

Compal Confidential

ULC AMD M/B LA-A996P DIS Schematics Document

AMD APU Beema/Kabini FT3 + ATI SUN LE + DDR3

Project Code : ZSO51

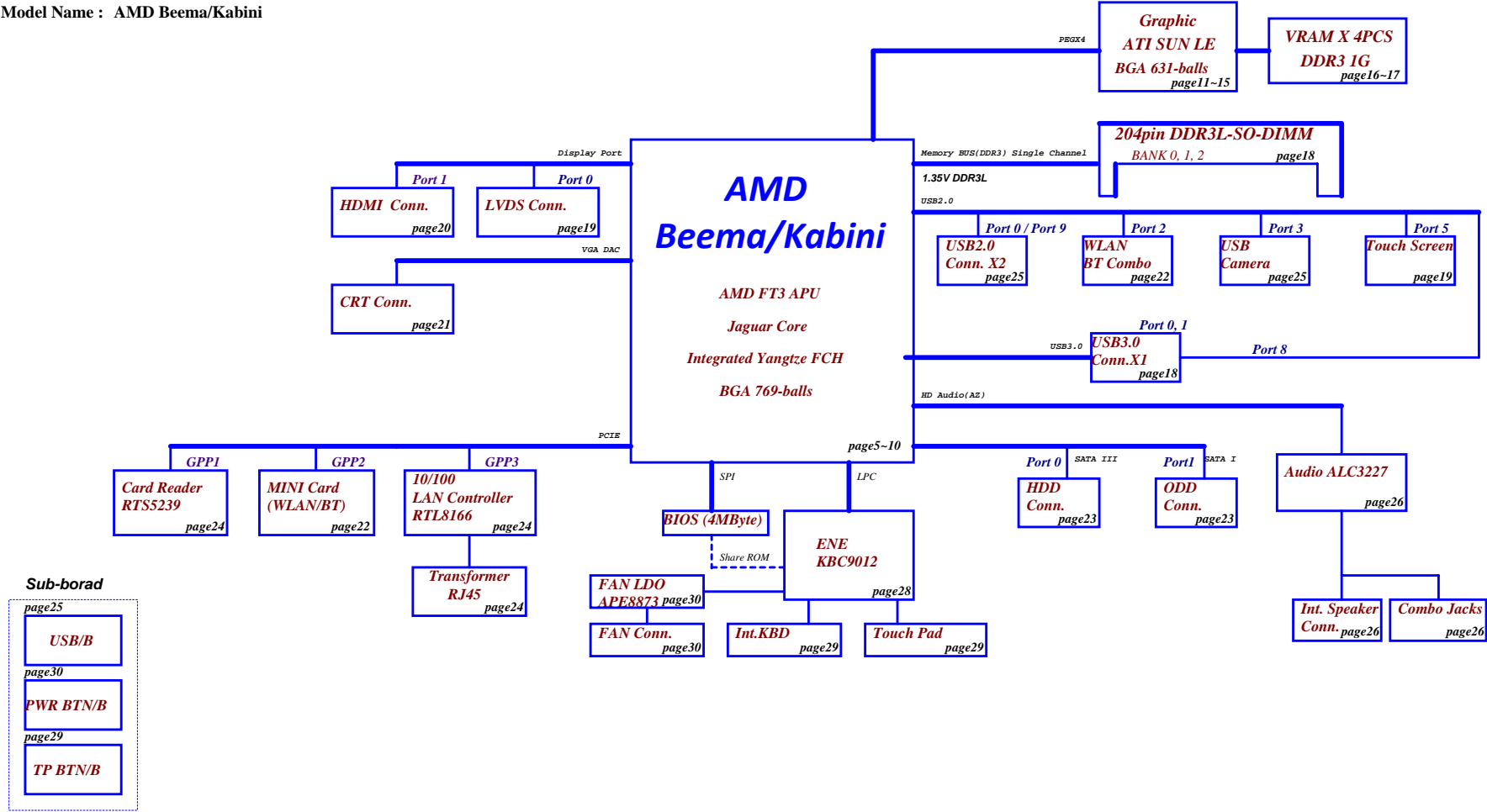
2014/02/08

PV Rev. 4.0

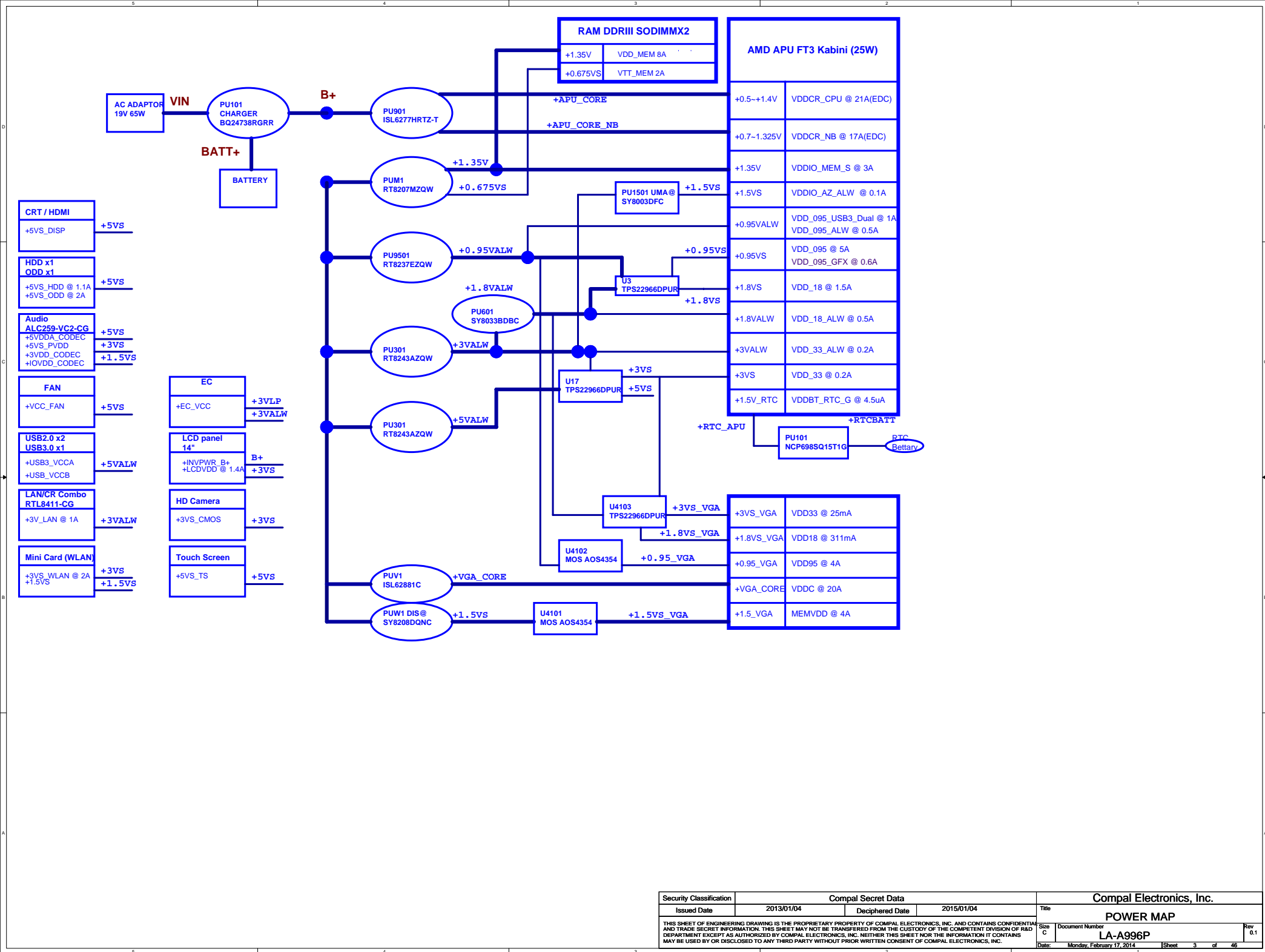
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Model Name : AMD Beema/Kabini



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Voltage Rails

Power Plane	Description	S0	S3	S5
VIN	Adapter power supply (19V)	ON	ON	ON
B+	AC or battery power rail for power circuit.	ON	ON	ON
+APU_CORE	Core voltage for APU	ON	OFF	OFF
+APU_CORE_NB	Voltage for On-die VGA of APU	ON	OFF	OFF
+0.95VALW	0.95V always on power rail	ON	OFF	OFF
+0.95VS	0.95V switched power rail	ON	OFF	OFF
+1.8VALW	1.8V always on power rail	ON	ON	ON*
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+1.5V	1.5V power rail for APU and DDR	ON	ON	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+0.75VS	0.75V switched power rail for DDR terminator	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON
+5VS	5V switched power rail	ON	OFF	OFF
+RTC_APU	RTC power			

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



A4-6300
Part Number = SA00007OP20
S IC A32 A4-6300 AM6300ITJ44JB



E2-6200
Part Number = SA00007OQ20
S IC A32 E2-6200 EM6200ITJ44JB 1.5G BGA



E1-6050
Part Number = SA00007IC50
S IC A32 E1-6050 ZM1332M2J2370 1.35G BGA



A8-6410 15W
Part Number = SA00007TQ20
AM6410ITJ44JB



A4-6210 R3 15W
Part Number = SA00007RA60
AM6210ITJ44JB



E2-6110 R2 15W
Part Number = SA00007RB60
EM6110ITJ44JB



E1-6010 R2 10
Part Number = SA00007RC60
EM6010IUJ23JB



A8-6410 15W
Part Number = SA00007TQ10
AM6410ITJ44JB



A4-6210 R1 15W
Part Number = SA00007RA40
AM6210ITJ44JB



E2-6110 R2 15W
Part Number = SA00007RB40
EM6110ITJ44JB



E1-6010 R2 10
Part Number = SA00007RC40
EM6010IUJ23JB



PCB
Part Number = DAZ14D00203
PCB LA-A996P REV4.0 M/B



E1-2100
Part Number = SA00006QX10
S IC A32 KABINI EM2100ICJ23HM 1G BGA769P



A4-5000
Part Number = SA00006R410
S IC A4 SERIES AT1250IDJ23HM 1G BGA 769P



E2-3800
Part Number = SA00007BX20
S IC A32 KABINI EM2100ICJ23HM 1G BGA769P



A6-5200
Part Number = SA00006R350
S IC KABINI AM5200IAJ44HM 2G BGA769P APU



HDMI
Part Number = RO0000003HM
PCB 102 LA-A996P REV0 M/B 2



E1-2100
Part Number = SA00006QX60
S IC A32 KABINI EM2100ICJ23HM 1G BGA769P



A4-5000
Part Number = SA00006R460
S IC A4 SERIES AT1250IDJ23HM 1G BGA 769P



E2-3800
Part Number = SA00007BX60
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SMBus List

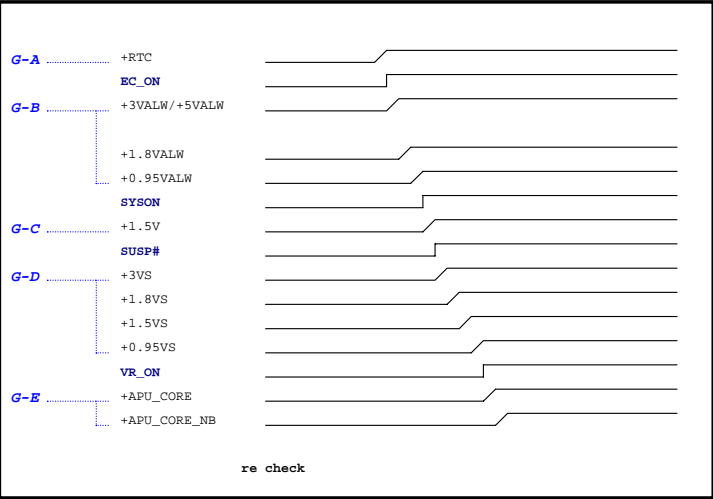
EC SMBus Port1 (+3VALW)			EC SMBus Port2 (+3VS)		
Device	Address	HEX	Device	Address	HEX
Smart Battery	0001 011X b	16H	SB-TSI (APU)	1001 100X b	98H

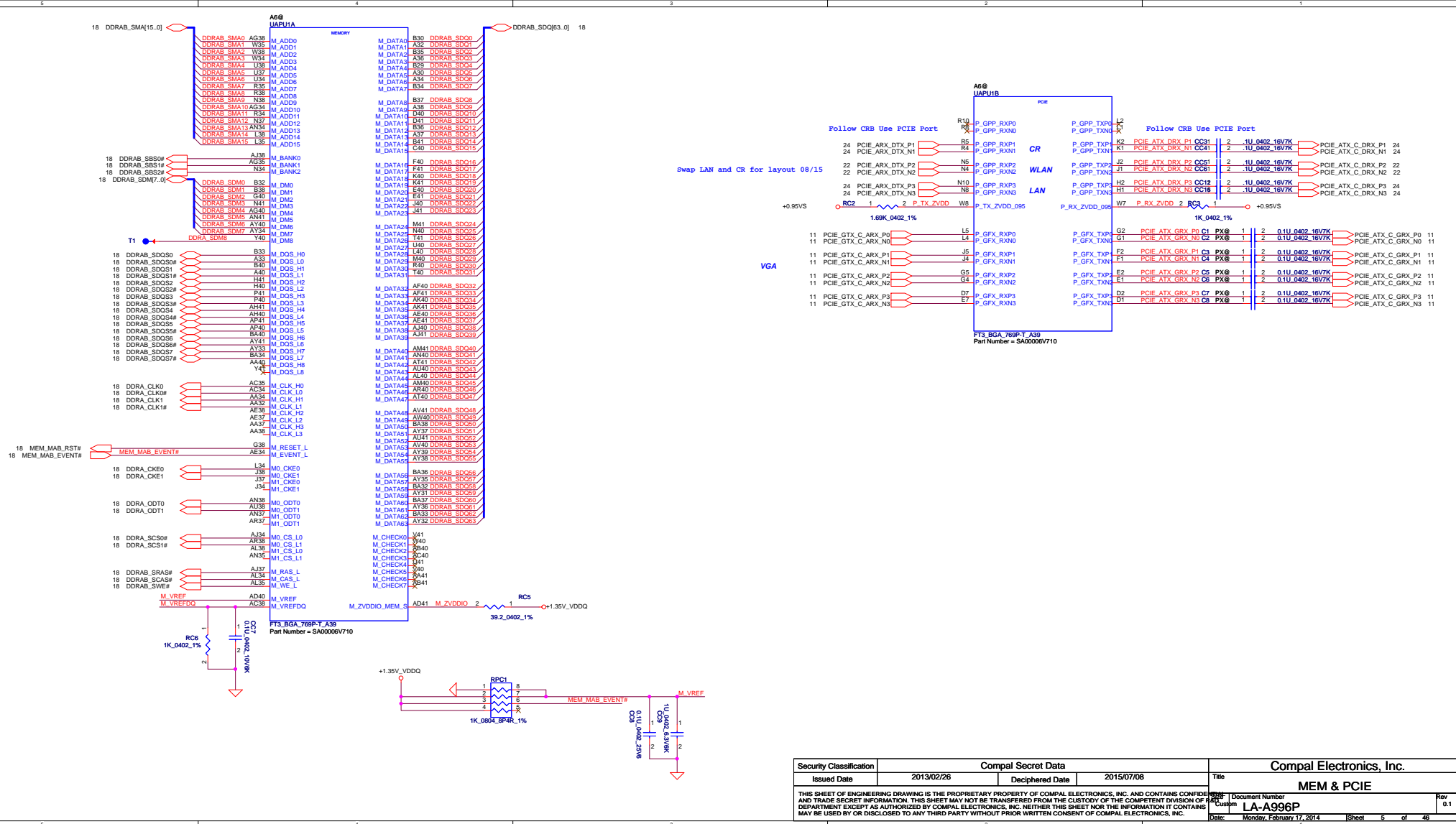
APU SMBus Port0 (+3VS)			APU SMBus Port1(+3VALW)		
Device	Address	HEX	Device	Address	HEX
DDR DIMM2	1010 000Xb	A0H			
DDR DIMM1	1010 001Xb	A2H			
Mini Card (DNI)					

BOM Structure Table

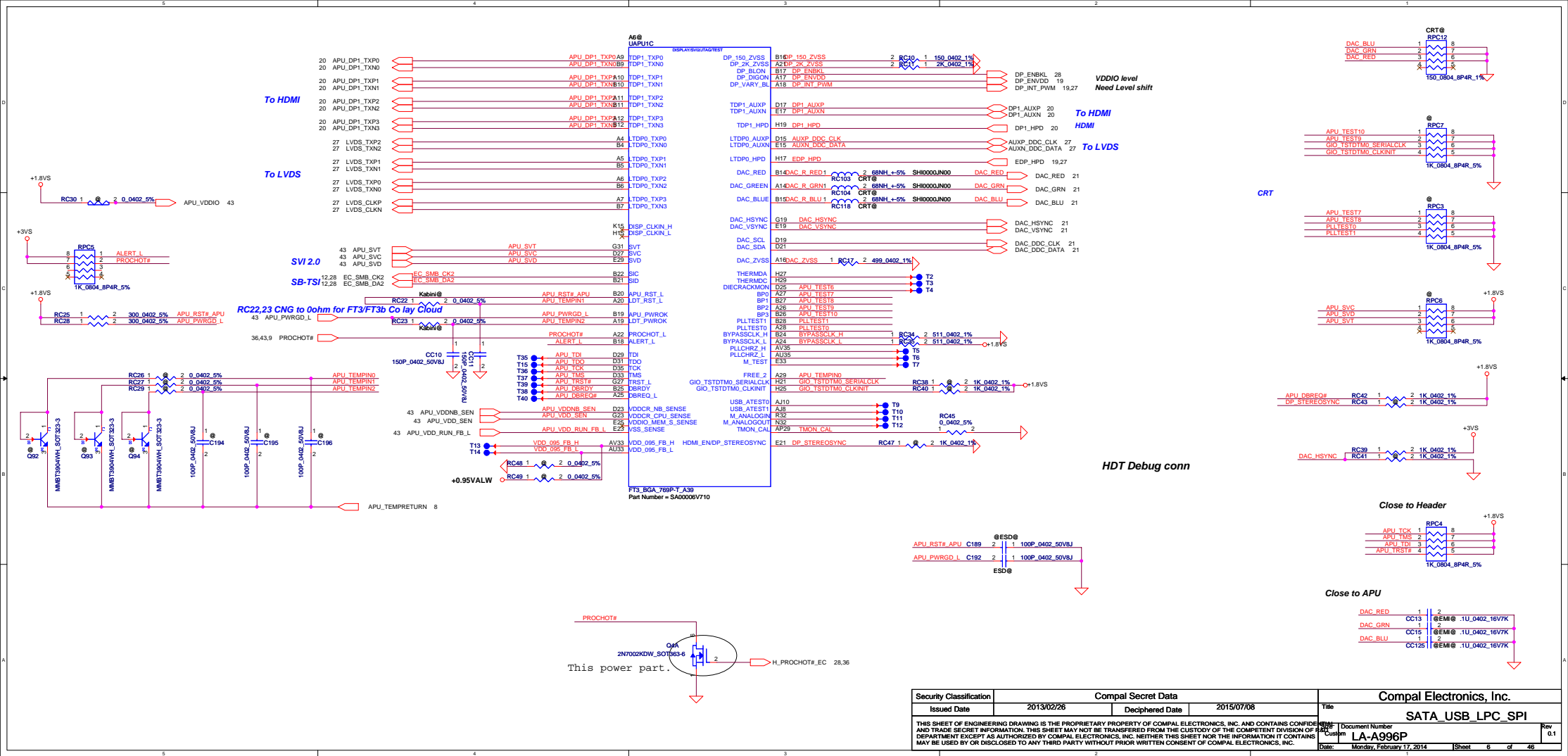
BOM Structure	BTO Item
@	Unpop
CONN@	Connector Part Control by ME
EMI@	EMI pop component
@EMI@	EMI unpop component
ESD@	ESD pop component
@ESD@	ESD Unpop component
PX@	GPU SUN LE Componet
8166@	10/100 LAN
8151@	Giga LAN
UMA@	UMA Componet
display@	display Componet
EDP@	EDP Componet
KLVDs@	Kabini LVDS Componet
BLVDs@	Beema LVDS Componet
Kabini@	Kabini Componet
Beema@	Beema Componet
LVDS@	LVDS Componet

