

Compal Confidential

B5W1S MB Schematic Document

LA-D671P

Rev: 1.0

2016.01.18

Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2016/07/18	Deciphered Date	2016/11/10	Title	Cover Sheet
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HDMI Conn.



page 22

eDP



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eDP

DDI

DDI2
HDMI x 4 lanes

Intel Kabylake U

Kabylake U
Kabylake PCH-LP(MCP)
(KBL-U_2+2)

Processor

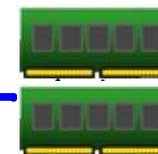
Dual Core + GT2

Memory BUS

Dual Channel

1.2V DDR4 1866/2133

Interleaved Memory



page 19

260pin DDR4-SO-DIMM X2

page 20

USB 3.0
conn x1
USB port 1

page 28

USB 2.0
conn x2
USB port2,3
Port3 on Sub/B

page 28

CMOS
Camera
USB port 7

page 21

Card Reader
RTS5170
SD only
USB port 8
on Sub/B

page 28

Flexible IO

LAN(GbE)

PCIe 1.0
2.5GT/s
port 6PCIe 1.0
2.5GT/s
port 5LAN(GbE)
Realtek 8111H
page 23

RJ45 conn.



page 23

SATA3.0
6.0 Gb/s
port 7
(SATA0)SATA HDD
Conn.

page 26

SATA3.0
6.0 Gb/s
port 8
(SATA1)SATA CDROM
Conn.

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15W
1356pin BGA
page 07~18

LPC/eSPI BUS

CLK=24MHz

ENE
KB9022
page 29

Int.KBD



page 30

Touch Pad
PS2 (from EC) / I2C (from SOC)

page 30

USBx8 48MHz

HD Audio

3.3V 24MHz

SPI

SPI ROM
64Mb
page 9HDA Codec
ALC233
page 25Int. Speaker
page 25Int. AMIC
page 25UAI
on Sub/B
page 28Touch
Screen
I2C (PORT1)
USB port 6
page 21NGFF
WLAN
USB port 5

page 24

RTC CKT.

page 15

Power On/Off CKT

page 30

DC/DC Interface CKT

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Power Circuit DC/DC

page 33~43

Sub Board

LS-D671
IO/B

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Fan Control
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Vcc	3.3V +/- 5%					
Ra	100K +/- 1%					
Board ID	Rb	VBID min	VBID typ	VBID max	EC AD3	PCB Revision
0	0	0 V	0 V	0.300 V	0x00 - 0x13	0.1
1	12K +/- 1%	0.347 V	0.345 V	0.360 V	0x14 - 0x1E	0.1
2	15K +/- 1%	0.423 V	0.430 V	0.438 V	0x1F - 0x25	
3	20K +/- 1%	0.541 V	0.550 V	0.559 V	0x26 - 0x30	
4	27K +/- 1%	0.691 V	0.702 V	0.713 V	0x31 - 0x3A	
5	33K +/- 1%	0.807 V	0.819 V	0.831 V	0x3B - 0x45	
6	43K +/- 1%	0.978 V	0.992 V	1.006 V	0x46 - 0x54	
7	56K +/- 1%	1.169 V	1.185 V	1.200 V	0x55 - 0x64	

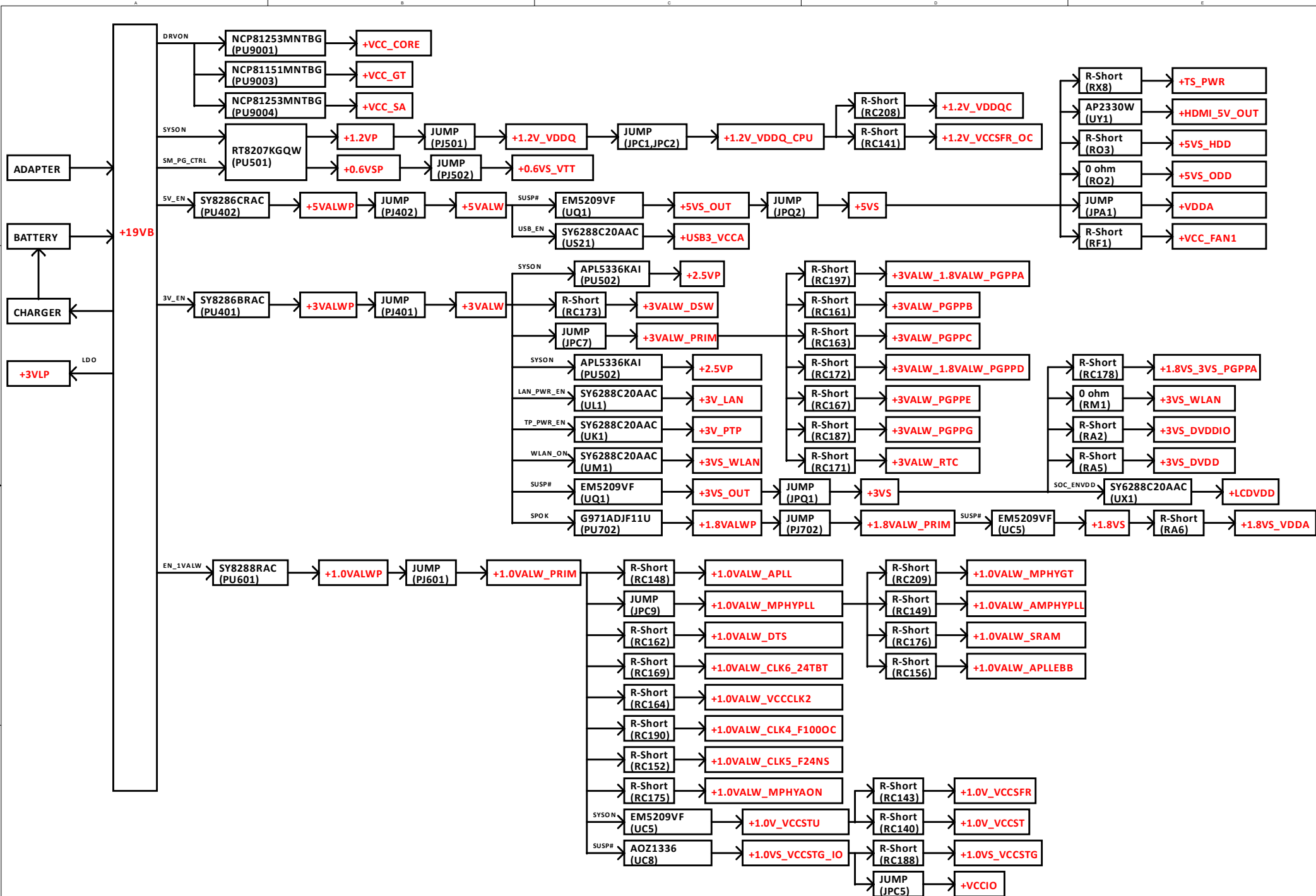
BOM Option Table		BOM Option Table	
Item	BOM Structure	Item	BOM Structure
Unpop	@		
Connector	CONN@		
For Acer BYOC	BYOC@	SkyLake plat f or m	SKL@
No Acer BYOC	NBYOC@	KabyLake plat f or m	KBL@
CODEC(ALC255)	255@		
CODEC(ALC233)	233@		
LPC MODE for EC	LPC@		
ESPI MODE for EC	ESPI@		
For Intel CMC	CMC@		
EMI requirement	EMI@		
EMI requirement depop	@EMI@		
ESD requirement	ESD@		
ESD requirement depop	@ESD@	CPU Code	QKJW@
LAN(8111GUS)	8111GUS@		
LAN(8111H)	8111H@		
RF requirement	RF@		

[illegible]

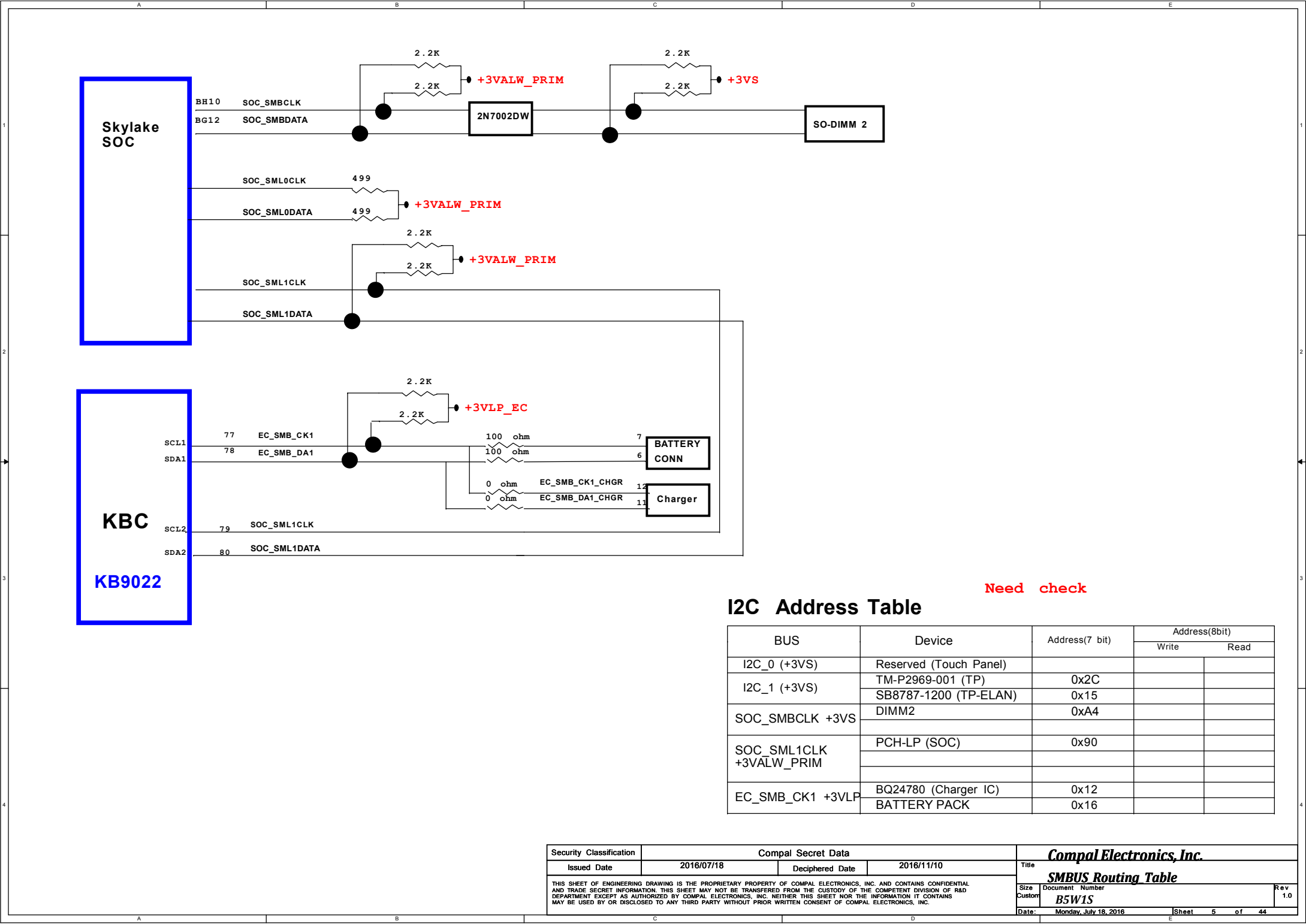
<i>SIGNAL</i>	<i>SLP_S3#</i>	<i>SLP_S4#</i>	<i>SLP_S5#</i>	<i>+VALW</i>	<i>+V</i>	<i>+VS</i>	<i>Clock</i>
<i>S0 (Full ON)</i>	<i>HIGH</i>	<i>HIGH</i>	<i>HIGH</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>
<i>S3 (Suspend to RAM)</i>	<i>LOW</i>	<i>HIGH</i>	<i>HIGH</i>	<i>ON</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>
<i>S4 (Suspend to Disk)</i>	<i>LOW</i>	<i>LOW</i>	<i>HIGH</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>
<i>S5 (Soft OFF)</i>	<i>LOW</i>	<i>LOW</i>	<i>LOW</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>

[illegible]

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Security Classification		Compal Secret Data		Compal Electronics, Inc.	
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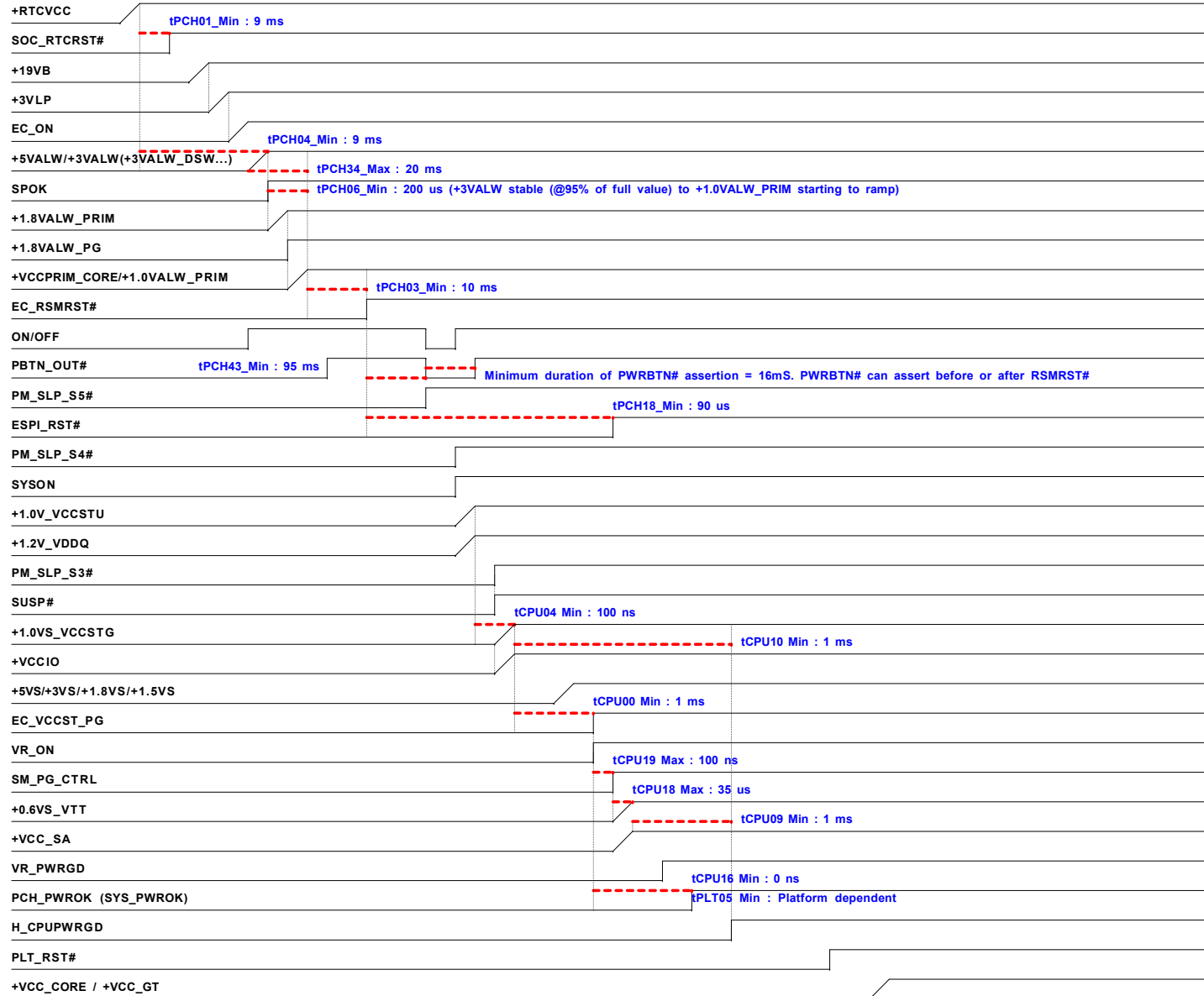


Need check

I2C Address Table

BUS	Device	Address(7 bit)	Address(8bit)	
			Write	Read
I2C_0 (+3VS)	Reserved (Touch Panel)			
I2C_1 (+3VS)	TM-P2969-001 (TP)	0x2C		
	SB8787-1200 (TP-ELAN)	0x15		
SOC_SMBCLK +3VS	DIMM2	0xA4		
SOC_SML1CLK +3VALW_PRIM	PCH-LP (SOC)	0x90		
EC_SMB_CK1 +3VLP	BQ24780 (Charger IC)	0x12		
	BATTERY PACK	0x16		

PWR Sequence_SKL-U2+2_DDR3L_Value_NON CS



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Function Strap Definition

#543016 PDG2.0 P.844

DDPB_CTRLDATA

DDPC_CTRLDATA

Display Port B/C Detected

NC =Port is not detected.

