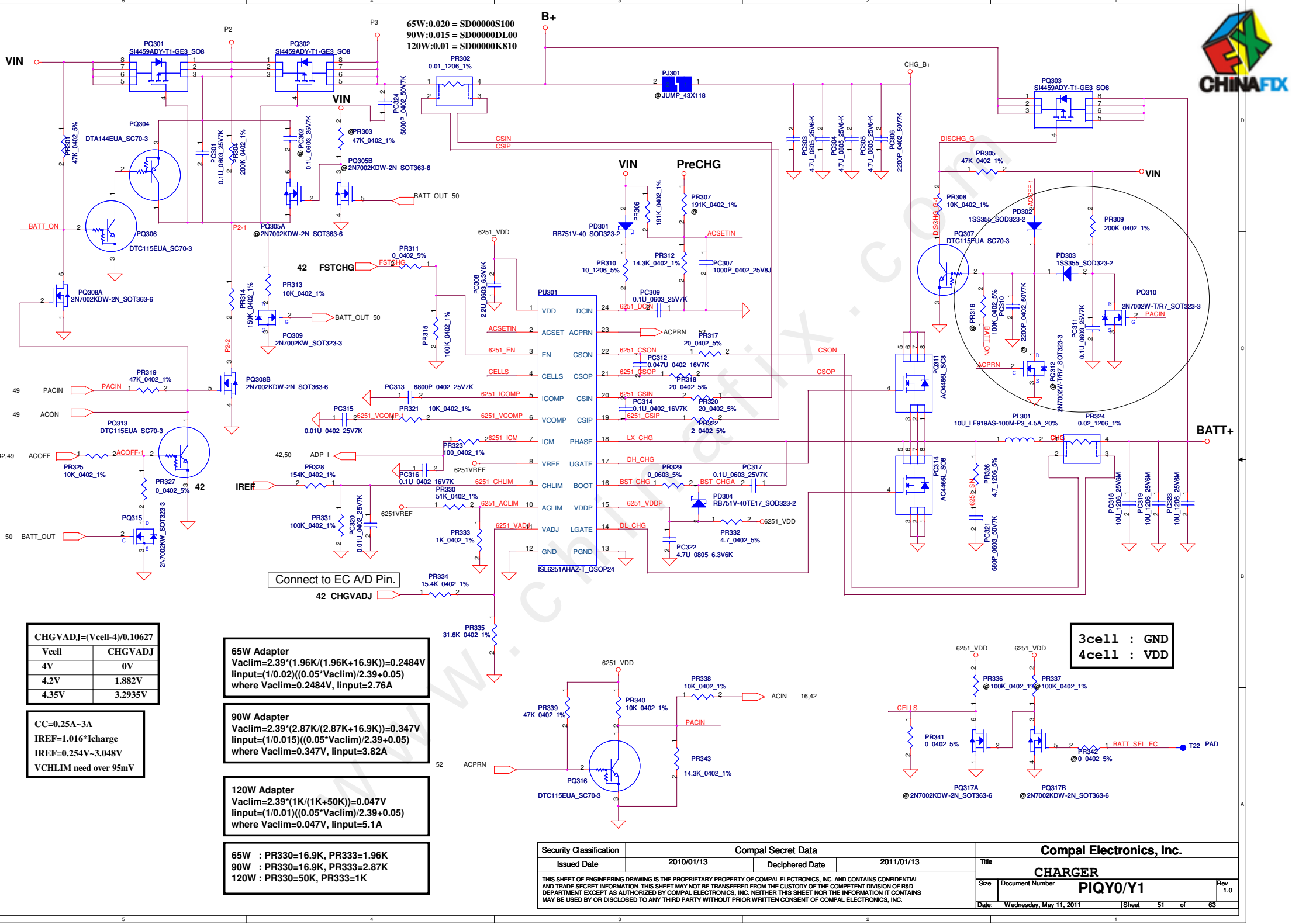
Compal Electronics, Inc.			
Title	PWR-BATTERY CONN/OTP		
Size: Custom	Document Number: PIQY0/Y1		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 50 of 63		