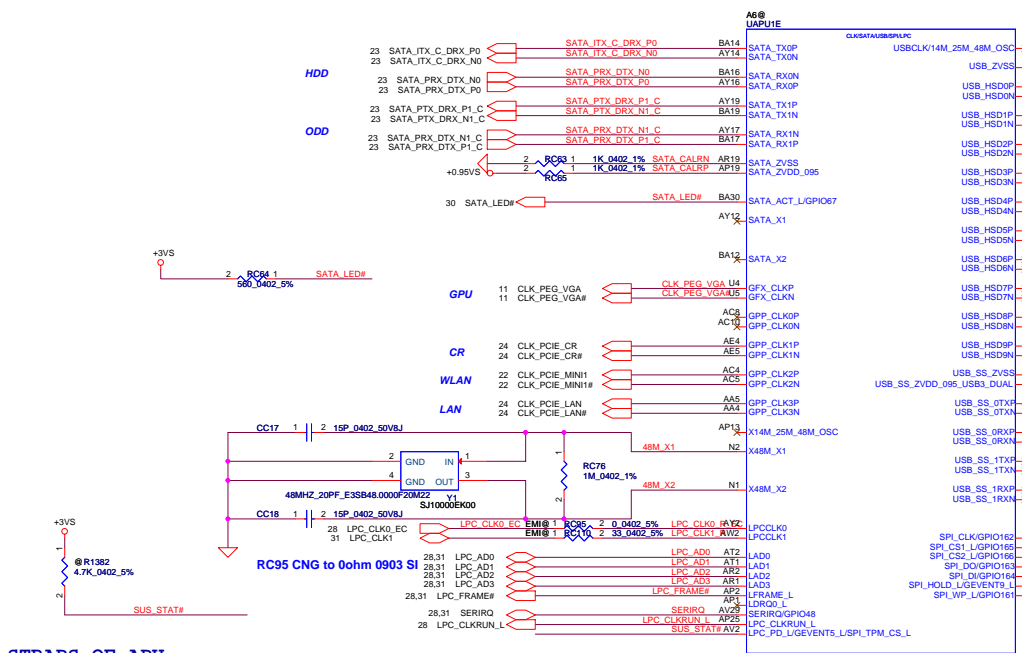
APU POWER SEQUENCE





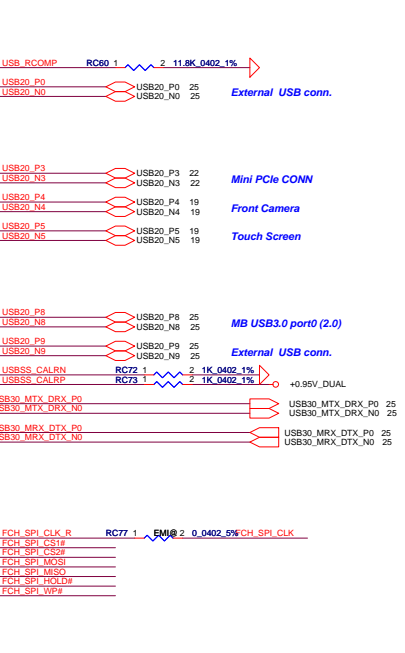
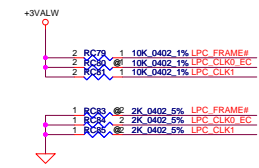
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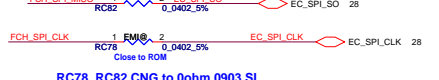
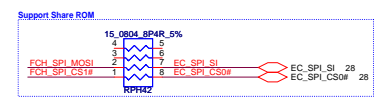
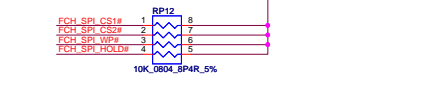
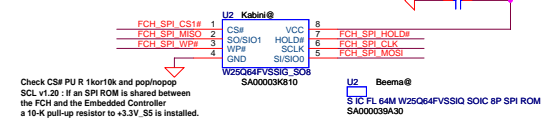


STRAPS OF APU

	LPC_FRAME#	LPC_CLK0_EC	LPC_CLK1	GEVENT2_L	RTC_CLK
H	SPI ROM (DEFAULT)	BOOT FAIL TIMER ENABLED	CLKGEN ENABLE (DEFAULT)	1.8V SPI ROM	NORMAL POWER UP/RESET TIMING (DEFAULT)
L	LPC ROM	BOOT FAIL TIMER DISABLED (DEFAULT)	CLKGEN DISABLED	3.3V SPI ROM (DEFAULT)	FAST POWER UP/RESET TIMING FOR SIMULATION

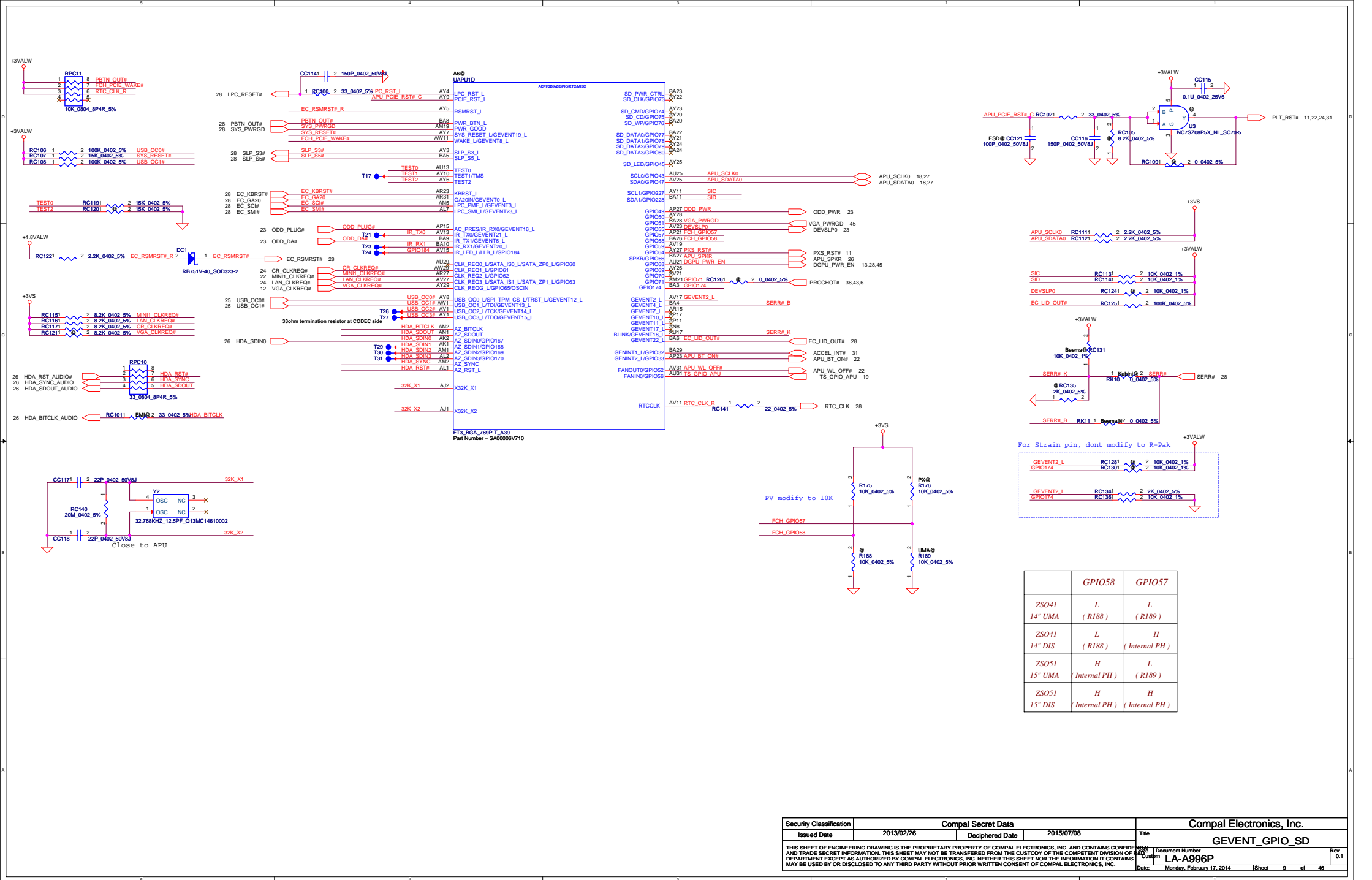


4MB SPI ROM
& Non-share ROM.

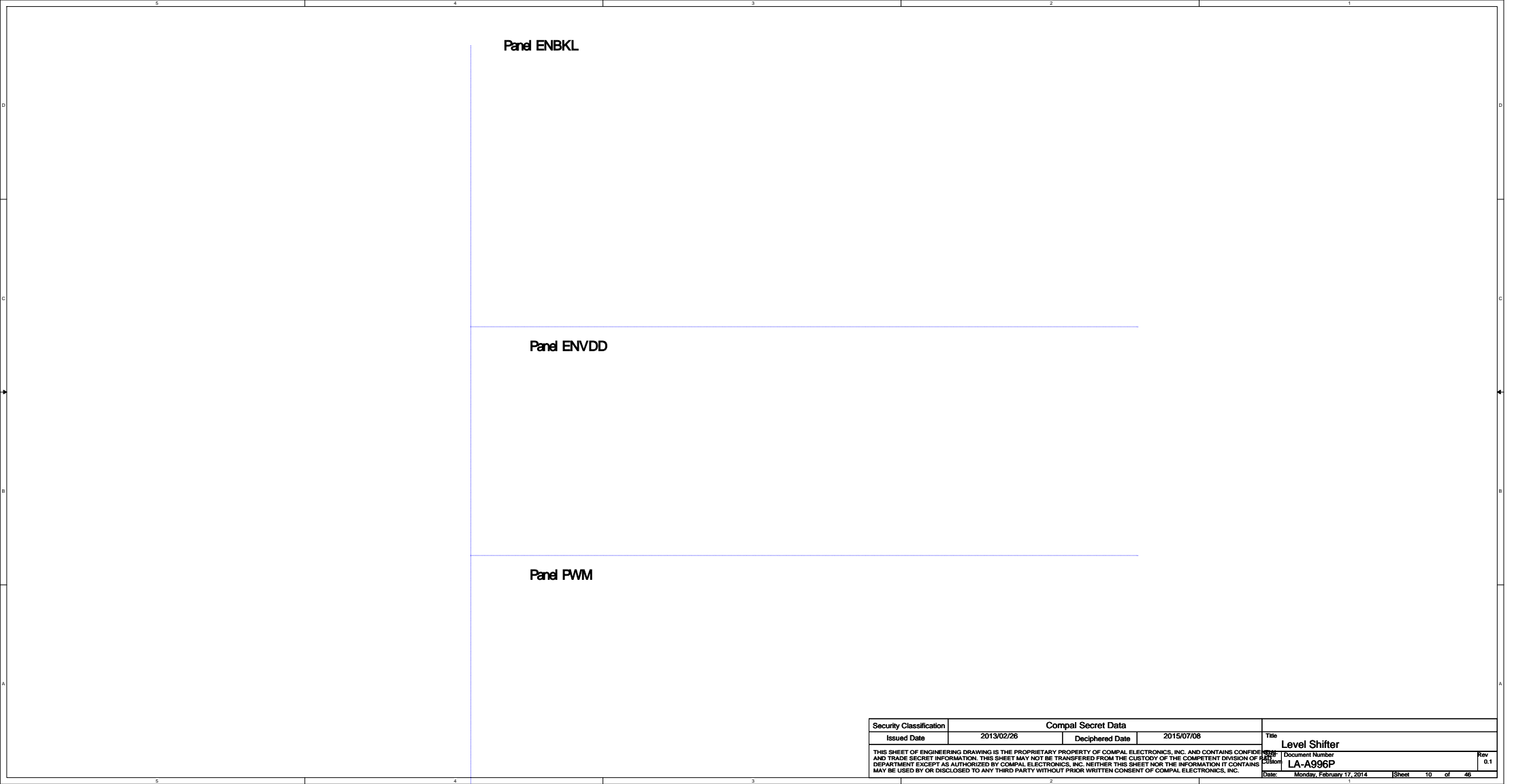


RC78, RC82 CNG to 0ohm 0903 SI

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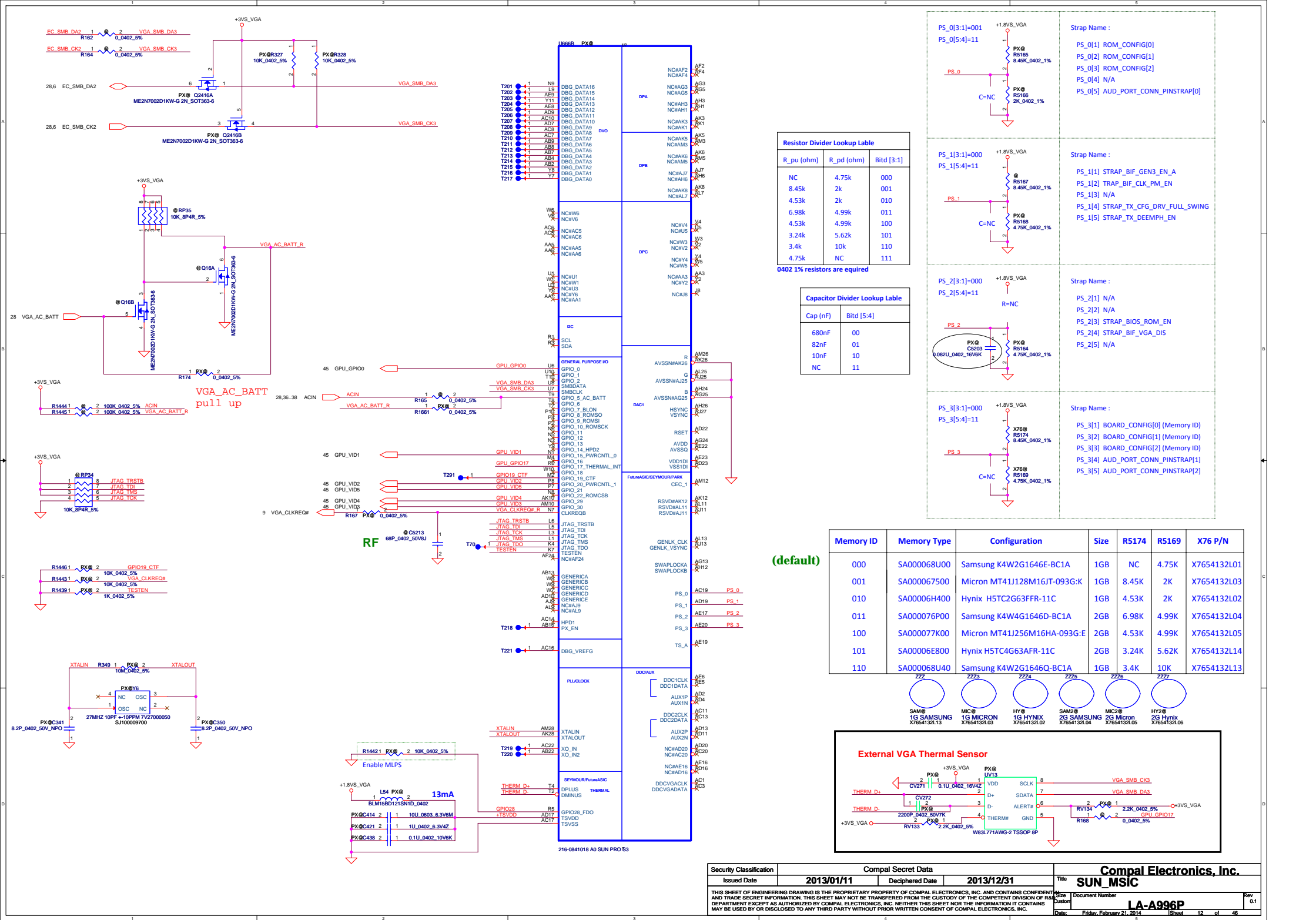


Panel ENBKL

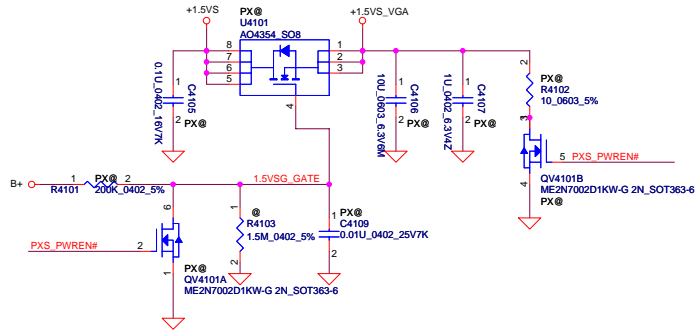
Panel ENVDD

Panel PWM

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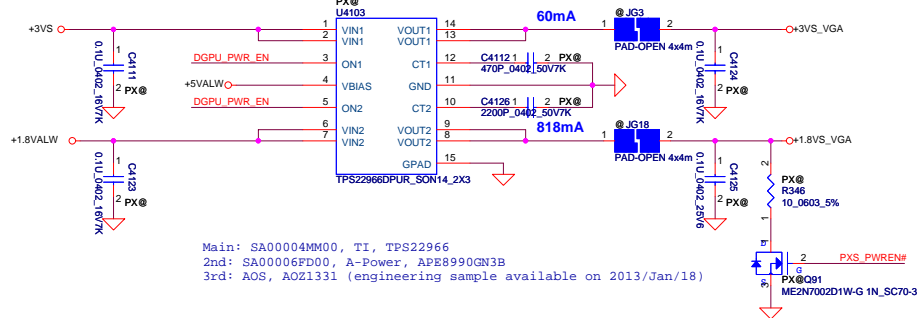
+1.5VS to +1.5VS_VGA (2.096A)



+3VS to +3VS_VGA (25mA)

