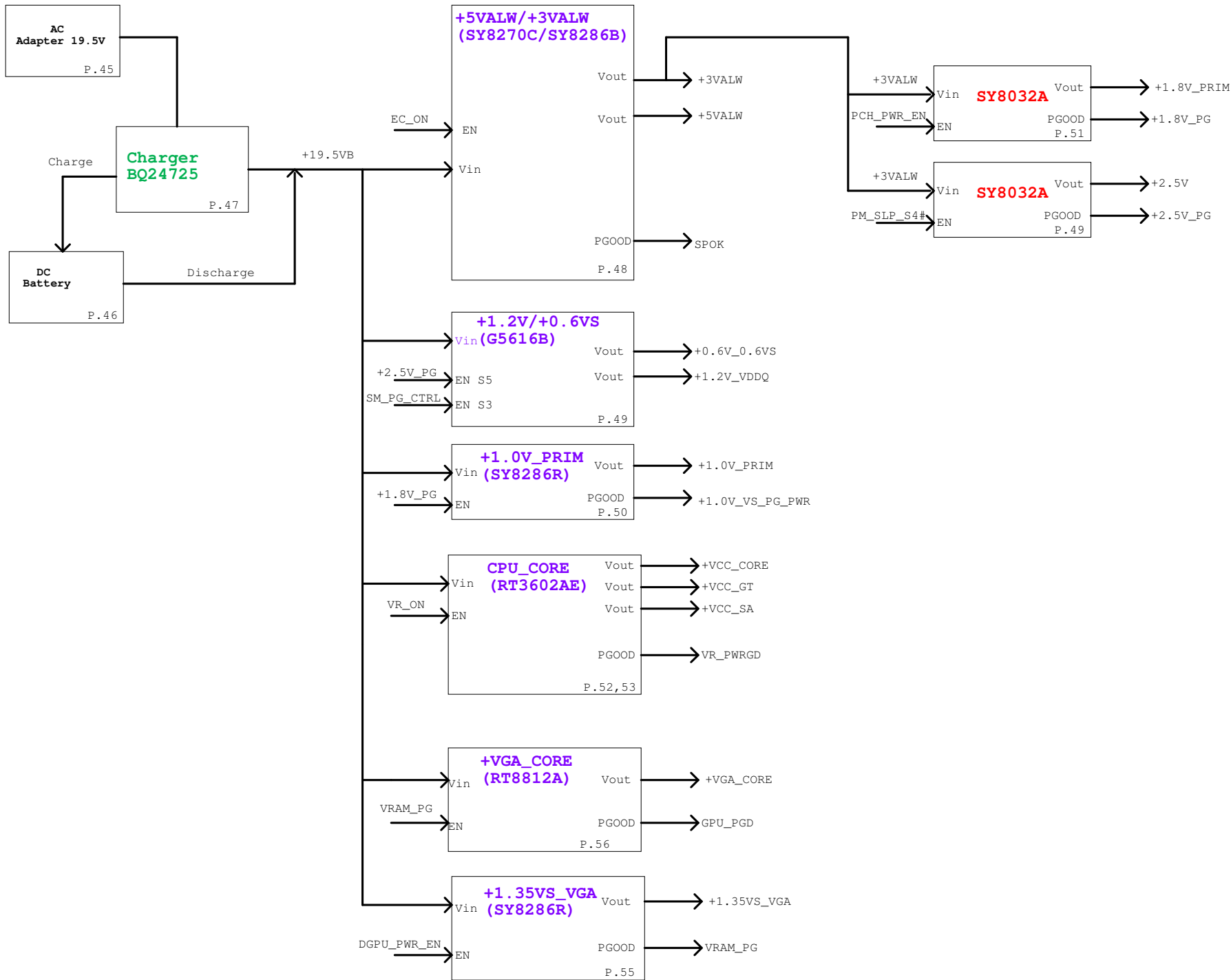
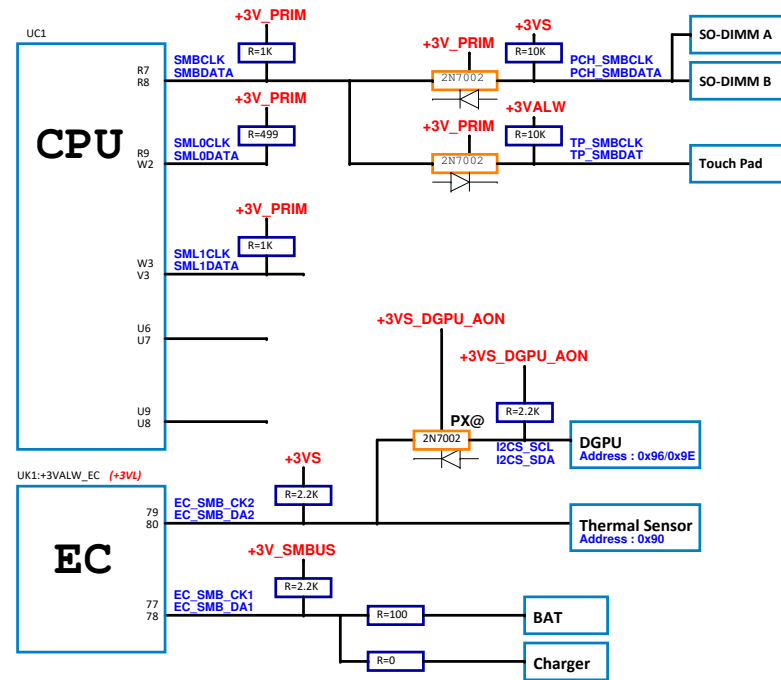