65W:0.020 = SD00000S100
90W:0.015 = SD00000DL00
120W:0.01 = SD00000K810
B+
VIN
PQ301 SI4459ADY-T1-GE3_SO8
PQ302 SI4459ADY-T1-GE3_SO8
PR302 0.01_1206_1%
PJ301 @JUMP_43X118
CHG_B+
PQ303 SI4459ADY-T1-GE3_SO8
PQ304 DTA144EUA_SC70-3
PQ306 DTC115EUA_SC70-3
PQ305A @2N7002KDW-2N_SOT363-6
PQ305B @2N7002KDW-2N_SOT363-6
PQ308A 2N7002KDW-2N_SOT363-6
PQ308B 2N7002KDW-2N_SOT363-6
PQ309 2N7002KW_SOT323-3
PQ313 DTC115EUA_SC70-3
PQ315 2N7002KW_SOT323-3
PR303 47K_0402_1%
PR305 47K_0402_1%
PR307 191K_0402_1%
PR308 10K_0402_1%
PR309 200K_0402_1%
PR310 10_1206_5%
PR311 0_0402_5%
PR312 14.3K_0402_1%
PR313 10K_0402_1%
PR314 150K_0402_1%
PR315 100K_0402_1%
PR316 100K_0402_5%
PR317 20_0402_5%
PR318 20_0402_5%
PR319 47K_0402_1%
PR320 20_0402_5%
PR321 10K_0402_1%
PR322 2_0402_5%
PR323 100_0402_1%
PR325 10K_0402_1%
PR326 4.7_1206_5%
PR327 0_0402_5%
PR328 154K_0402_1%
PR329 0_0603_5%
PR330 51K_0402_1%
PR331 100K_0402_1%
PR332 4.7_0402_5%
PR333 1K_0402_1%
PR334 15.4K_0402_1%
PR335 31.6K_0402_1%
PR336 @100K_0402_1%
PR337 @100K_0402_1%
PR338 10K_0402_1%
PR339 47K_0402_1%
PR340 10K_0402_1%
PR341 0_0402_5%
PR342 @0_0402_5%
PR343 14.3K_0402_1%
PC301 0.1U_0603_25V7K
PC302 @0.1U_0603_25V7K
PC303 4.7U_0805_25V6-K
PC304 4.7U_0805_25V6-K
PC305 4.7U_0805_25V6-K
PC306 2200P_0402_50V7K
PC307 1000P_0402_25V8J
PC308 2.2U_0603_6.3V6K
PC309 0.1U_0603_25V7K
PC310 2200P_0402_50V7K
PC311 0.1U_0603_25V7K
PC312 @0.047U_0402_16V7K
PC313 6800P_0402_25V7K
PC314 0.1U_0402_16V7K
PC315 0.01U_0402_25V7K
PC316 0.1U_0402_16V7K
PC317 0.1U_0603_25V7K
PC318 10U_1206_25V6M
PC319 10U_1206_25V6M
PC320 0.01U_0402_25V7K
PC321 680P_0603_50V7K
PC322 4.7U_0805_6.3V6K
PC323 10U_1206_25V6M
PC324 5600P_0402_50V7K
PD301 RB751V-40_SOD323-2
PD302 1SS355_SOD323-2
PD303 1SS355_SOD323-2
PD304 RB751V-40TE17_SOD323-2
PL301 10U_LF919AS-100M-P3_4.5A_20%
PU301 ISL6251AHAZ-T_QSOP24
PQ310 2N7002W-T/R7_SOT323-3
PQ311 AO4466L_SO8
PQ312 @2N7002W-T/R7_SOT323-3
PQ314 AO4466L_SO8
PQ316 DTC115EUA_SC70-3
PQ317A @2N7002KDW-2N_SOT363-6
PQ317B @2N7002KDW-2N_SOT363-6
BATT+
BATT_ON
BATT_OUT 50
FSTCHG
PACIN
ACON
ACOFF
IREF
ADP_I
ACSETIN
ACPRN
CSIN
CSOP
CSON
CSIP
DISCHG_G
LX_CHG
DH_CHG
BST_CHG
BST_CHGA
DL_CHG
6251_VDDP
6251_VADJ
6251_VDD
6251VREF
6251_EN
6251_CELLS
6251_ICOMP
6251_VCOMP
6251_ICM
6251_CHLIM
6251_ACLIM
6251_DCIN
6251_CSON
6251_CSOP
6251_CSIN
6251_CSIP
ACIN
CELLS
BATT_SEL_EC
T22 PAD
Connect to EC A/D Pin.
42 CHGVADJ
3cell : GND
4cell : VDD
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
65W Adapter
Vaclim=2.39*(1.96K/(1.96K+16.9K))=0.2484V
linput=(1/0.02)((0.05*Vaclim)/2.39+0.05)
where Vaclim=0.2484V, linput=2.76A
90W Adapter
Vaclim=2.39*(2.87K/(2.87K+16.9K))=0.347V
linput=(1/0.015)((0.05*Vaclim)/2.39+0.05)
where Vaclim=0.347V, linput=3.82A
120W Adapter
Vaclim=2.39*(1K/(1K+50K))=0.047V
linput=(1/0.01)((0.05*Vaclim)/2.39+0.05)
where Vaclim=0.047V, linput=5.1A
65W : PR330=16.9K, PR333=1.96K
90W : PR330=16.9K, PR333=2.87K
120W : PR330=50K, PR333=1K
Security Classification | Compal Secret Data
Issued Date | 2010/01/13 | Deciphered Date | 2011/01/13
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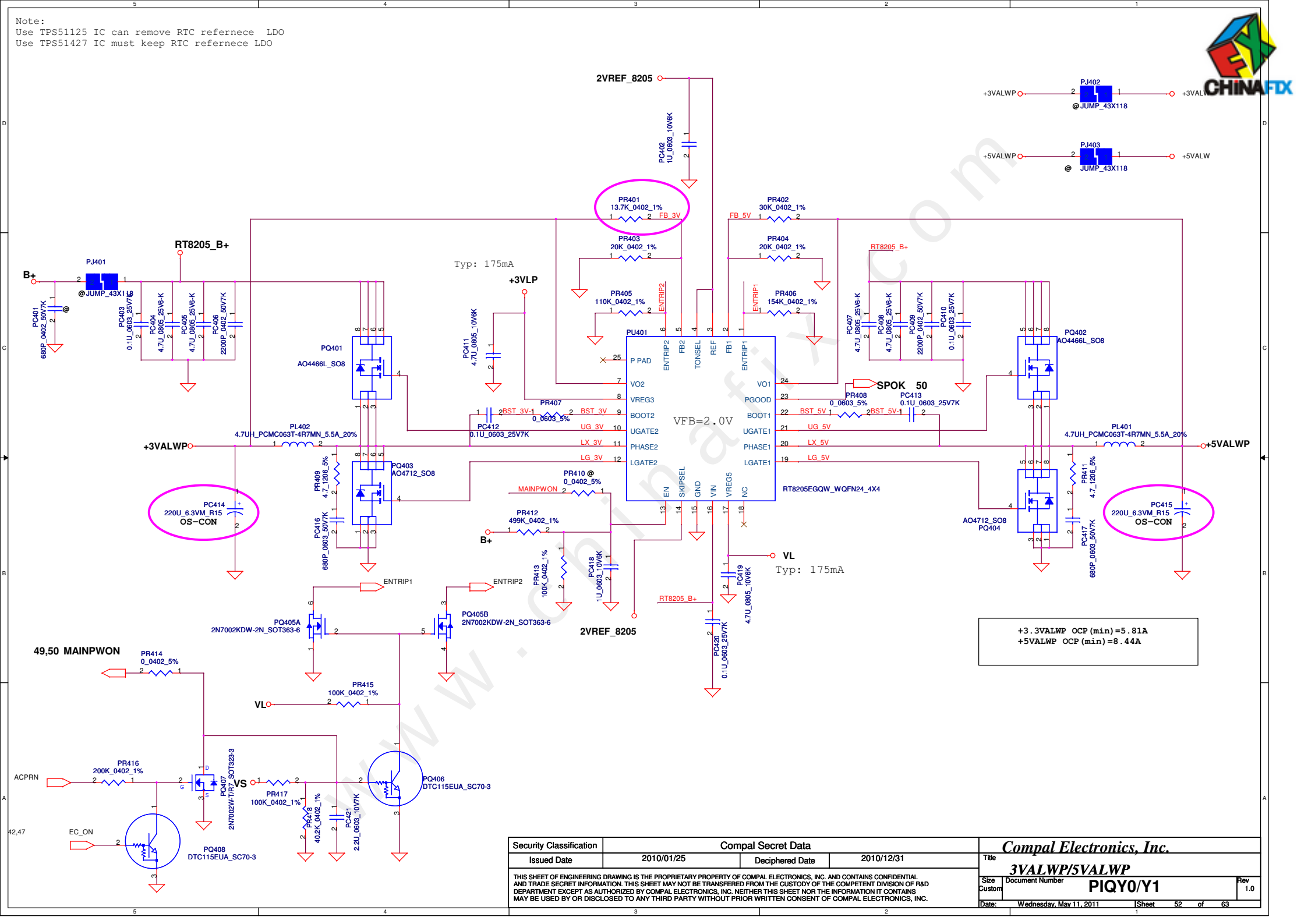
Compal Electronics, Inc.
Title: CHARGER
Size | Document Number: PIQY0/Y1 | Rev: 1.0
Date: Wednesday, May 11, 2011 | Sheet 51 of 63