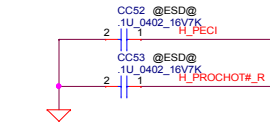
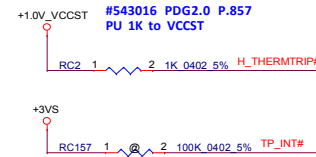
PU =Port is detected.



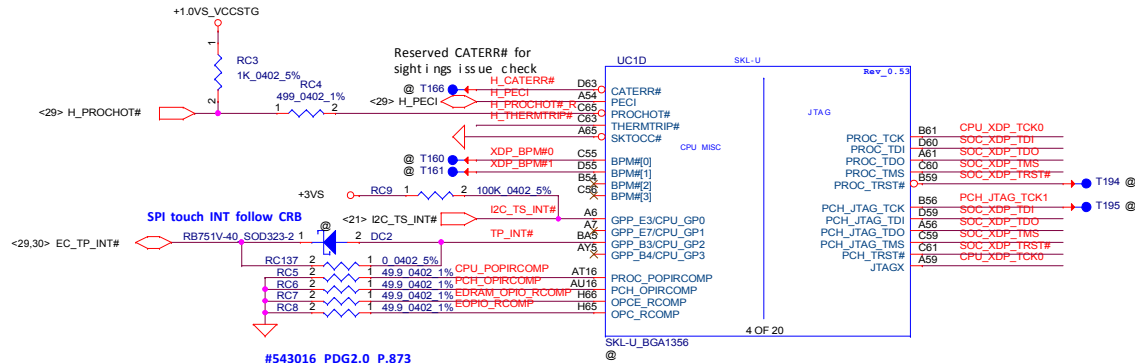
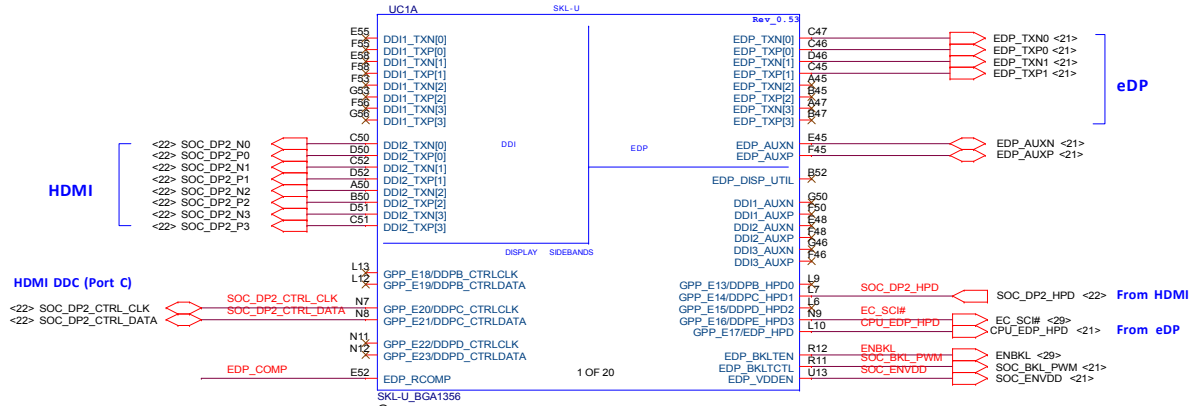
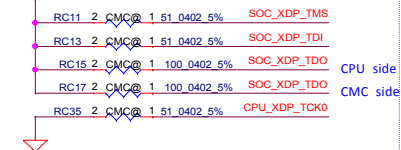
#543016 PDG2.0 P.225

COMPENSATION PU for eDP

Trace width=5 mils,Spacing=25mil,Max length=600mils

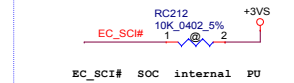


For Intel debug, place to CPU side.
#543016 PDG2.0 P.629

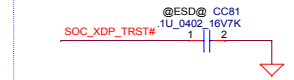


#543016 PDG2.0 P.873
PROC_POPIRCOMP/PCU_OPIRCOMP
PD 50ohm

#544659 CRB1.1 P.52
EDRAM_OPIO_RCOMP/EOPIO_RCOMP
PD 50ohm

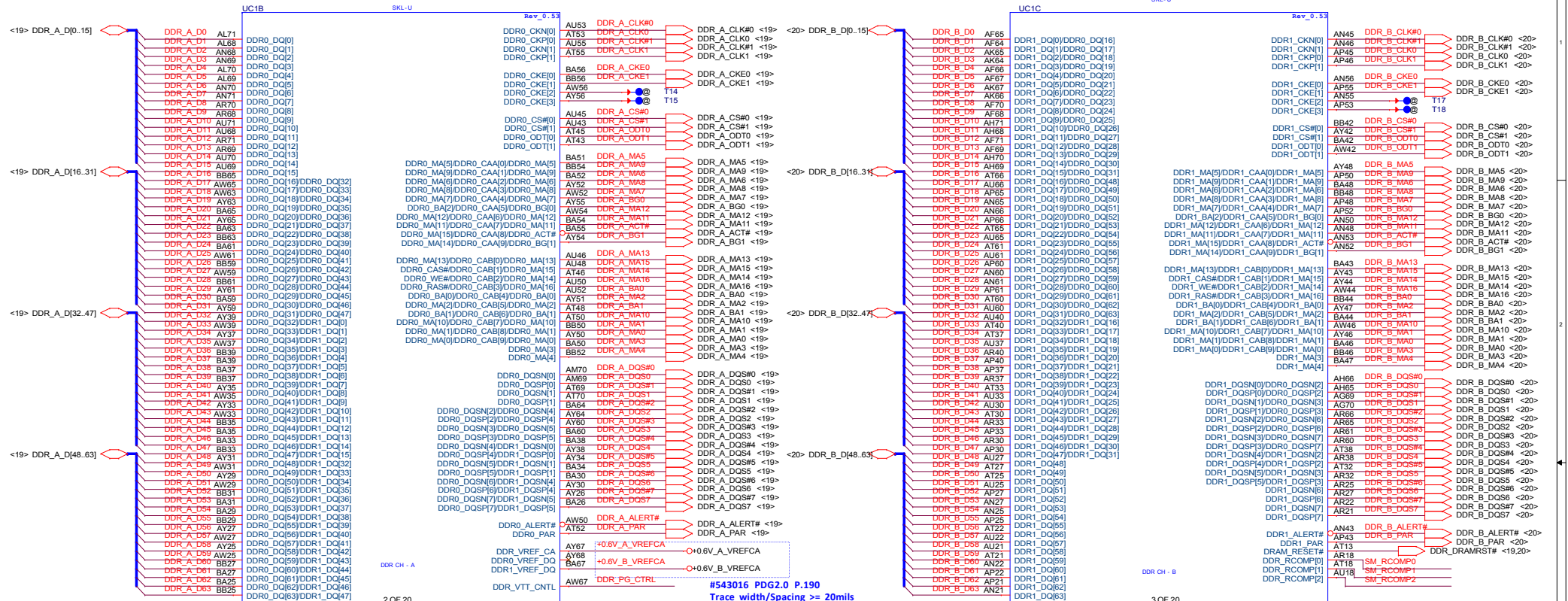


#545659 PCH ED51.51 P.131
SCI capability is available on all GPIOs, while NMI and SMI capability is available on only select GPIOs.
Below are the PCH GPIOs that can be routed to generate SMI# or NMI:
• GPP_B14 GPP_B20 GPP_B23
• GPP_C [23 : 22]
• GPP_D [4 : 0]
• GPP_E [8 : 0], GPP_E [16 : 13]



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Interleaved Memory



PCB B5W11 LA-E061PLS-D671P
DAZ1P500100

ES Sample

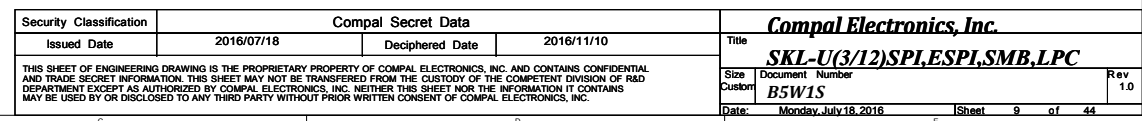
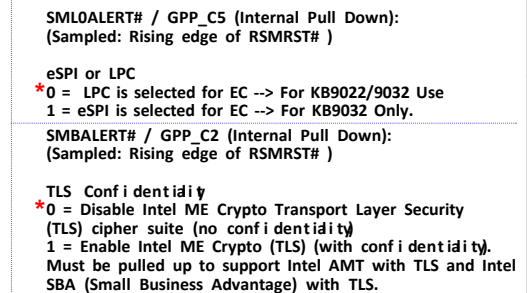
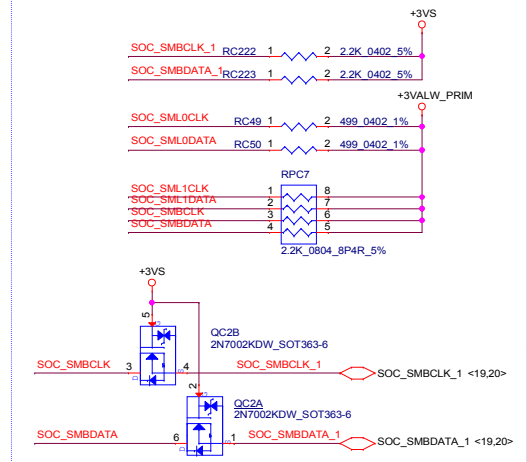
UC1

CPU_Q92.6G

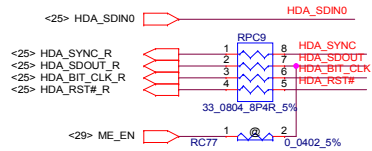
OKJW@

SA00009UR10

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HDA for AUDIO

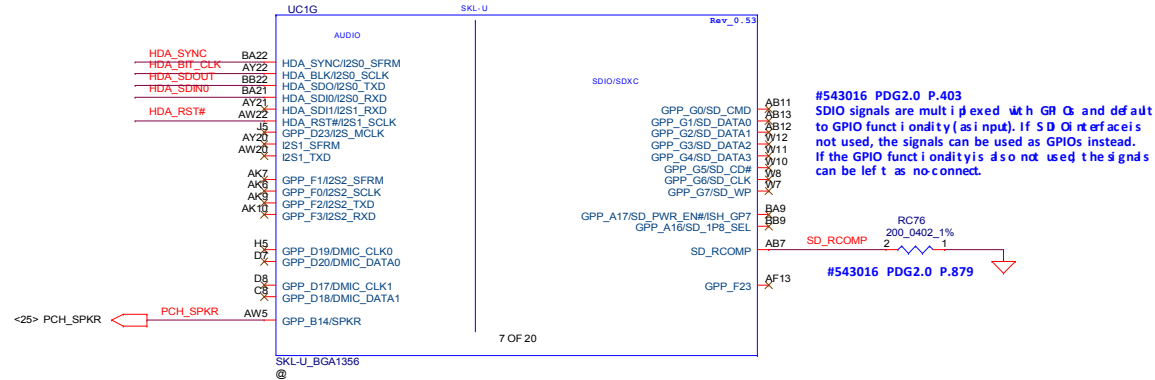


HDA_SDO / I2S_TXD0 (Internal Pull Down):
(Sampled: Rising edge of PCH_PWROK)
Flash Descriptor Security Override
0 = Enable security measures defined in the Flash Descriptor.
1 = Disable Flash Descriptor Security (override). This strap should only be asserted high using external pull-up in manufacturing/debug environments ONLY.

SPKR / GPP_B14 (Internal Pull Down):
(Sampled: Rising edge of PCH_PWROK)

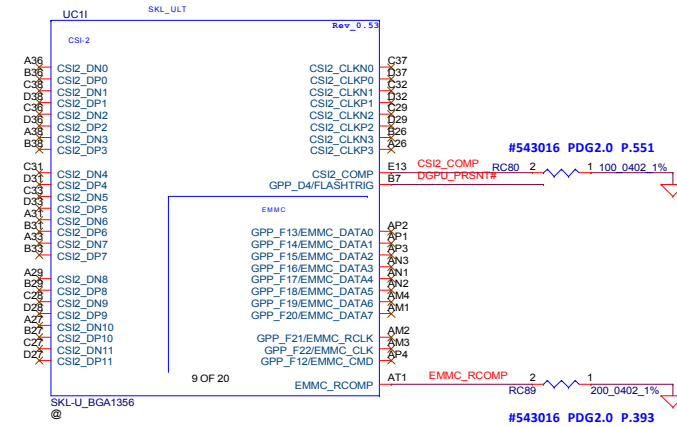
★ TOP Swap Override
0 = Disable TOP Swap mode.
1 = Enable TOP Swap Mode.

Intel HD Audio link capabilities
> Two SDI signals to support two external codecs.
> Drivers variable frequency (5MHz to 24MHz) BCLK to support:
-- SDO double pumped up to 48 Mb/s
-- SDI's single pumped up to 24 Mb/s
> Provides cadence for 44.1 kHz based sample rate output.
> Support 1.5V, 1.8V, and 3.3V modes.



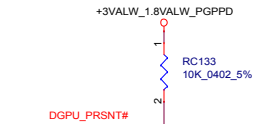
#543016 PDG2.0 P.403
SDIO signals are multiplexed with GPIOs and default to GPIO functionality (as input). If SDIO interfaces not used, the signals can be used as GPIOs instead. If the GPIO functionality is also not used the signals can be left as no-connect.