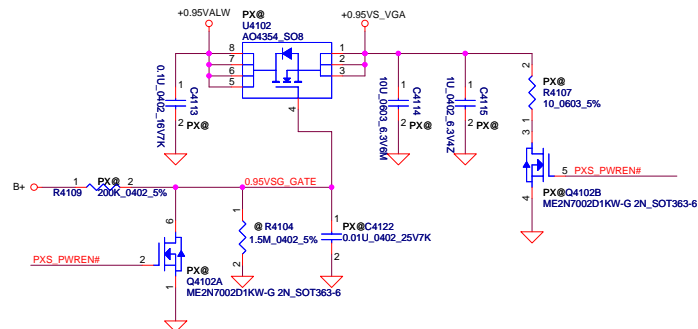
+1.8VALW to +1.8VS_VGA (311mA)

+1.8VS_VGA 必須比 +VGA_CORE晚起來



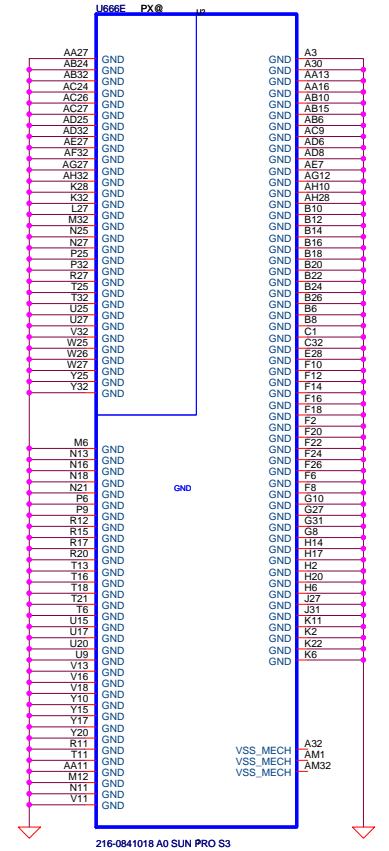
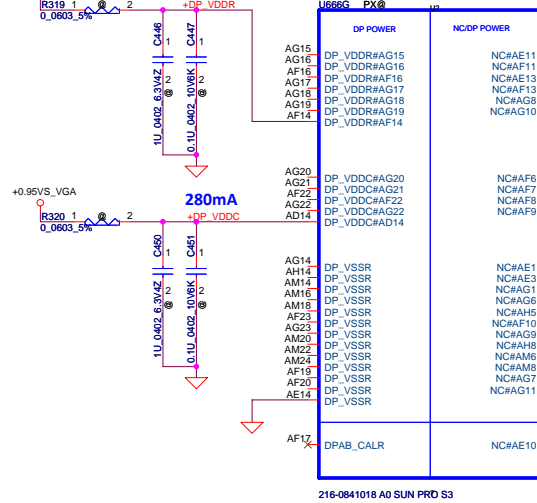
Main: SA00004MM00, TI, TPS22966
2nd: SA00006PD00, A-Power, APE8990GN3B
3rd: AOS, AOZ1331 (engineering sample available on 2013/Jan/18)

+0.95VALW to +0.95VSG (4.016A)



370mA (HDMI) 188mA (Display Port)

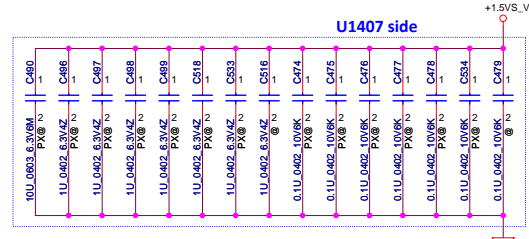
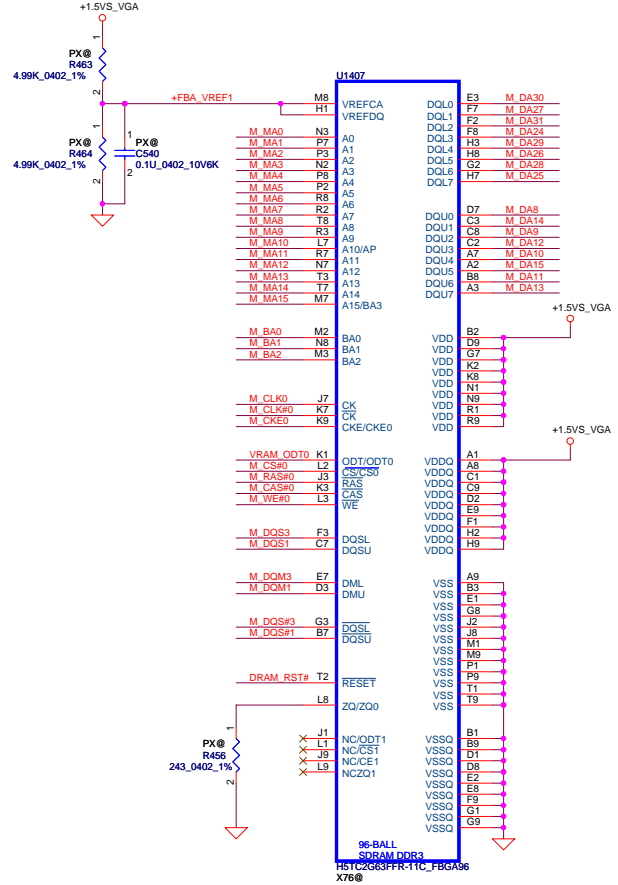
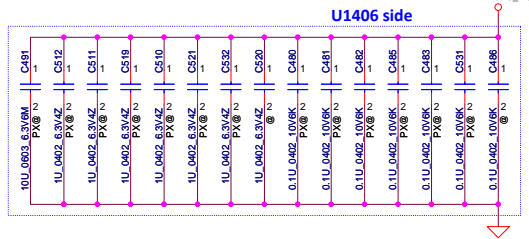
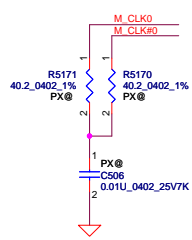
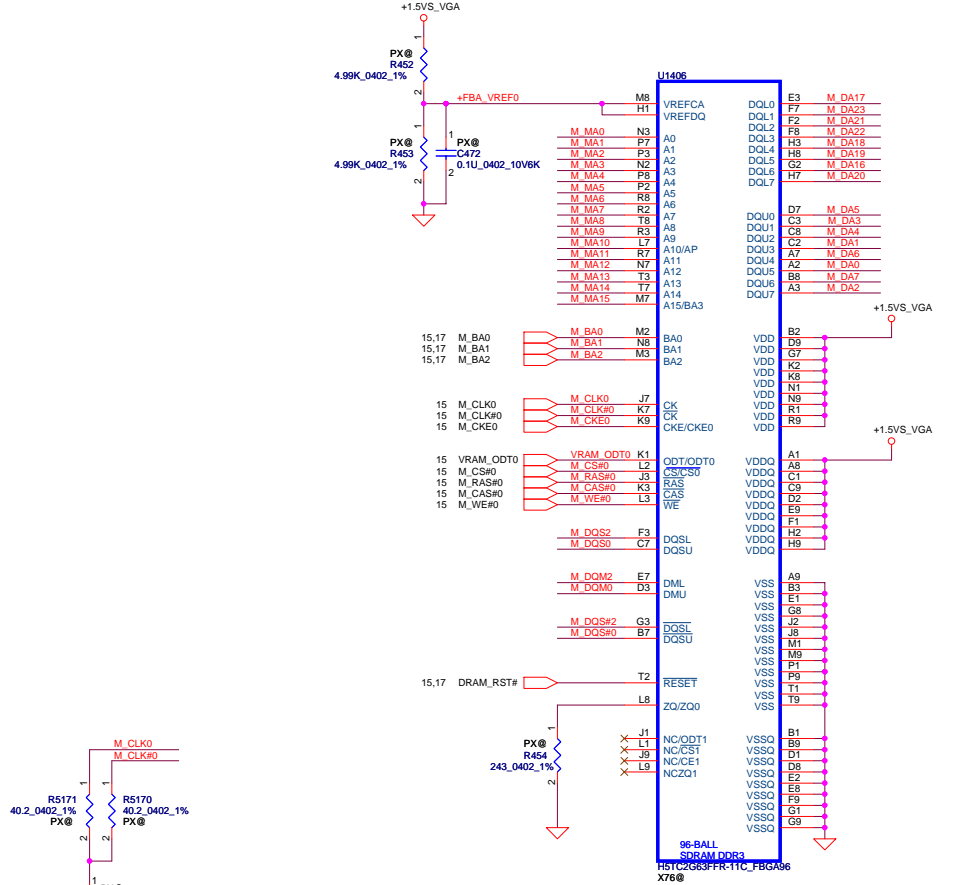
No Use GPU Display Port output



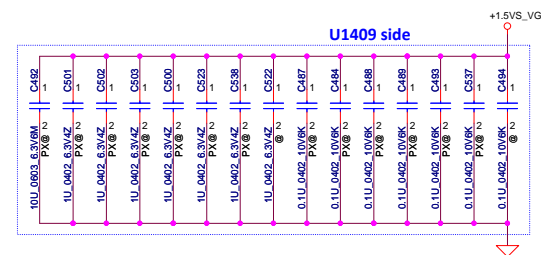
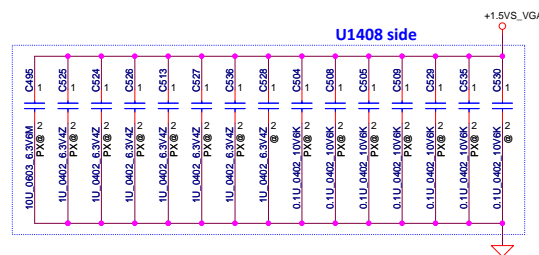
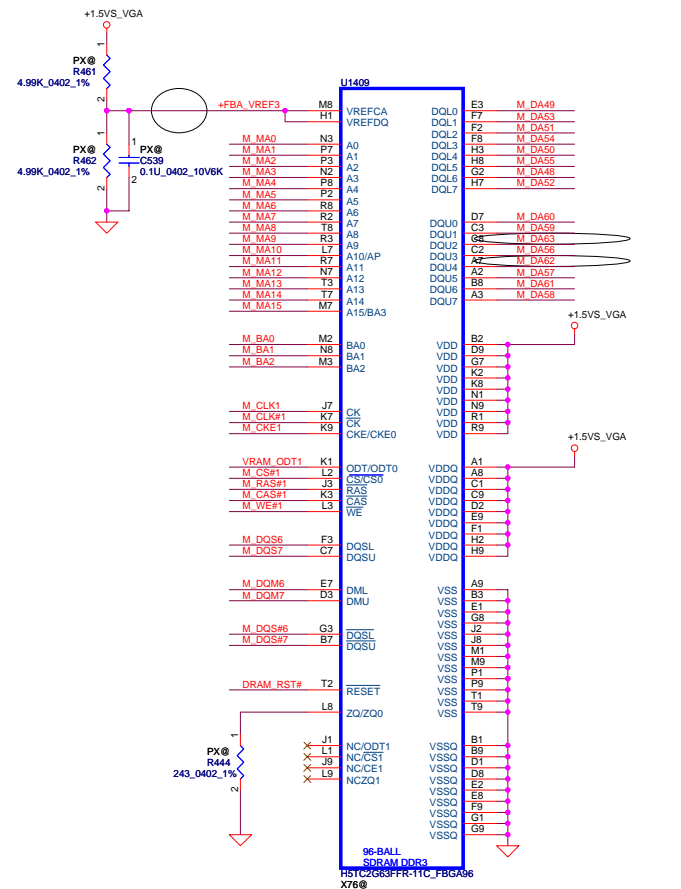
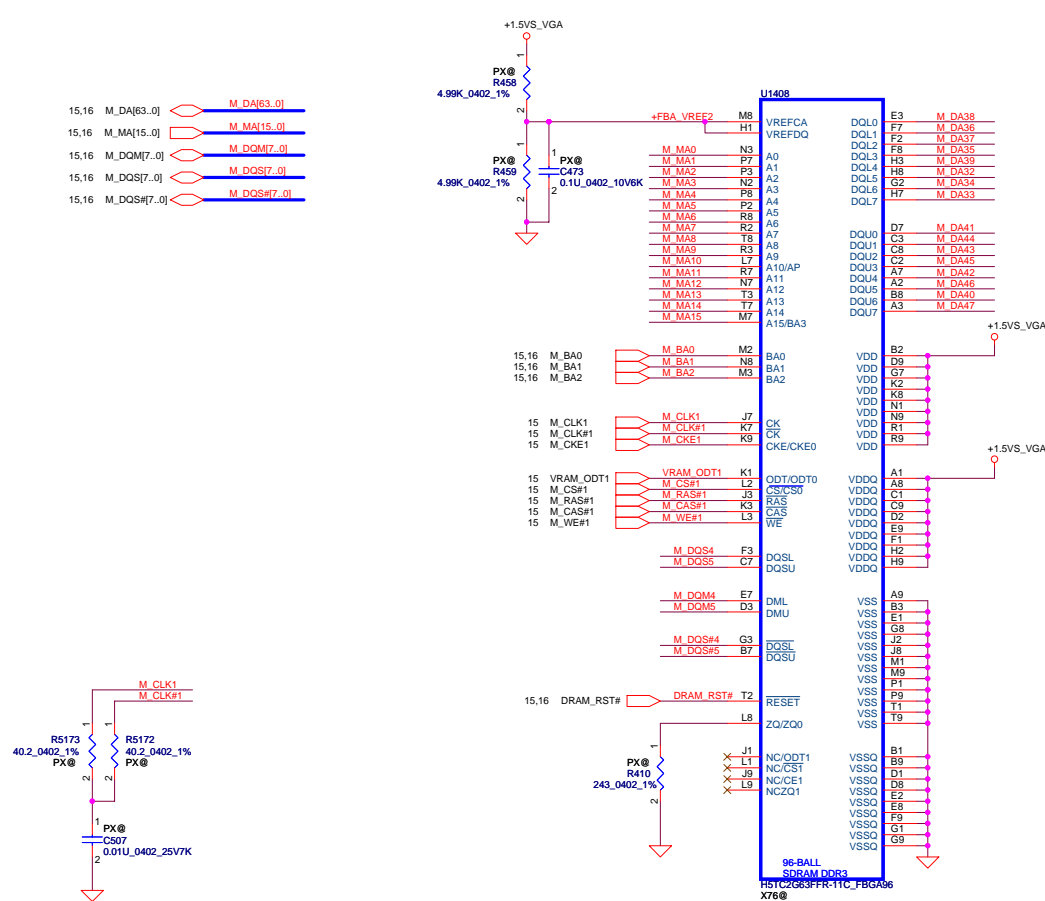
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Memory Partition A - Lower 32 bits

- 15.17 M_DA[63..0] M_DA[63..0]
- 15.17 M_MA[15..0] M_MA[15..0]
- 15.17 M_DQM[7..0] M_DQM[7..0]
- 15.17 M_DQS[7..0] M_DQS[7..0]
- 15.17 M_DQS# [7..0] M_DQS# [7..0]



Memory Partition A - Upper 32 bits

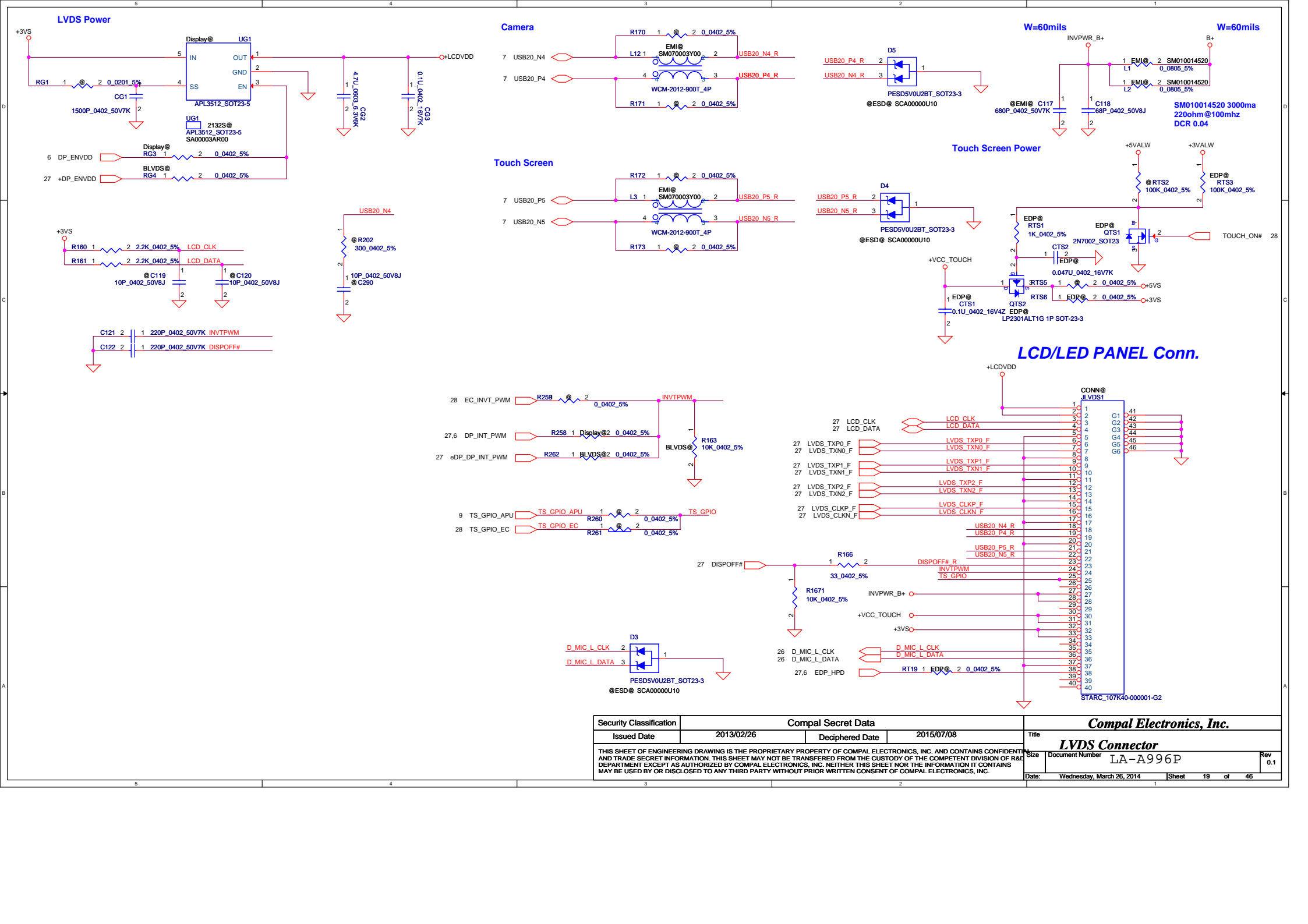


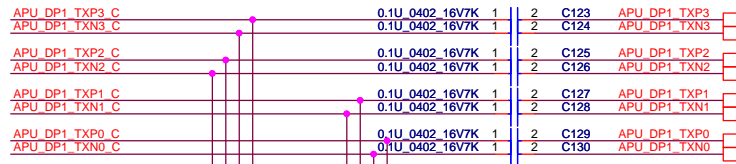
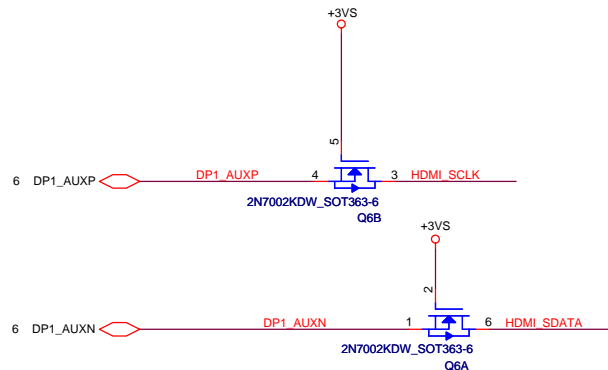
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The schematic diagram illustrates the electrical connections for a device interface, organized into several functional blocks:

- LVDS Power:** Shows the power supply for the LVDS driver (UG1, APL3512_SOT23-5). It includes +3VS input, resistors RG1, CG1, and capacitors C119, C120, C121, C122. Connections for DP_ENVDD and +DP_ENVDD are shown.
- Camera:** Details the camera module's power and signal connections. It features USB20_N4, USB20_P4, and USB20_R4 signals, along with EMI suppression components (R170, L12, R171) and WCM-2012-900T_4P.
- Touch Screen:** Shows the touch screen's power and signal connections. It includes USB20_P5, USB20_N5, and USB20_R5 signals, along with EMI suppression components (R172, L3, R173) and WCM-2012-900T_4P.
- LCD/LED PANEL Conn.:** Provides a comprehensive pinout for the panel connector (CONN@ LVDS1). It lists signals such as LCD_CLK, LCD_DATA, LVDS_TXP0_F, LVDS_TXN0_F, LVDS_TXP1_F, LVDS_TXN1_F, LVDS_TXP2_F, LVDS_TXN2_F, LVDS_CLKP_F, LVDS_CLKN_F, and various power pins (+3VS, +VCC_TOUCH, INVPWR_B+).
- Power Management:** Includes sections for inverters (D3, D4, D5), regulators (RTS1, RTS2, RTS3), and capacitors (C117, C118, C120, C121, C122). It also shows connections for +5VALW, +3VALW, and +VCC_TOUCH.