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



Security Classification	Compal Secret Data		
Issued Date	2010/01/25	Deciphered Date	2010/12/31

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Compal Electronics, Inc.

Title: 3VALWP/5VALWP

Size	Document Number	Rev
Custom	PIQY0/Y1	1.0

Date: Wednesday, May 11, 2011 Sheet 52 of 63

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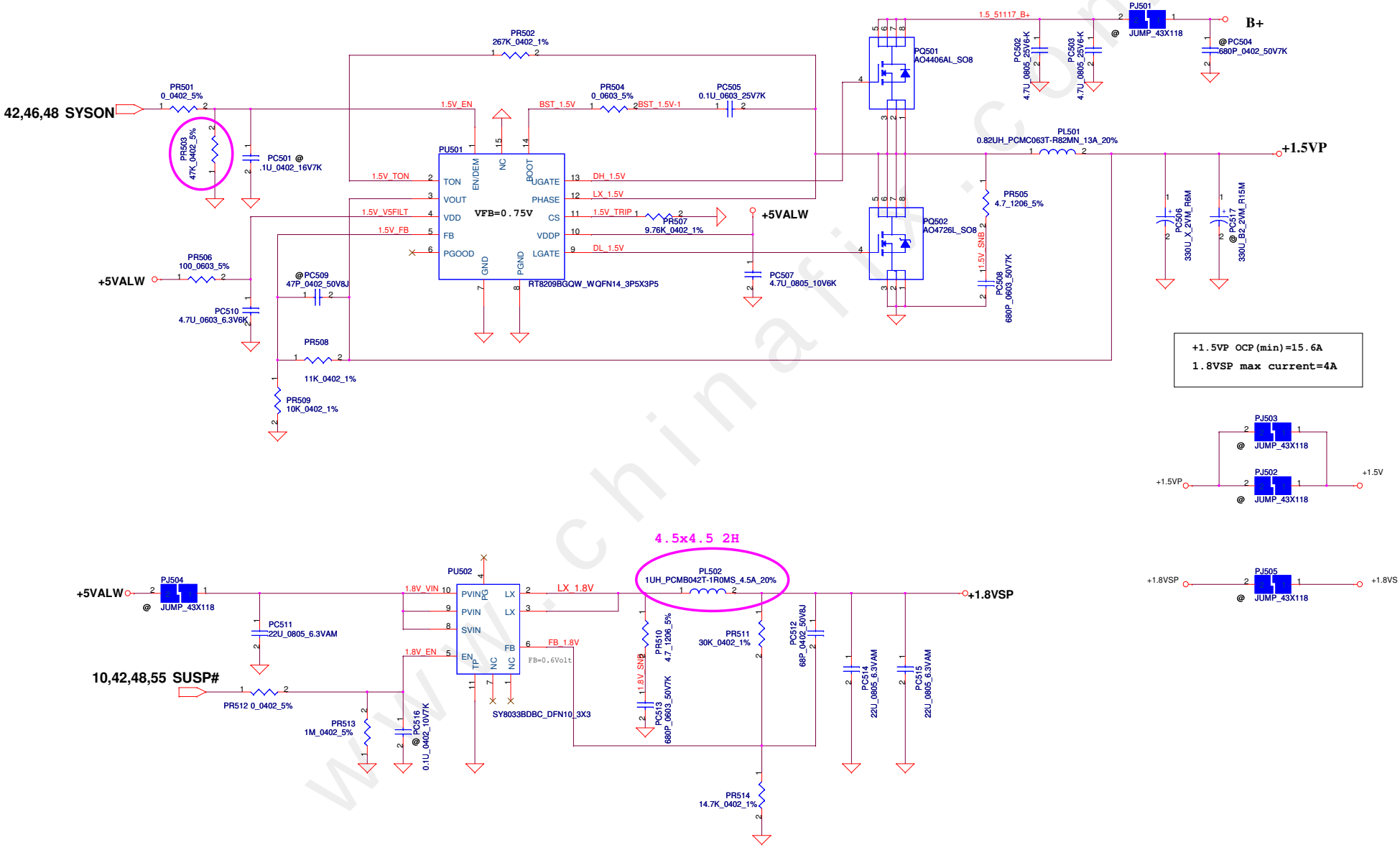