#543016 PDG2.0 P.879

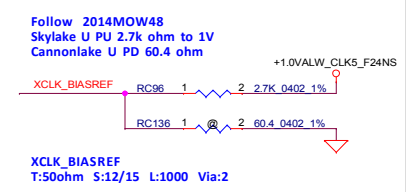
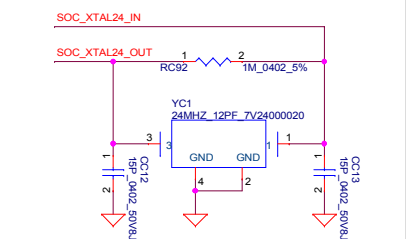
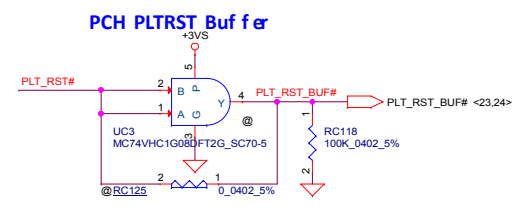
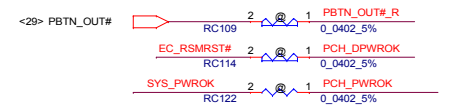
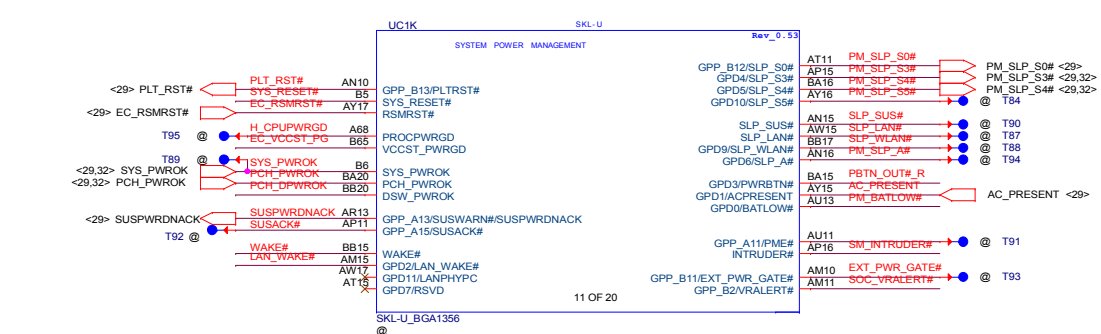
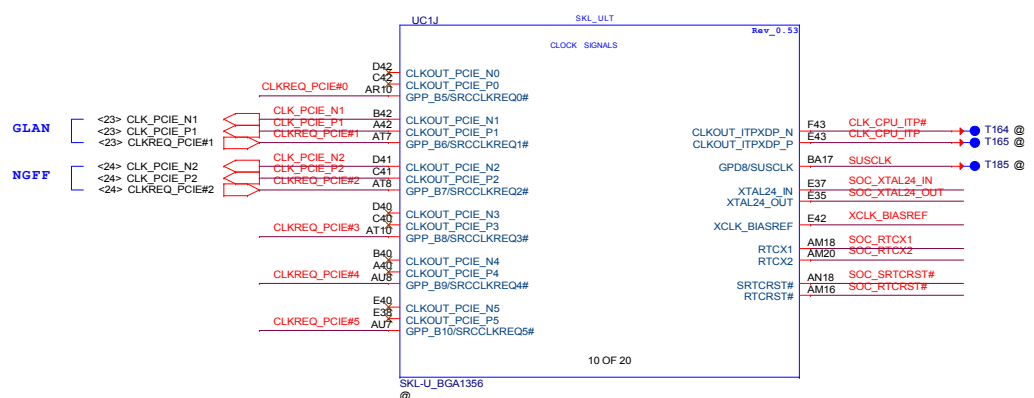
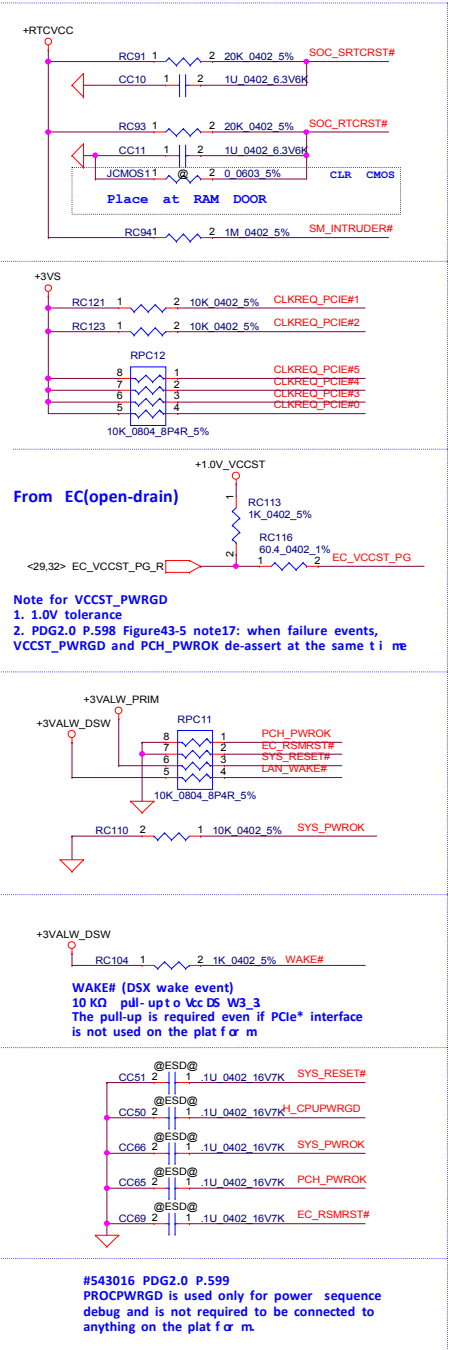


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#543016 PDG2.0 P.393



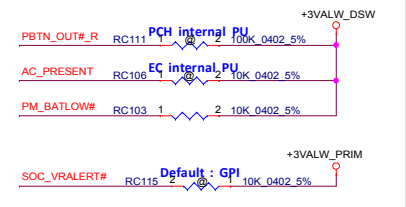
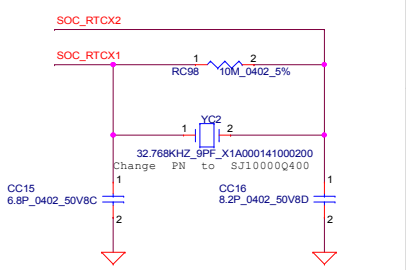
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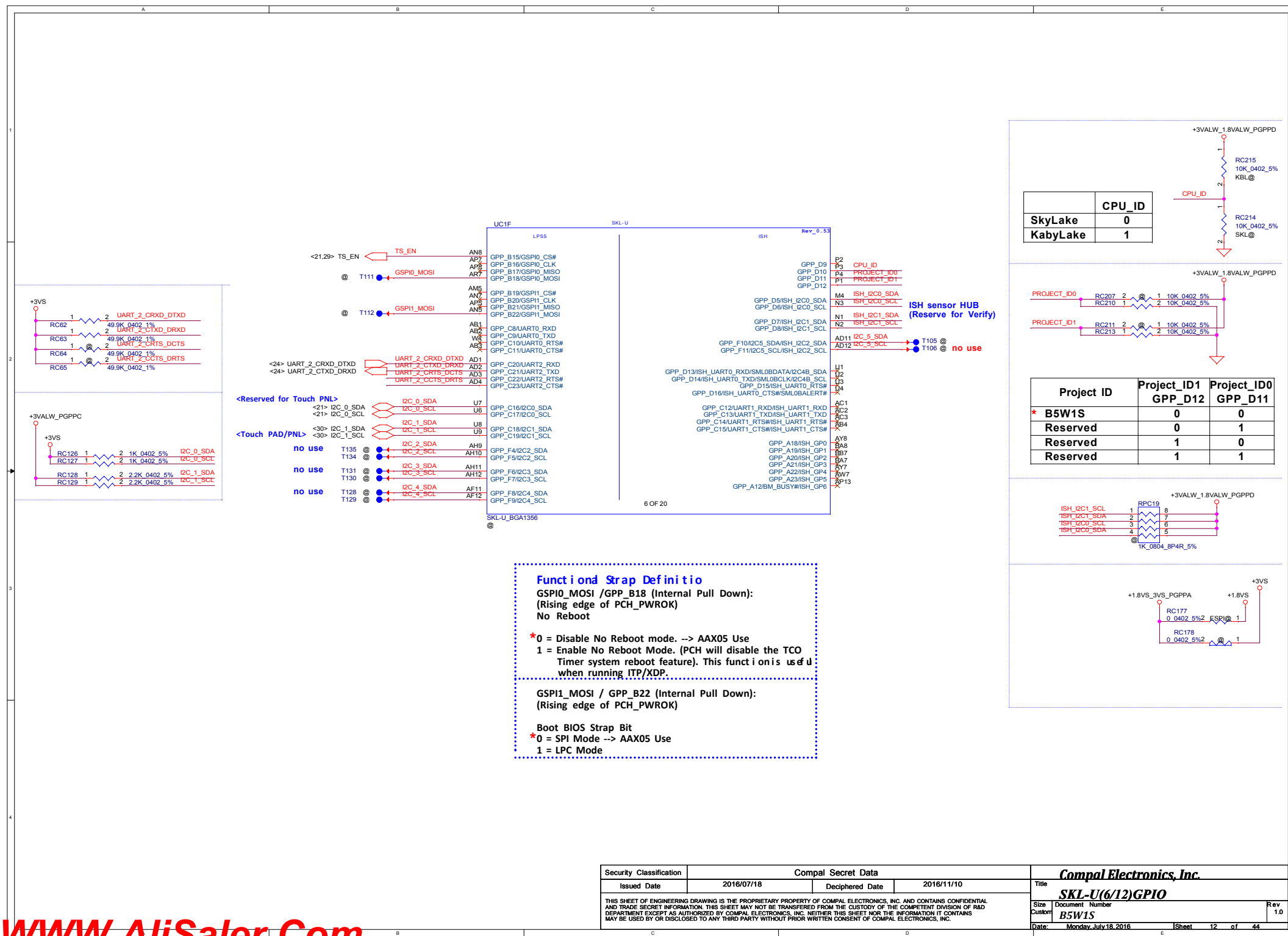
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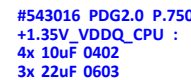
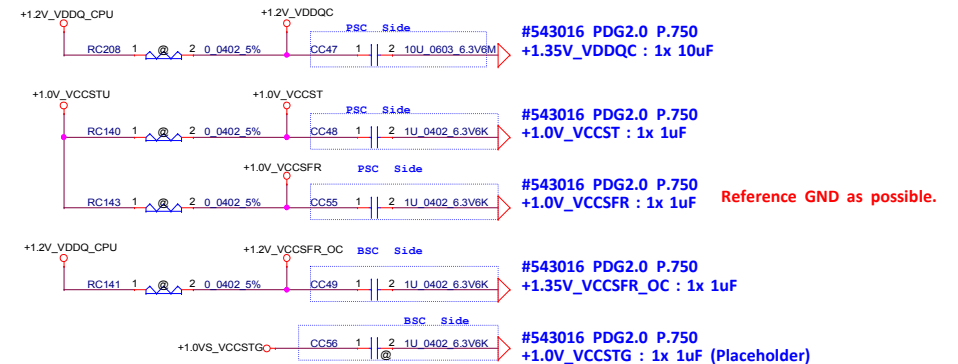
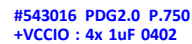
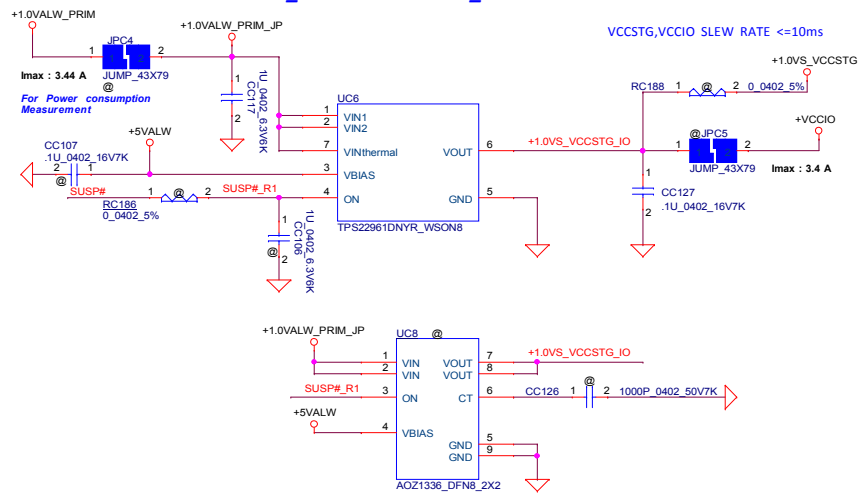
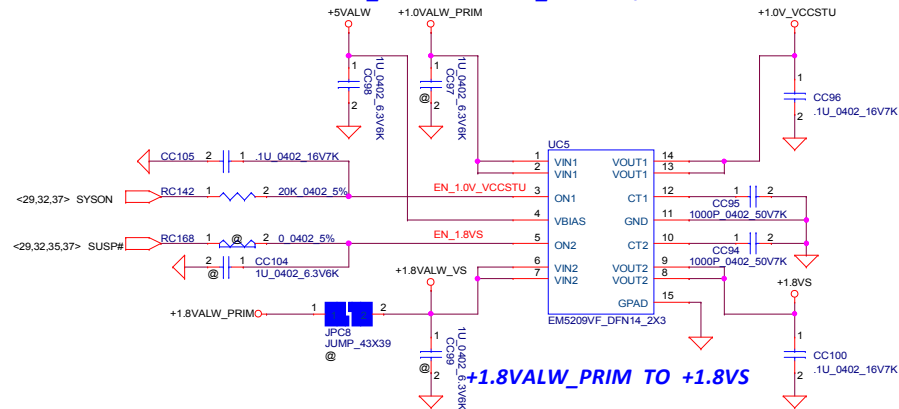
SkyLake-U use 24M 50 ohm ESR

Cannonlake U use 38.4M 30 ohm ESR



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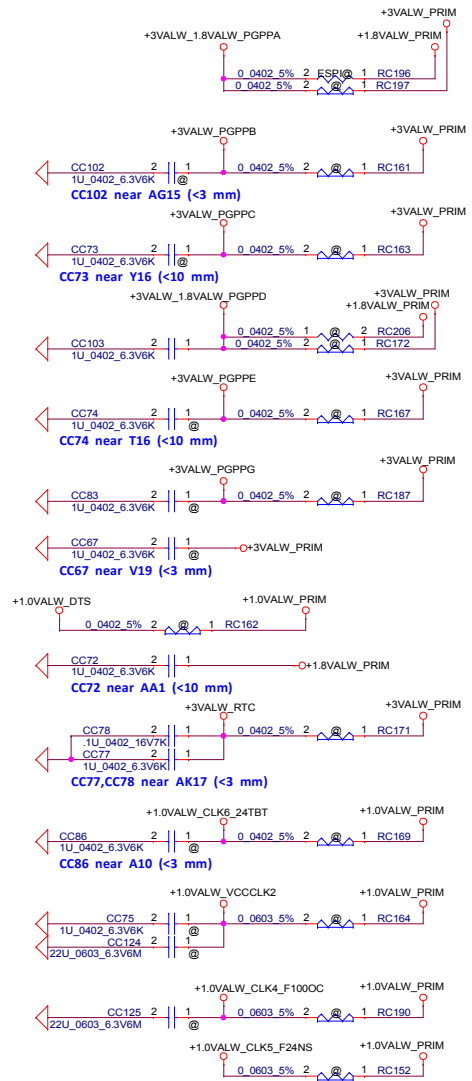
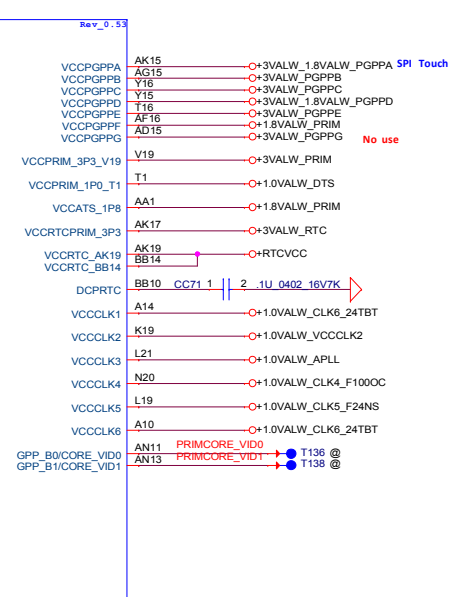
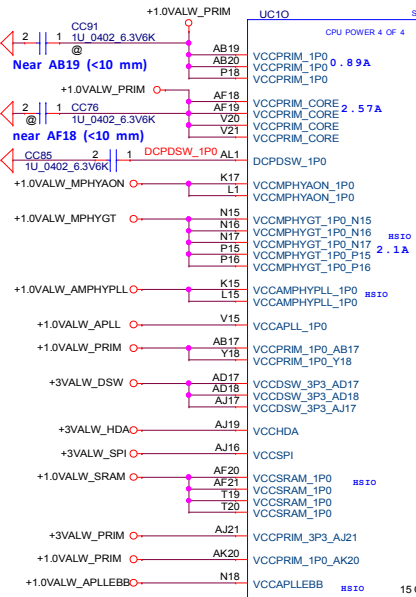
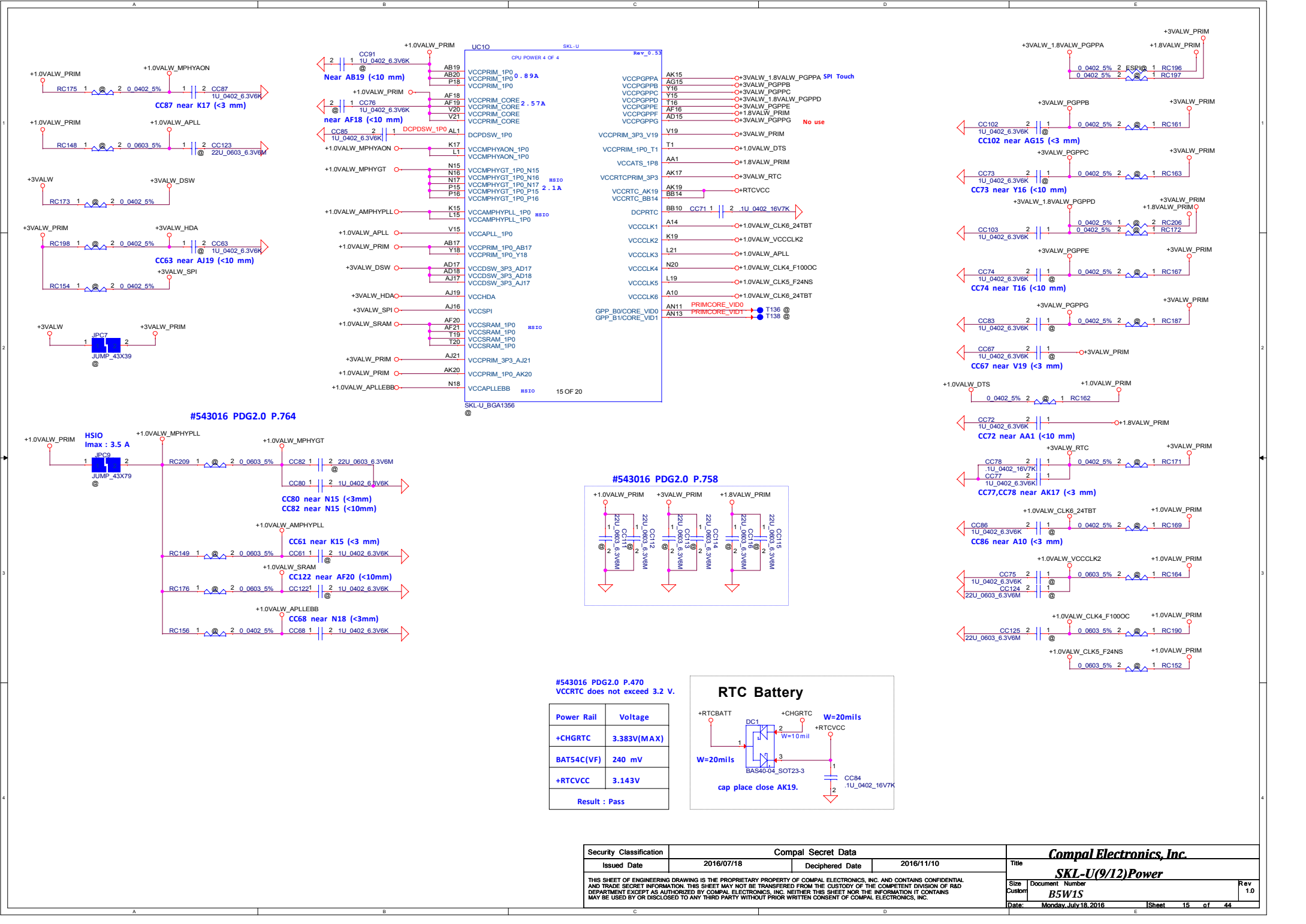