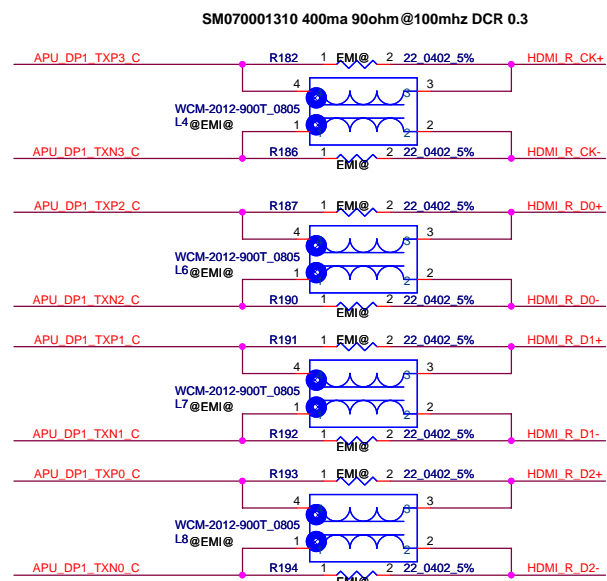
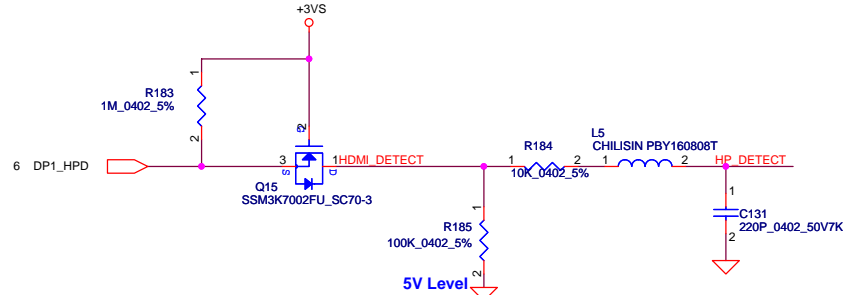
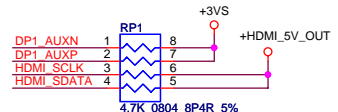
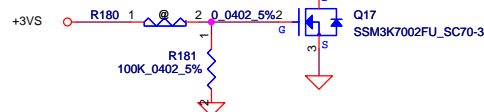
The diagram uses standard electronic symbols for components like resistors, capacitors, inductors, diodes, and integrated circuits. Signal traces are color-coded (red for power, blue for signals) to distinguish between different types of connections.

[illegible]

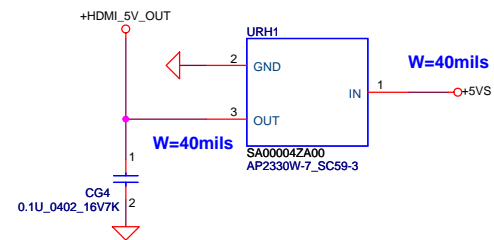
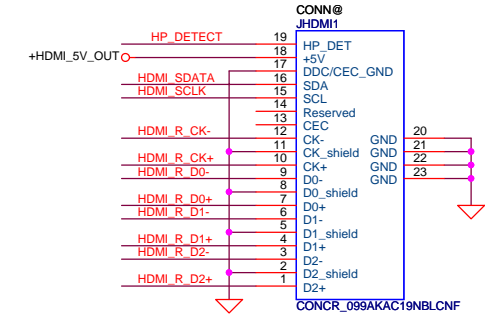
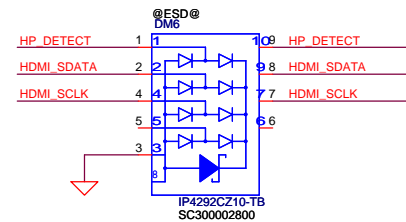


CLK
Data0
Data1
Data2

NET: HDMIRES_GND
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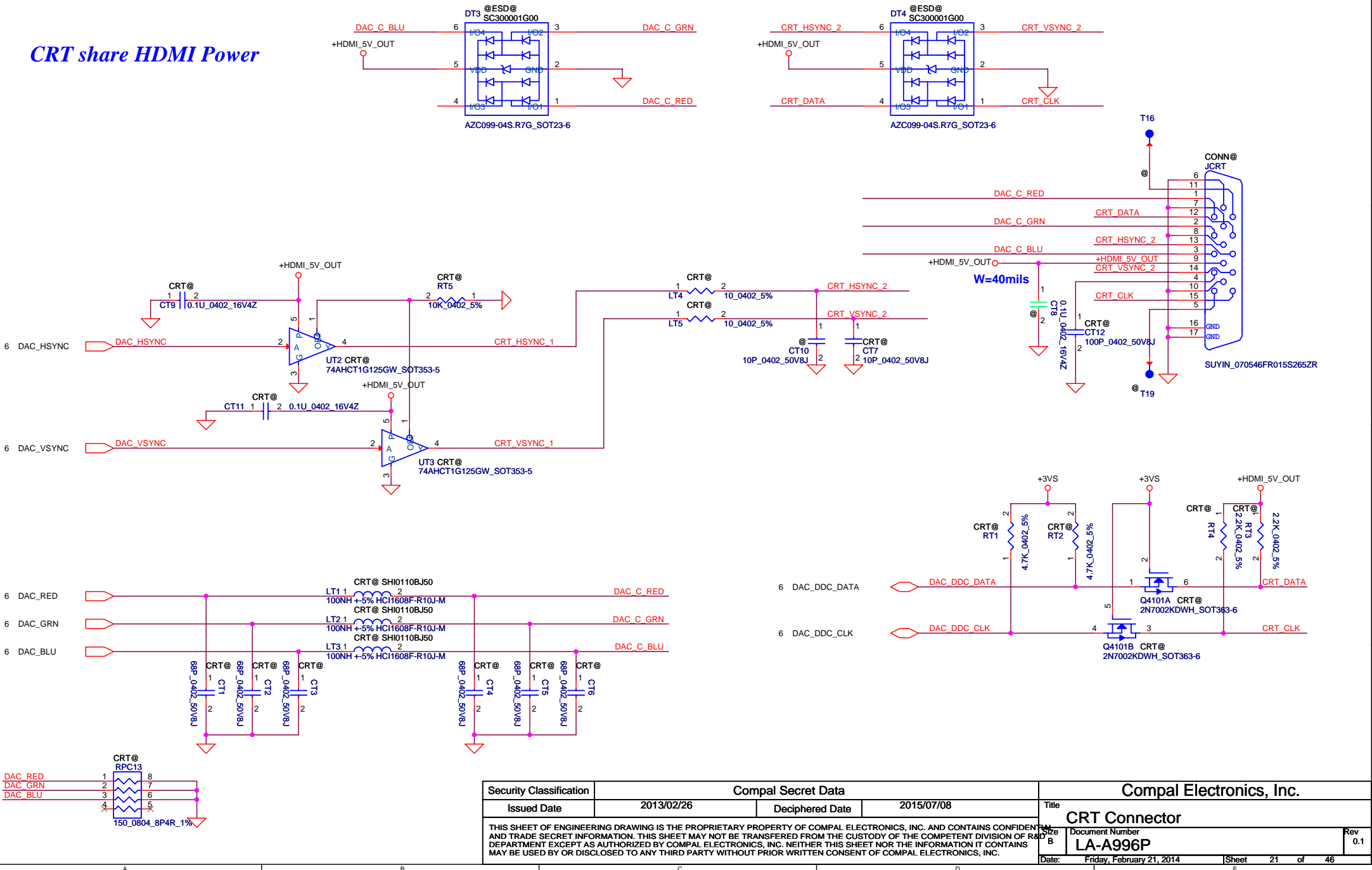


8/20 change HDMI Conn HDMI Conn.

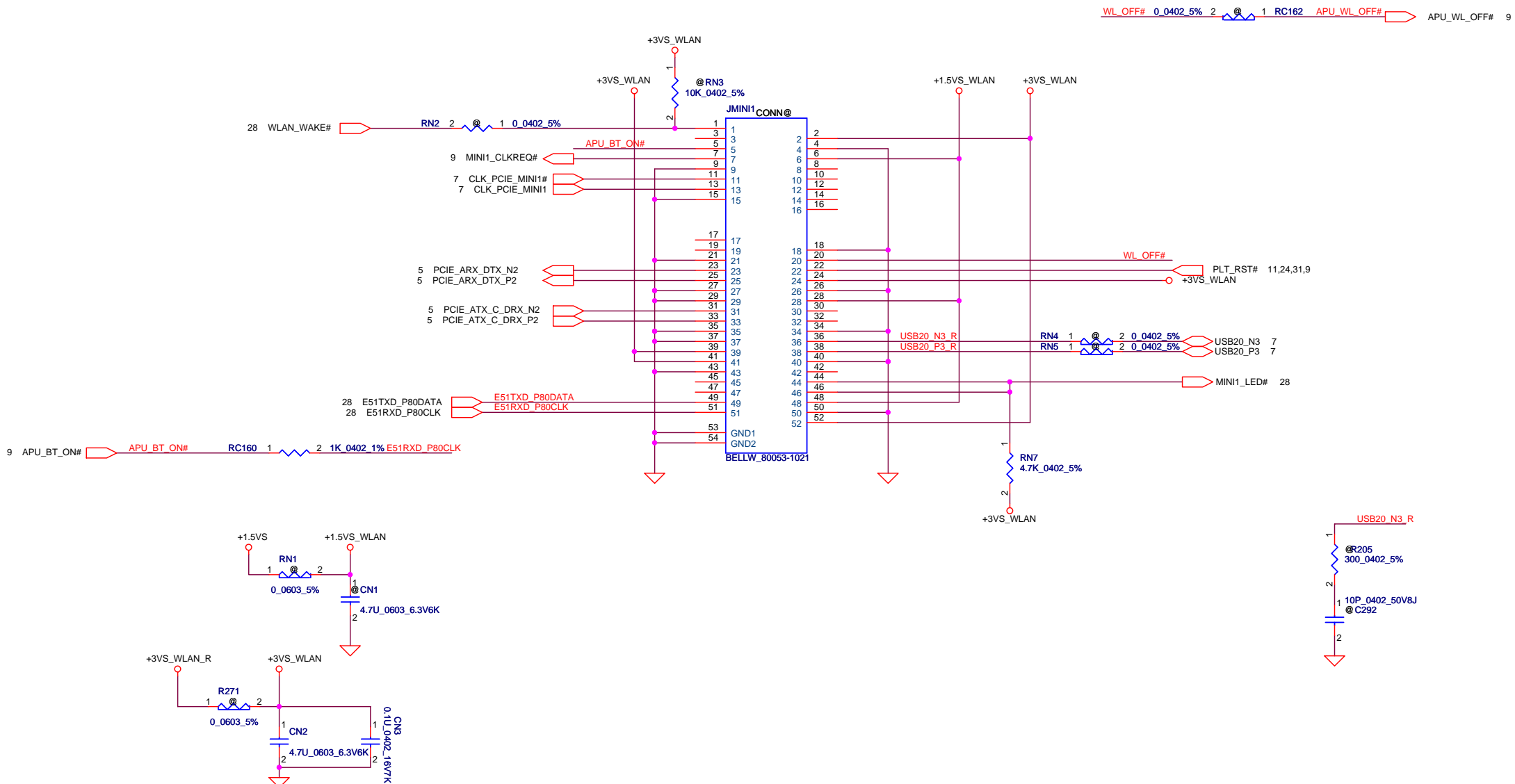


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CRT share HDMI Power

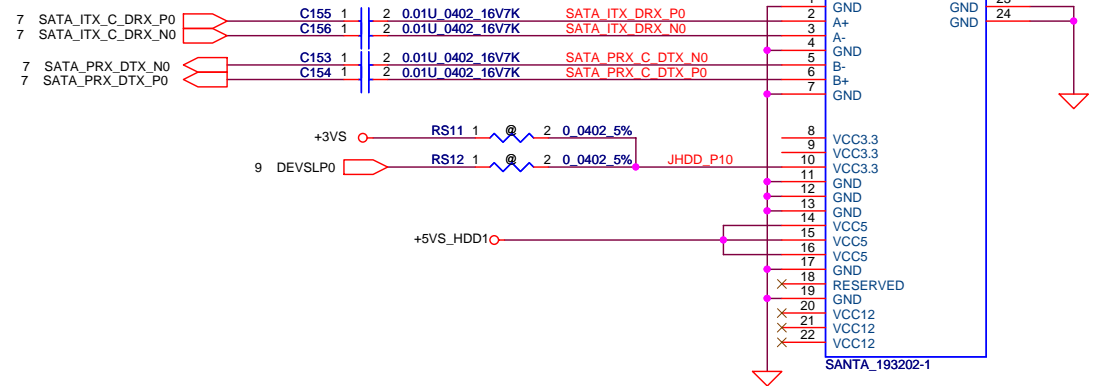
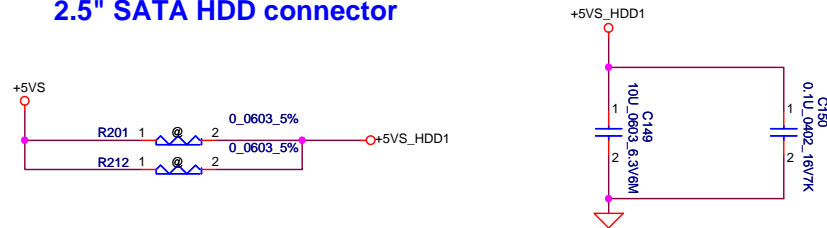


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				Document Number	Rev
				LA-A996P	0.1
				Date: Friday, February 21, 2014	Sheet 21 of 46

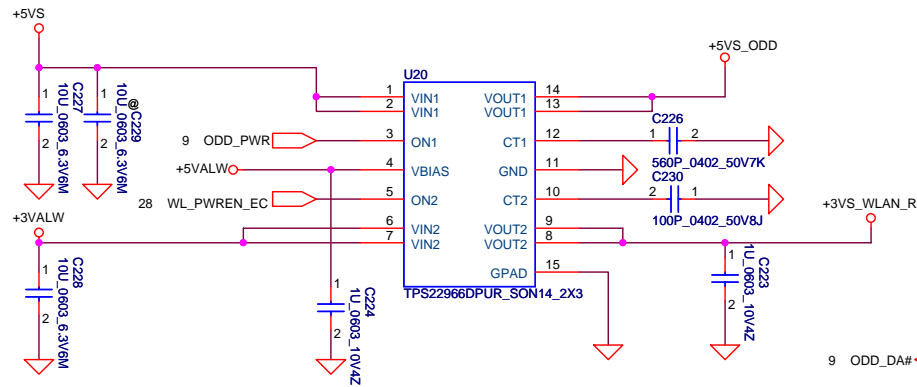


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						Document Number		0.1	
						LA-A996P			
						Date: Monday, February 17, 2014		Sheet 22 of 46	

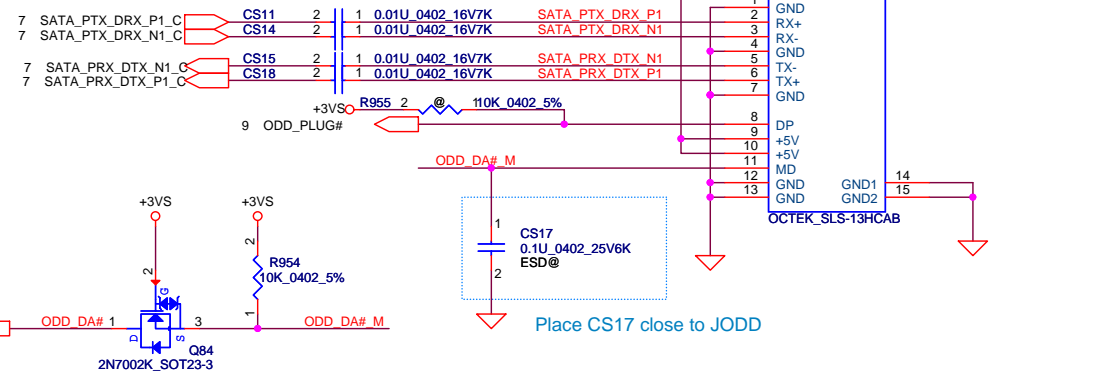
2.5" SATA HDD connector



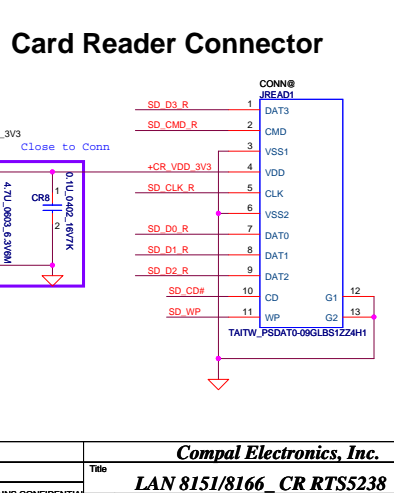
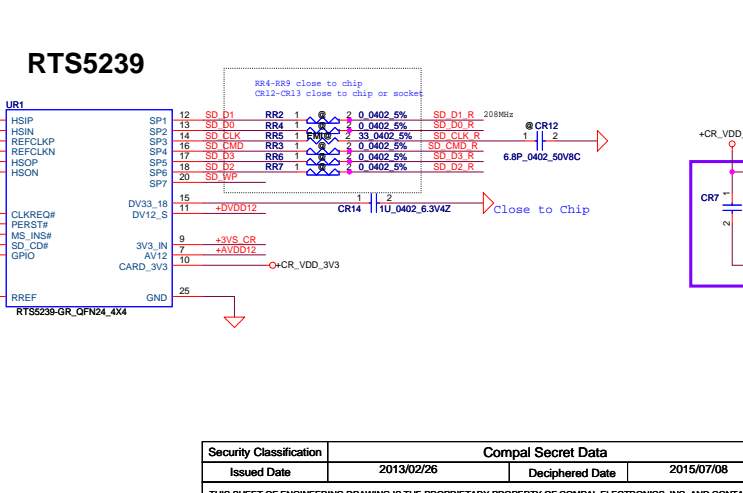
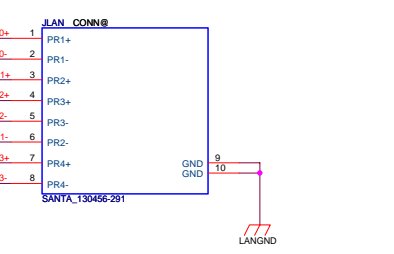
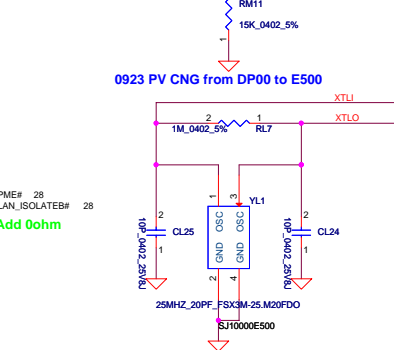
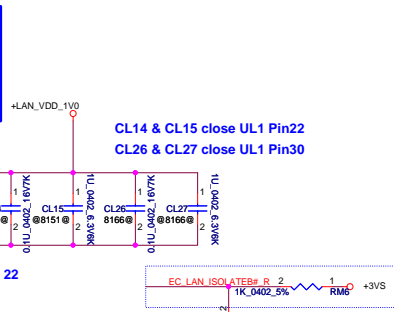
Change ODD Conn 08/22, check pin define