Compal EPW50 LA-H323P Rev 1.0



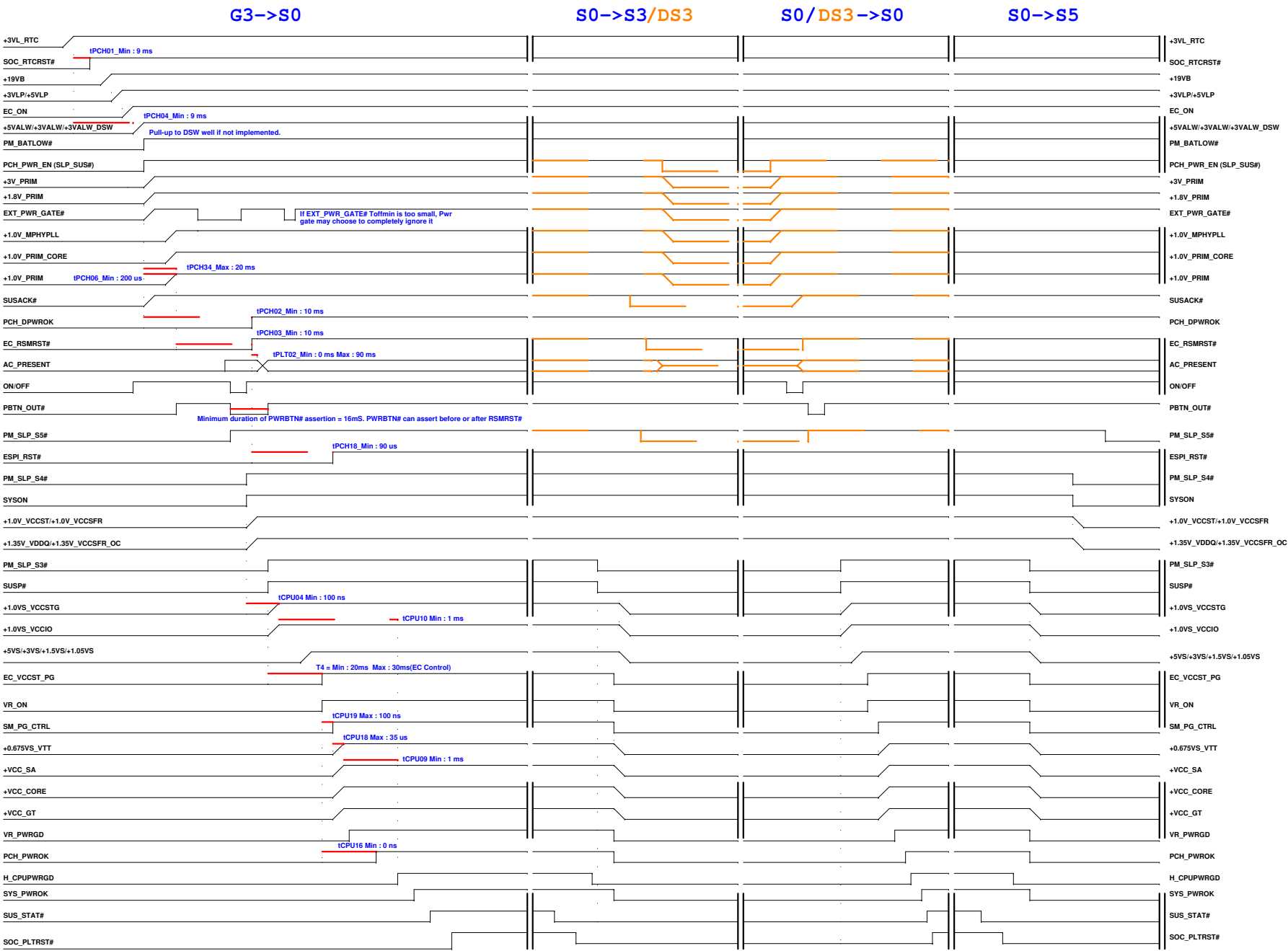






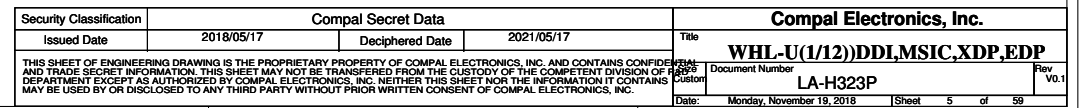
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Issued Date	2018/05/17	Deciphered Date	2021/05/17	Title
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**1 = Port C is detected.**



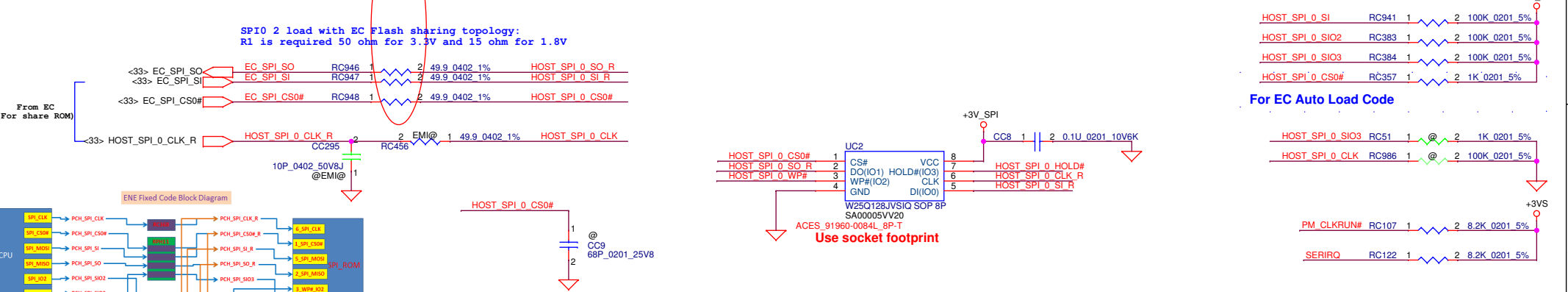
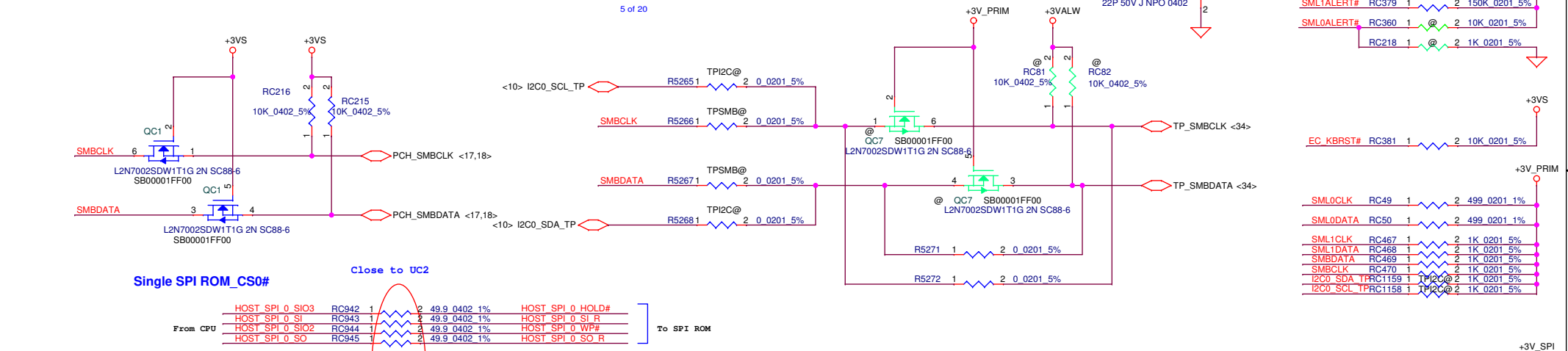
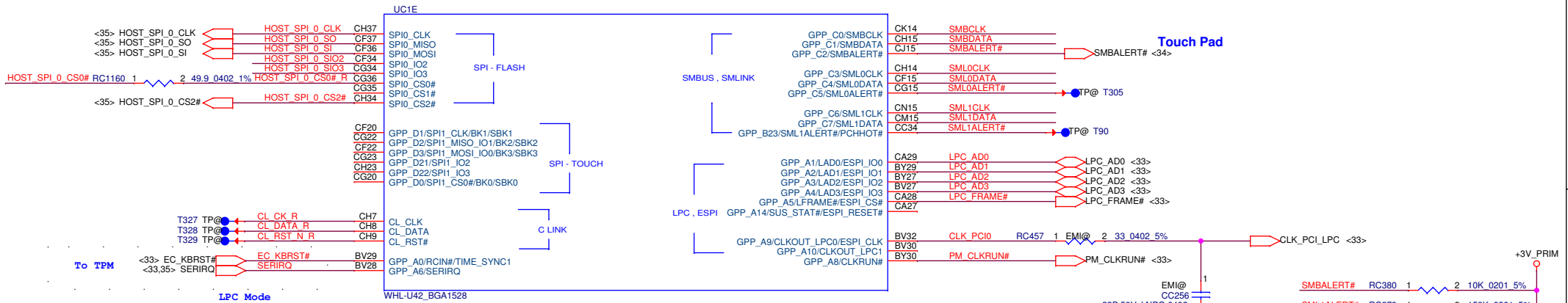