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Issued Date	2010/01/25	Deciphered Date	2010/12/31

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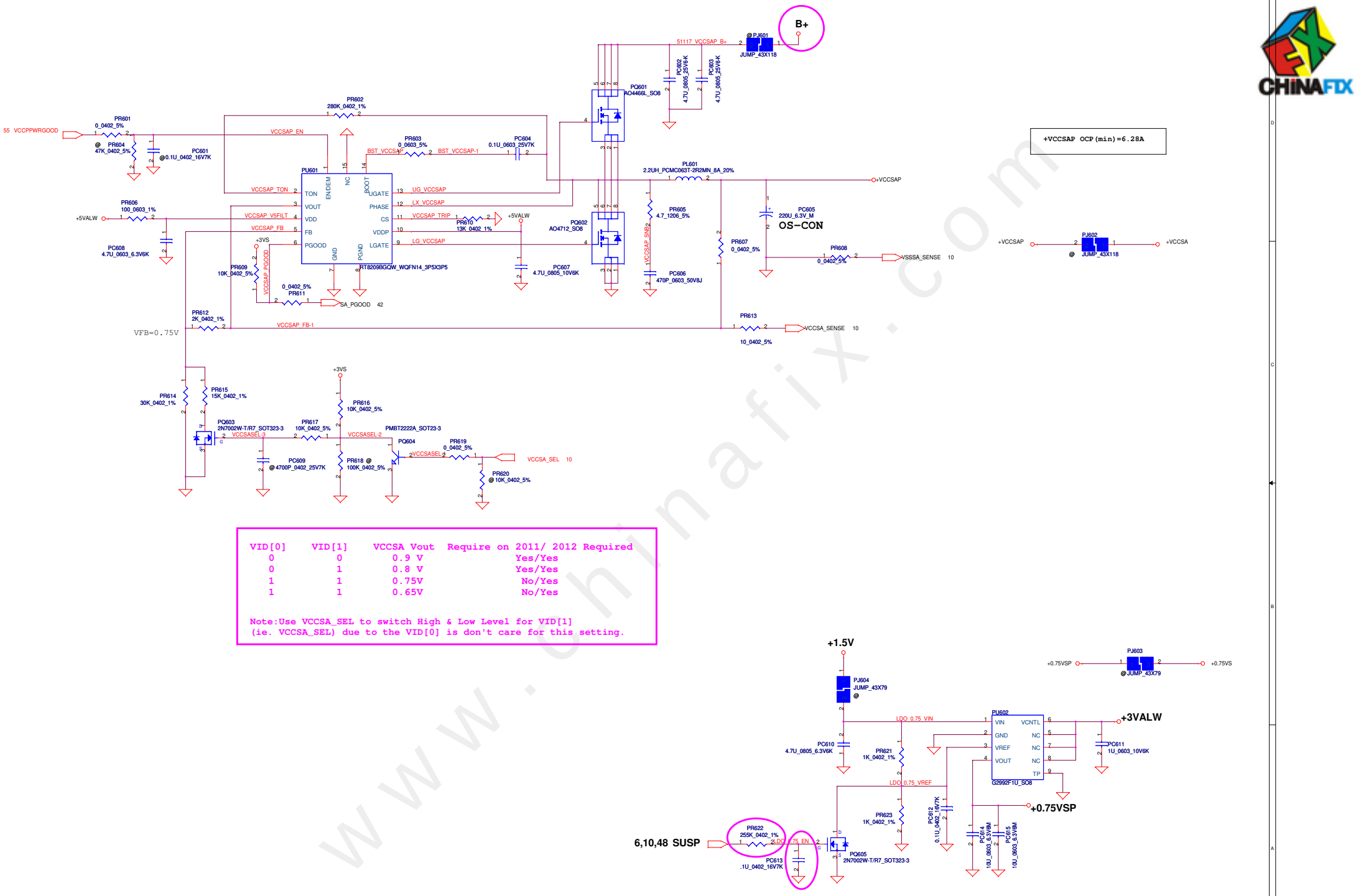
Compal Electronics, Inc.

Title: ***PWR-+1.5VP/+1.8VSP***

Size	Document Number	Rev
Custom	PIQY0/Y1	1.0

Date: Wednesday, May 11, 2011 | Sheet 53 of 63



VID[0]	VID[1]	VCCSA Vout	Require on 2011/ 2012 Required
0	0	0.9 V	Yes/Yes
0	1	0.8 V	Yes/Yes
1	1	0.75V	No/Yes
1	1	0.65V	No/Yes

Note:Use VCCSA_SEL to switch High & Low Level for VID[1]
(ie. VCCSA_SEL) due to the VID[0] is don't care for this setting.