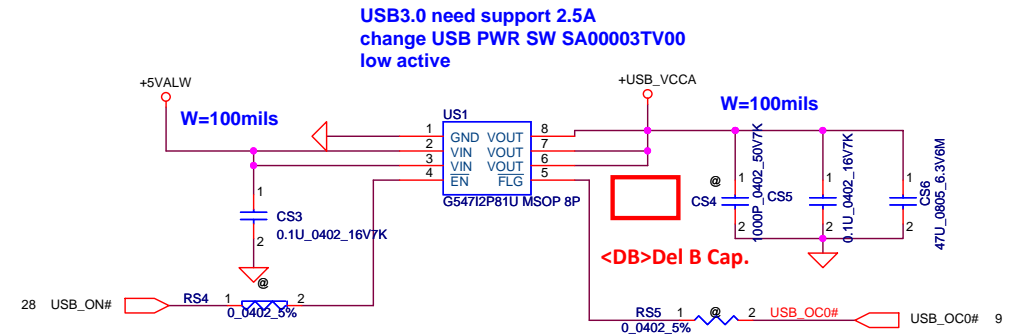
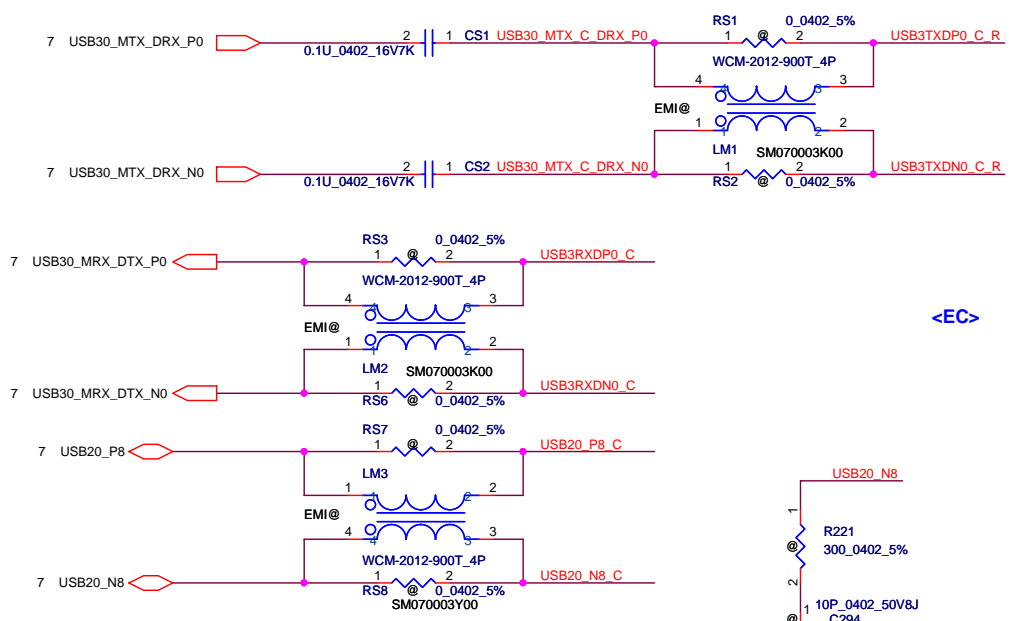
Place near ODD Connector



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				Date	Monday, February 17, 2014
				Sheet	23 of 46

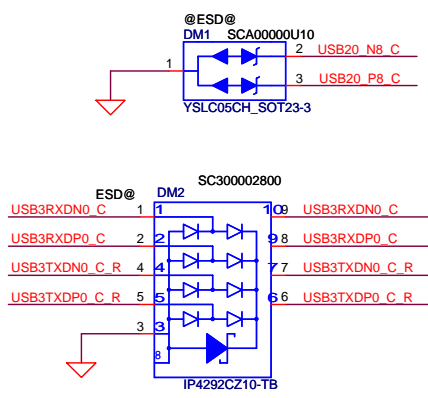


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					LA-A96P
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				Date:	Friday, February 21, 2014
				Sheet	24 of 46

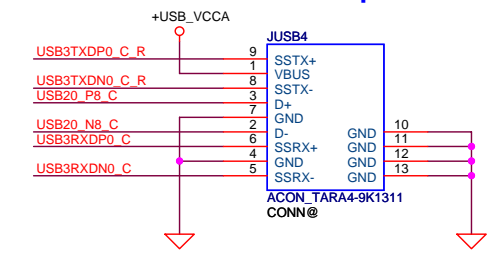


USB3.0 need support 2.5A
change USB PWR SW SA00003TV00
low active

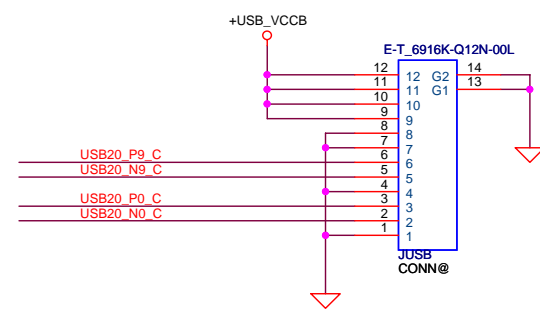
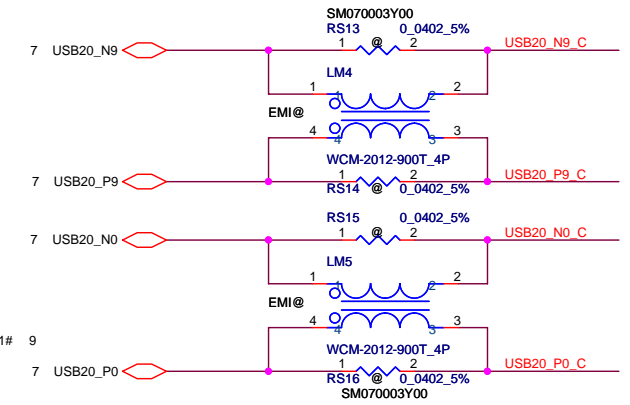
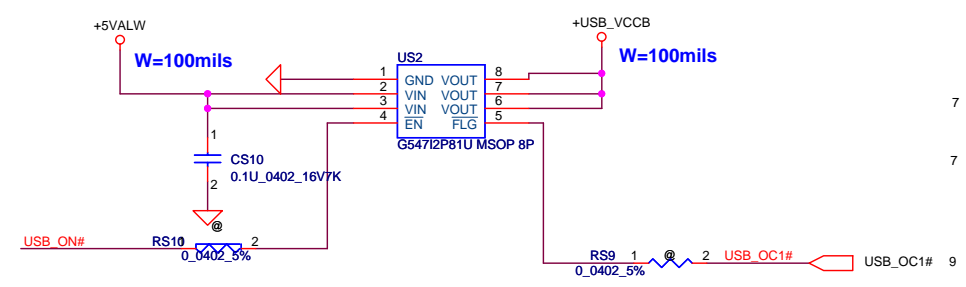
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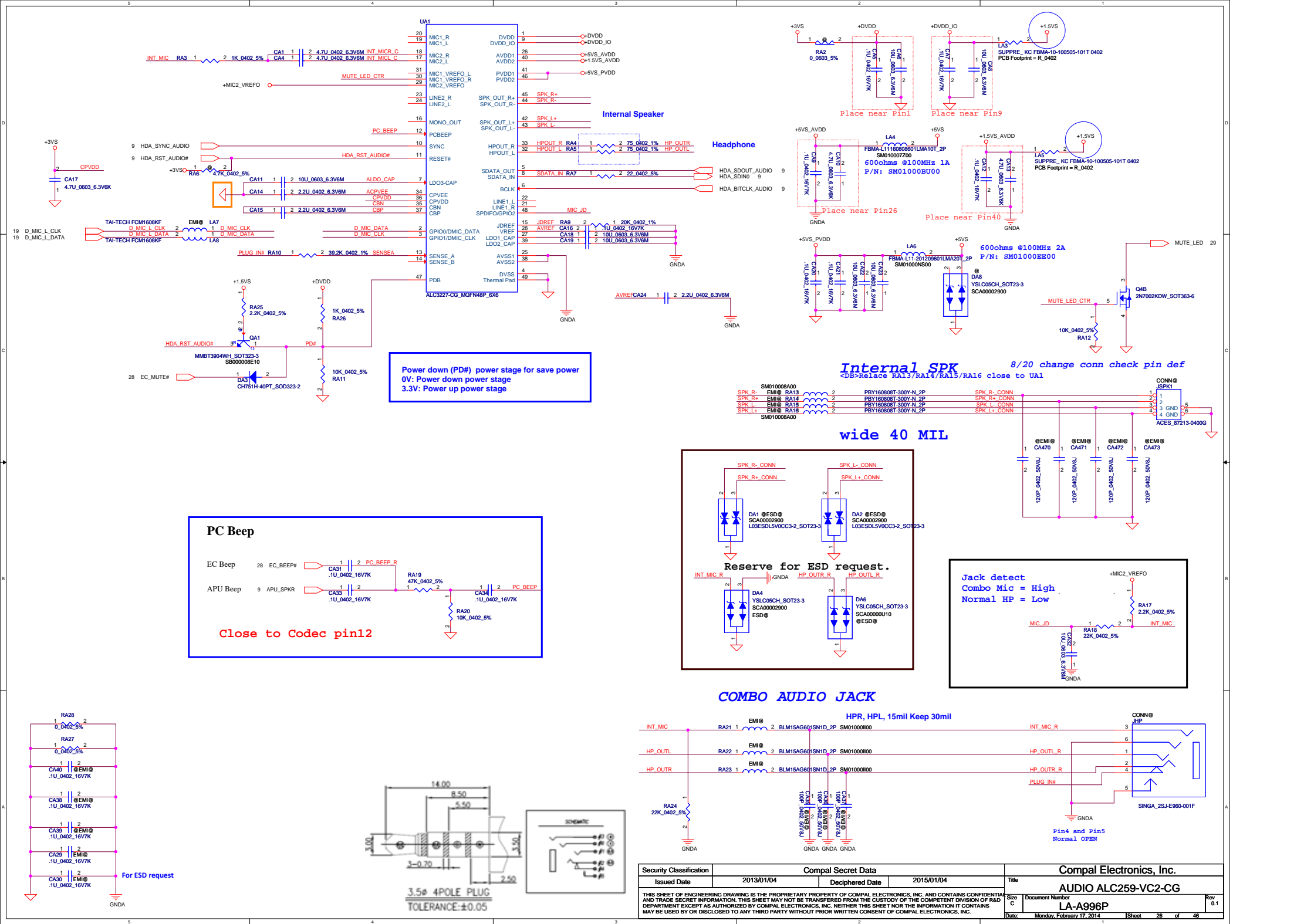
USB2.0/USB3.0 port 1

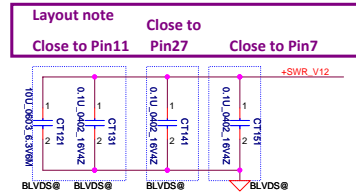
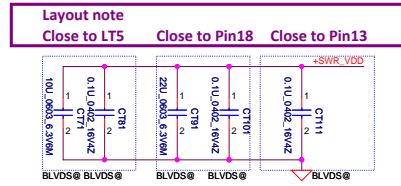
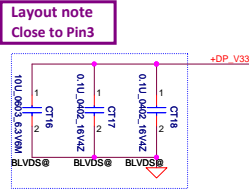


USB2.0 port x 2

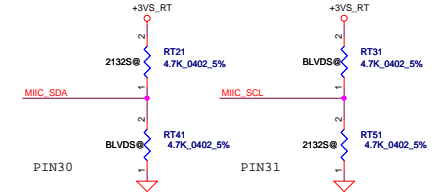


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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	USB 3.0/2.0 conn	
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				Date:	Friday, February 21, 2014	Sheet 25 of 46



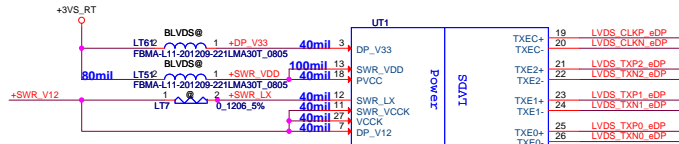


※ROM only mode : PIN 30 4.7k pull low, Pin 31 4.7k pull high.
EP mode : PIN 30 4.7k pull high, Pin 31 4.7k pull low.
EEPROM : PIN 30 4.7k pull high, Pin 31 4.7k pull high.
(※Default mode)

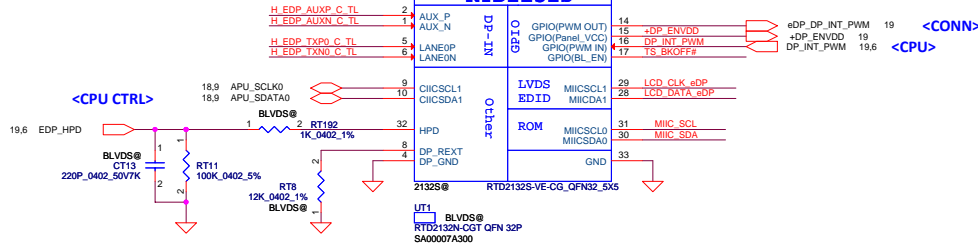


SWR / LDO Mode select		
	LDO	SWR
2132S	Do not support	mount LT7
2132N	Use 0 ohm	mount LT7

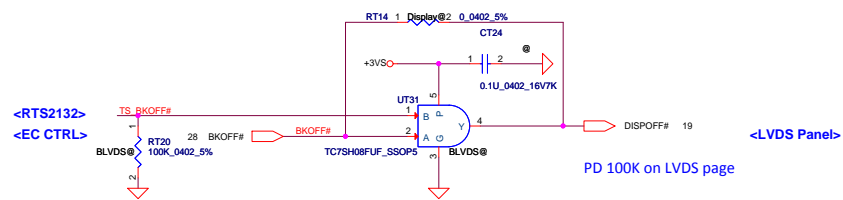
※ If use 2132N, please select LDO mode as default.



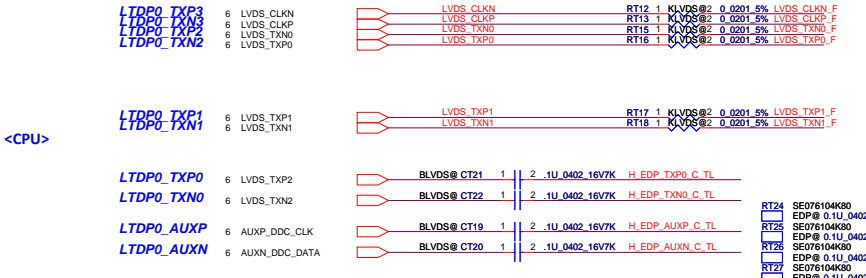
RTD2132S



Layout note
Close to Pin8



PD 100k on LVDS page



RP40 Close CPU

RT24~27 Close JLVDS conn

LVDS_TXP2	RT33	1	Display@2	0.0402_5%	LVDS_TXP2_K	RT24	1	KLVDs@2	0.0402_5%	LVDS_TXP2_F
LVDS_TXN2	RT34	1	Display@2	0.0402_5%	LVDS_TXN2_K	RT25	1	KLVDs@2	0.0402_5%	LVDS_TXN2_F
AUXP_DDC_CLK	RT35	1	Display@2	0.0402_5%	AUXP_DDC_CLK_K	RT26	1	KLVDs@2	0.0402_5%	LCD_CLK
AUXN_DDC_DATA	RT36	1	Display@2	0.0402_5%	AUXN_DDC_DATA_K	RT27	1	KLVDs@2	0.0402_5%	LCD_DATA

	PIN15
2132S	TL_ENVDD
BLVDS	+LCD_VDD *

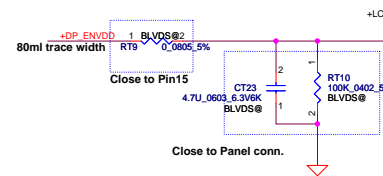
* Version R internal Power Switch, can output 1A, Rds(on)=0.2 ohm