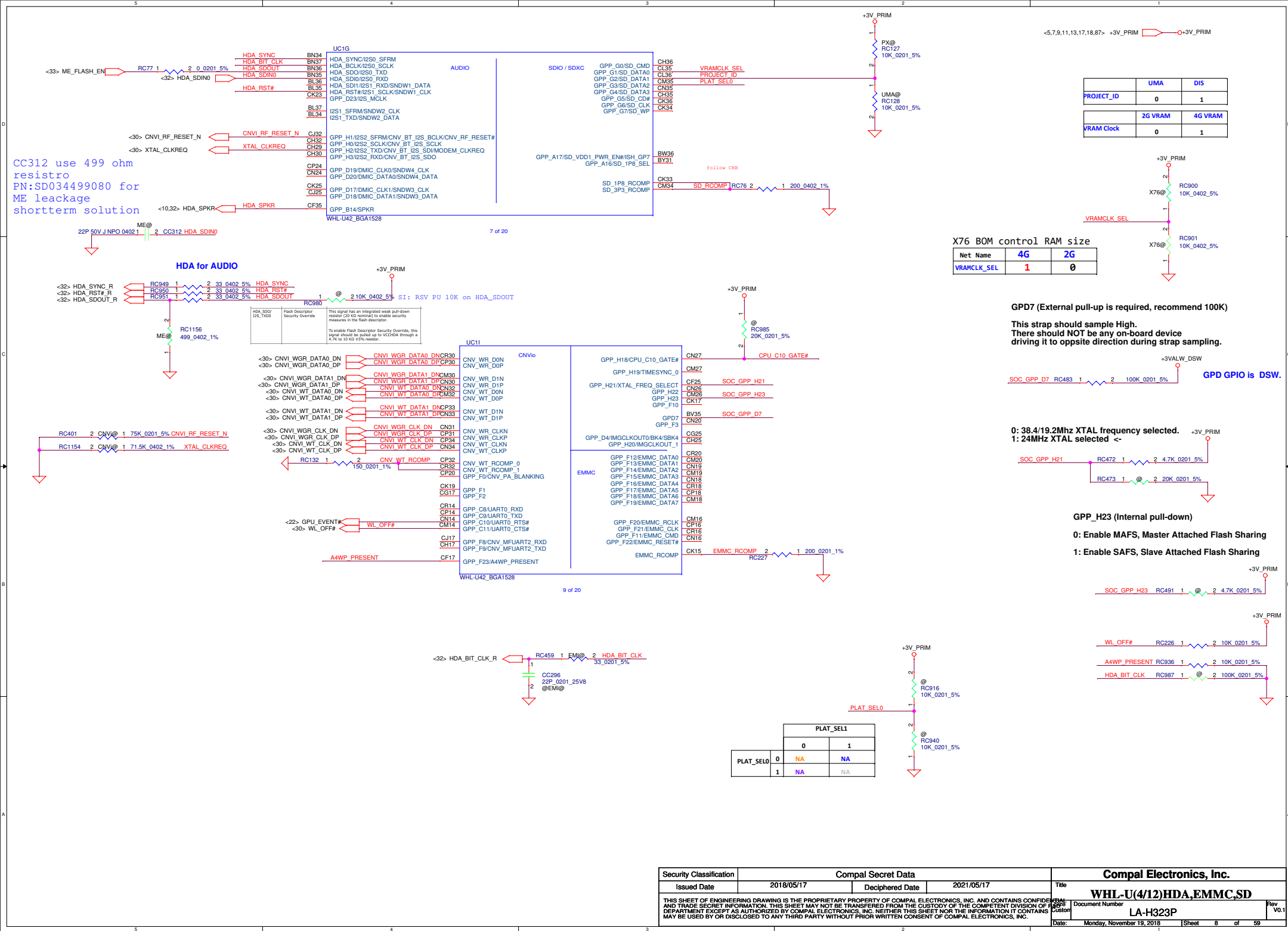
SMLOALERT# (Internal Pull Down):  
eSPI or LPC  
0 = LPC is selected for EC --> For KB9022/9032 Use  
1 = eSPI is selected for EC --> For KB9032 Only.

<5,8,9,11,13,17,18,87> +3V\_PRIM  
<6,9,10,11,17,18,19,22,23,24,27,28,29,31,32,33,35,36,40,41,88,94> +3VS  
<13> +3V\_SPI