Compal Electronics, Inc.

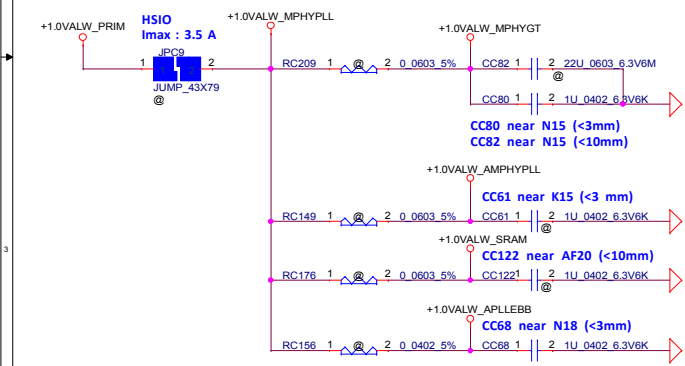
SKL-U(8/12)Power

Size	Document Number	Rev
Custom	B5W1S	1.0

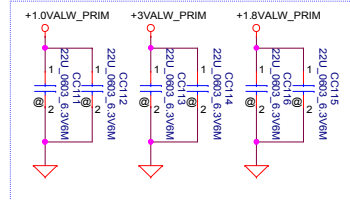
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#543016 PDG2.0 P.764

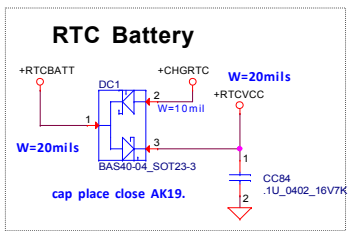


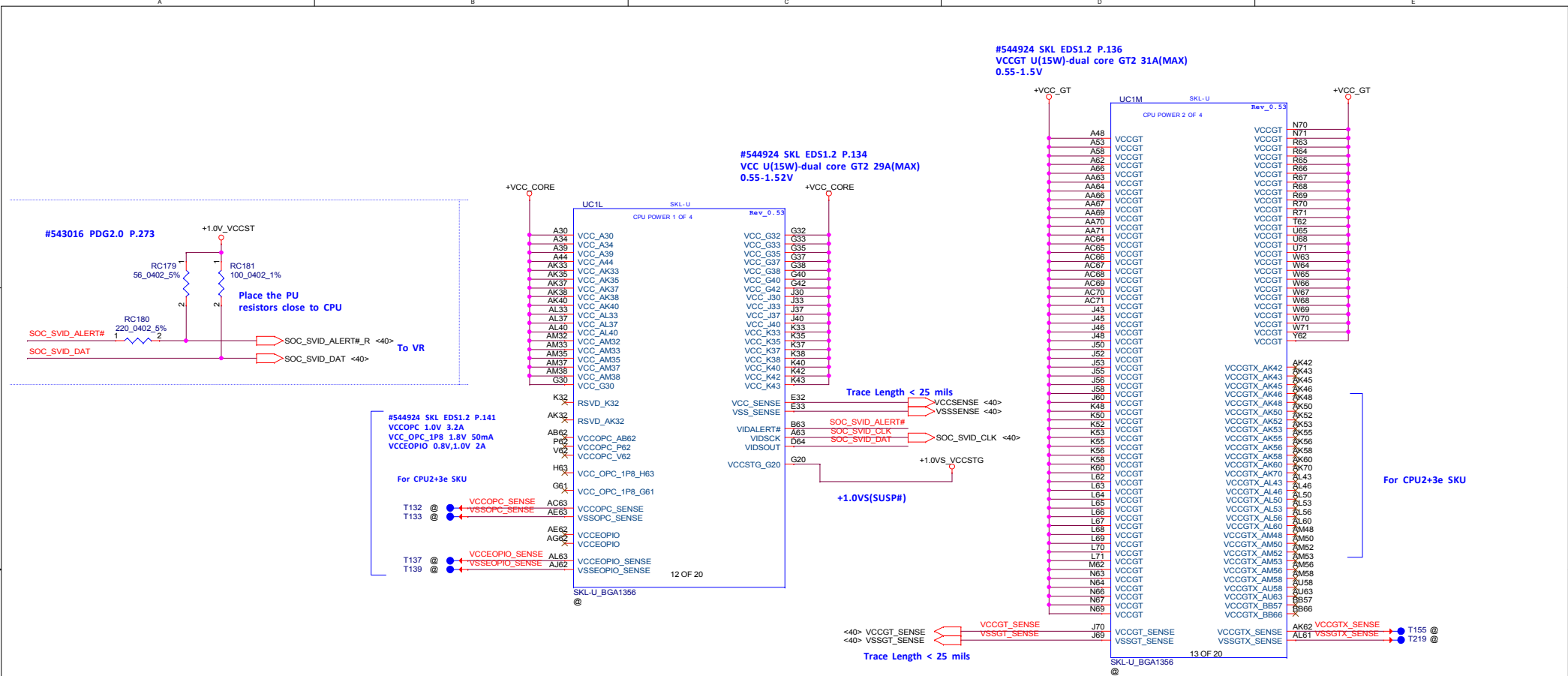
#543016 PDG2.0 P.758



#543016 PDG2.0 P.470
VCCRTC does not exceed 3.2 V.

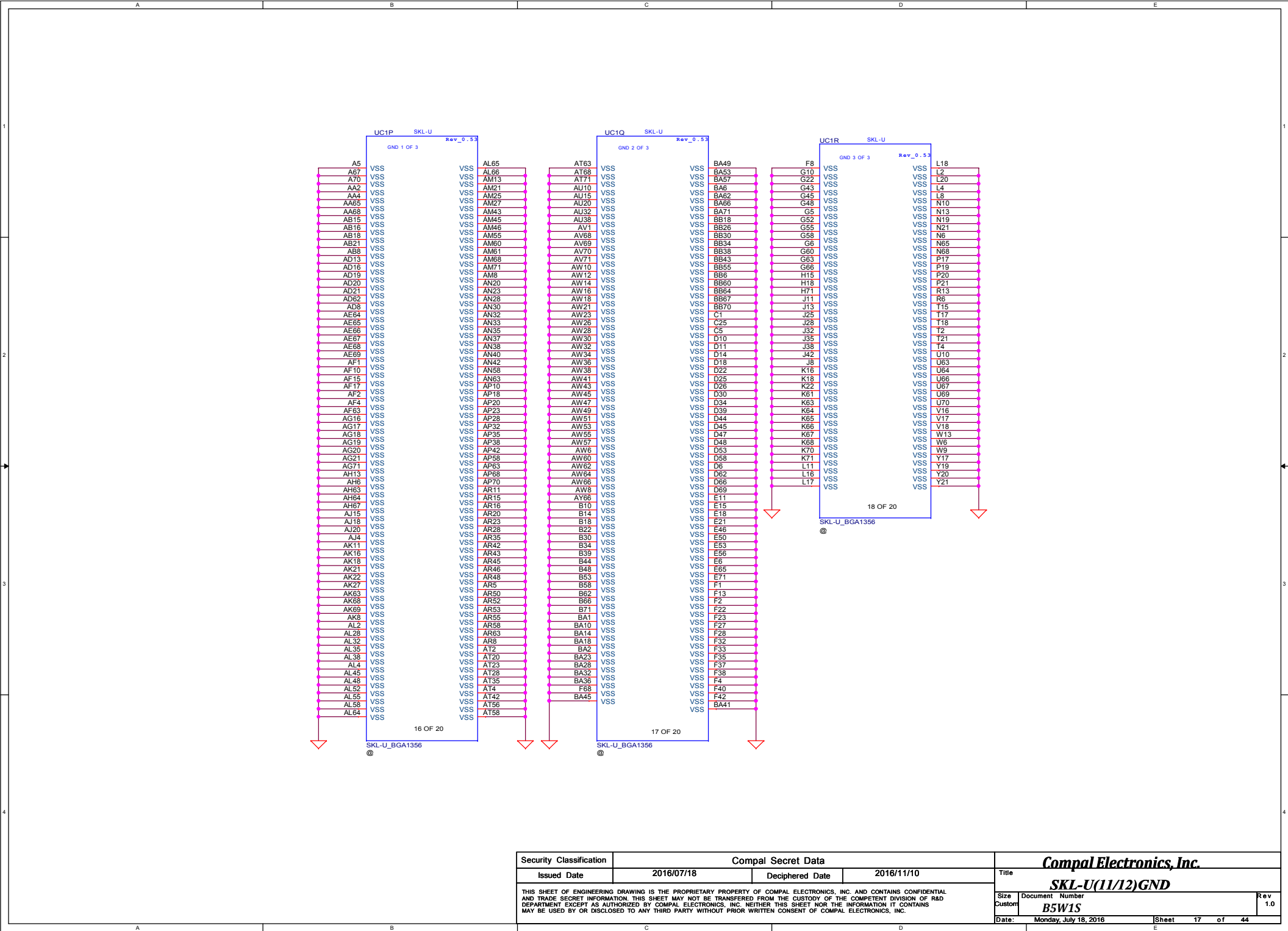
Power Rail	Voltage
+CHGRTC	3.383V(MAX)
BAT54C(VF)	240 mV
+RTCVCC	3.143V
Result : Pass	



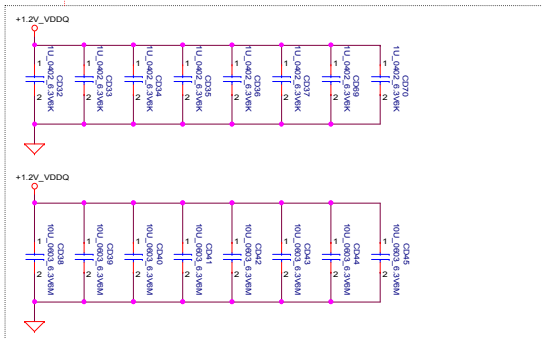
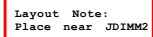


Processor Power Rails

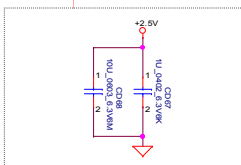
Power Rail	Description	Control
V _{CC}	Processor IA Cores Power Rail	SVID
V _{CCGT}	Processor Graphics Power Rails	SVID
V _{CCGTx}	Processor Graphics Extended Power Rail Available only for GT3/GT4 processor SKUs	SVID
V _{CCSA}	System Agent Power Rail	SVID/Fixed (SKU dependent)
V _{CCIO}	IO Power Rail	Fixed
V _{CCST}	Sustain Power Rail	Fixed
V _{CCPLL}	Processor PLLs power rail	Fixed
V _{DDQ}	Integrated Memory Controller Power Rail	Fixed (Memory technology dependent)
V _{CCOPC}	Processor OPC power rail (available only in SKU's with OPC)	Fixed
V _{CCOPC_1P8}	Processor OPC power rail (available only in SKU's with OPC)	Fixed
V _{CCEOPIO}	Processor EOPIO power rail (available only in SKU's with OPC)	Fixed



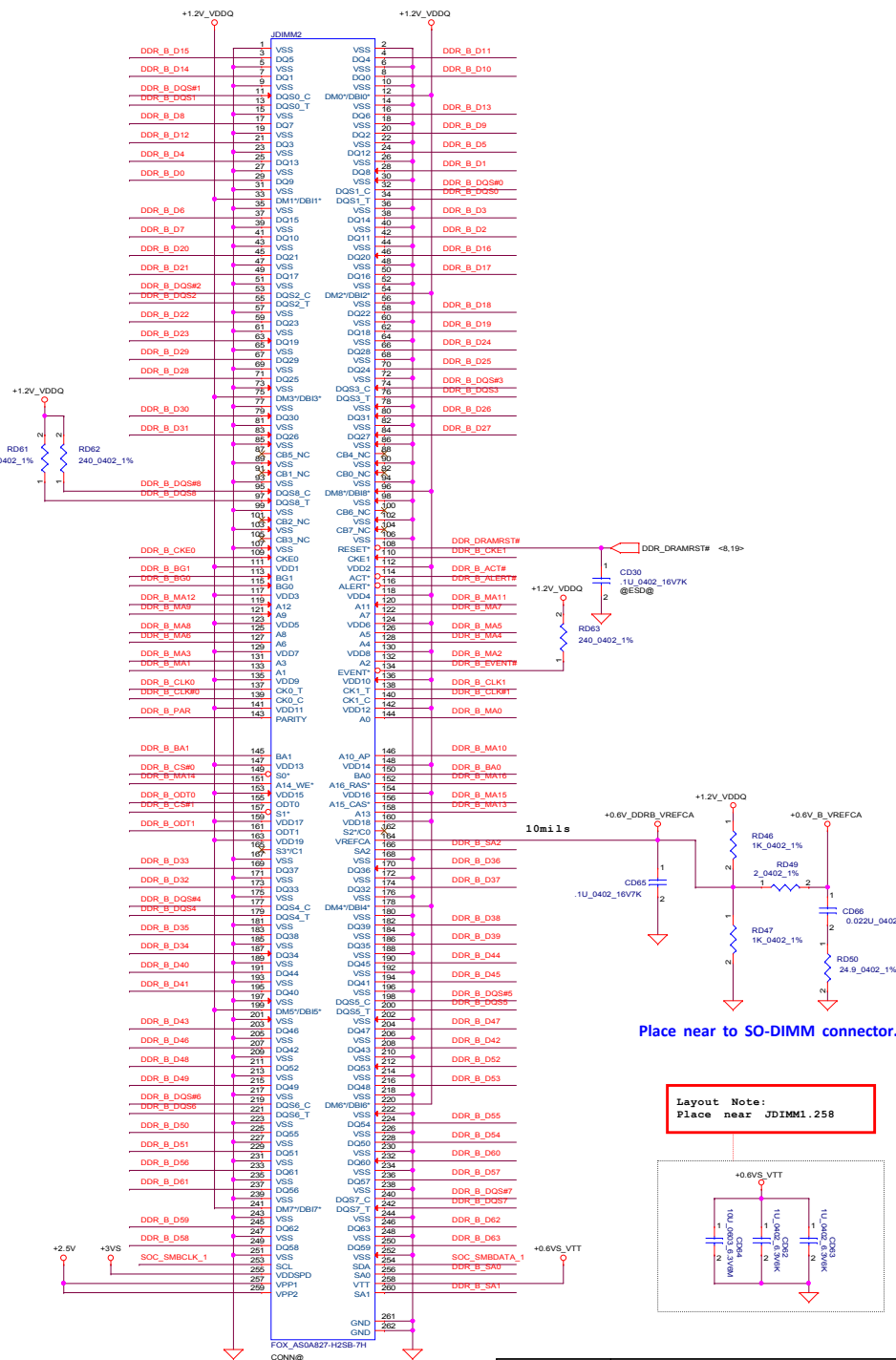
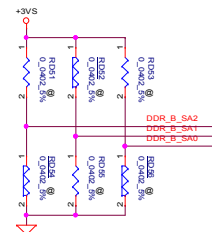
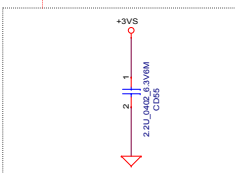
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Issued Date	2016/07/18	Deciphered Date	2016/11/10	Title	
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Size	Document	Number	Rev	Date: Monday, July 18, 2016	
Custom	B5W1S		1.0	Sheet	17 of 44