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Security Classification	Compal Secret Data		
Issued Date	2010/01/25	Deciphered Date	2010/12/31

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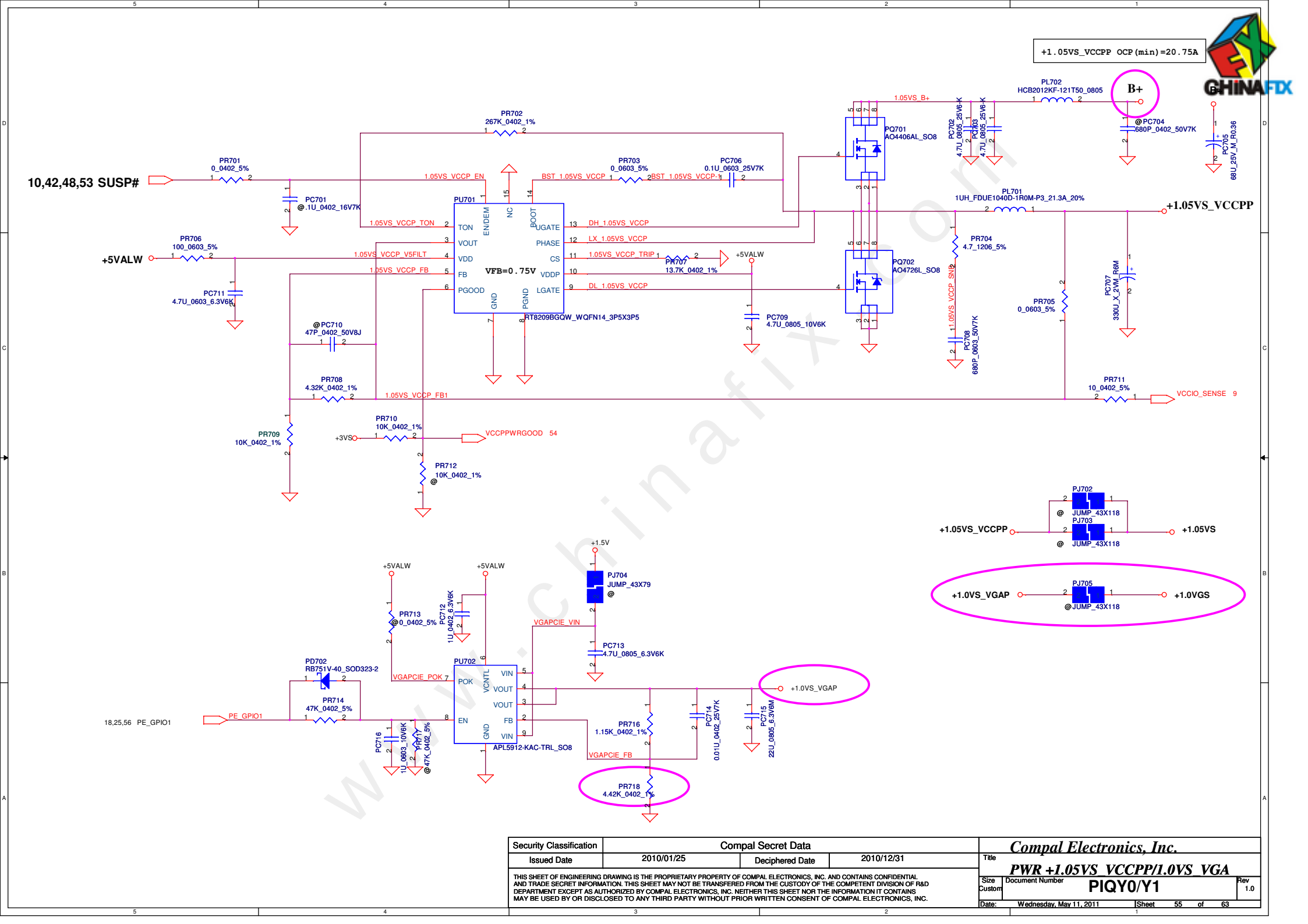
Compal Electronics, Inc.

Title: PWR +VCCSAP/+0.75VSP

Size	Document Number	Rev
C	PIQY0/Y1	1.0

Date: Wednesday, May 11, 2011 Sheet 54 of 63



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Security Classification	Compal Secret Data		
Issued Date	2010/01/25	Deciphered Date	2010/12/31