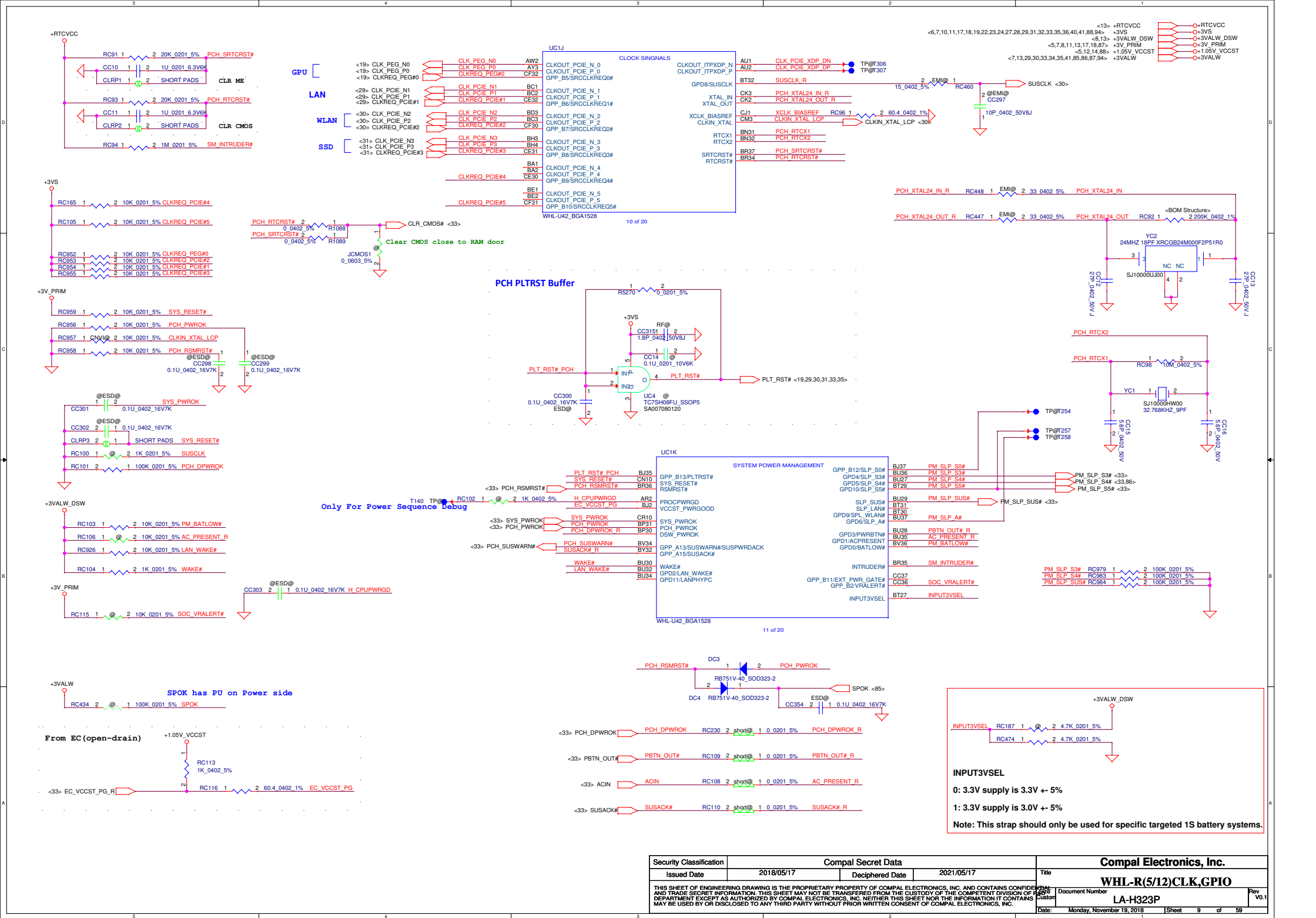


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				Date	Monday, November 19, 2018
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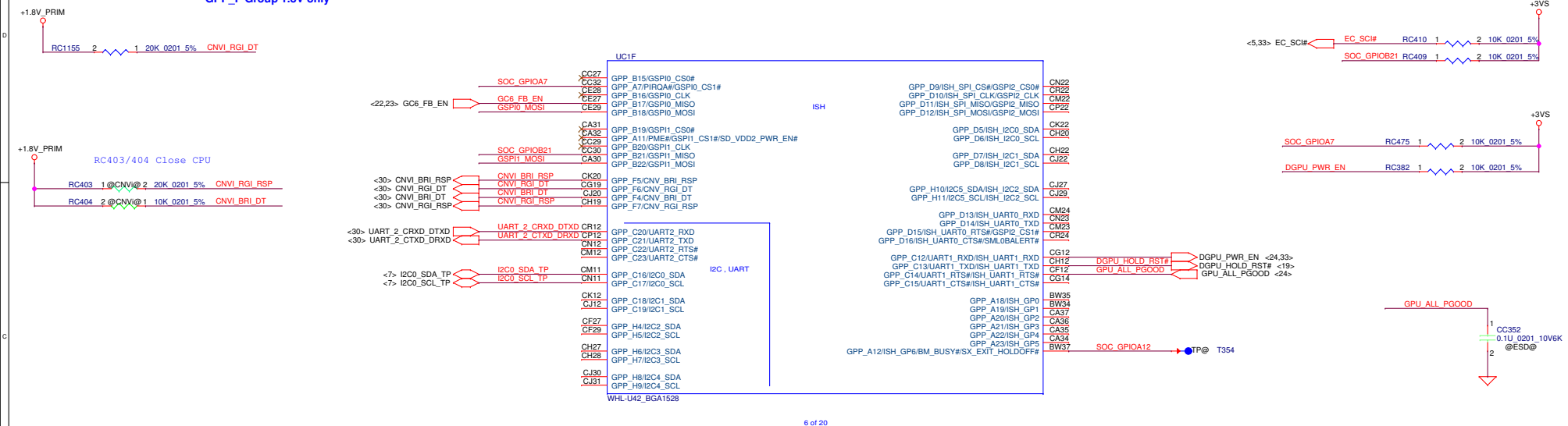






1 = Integrated CNVi disable.

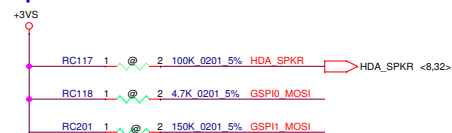
**GPP\_F Group 1.8V only**



**1 = Enable TOP Swap Mode.**

**1 = Enable No Reboot Mode.** (PCH will disable the TCO Timer system reboot feature). This function is useful when running ITP/XDP.

1 = LPC Mode



UC11

SMBCLK SMBDATA

5

EC\_SMB\_DA2 <22.33>

3V3

CC127

0.1U\_0201\_10V6k

1

2

4

+Vs

ALERT#

G753111U\_SOT23-5

SA000008CH00

2

1

2

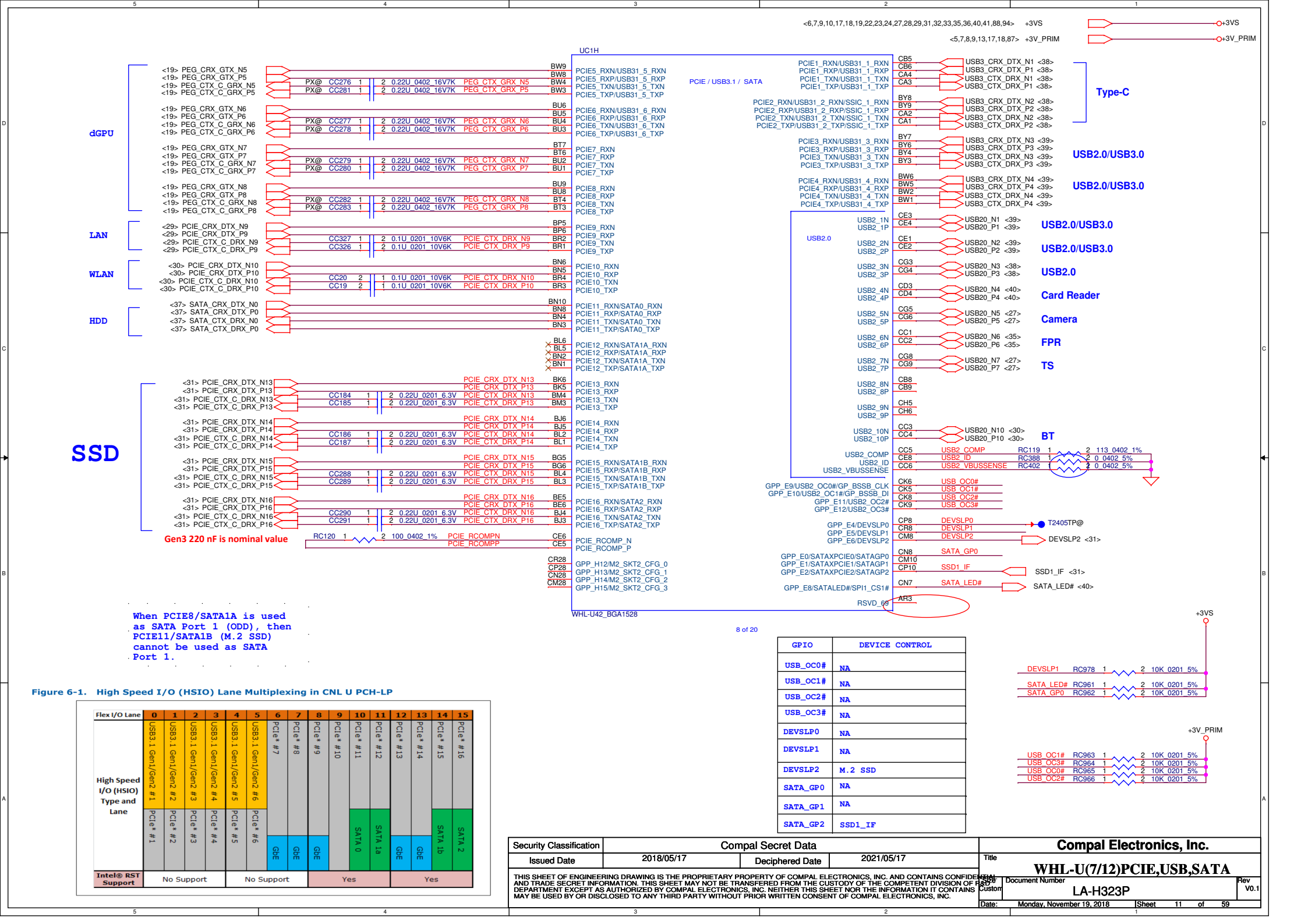
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EC\_SMB\_CK2

<22.33>

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				Date:	Thursday, November 15, 2018