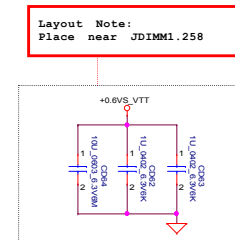
Layout Note:
Place near JDIMM1.257,259



Layout Note:
Place near JDIMM2.255



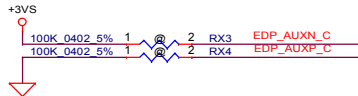
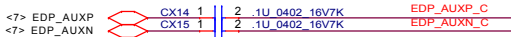
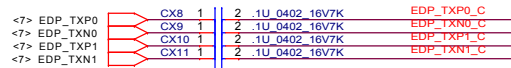
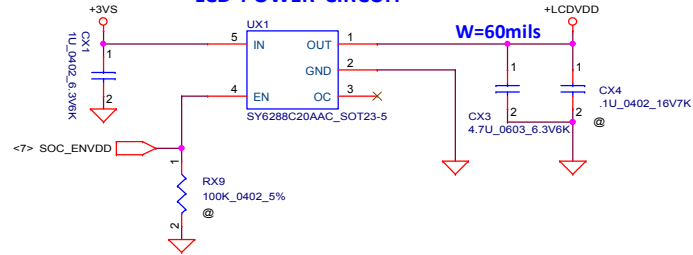
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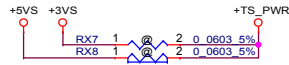
Layout Note:
Place near JDIMM1.258

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			Customer	BSW15
			Date:	Monday, July 18, 2016
			Sheet	20 of 44

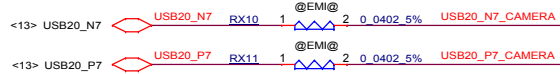
LCD POWER CIRCUIT



Touch Screen

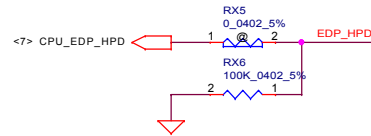
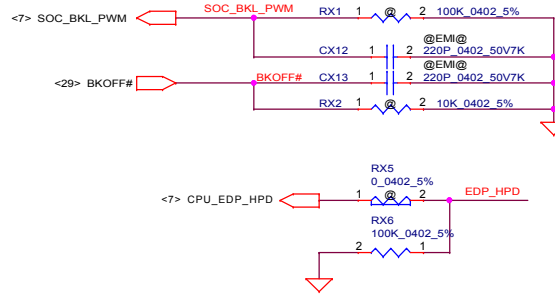
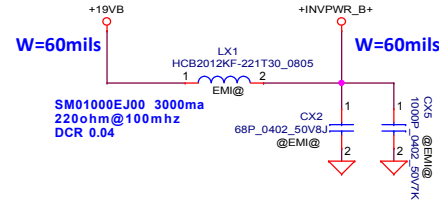


Camera

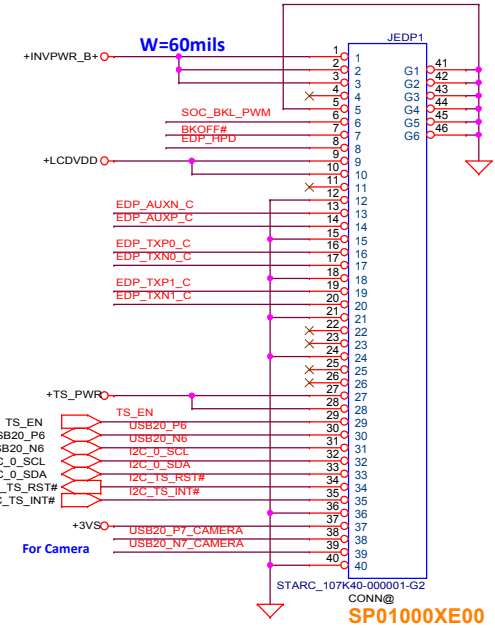
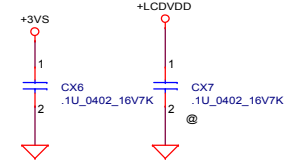


W=60mils

SM01000EJ00 3000ma
220ohm@100mhz
DCR 0.04



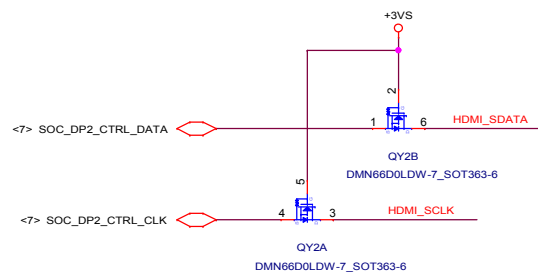
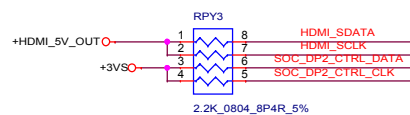
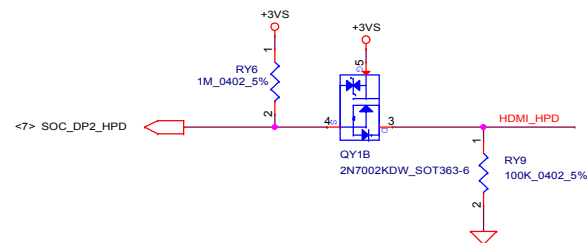
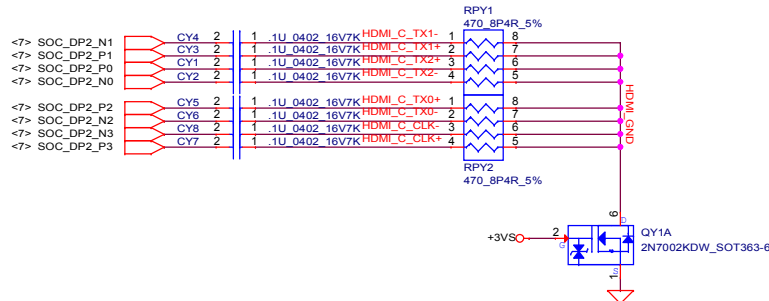
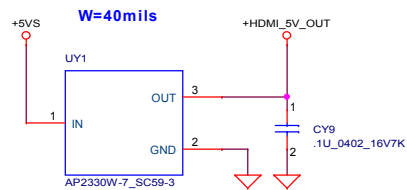
Place closed to JEDP1



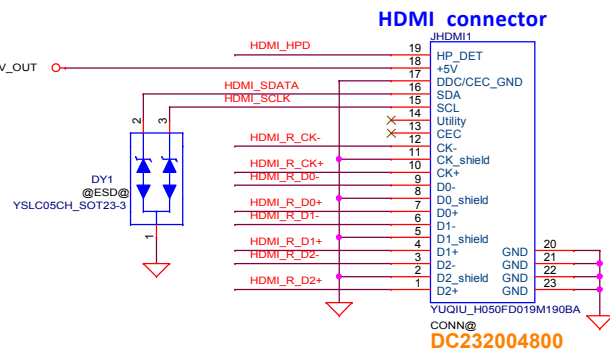
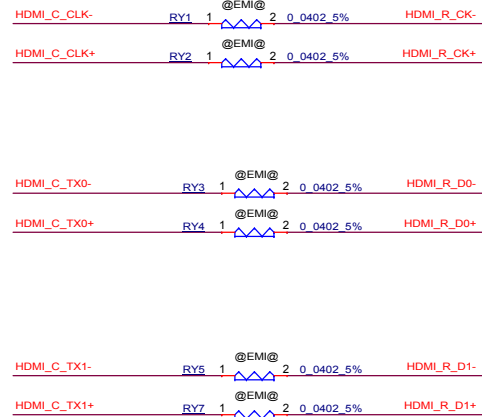
Touch Screen

For Camera

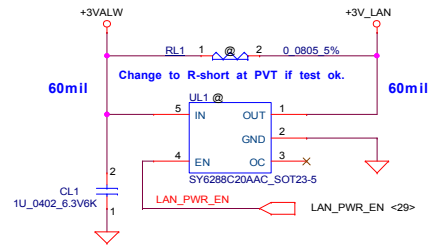
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				Size	Document Number	Rev
				Custom	B5WIS	1.0
Date: Monday, July 18, 2016				Sheet	21 of 44	



Intel spec Ron/Cout : 3ohm/10pF.
SB000016K00, S TR PJT138KA 2N SOT363-6



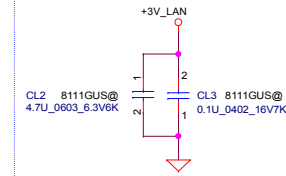
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				Size	Document Number	Rev
				Custom	B5WIS	1.0
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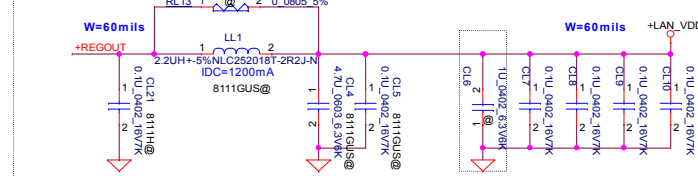
+3V_LAN Rising time request: 0.5~100 ns

SA000028V10
High active
EN threshold voltage :1.2~2.0V
Current limit threshold :1.5~2.8A
Output turn-on rising time :1.3~2.7 ms

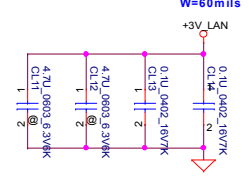
Close to U20 Pin23



(Should be place within 200 mils)
Close to Pin 24

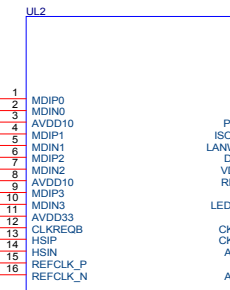


0.1uF close to Pin 11,32



PU to +3VS at PCH side

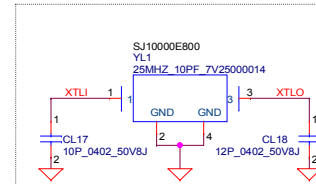
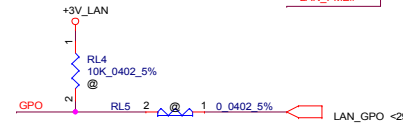
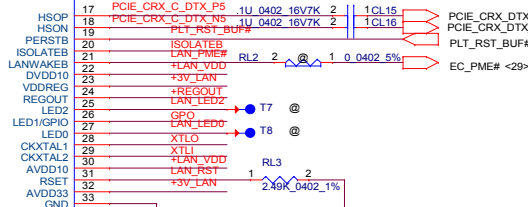
<11> CLKREQ_PCIE#1
<13> PCIE_CTX_C_DRX_P5
<13> PCIE_CTX_C_DRX_N5
<11> CLK_PCIE_P1
<11> CLK_PCIE_N1



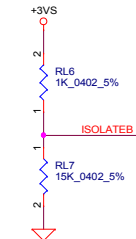
SIC RTL8111H-CG QFN 32P E-LAN CTRL
SA000080P00 8111H@

Use 8111GS symbol

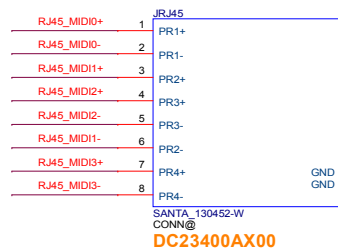
close to Pin 17, 18



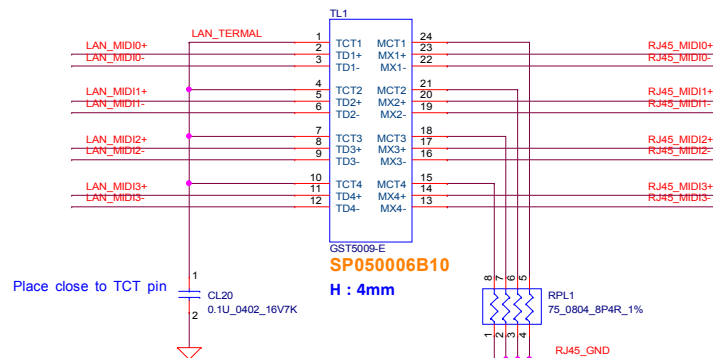
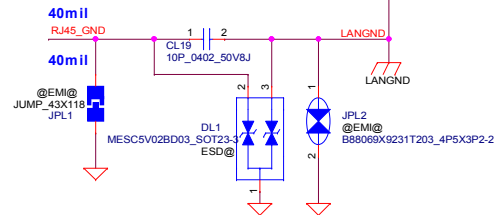
Consider VCC33 may be connected to Main Power or chipset/bios's GPO, the pull-low resistor RL7 can be NC only when Main Power or chipset/bios's GPO can ensure to drive the ISOLATEB pin to a voltage level < 0.8V at the system state S3~S5.