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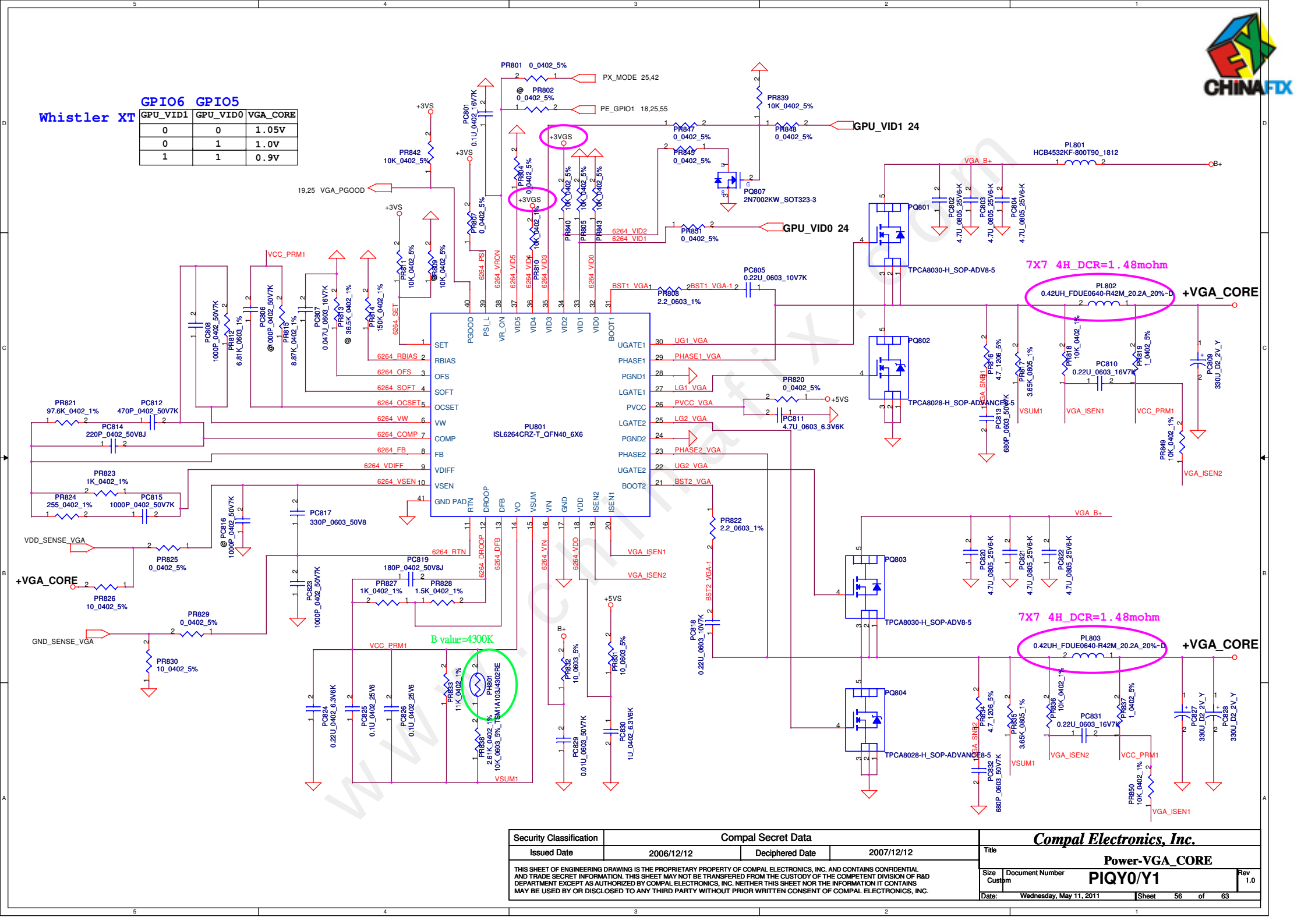
Compal Electronics, Inc.			
Title	PWR +1.05VS_VCCPP/1.0VS_VGA		
Size	Document Number	PIQY0/Y1	Rev 1.0
Custom			
Date:	Wednesday, May 11, 2011	Sheet 55 of 63	



GPU_VID1	GPU_VID0	VGA_CORE
0	0	1.05V
0	1	1.0V
1	1	0.9V

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Security Classification	Compal Secret Data		
Issued Date	2006/12/12	Deciphered Date	2007/12/12

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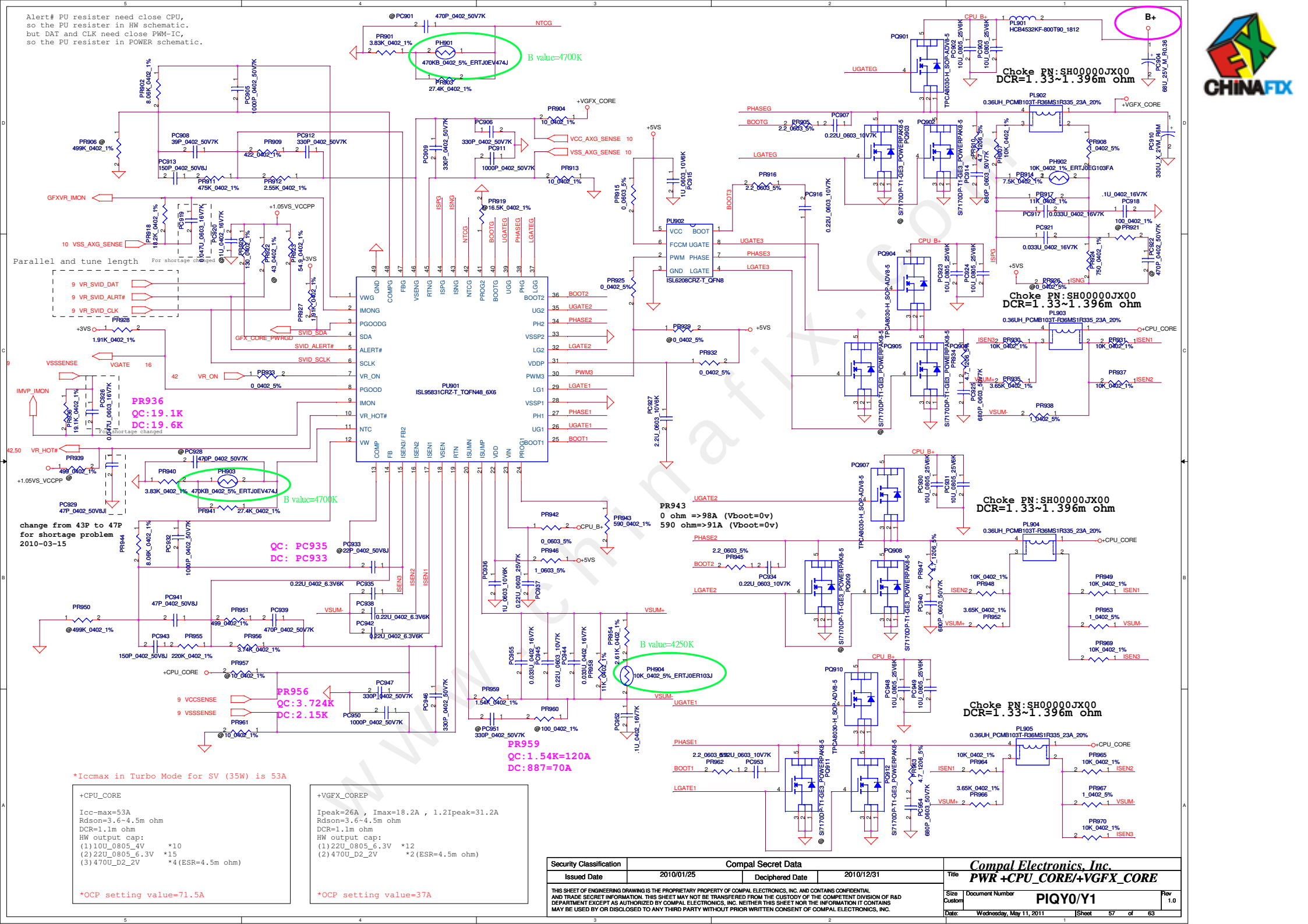
Compal Electronics, Inc.