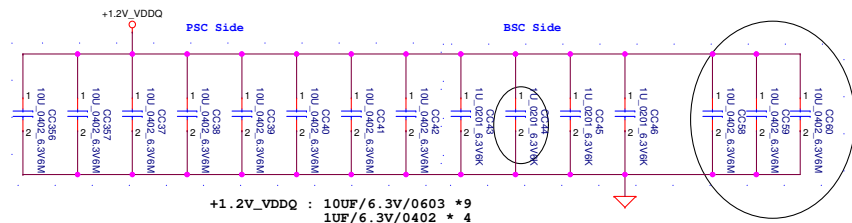
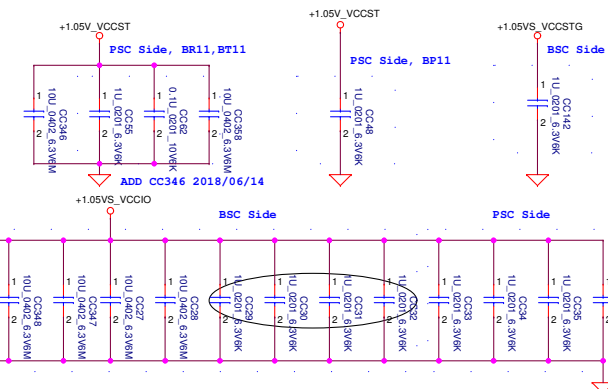
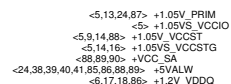


08-18  
w Cocoa MV modify list for power sequence



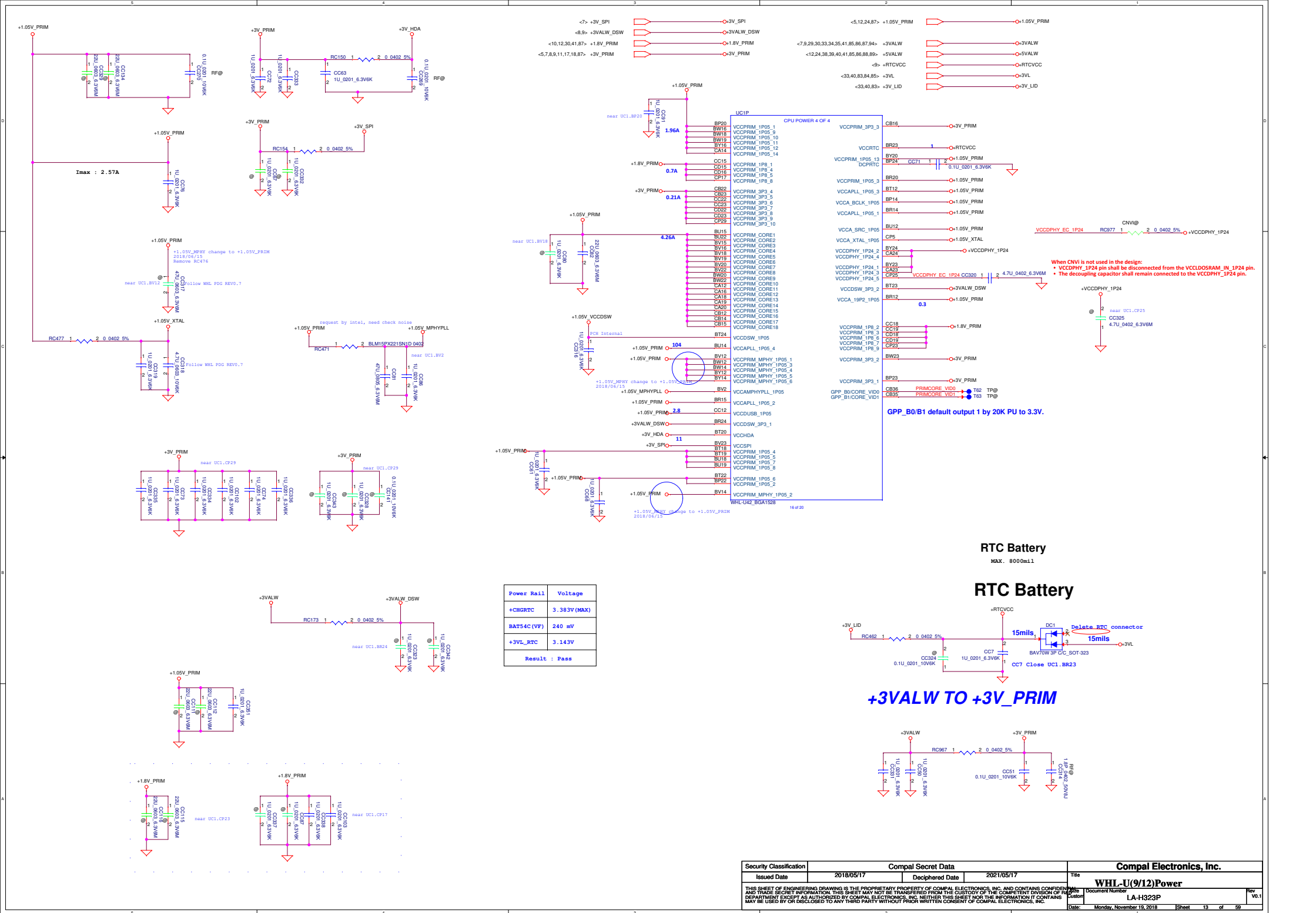
\*\*Do not combine with VccSTG; 1.05V-10% allowed only on VCCIO; 5% additional Vdroop factored into LS RdsON

CC  
02

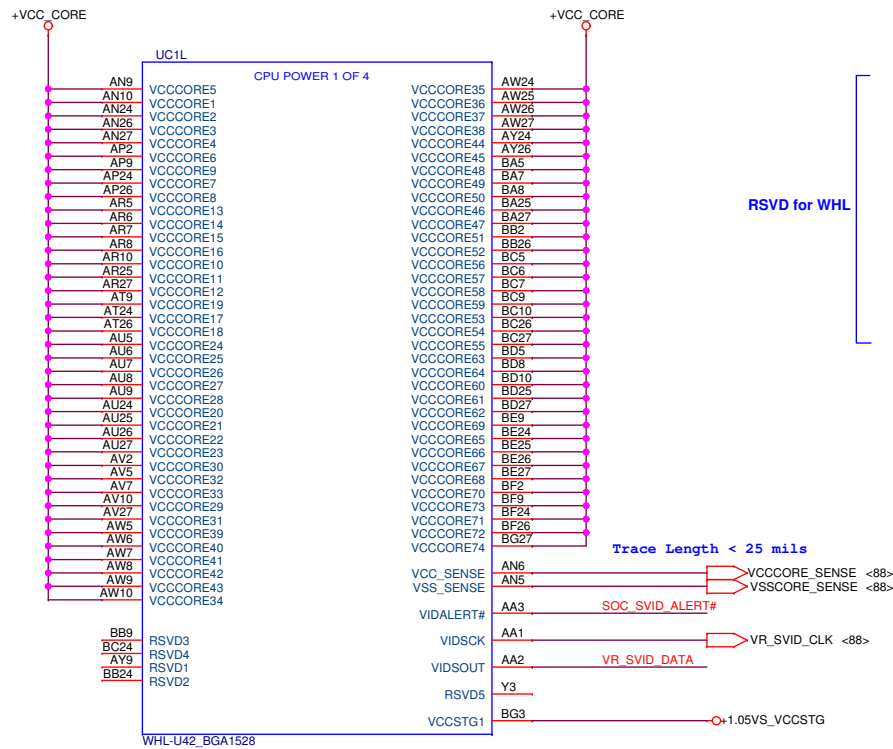


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				Date: Monday, November 19, 2018	Sheet 12 of 59