LAN Connector



DC23400AX00

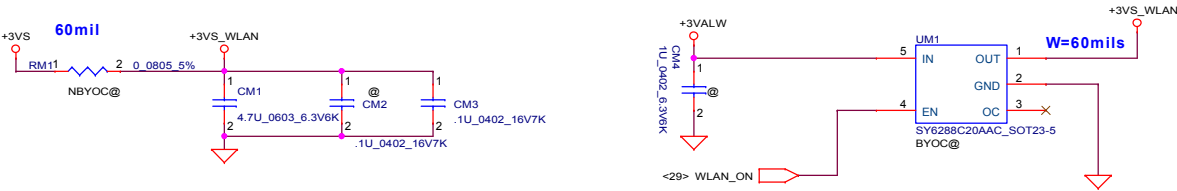


Place close to TCT pin

SP05006B10
H : 4mm

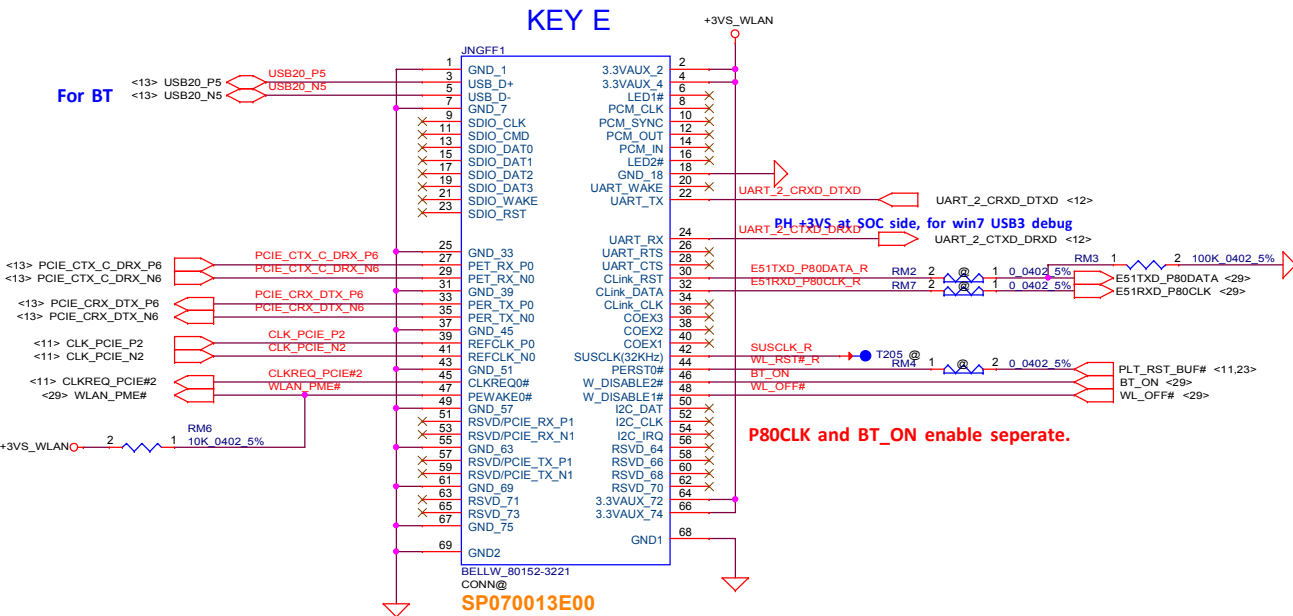
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				LAN RTL8111H	
				Size	
Custom		Document Number		Rev	
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Wireless LAN



NGFF WL+BT (KEY E)

74	3.3V	GND	75
72	3.3V	RESERVED/REFCLKN1	73
70	UM1_Power_SRC/GPIO1/PEWake1#	RESERVED/REFCLKP1	71
68	UM1_Power_SRC/CLKREQ1#	RESERVED/PERn1	69
66	UM1_SWP/PERST1#	RESERVED/PERn1	65
64	RESERVED	GND	63
62	ALERT# (I/O)(3.3)	RESERVED/PETn1	61
60	IQ CLK (O)(0.3.3)	RESERVED/PERn1	59
58	IQ DATA (I/O)(0.3.3)	GND	57
56	WL_DISABLE# (O)(0.3.3)	PEWakeDr (I/O)(0.3.3)	55
54	Reserved WL_DISABLE#2 (O)(0.3.3)	CLKREQDr (I/O)(0.3.3)	53
52	PERST0# (O)(0.3.3)	GND	51
50	SUSCLK(32KHz) (O)(0.3.3)	REFCLKN0	49
48	COEX1 (I/O)(0.1.8V)	REFCLKP0	47
46	COEX2 (I/O)(0.1.8V)	GND	45
44	COEX3 (I/O)(0.1.8V)	PERn0	43
42	VENDOR DEFINED	PERp0	41
40	VENDOR DEFINED	GND	39
38	VENDOR DEFINED	PETn0	37
36	UART RTS (I/O)(1.8V)	PETp0	35
34	UART CTS (I/O)(1.8V)	GND	33
32	UART TX (I/O)(1.8V)	GND	31
30	UART RX (I/O)(2.8V)	SDIO Reset# (I/O)(2.8V)	23
28	UART Wake# (I/O)(3.3V)	SDIO Wake# (I/O)(1.8V)	21
26	GND	SDIO DAT3 (I/O)(1.8V)	19
24	LED#2 (I/O)	SDIO DAT2 (I/O)(1.8V)	17
22	PCM_OUT/US SD_OUT (O)(0.1.8V)	SDIO DAT1 (I/O)(1.8V)	15
20	PCM_IN/US SD_IN (I/O)(1.8V)	SDIO DAT0 (I/O)(1.8V)	13
18	PCM_SYNC/US VSS (O)(0.1.8V)	SDIO CMD (I/O)(1.8V)	11
16	PCM_CLK/US SCK (O)(0.1.8V)	GND	9
14	LED#1 (I/O)	USB_D+	5
12	3.3V	USB_D-	3
10	3.3V	GND	1



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		M.2 Key E (WLAN)
Size		Document Number
Custom		B5WIS
Date:	Monday, July 18, 2016	Sheet 24 of 44
		Rev 1.0

SM01000EJ00 3000mA 220ohm@100mhz DCR 0.04



Int. Speaker Conn.



Analog MIC(SMD)

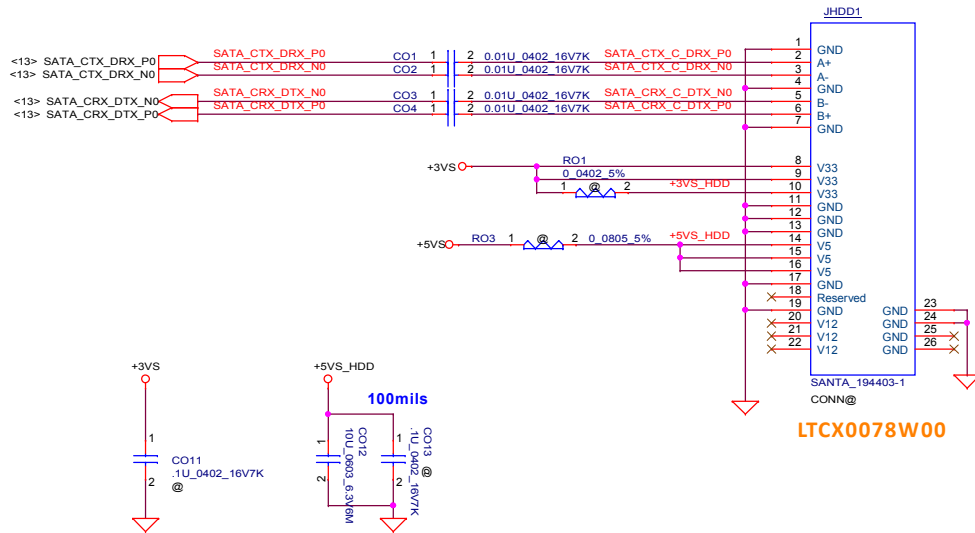


Headphone Out

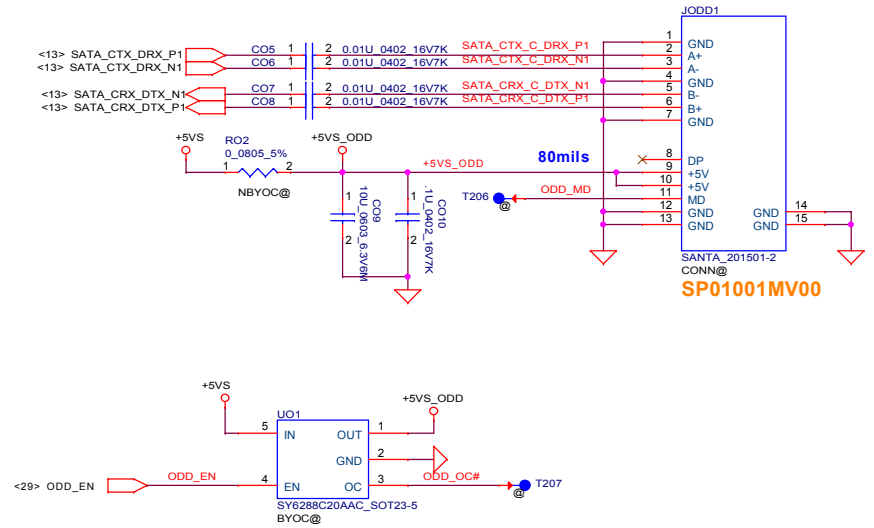


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				Size	Document Number	Rev
				Custom		1.0
				Date	Monday, July 18, 2016	Sheet 26 of 44

SATA HDD Conn.



SATA ODD Conn.

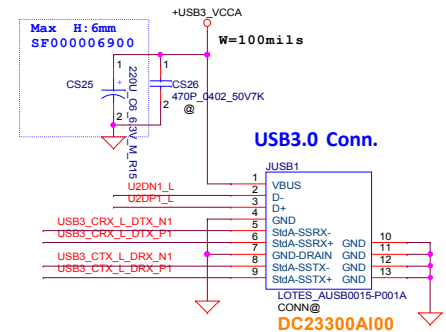
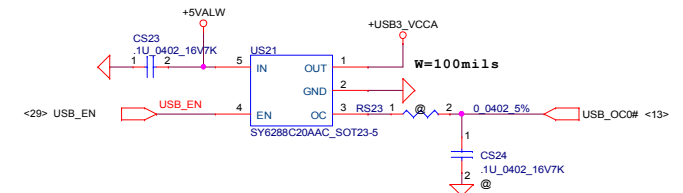
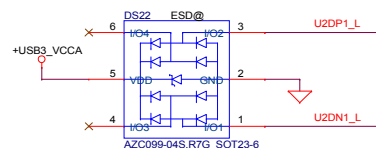
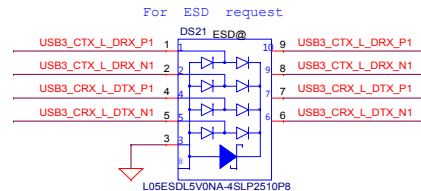
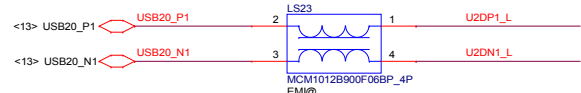
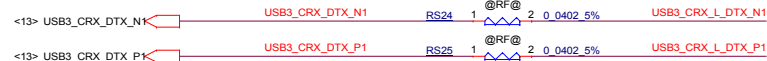
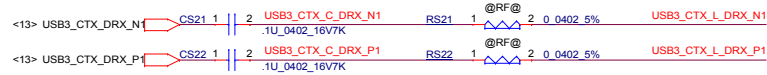


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					Rev 1.0

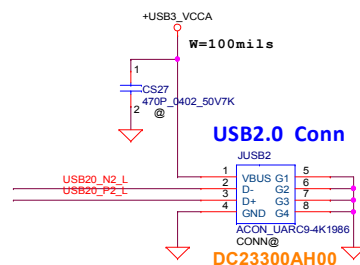
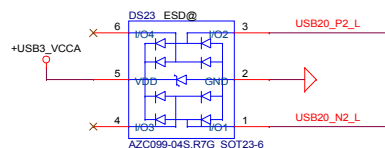
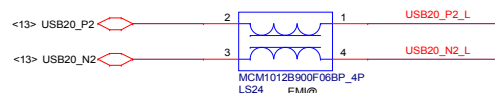
SPACE

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						Size	Document Number	Rev
						Custom		1.0
						Date:		Monday, July 18, 2016

USB3.0 (Port 1)

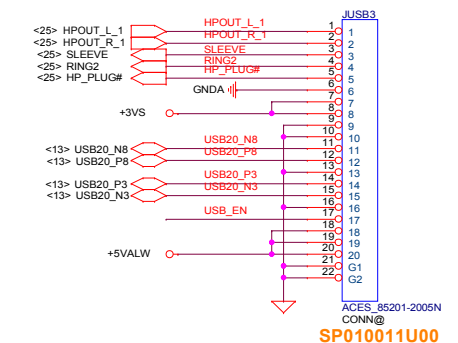


USB2.0 (Port 2)

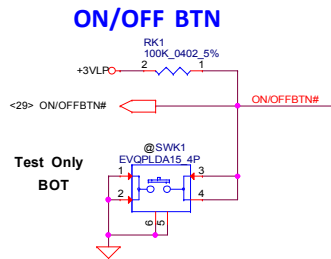


Need check pin defini t i o

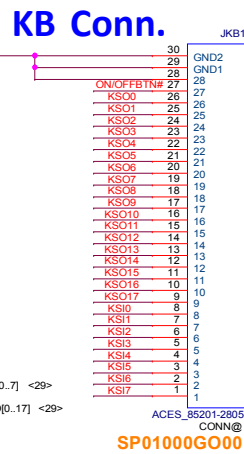
IO/B (USB, AUDIO, CR)



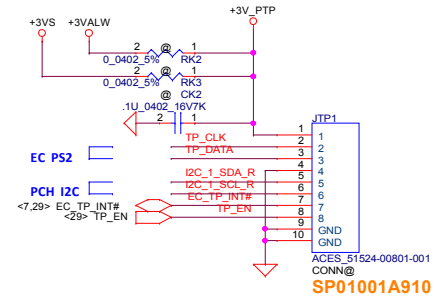
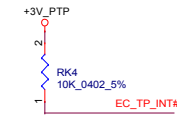
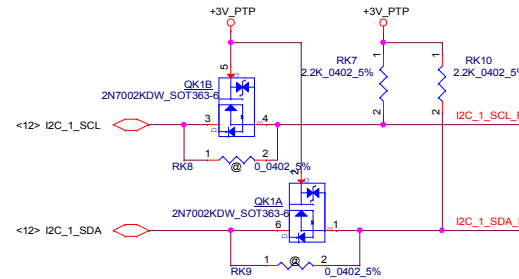
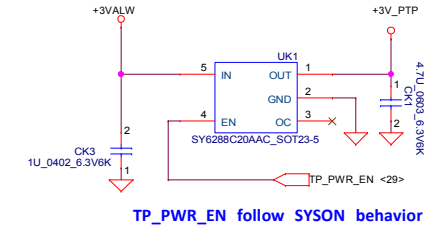
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Size	Document	Number		Rev	1.0
Date:	Monday, July 18, 2016	ISheet	28	of	44



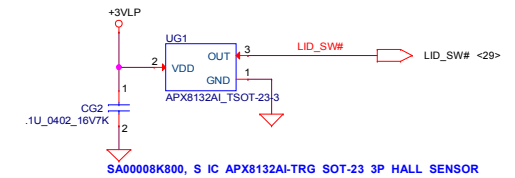
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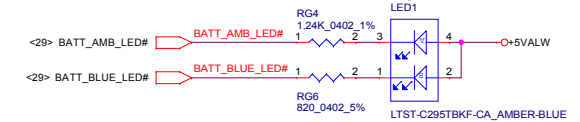
TP/B Conn.



Lid Switch (Hall Effect Switch) Follow 2015

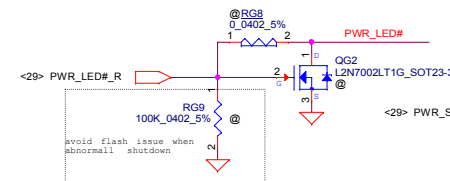
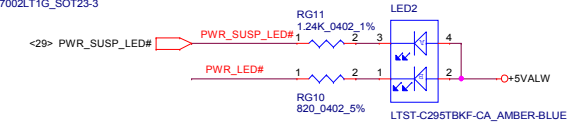


Battery LED



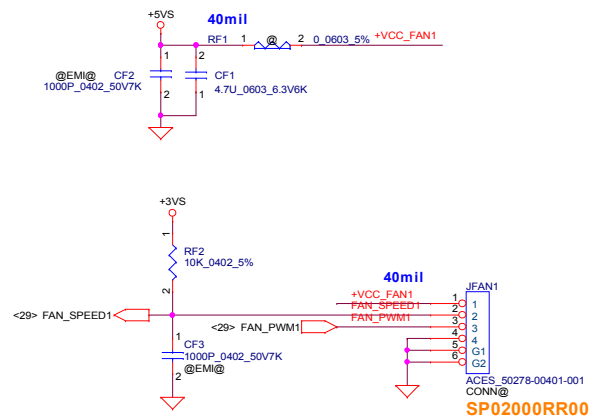
Follow Z5W1M LED.