Title: Power-VGA_CORE

Size	Document Number	Rev
Custom	PIQY0/Y1	1.0

Date: Wednesday, May 11, 2011 Sheet 56 of 63


Alert# PU resister need close CPU,
so the PU resister in HW schematic.
but DAT and CLK need close PWM-IC,
so the PU resister in POWER schematic.
B+
Choke PN:SH00000JX00
DCR=1.33~1.396m ohm
PU901
ISL95831CRZ-T_TQFN48_6X6
PU902
ISL6208CRZ-T_QFN8
PR936
QC:19.1K
DC:19.6K
PR943
0 ohm =>98A (Vboot=0v)
590 ohm=>91A (Vboot=0v)
PR956
QC:3.724K
DC:2.15K
PR959
QC:1.54K=120A
DC:887=70A
B value=4700K
B value=4250K
QC: PC935
DC: PC933
change from 43P to 47P
for shortage problem
2010-03-15
Parallel and tune length
*Iccmax in Turbo Mode for SV (35W) is 53A
+CPU_CORE
Icc-max=53A
Rdson=3.6~4.5m ohm
DCR=1.1m ohm
HW output cap:
(1)10U_0805_4V *10
(2)22U_0805_6.3V *15
(3)470U_D2_2V *4(ESR=4.5m ohm)
*OCP setting value=71.5A
+VGFX_COREP
Ipeak=26A , Imax=18.2A , 1.2Ipeak=31.2A
Rdson=3.6~4.5m ohm
DCR=1.1m ohm
HW output cap:
(1)22U_0805_6.3V *12
(2)470U_D2_2V *2(ESR=4.5m ohm)
*OCP setting value=37A
Security Classification
Compal Secret Data
Issued Date
2010/01/25
Deciphered Date
2010/12/31
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Compal Electronics, Inc.
Title
PWR +CPU_CORE/+VGFX_CORE
Size
Custom
Document Number
PIQY0/Y1
Rev
1.0
Date:
Wednesday, May 11, 2011
Sheet
57
of
63

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

Item	Reason for change	PG#	Modify List	Date	Phase
1	Disable Pre-charge		PR102, PR103, PR104, PR107, PD102, PD104, PQ102, PQ103, PQ104		
2	Back to Back MOS change		PQ301, PQ302, PQ303		
3	Battery Learning function		PQ205		
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

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QIQY2 HW PIR List

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
				SDV
1		P23	Change U8 to SA00004R500	Customer need to change
2		P23	Del C998/ C1067/ C343/ C339/ C382/ C376/ C377/ R692	For VGA function
3		P23	Change Q69 to Q75, Q68 to Q76, U56 to U62, U60 to U64, Q87 to Q109, Q86 to Q110, C732 to C777, U59 to U66, R872 to R890, U37 to U41	For VGA function
4		P42	Del R994/ R999/ D46/ Q91	For EC function
5		P15	Del PJP2/ R67/ R257/ R261	For PCH function
6		P23	Del C386/ C732/ R1400/ R1360 Del R354/ R3461/ R1372/ R1373	For VGA function
7		P33	Del R185/ R434/ Q84/ R1022/ Q92/ CV253~CV260/ Q115/R1144/ R1143/ L67/ R997/ R1321	For HDMI function
8		P44	BT_OFF# change to BT_ON#	For BT function
9		P35	EC_PME# change to LAN_WAKE#	For LAN wake funcion
10		P32	CMOS_OFF# change to CMOS_ON#	For CMOS function
11		P45	U11 from SB000007010 change to SB548000210	For +1.5VGS function
12		P32	D31~D35 from +5VS change to +CRT_VCC_CONN	For CRT function
13		P15	U4 from SA00004EEJ0 change to SA00004EEV0	PCH from rev.B2 change to rev.B3
14		P14	R133 from 0 ohm change to 33 ohm	For BIOS ROM function
				SIT
1		P23	Add C69 22Uf_0805 cap for +BIF_VDDC.	For vendor feedback
2		P23	Reserve R613 & R614 to pull up +3VS.	For VGA function
3		P23	Change 0 ohm to R_short --- R10/R1002/R1014/R1029/R109/ R11/R1111/R1114/R1116/R1280/R1281/R1282/R1283/R1285/ R130/R1320/R1336/R1342/R1323/R14/R181R19/R190/R193/R196/ R198/R207/R22/R222/R254R256/R258/R26/R260/R263/R265/R269 /R270/R272R273/R274/R276/R277/R278/R281/R282/R283/R284/ R285/R286/R288/R289/R293/R295/R302/R303/R313/R40/R432/ R52/R53/R668/R710/R824/R825/R880/R882/R885/R886/R891/ R922/R941/R969/R973/R993/R996.	For IO/ PCH/ VGA function
4		P45	U39/ U62 /U44 from SA000039E00 change to SA00003TV00.	For USB function
5		P18	Del net name PCH_GPIO51 connect to RP1 pin2.	For VGA function
6		P25	C351 from 0.1uF_0603 change to 0.047uF_0402.	For VGA function
7		P10	ADD PJP2 jump.	For PCH function
8		P43	U41 from SA000031C00 change to SA00001TC00.	For LID function
9		P25	R352 from 0 ohm change to 330K ohm.	For VGA function
10		P25	Add C343 & C346 for reserve.	For VGA function
11		P25	Q121 from SBX01240010 change to SB000008J10.	For VGA function