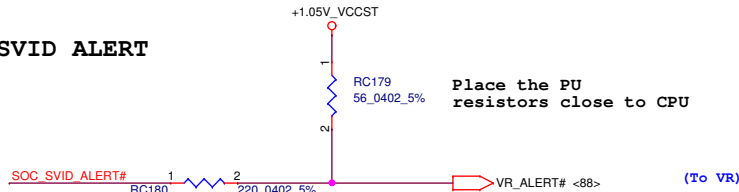




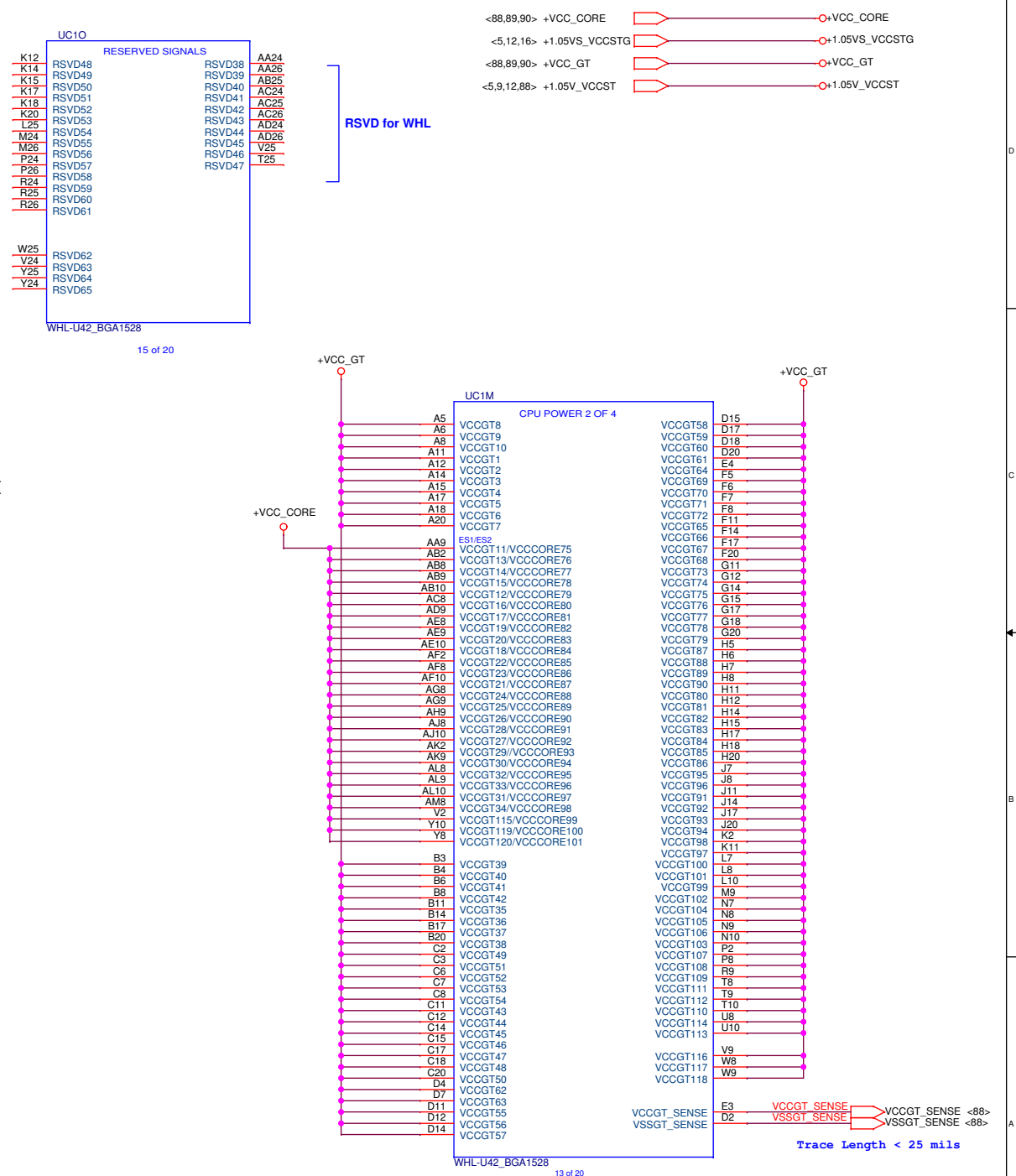
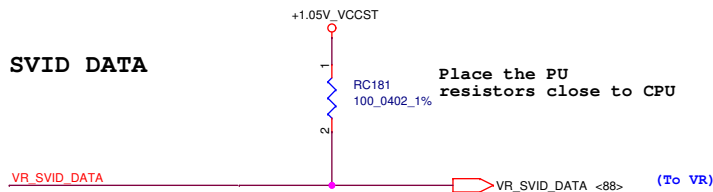