PIN16	Accept voltage input (high level)
2132S	3.3V
BLVDS	1.5~3.3V

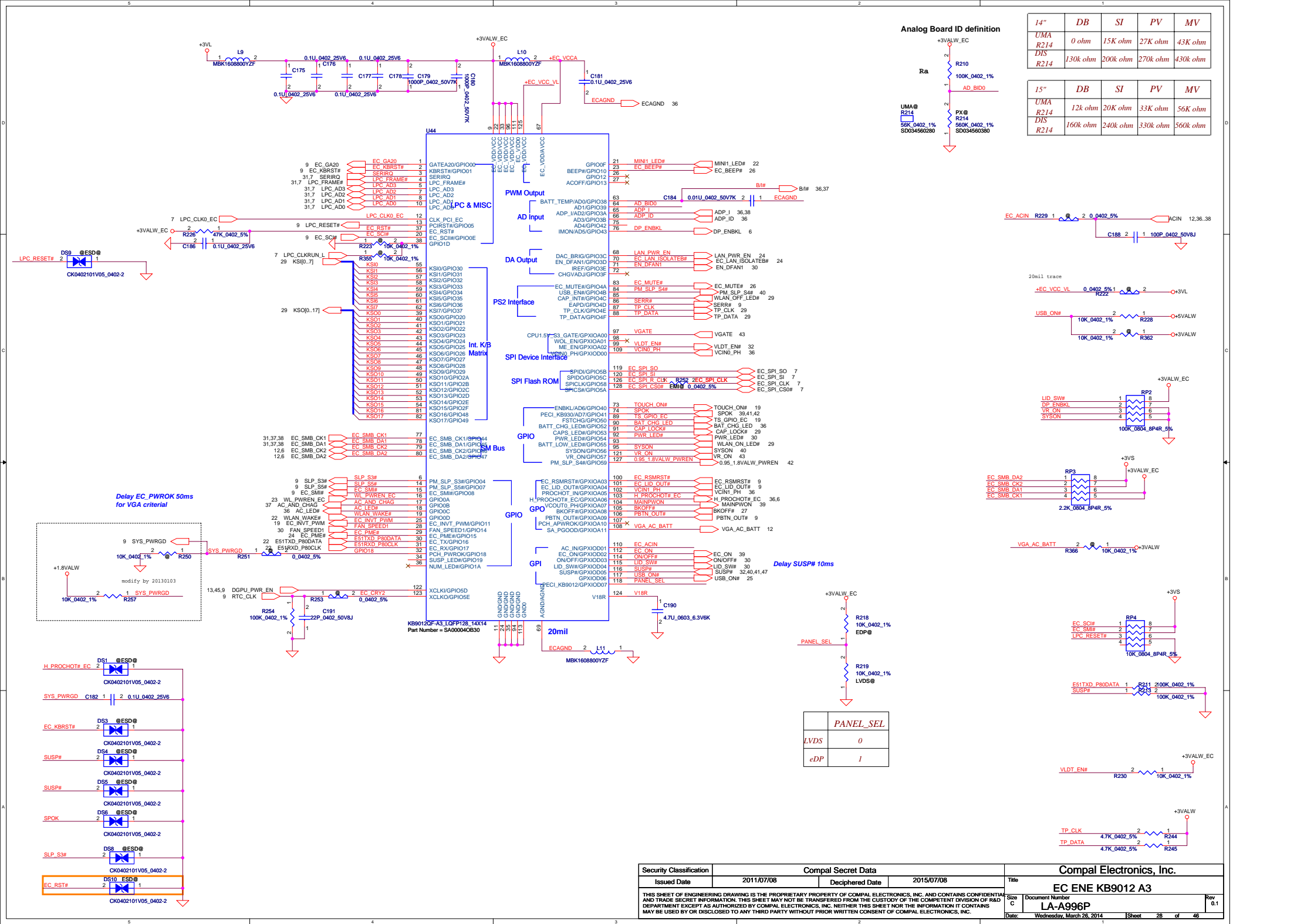
* Version R has internal level shifter, remove level shifter circuit on AMD platform

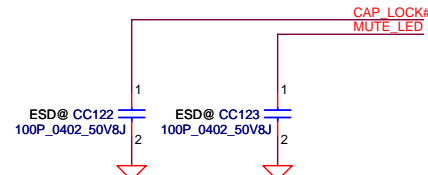
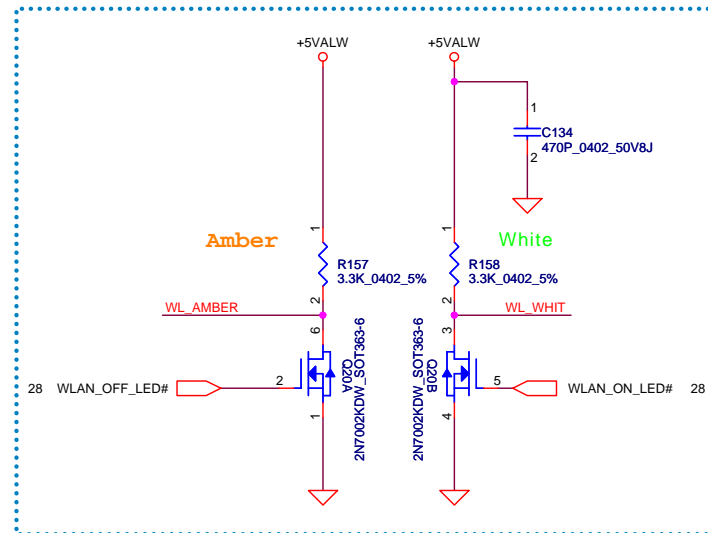
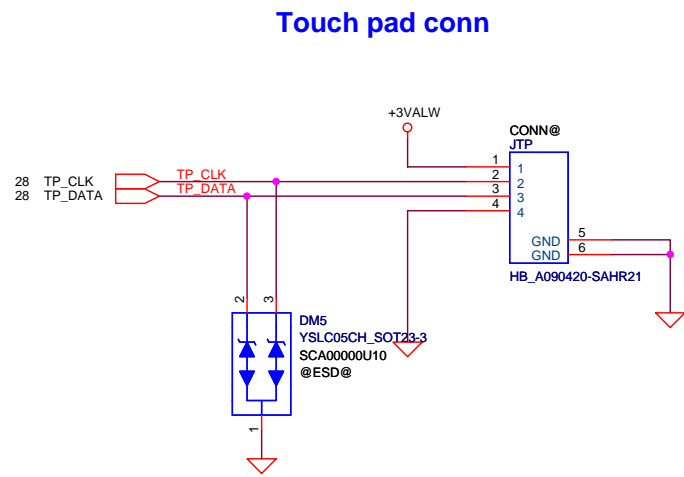
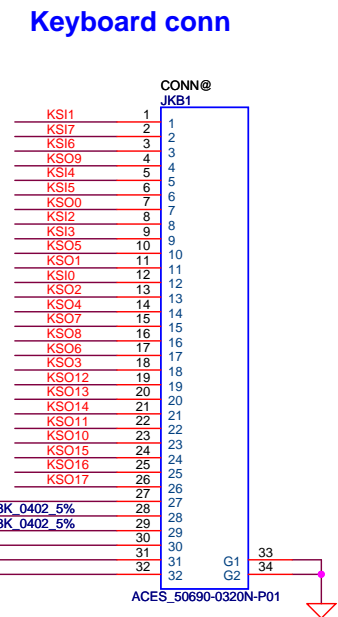
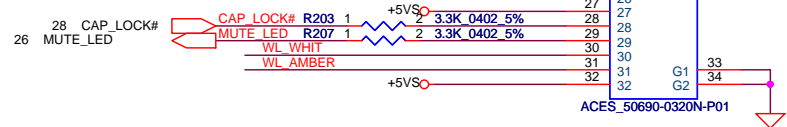
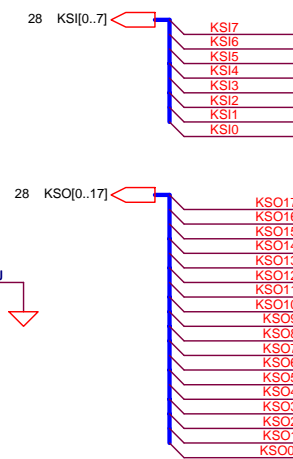
Different between 2132S and 2132N(BLVDS)	
2132S	2132N
1. Support SWR mode	1. Support LDO mode and SWR mode 2. Internal ROM 3. Support LCD_VDD(internal Power switch) 4. Integrates Level shifter

<CONN>



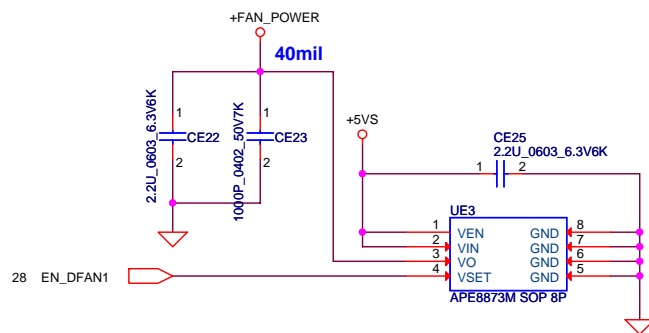
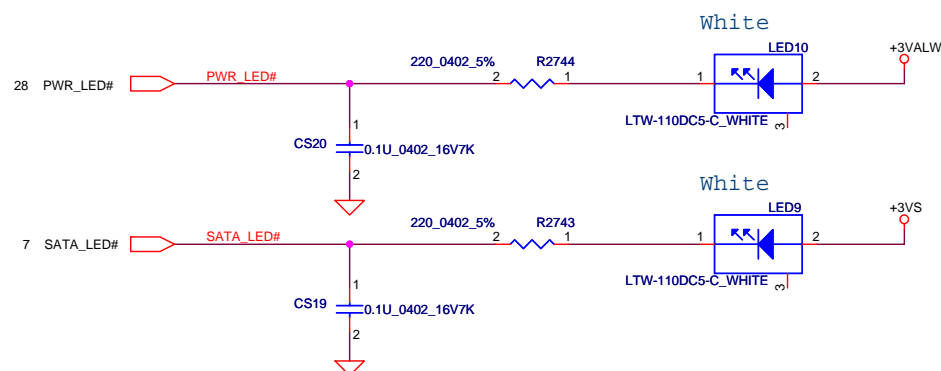
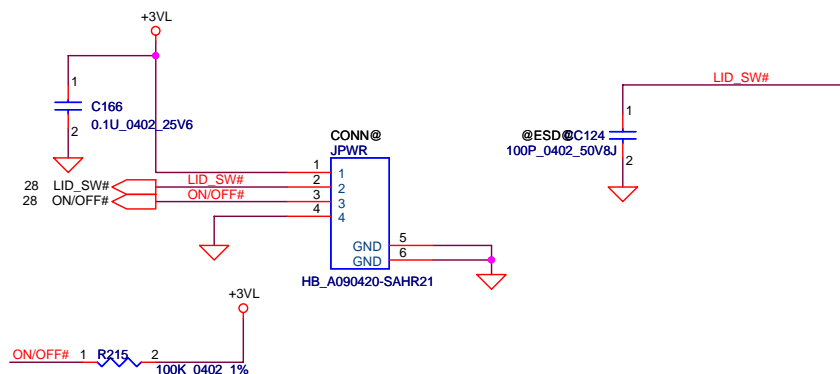
Security Classification		Compal Secret Data		Title	
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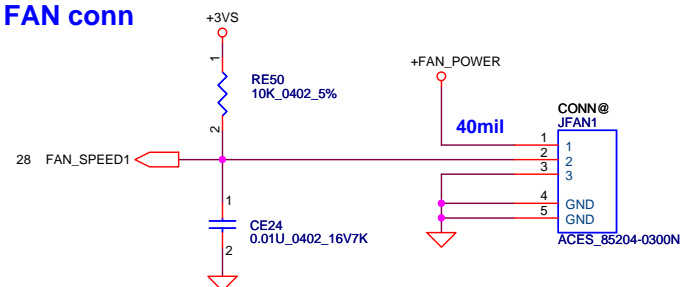


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				Document Number	0.1
				Date	Monday, February 17, 2014
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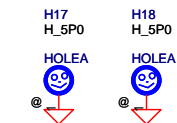
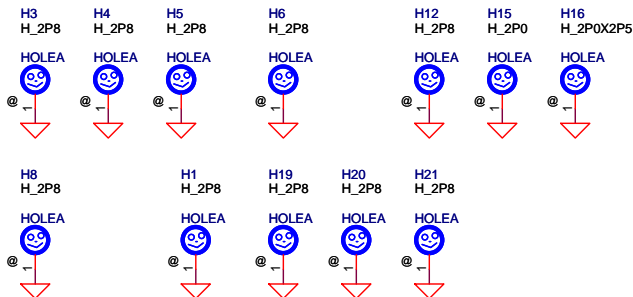
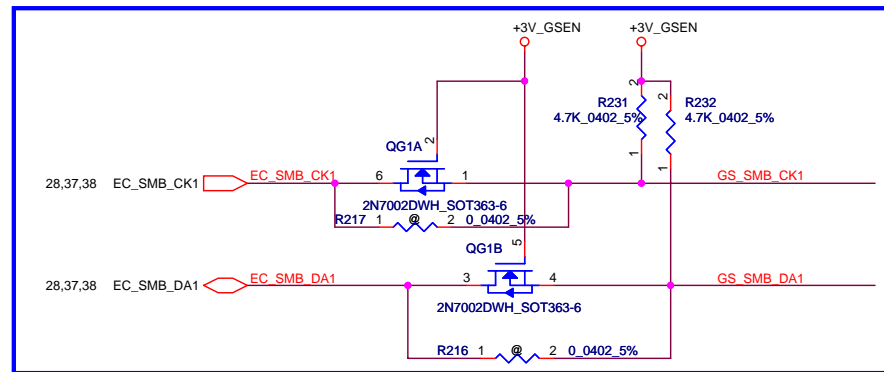
Power Button Connector



FAN conn



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[illegible]

PM1.2

The schematic diagram illustrates the connection of the U69 microcontroller to the LPC1114 microcontroller. The U69 is connected to the LPC1114 via a series of pins, including LAD0-LAD3, LCLK, LFRAME#, LRESET#, SERIRQ, CLKRUN#, PP, XTALO, XTALI, GPIO2, GPIO, NC, GND, and VDD. The diagram shows the connection of various components, including capacitors C1053, C1054, C1055, C1052, and C1051, and resistors R1380, R1409, R1412, and R1413. The diagram is labeled "PM1.2" and "TPM SLB 9656 TT 1.2".

U69 Pin Connections:

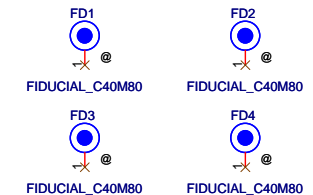
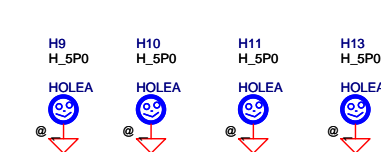
- 24: VDD
- 19: VDD
- 10: VDD
- 5: VSB
- 26: LAD0
- 23: LAD1
- 20: LAD2
- 17: LAD3
- 21: LCLK
- 22: LFRAME#
- 16: LRESET#
- 27: SERIRQ
- 15: CLKRUN#
- 7: PP
- 28: XTALO
- 8: XTALI
- 14: XTALO
- 13: XTALI
- 2: GPIO2
- 6: GPIO
- 1: NC
- 3: NC
- 12: NC
- 4: GND
- 11: GND
- 18: GND
- 25: GND

LPC1114 Pin Connections:

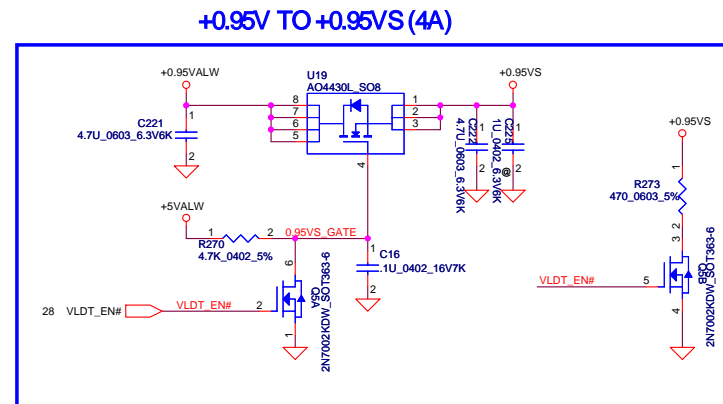
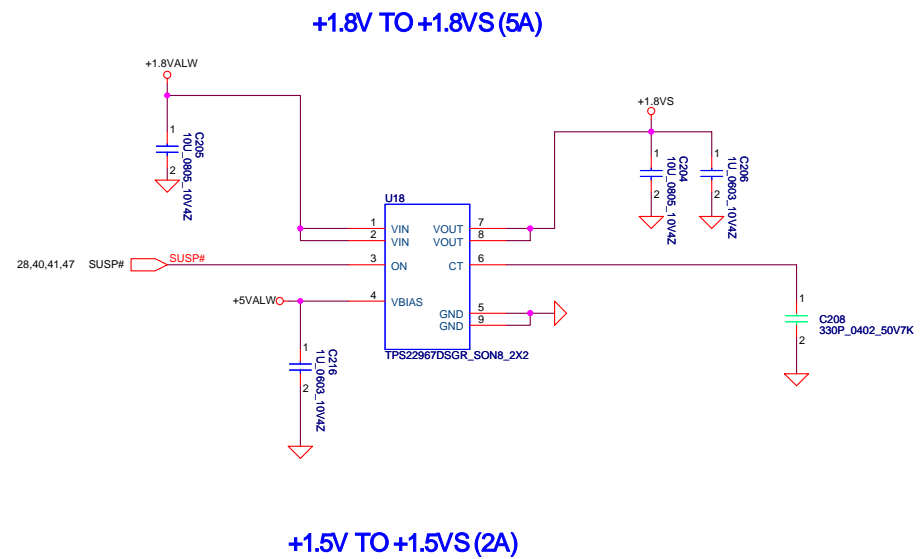
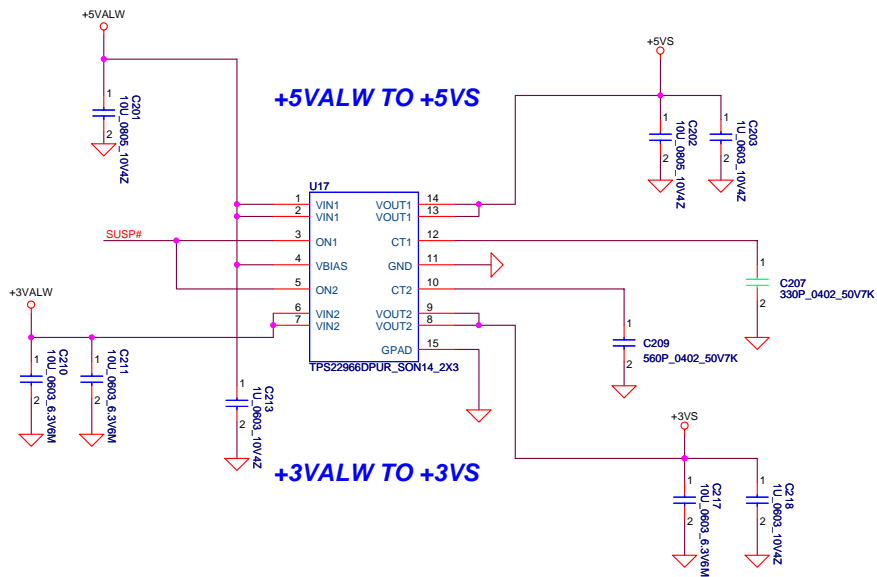
- 28.7: LPC_AD0
- 28.7: LPC_AD1
- 28.7: LPC_AD2
- 28.7: LPC_AD3
- 7: LPC_CLK1
- 28.7: LPC_FRAME#
- 11, 22, 24.9: PLT_RST#
- 28.7: SERIRQ

Other Components:

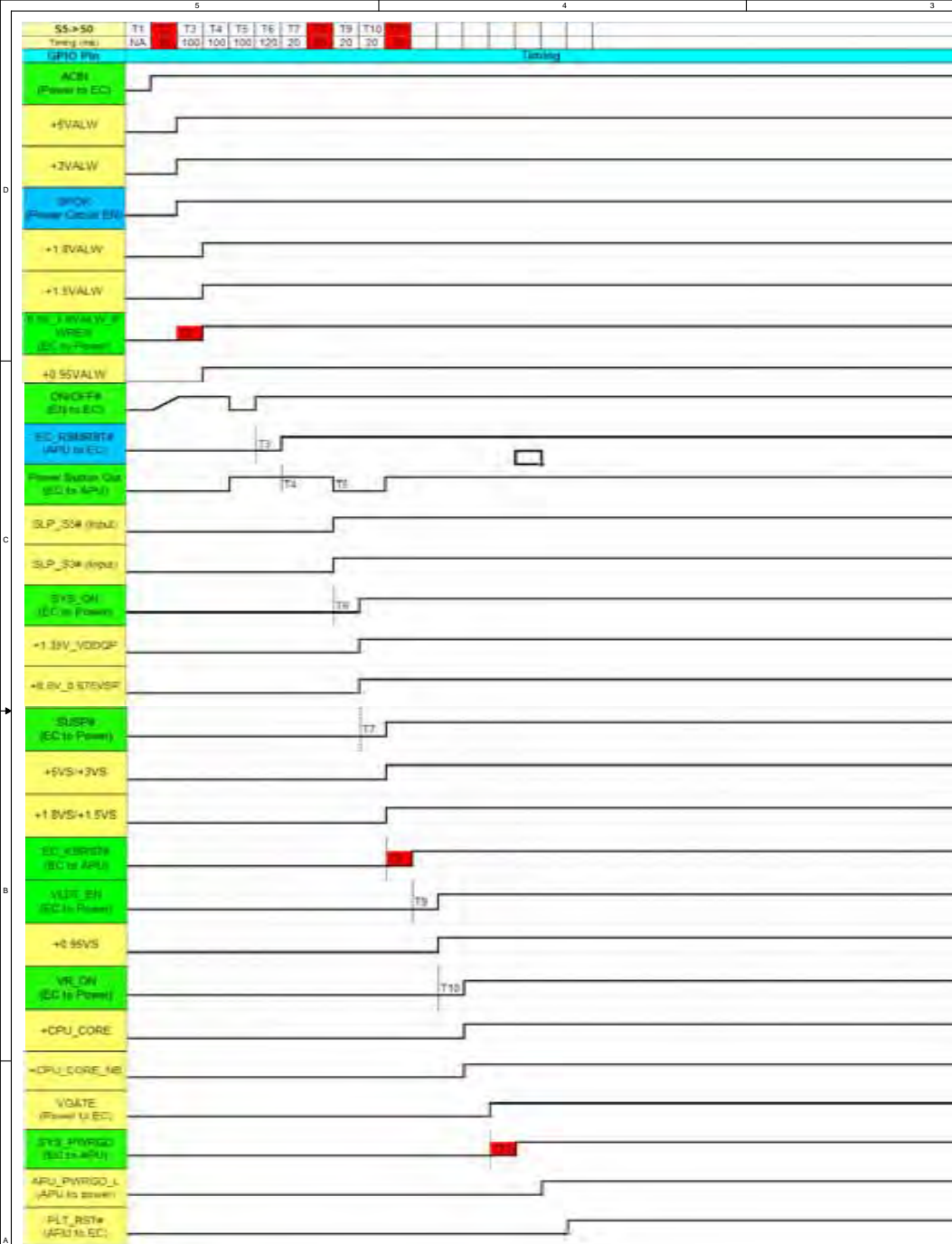
- C1053, C1054, C1055: 0.1uF 20V 0% capacitors
- C1052: 0.1uF 0402 16V4Z capacitor
- R1380: 4.7K 0402 5% resistor
- R1409: 0.0402 5% resistor
- R1412: 0.0402 5% resistor
- R1413: 0.0402 5% resistor



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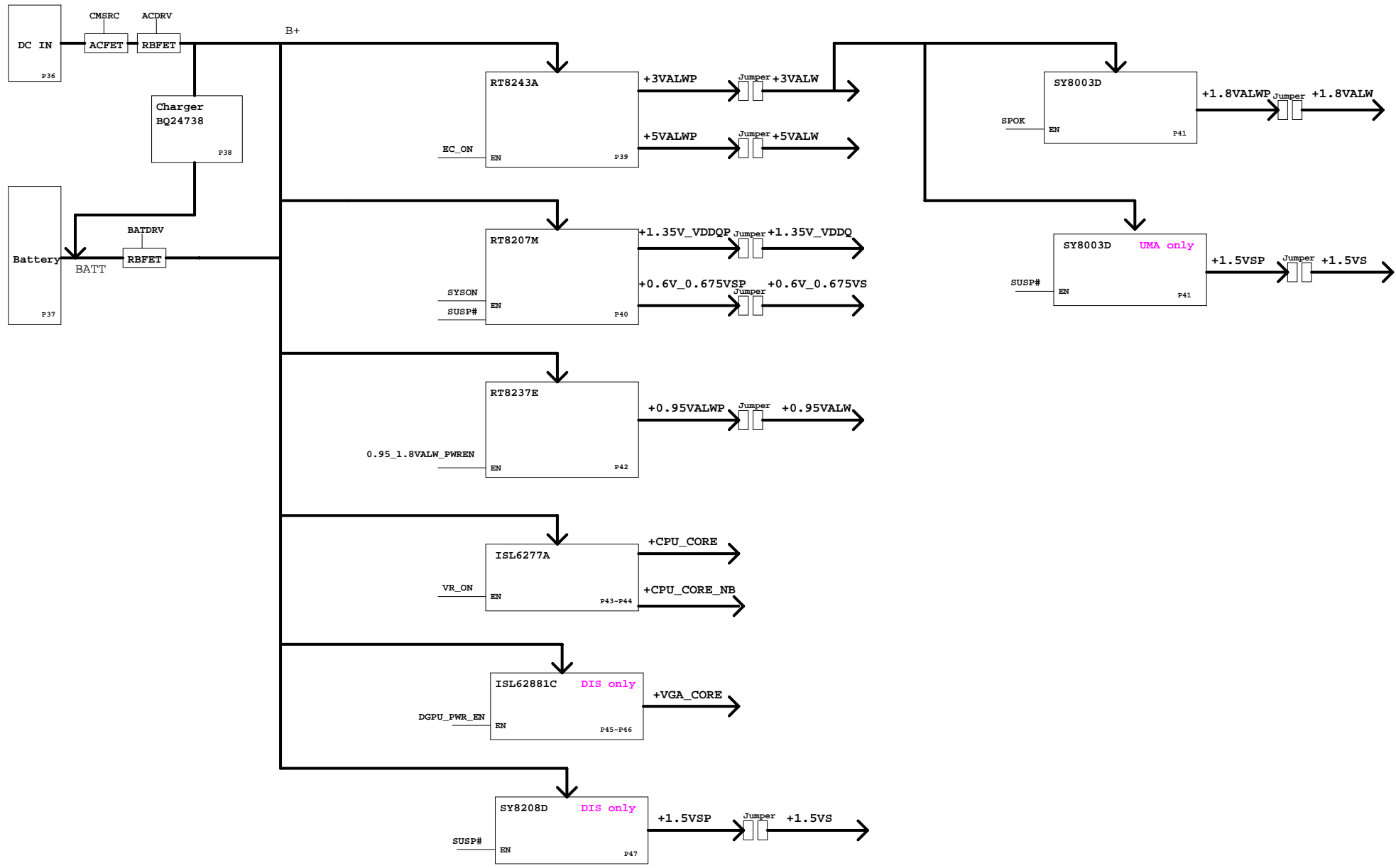
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Issued Date		2013/02/26		Deciphered Date		2015/07/08		Title	
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						Document Number		Rev	
						Custpm		0.1	
Date: Monday, February 17, 2014						Sheet		32 of 46	



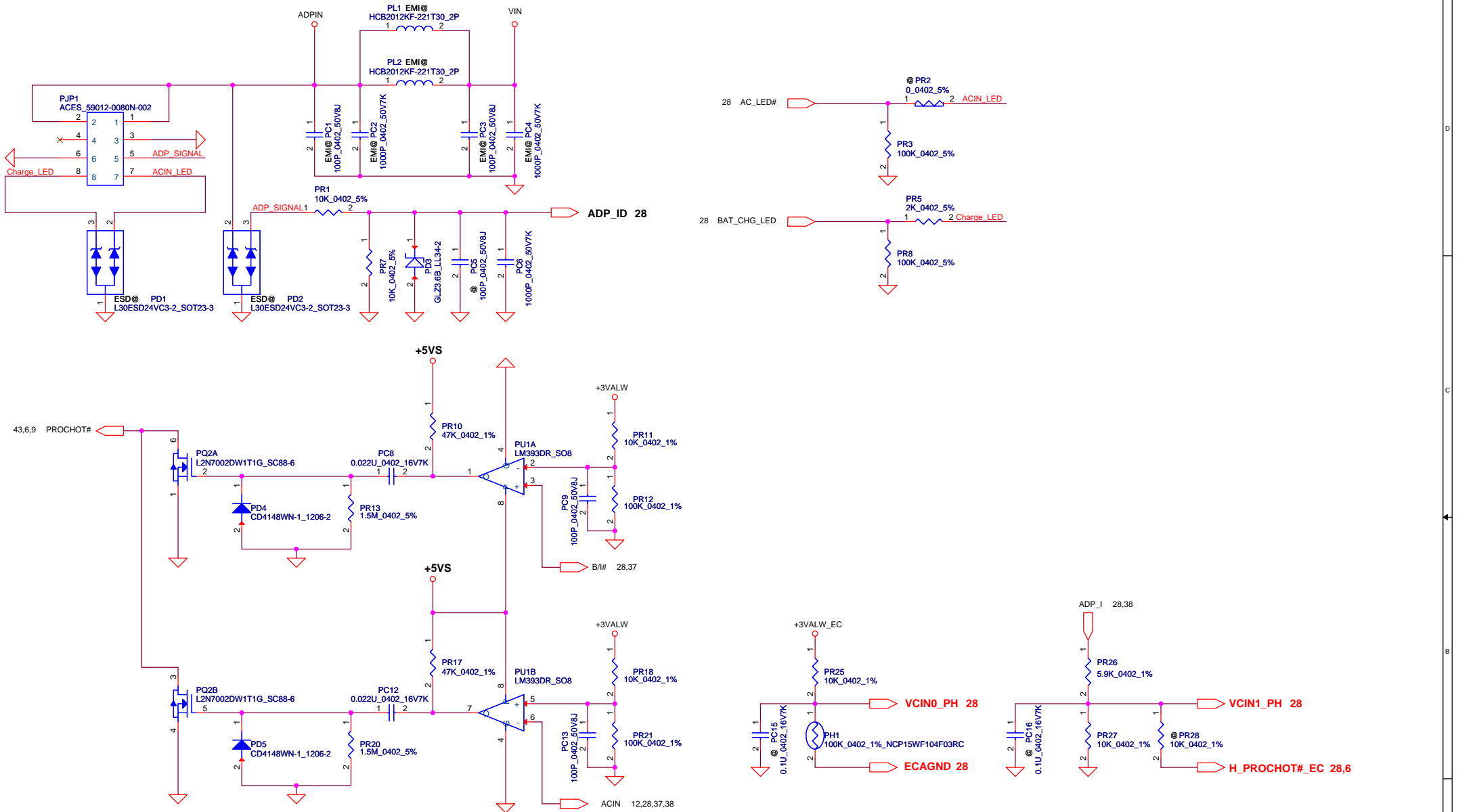
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	Power sequence
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5	4	3	2	1
D				D
C				C
B				B
A				A

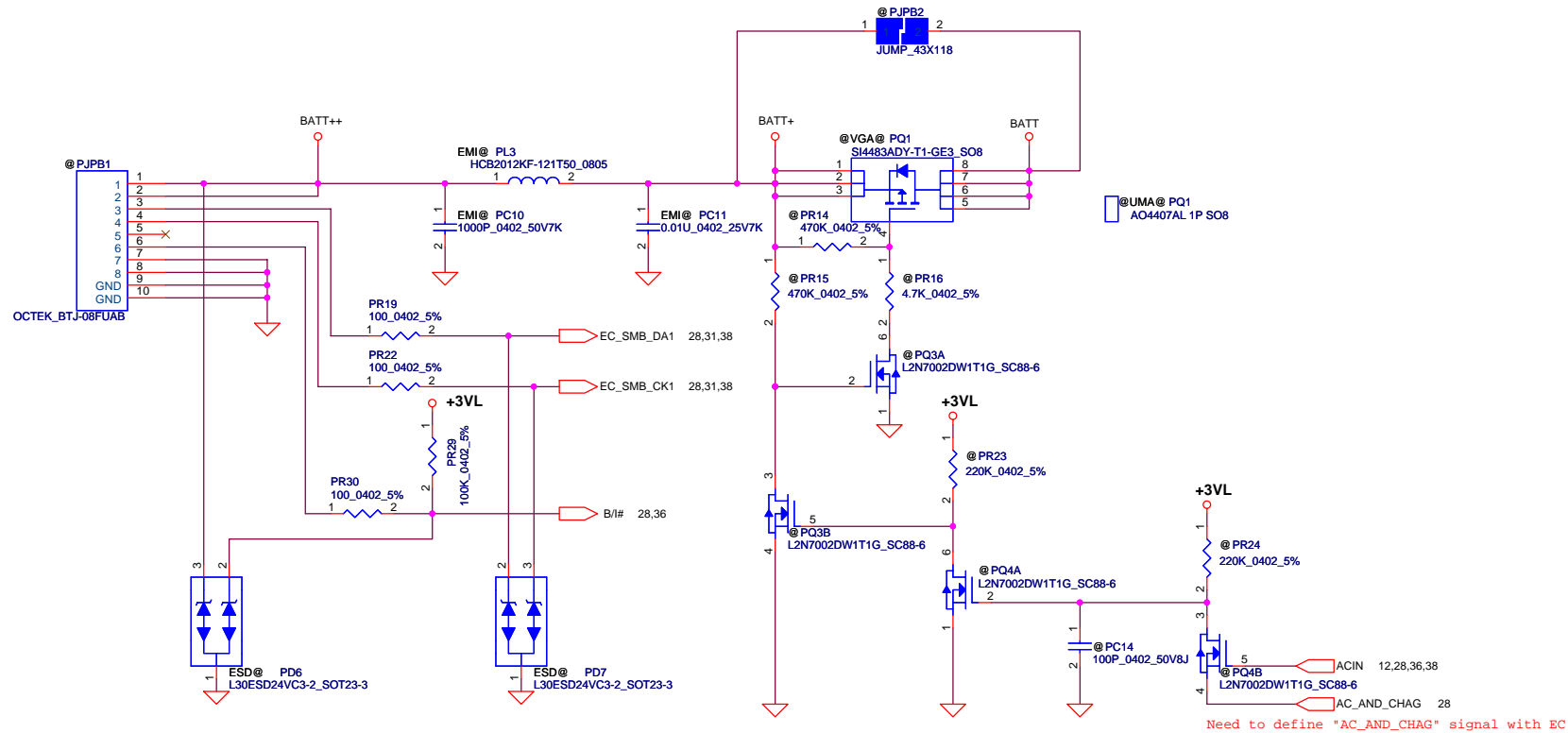
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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	EE Change list
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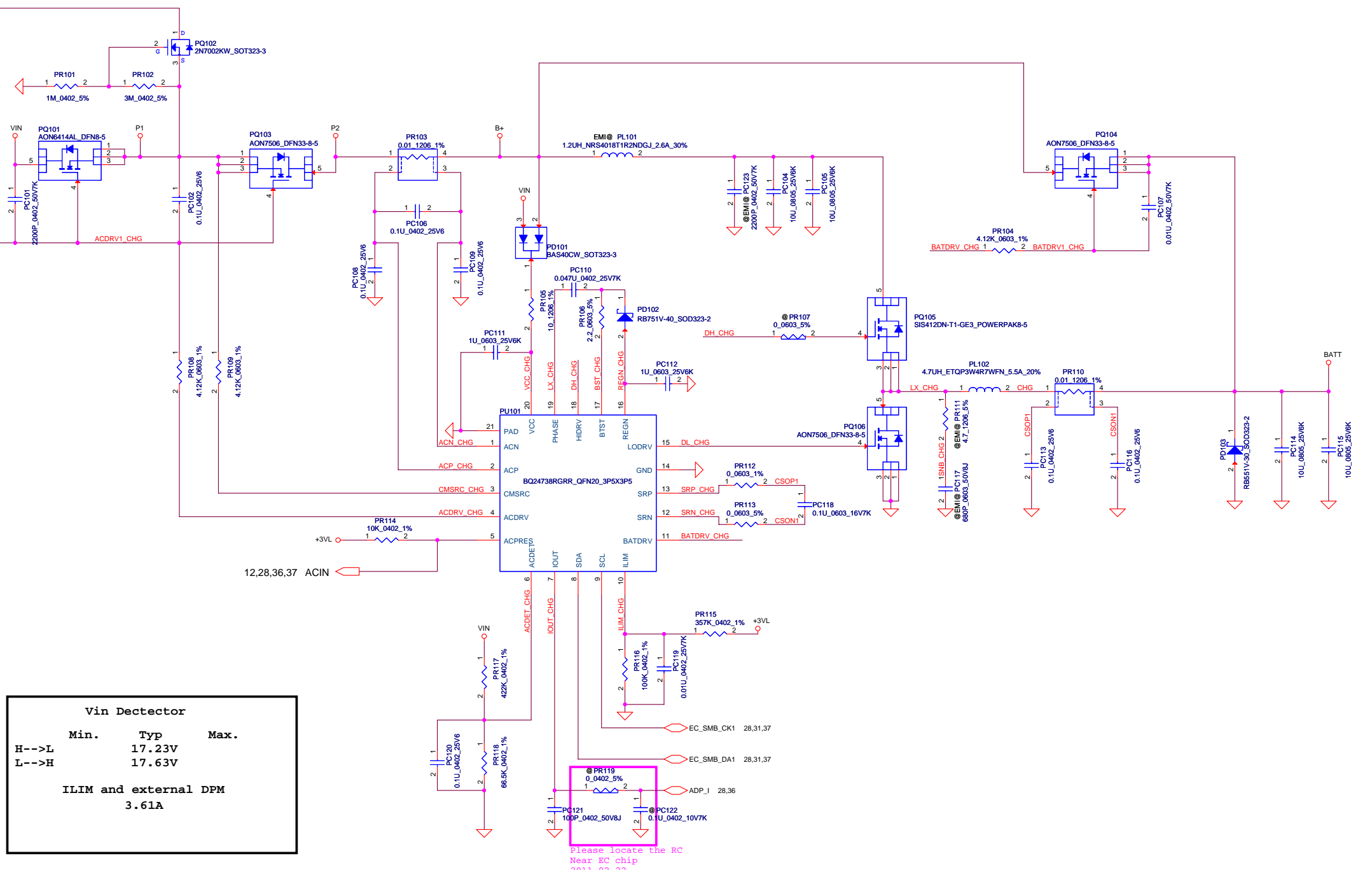
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Issued Date	2012/04/03	Deciphered Date	2014/12/31	Title	Power Block Diagram
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Date:		Tuesday, February 25, 2014		Sheet	35 of 47