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Security Classification	Compal Secret Data		
Issued Date	2010/11/30	Deciphered Date	2009/01/06

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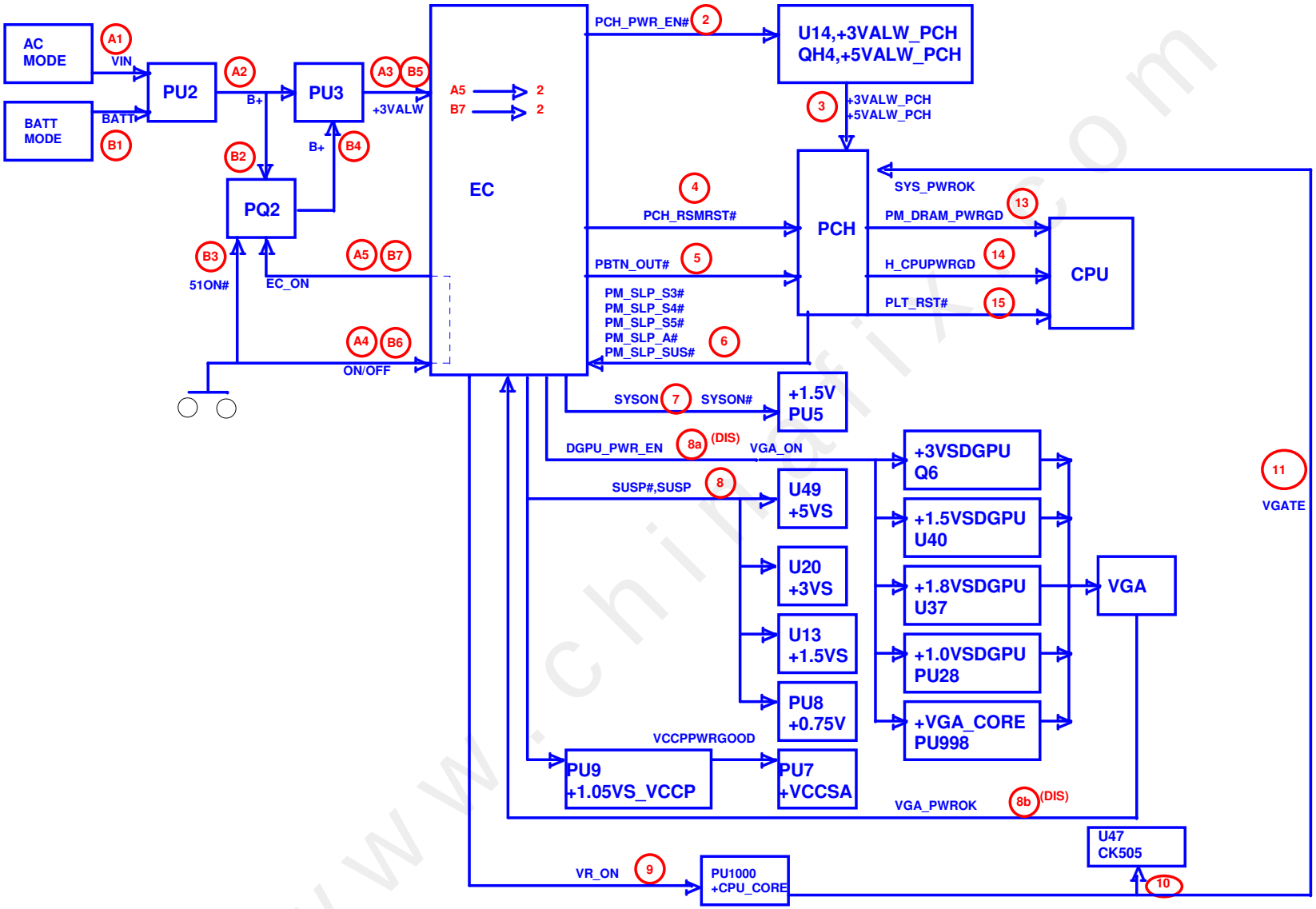
Compal Electronics, Inc.			
Title	PIR (HW)		
Size: Custom	Document Number: LA-6884P		Rev: 1.0
Date: Wednesday, May 11, 2011	Sheet 59 of 60		



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Issued Date	2010/01/25	Deciphered Date	2010/12/31

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Compal Electronics, Inc.

Title: Power sequence

Size	Document Number	Rev
Custom	QIQY2 LA6884P	1.0

Date: Wednesday, May 11, 2011 Sheet 60 of 63