### SVID ALERT

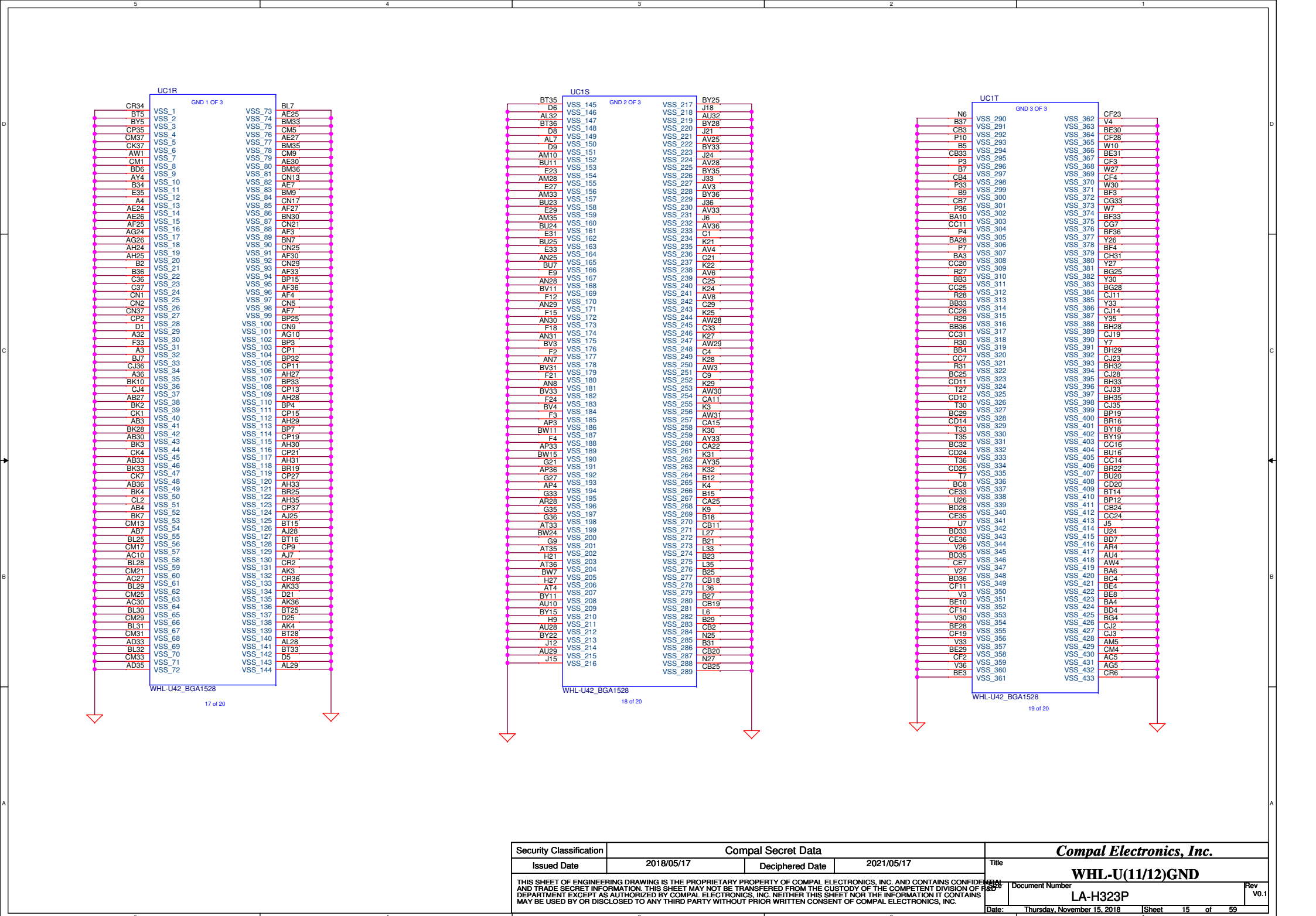


### SVID DATA

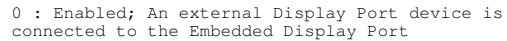


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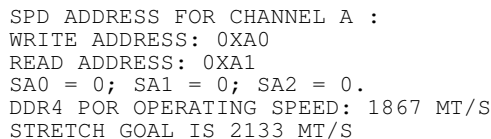


Security Classification		Compal Secret Data				<b>Compal Electronics, Inc.</b>					
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								Document Number		LA-H323P	
								Date: Thursday, November 15, 2018		Sheet 16 of 59	

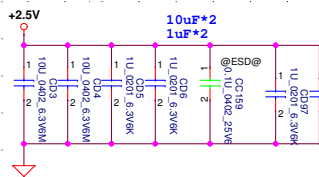


## REVERSE TYPE

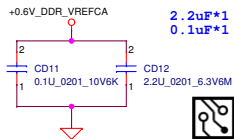
TOP: JDIMM1 CONN Non-ECC DIMM



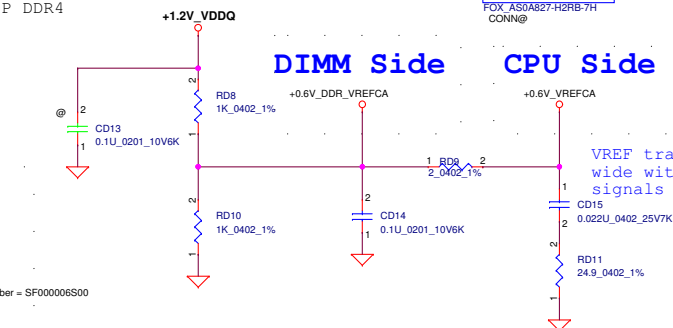
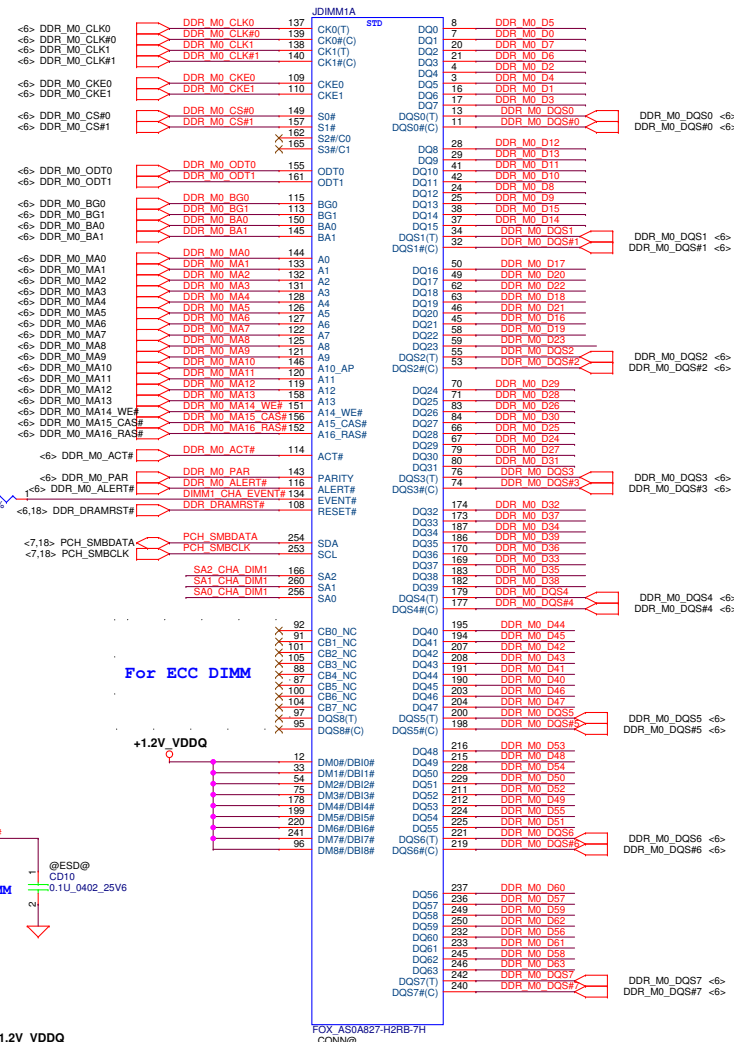
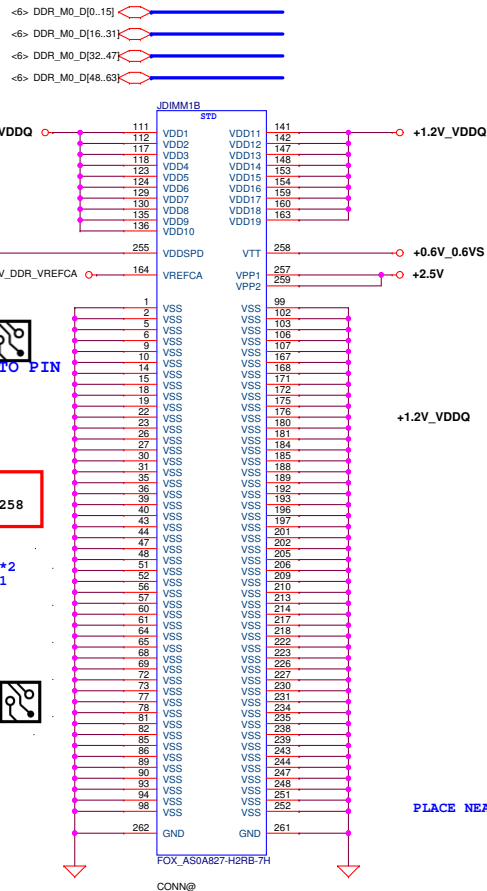
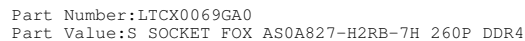
Layout Note:  
Place near JDIMM1.257,259



Layout Note:  
PLACE THE CAP near JDIMM1. 164



Layout Note:  
Place near JDIMM1



VREF traces should be at least 20 mils wide with 20 mils spacing to other signals

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				<b>LA-H323P</b>	1.0
Date:	Monday, November 19, 2018	Sheet	17	of	59

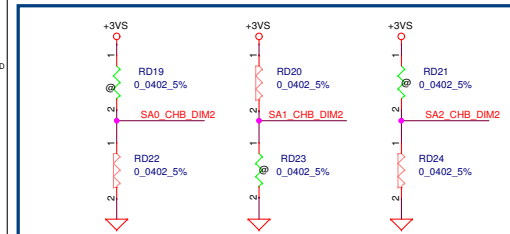


# CHANNEL-B

STD (5.2 mm)