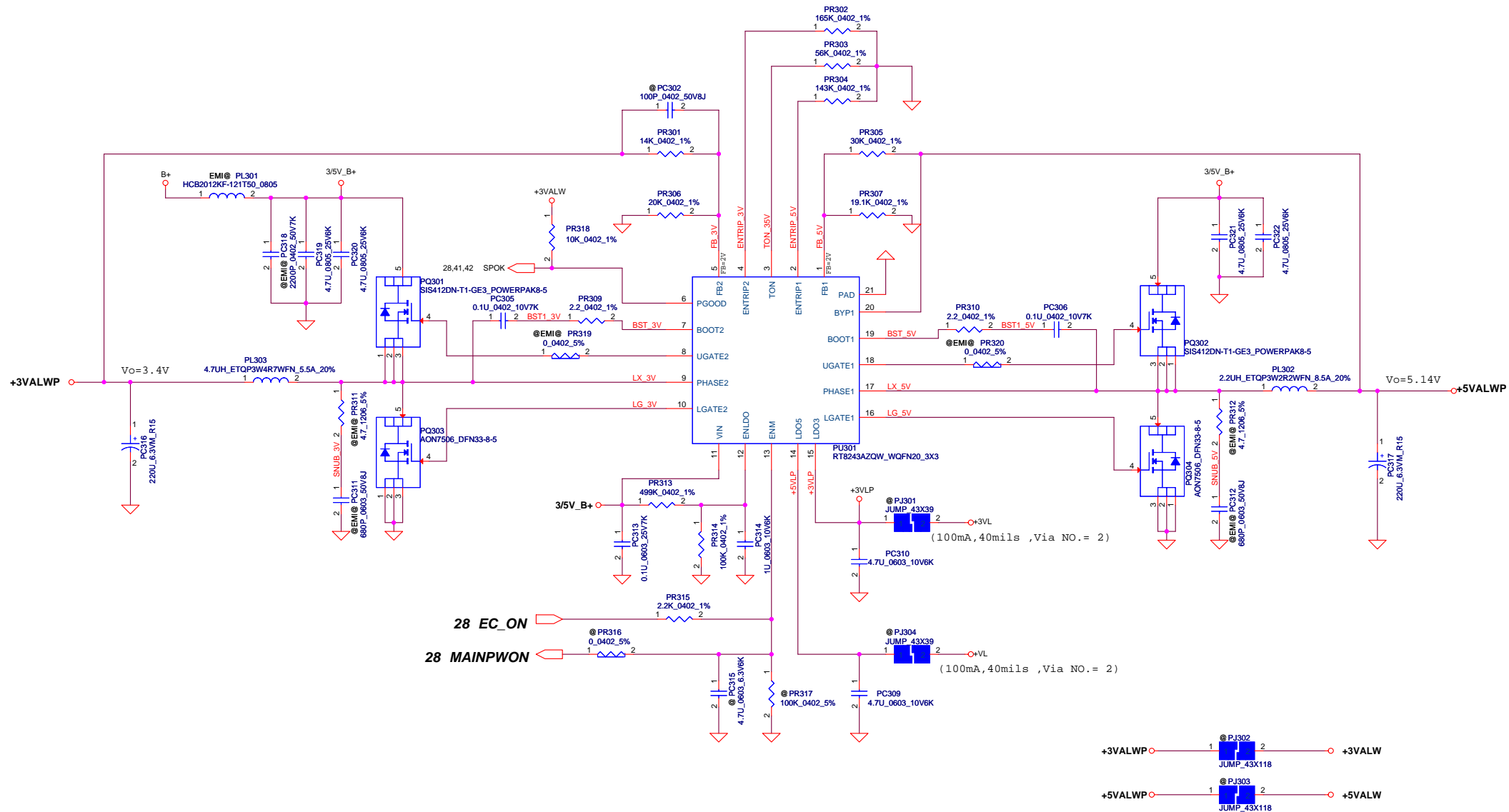
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Date: Tuesday, February 25, 2014				Sheet	36 of 47



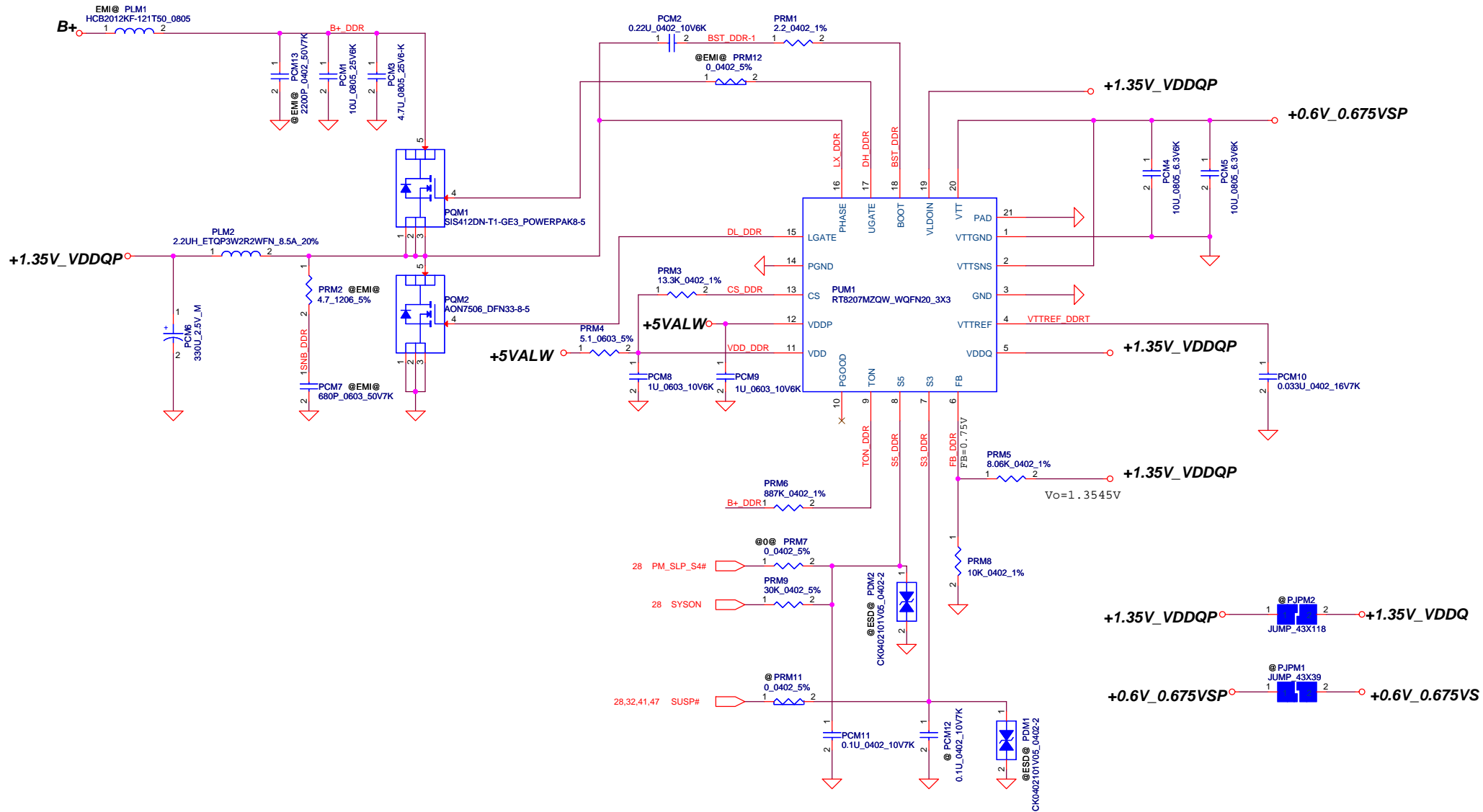
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Issued Date	2013/08/07	Deciphered Date	2016/08/06	Title	BATT Conn
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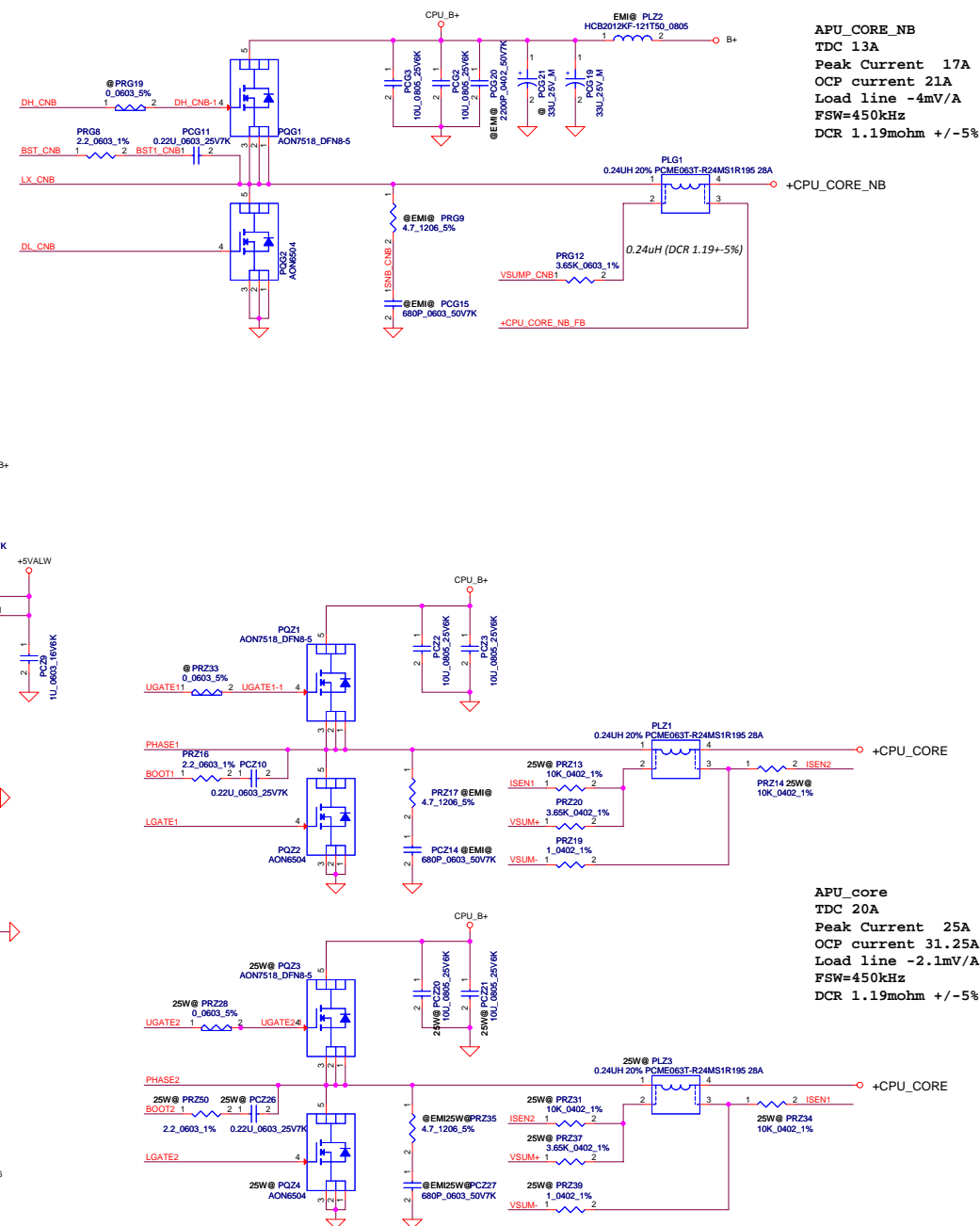
Vin Detector			
	Min.	Typ	Max.
H-->L		17.23V	
L-->H		17.63V	
ILIM and external DPM			
3.61A			



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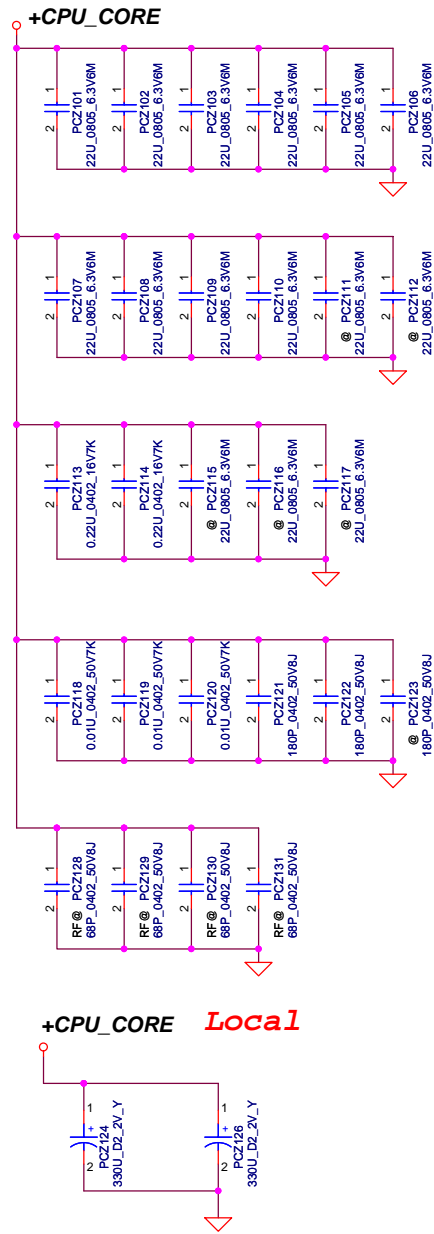


APU_CORE_NB
TDC 13A
Peak Current 17A
OCP current 21A
Load line -4mV/A
FSW=450kHz
DCR 1.19mohm +/-5%

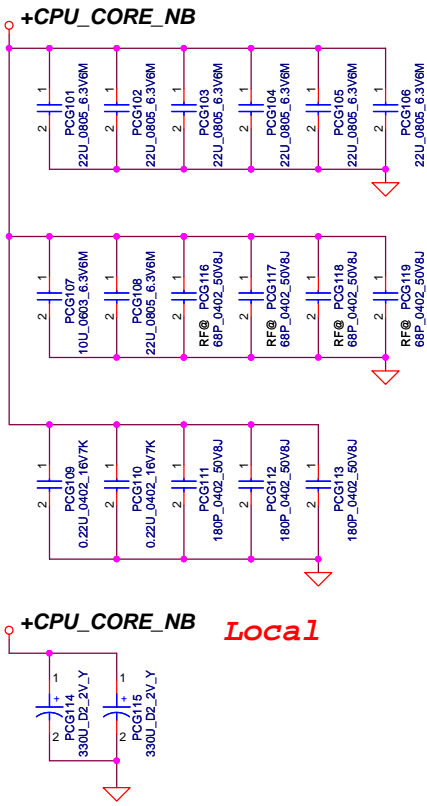
APU_core
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Peak Current 25A
OCP current 31.25A
Load line -2.1mV/A
FSW=450kHz
DCR 1.19mohm +/-5%

Security Classification	Compal Secret Data			<i>Compal Electronics, Inc.</i> CPU CORE/CPU CORE NB		
Issued Date	2012/11/07	Deciphered Date	2012/11/07	Title		
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+CPU_CORE

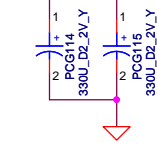


+CPU_CORE_NB

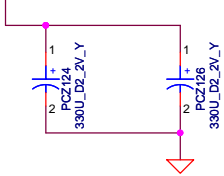


	330uF/9m	22uF/0805	0.22uF/0402	10uF/0603	0.01uF/0402	180pF/0402
+CPU_CORE	2	10	2		3	2
+CPU_CORE_NB	2	7	2	1		3

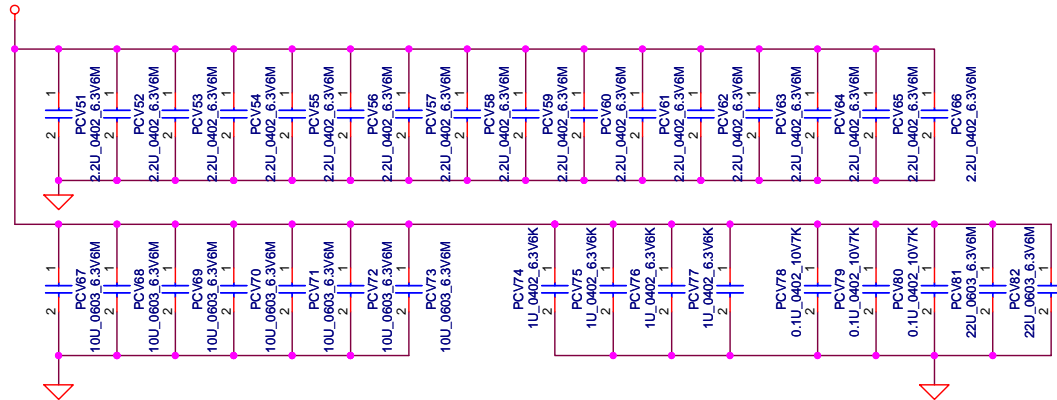
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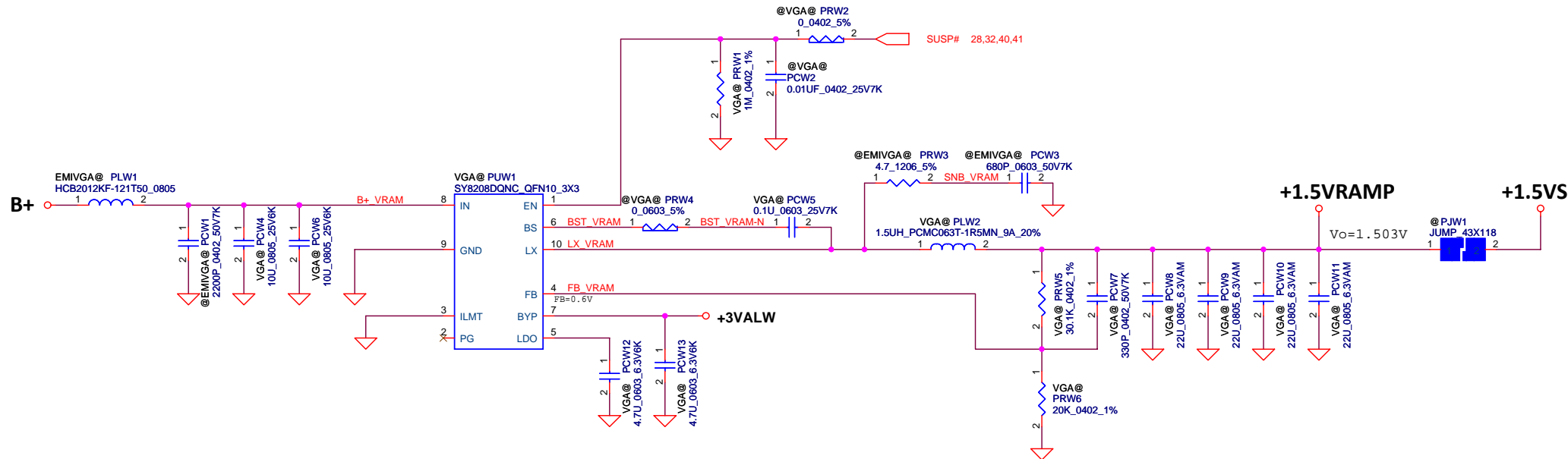
+CPU_CORE Local



+VGA_CORE



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Issued Date	2013/08/07	Deciphered Date	2016/08/06	Title	VRAM Power
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