Power LED

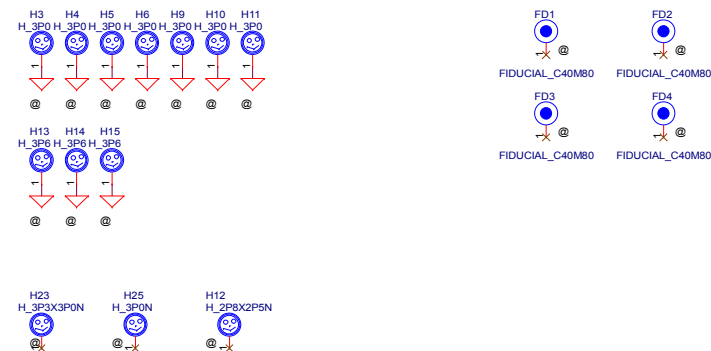


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Size	Document	Number	Rev	1.0
Custom	BSWIS			
Date	Monday, July 18, 2016	ISheet	30	of 44

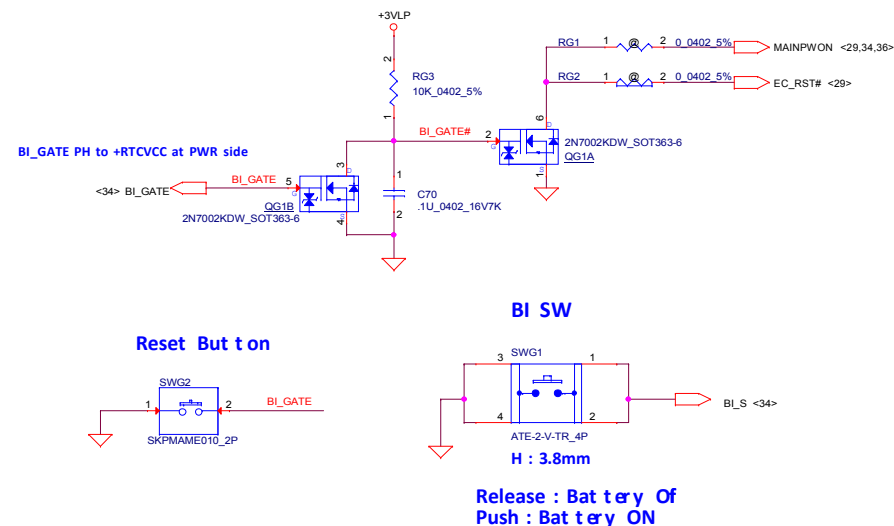
FAN1 Conn



Screw Hole

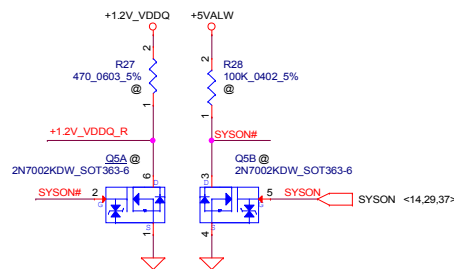
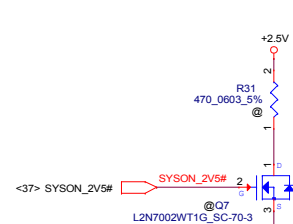
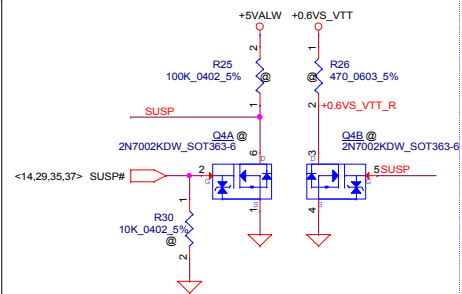
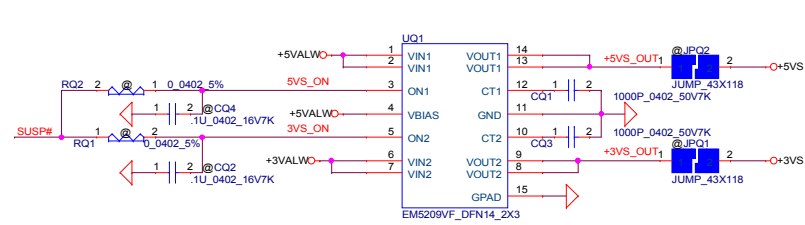


Reset Circuit

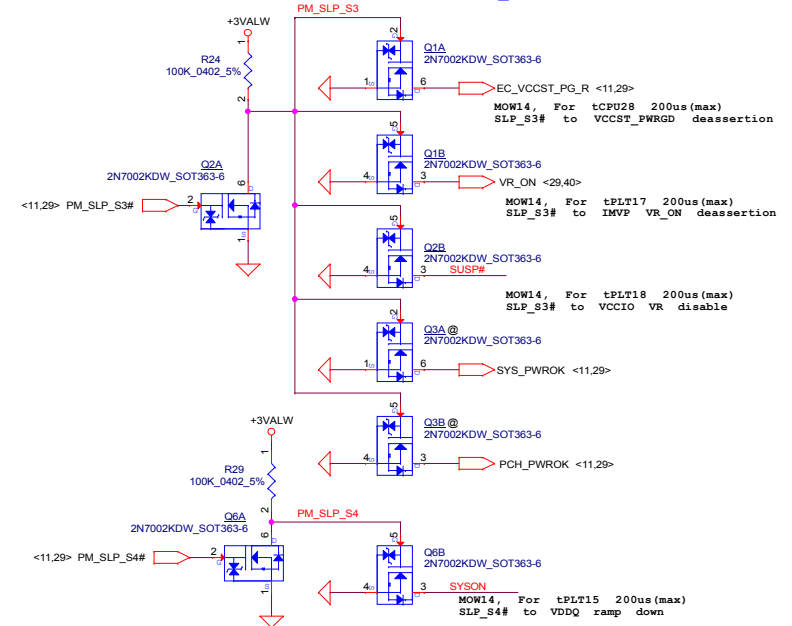


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				Date	Monday, July 18, 2016
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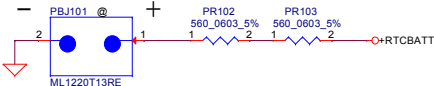
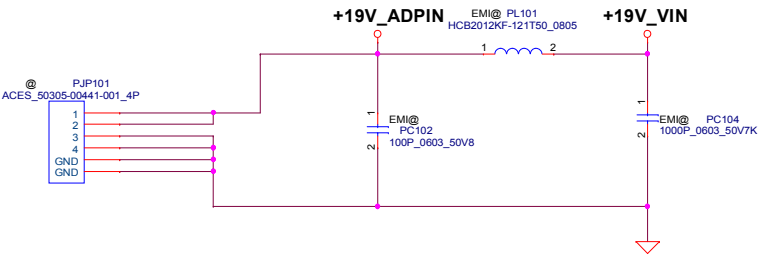
DC Interface



For Power ON/Off Sequence



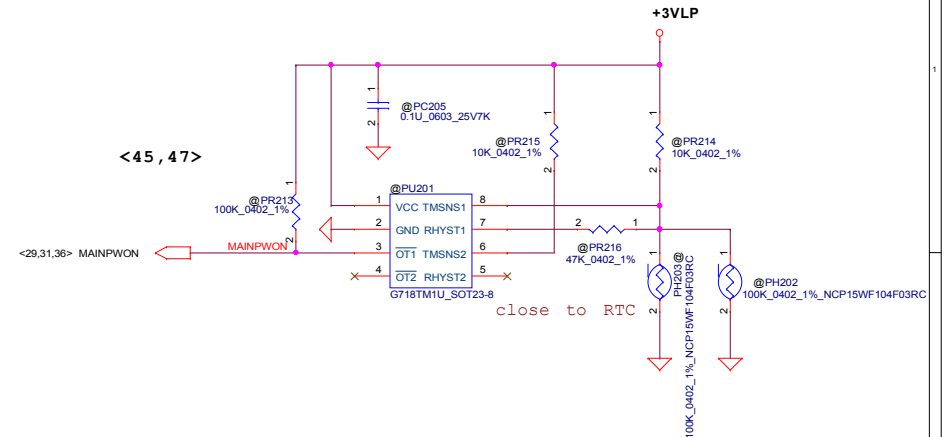
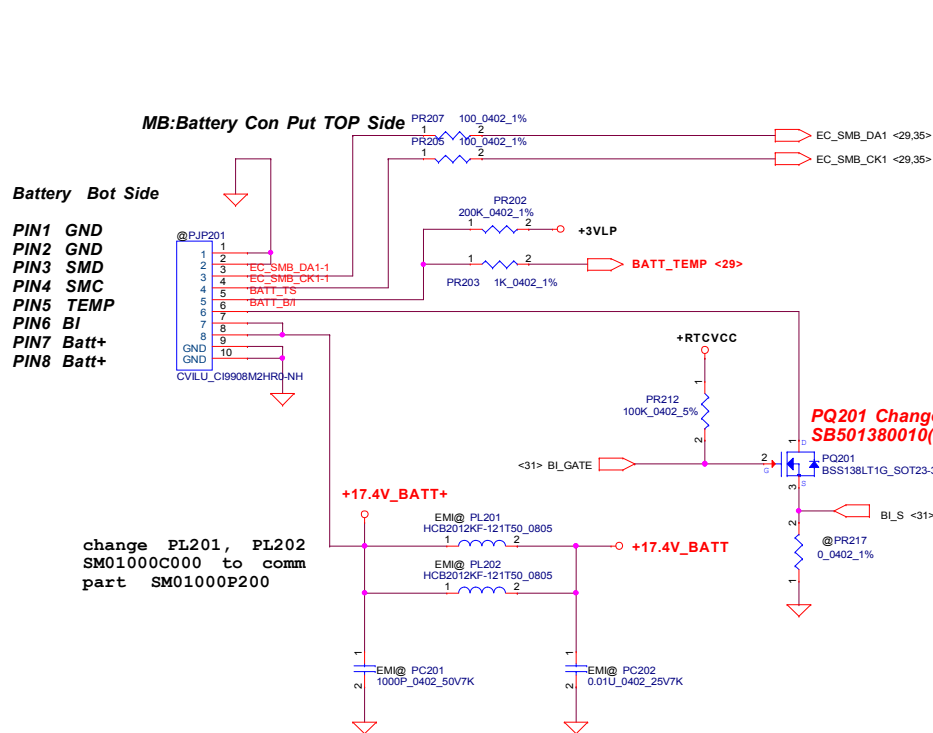
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				Date	Monday, July 18, 2016
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2013/07/23
change PC5 and PC6 function field from 37.1 to 47.1

schematic from A4WAS



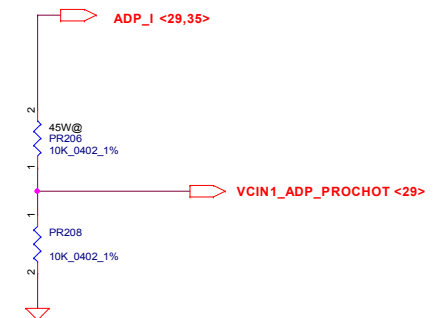
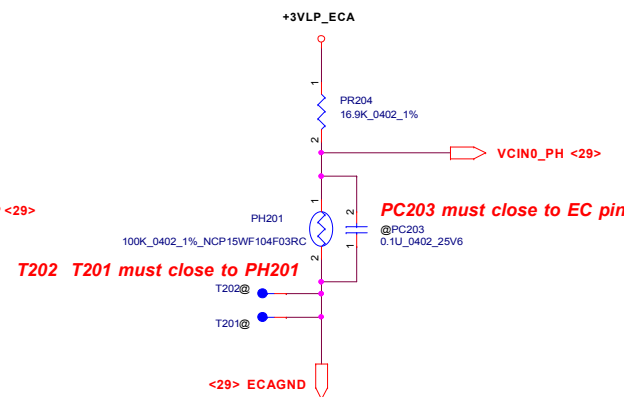
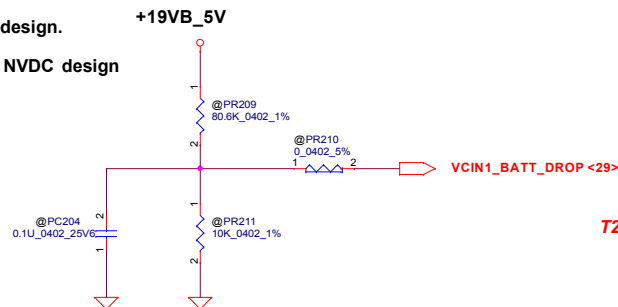
2014/09/25 update

For KB9022 sense 20mA	Active	Recovery
45W PR206 10K ohm SD034100280	58.5W, 0.61V	45W, 0.47V
PH1	2V	1V

PH1 under CPU botten side :
CPU thermal protection at 89 +3 degree C
Recovery at 56 +3 degree C

2013/06/07
Add for ENE9022 Battery Voltage drop detection.
Connect to ENE9022 pin64 AD1.

VAL50/ZAL20 Battery is 3-cell NVDC design.
B+=9V
Change PR12=50k if Battery is 2-cell NVDC design
B+=6V



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				Date	Monday, July 18, 2016
				ISheet	34 of 44
				Rev	0.2

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schematic from module
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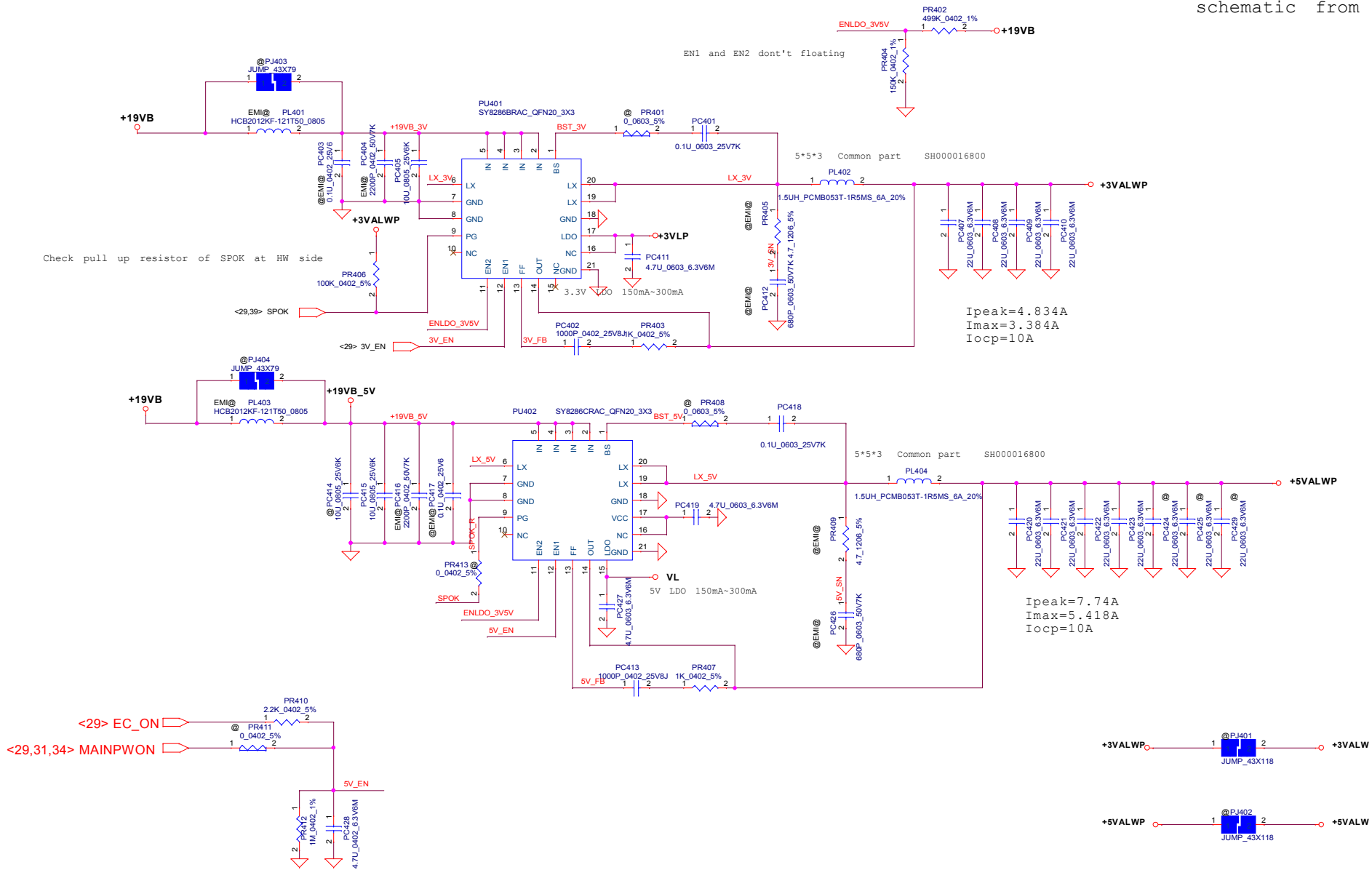


	Vin Detector		
	Min.	Typ	Max.
L-->H	17.16V	17.63V	18.12V
H-->L	16.76V	17.22V	17.70V

$VILIM = 20 * ILIM * Rsr$
 $ILIM = 3.3 * 100 / (100 + 316) / 20 / 0.01$
 $= 3.966 \text{ A}$

Security Classification		Compal Secret Data		<div>Compal Electronics, Inc.</div> <div>CHARGER</div> <div>Common Circuit</div>		
Issued Date	2015/10/02	Deciphered Date	2014/05/24			
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				Date: Monday, July 18, 2016	Sheet 35 of 44	

schematic from A4WAS

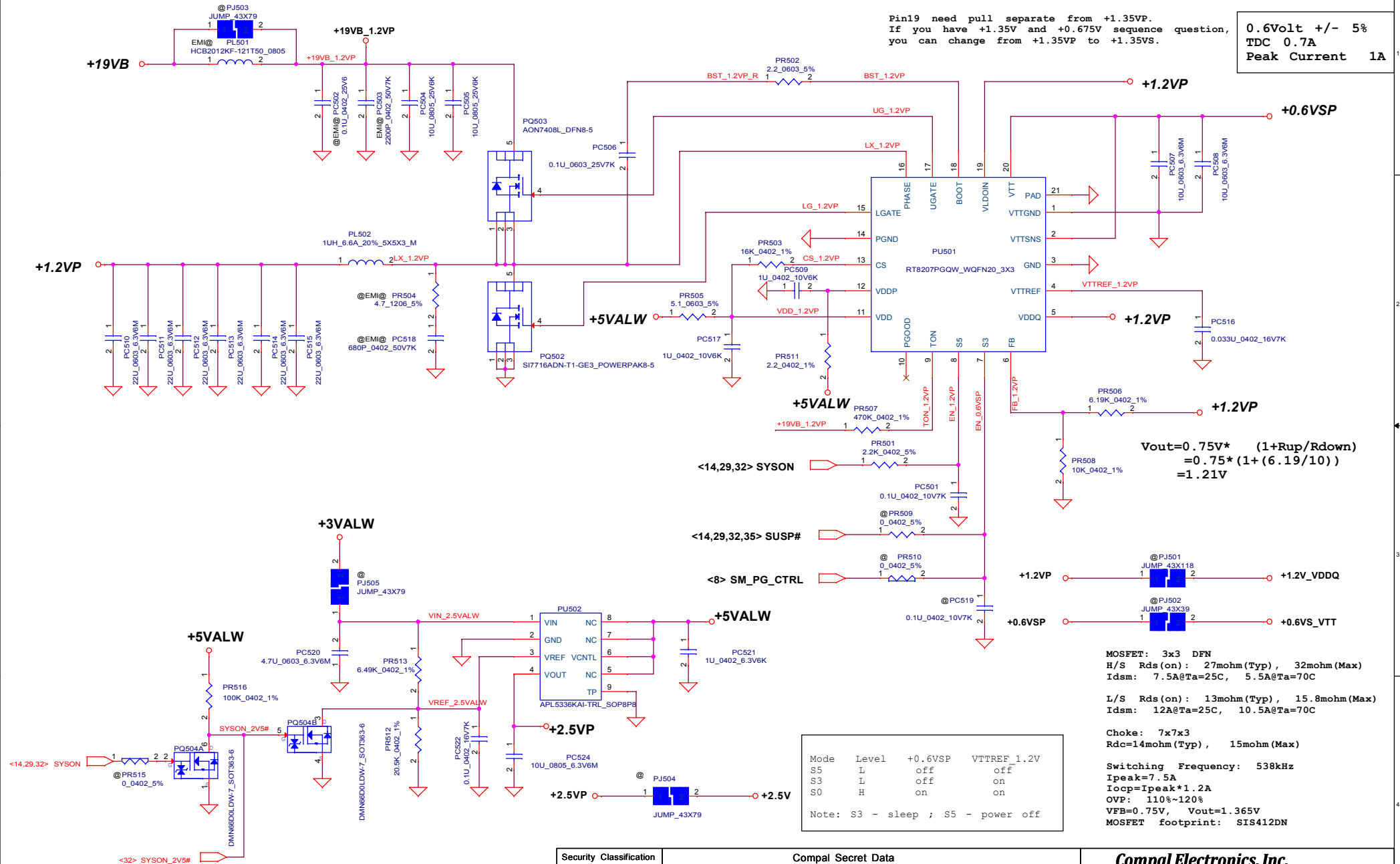


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Issued Date	2015/10/02	Deciphered Date	2016/11/10	Title	
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				Document Number	
				Rev	
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schematic from A4WAS
IC change RT8207K

Pin19 need pull separate from +1.35VP.
If you have +1.35V and +0.675V sequence question,
you can change from +1.35VP to +1.35VS.

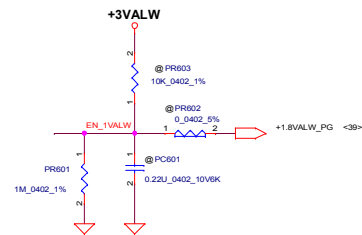
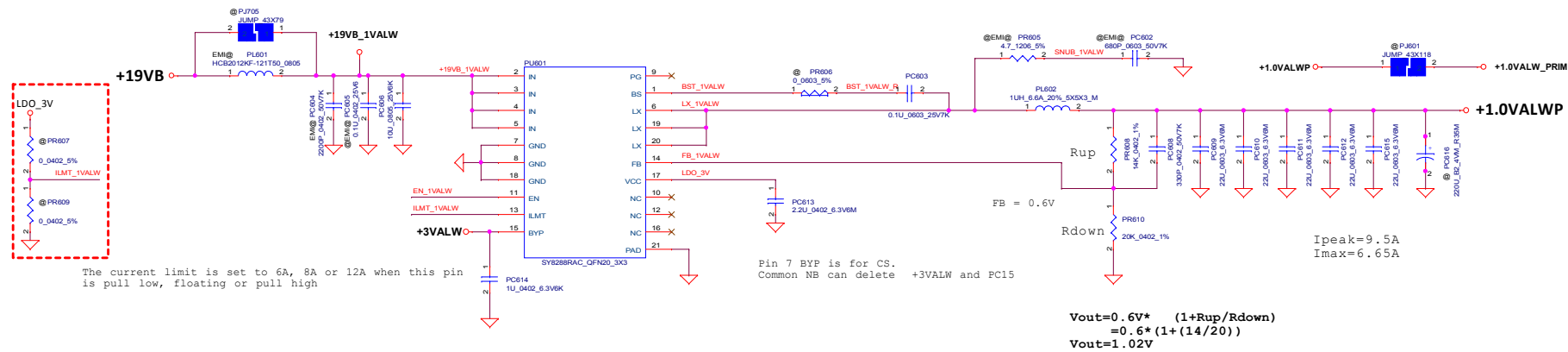
0.6Volt +/- 5%
TDC 0.7A
Peak Current 1A



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Issued Date	2015/10/02	Deciphered Date	2016/11/10	Title		
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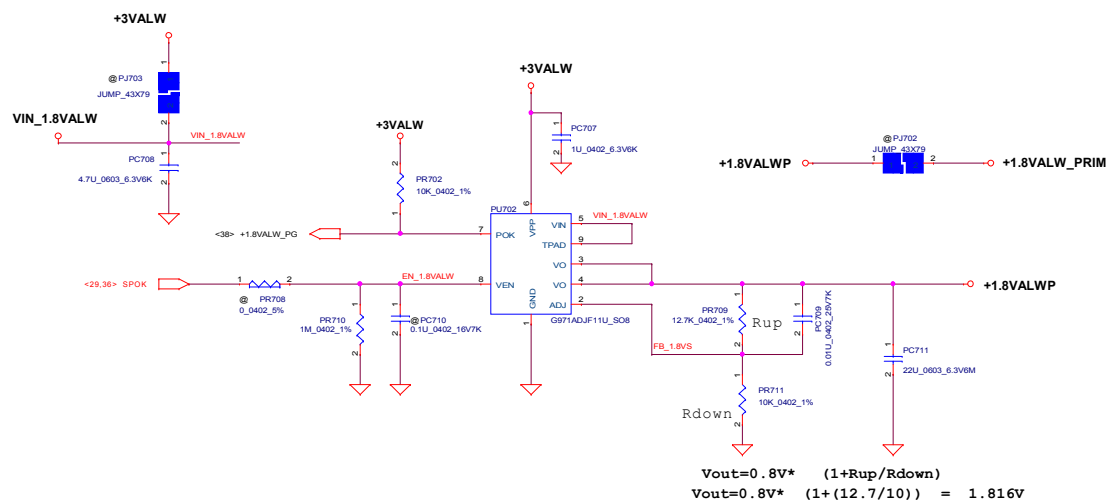
schematic from A4WAS

EN pin don't floating
If have pull down resistor at HW side, pls delete PR702

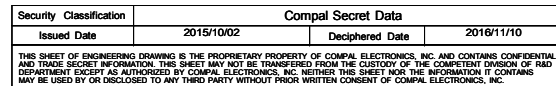


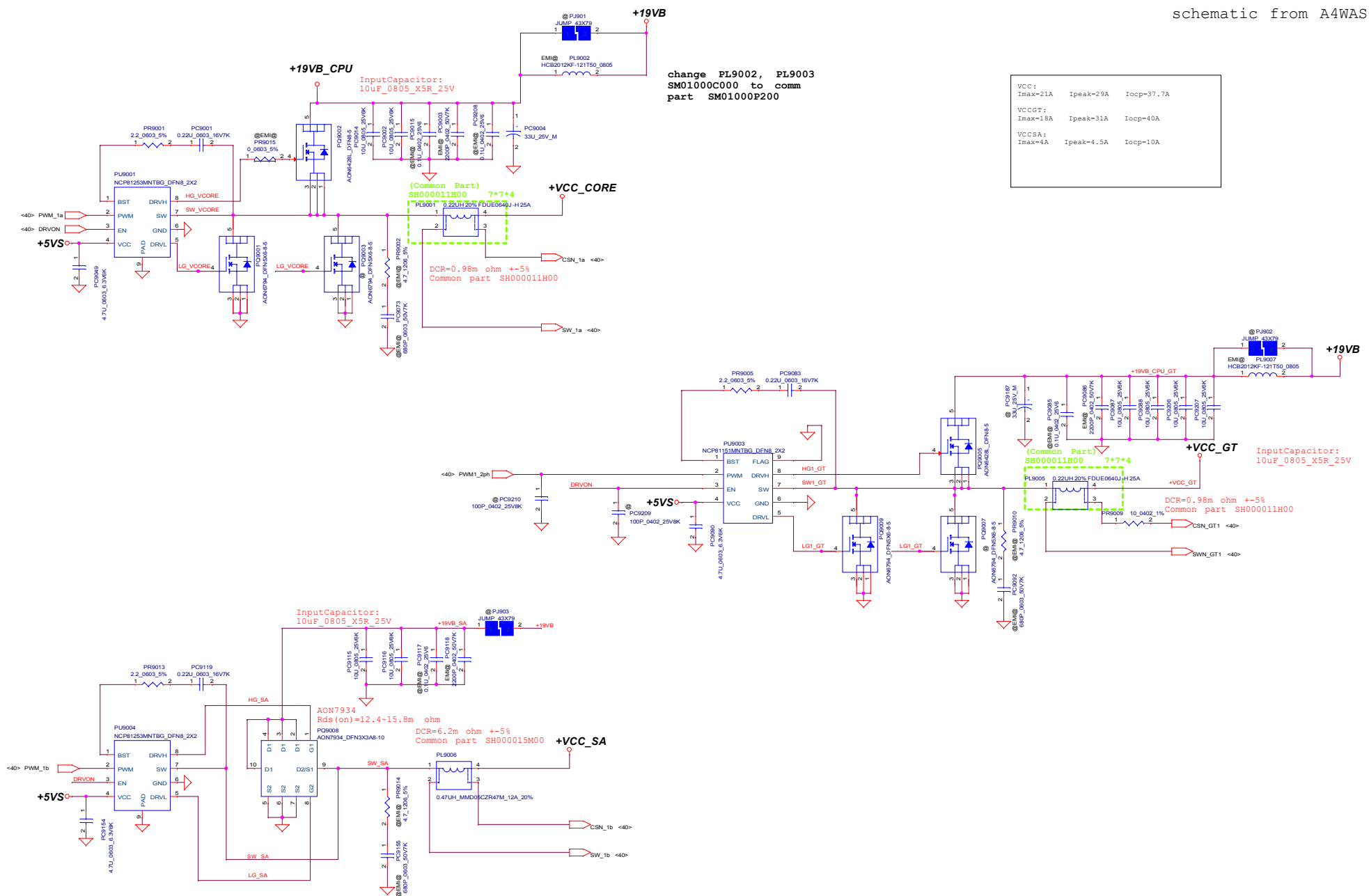
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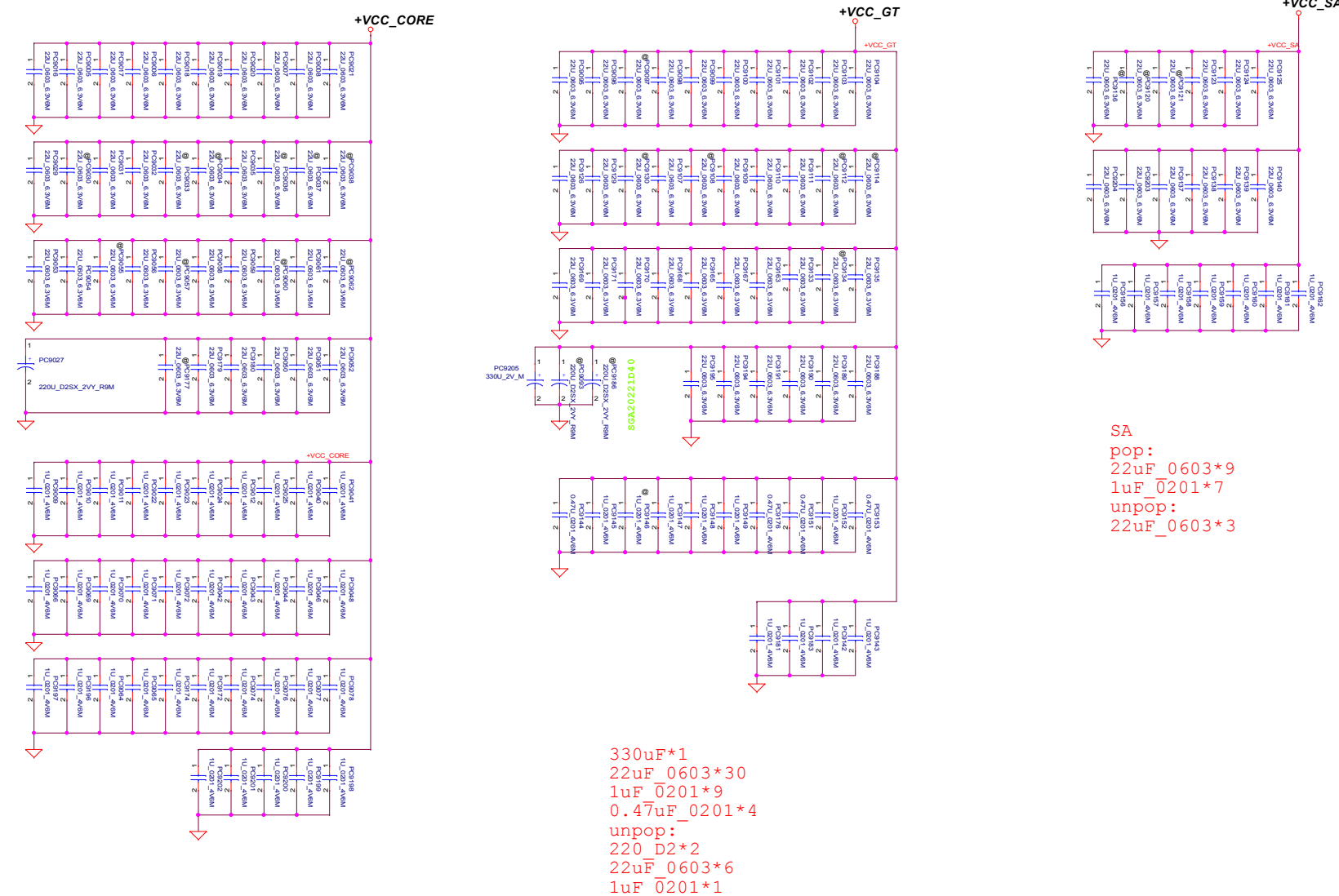
schematic from A4WAS
IC change to G971



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				Sheet	44 of 44