## Interleaved Memory

TOP: JDIMM2 CONN Non-ECC DIMM

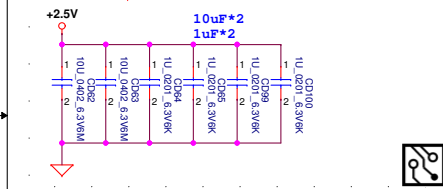


PLACE ALL THE BELOW RESISTORS CLOSE TO SODIMM

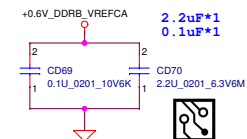
SPD ADDRESS FOR CHANNEL B :  
WRITE ADDRESS: 0XA4  
READ ADDRESS: 0XA3  
SA0 = 0; SA1 = 1; SA2 = 0.  
DDR4 POR OPERATING SPEED: 1867 MT/S  
STRETCH GOAL IS 2133 MT/S

Layout Note:  
Place near JDIMM2.257,259

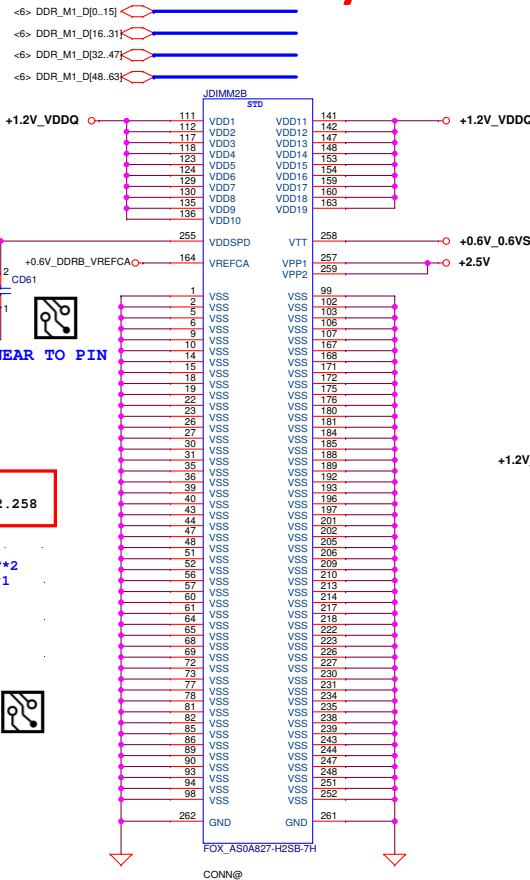
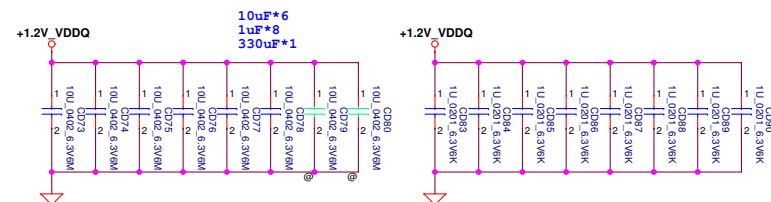
Layout Note:  
Place near JDIMM2.258



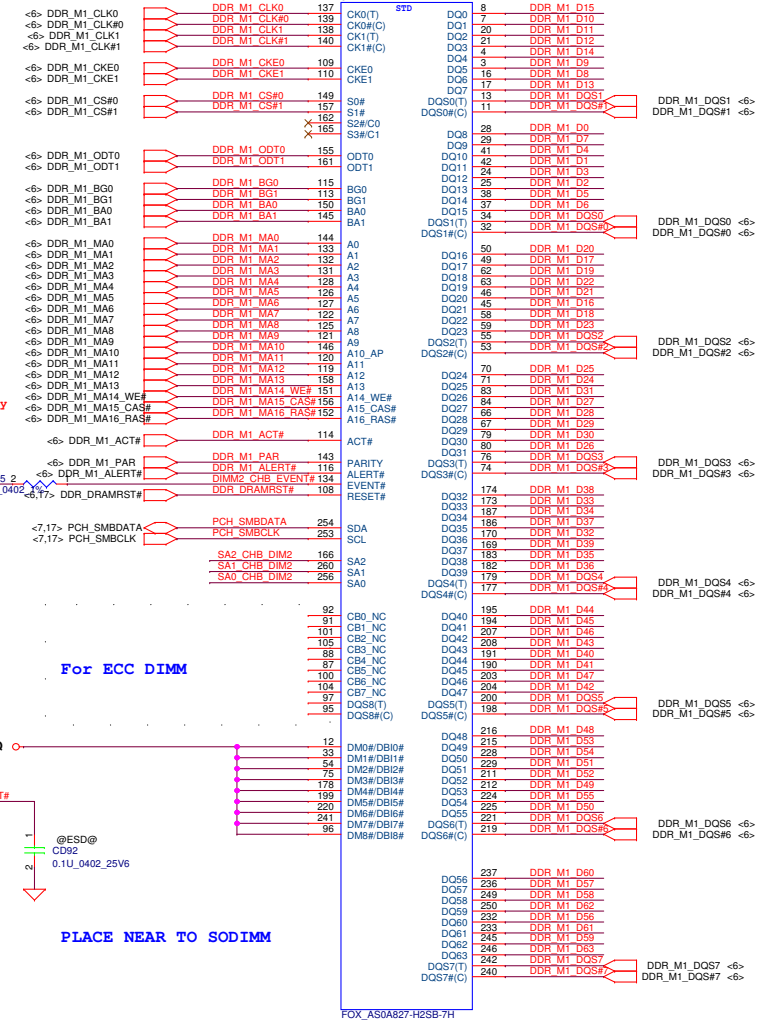
Layout Note:  
PLACE THE CAP WITHIN 200 MILS  
FROM THE JDIMM2



Layout Note:  
Place near JDIMM2

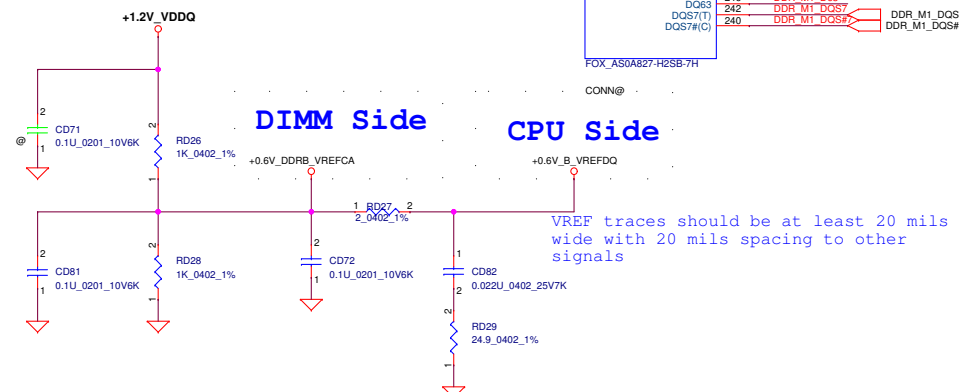


Part Number: LTCX0069FA0  
Part Value: S SOCKET FOX AS0A827-H2SB-7H 260P DDR4



For ECC DIMM

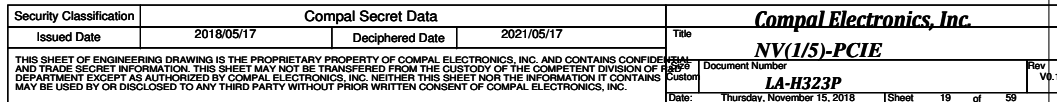
PLACE NEAR TO SODIMM



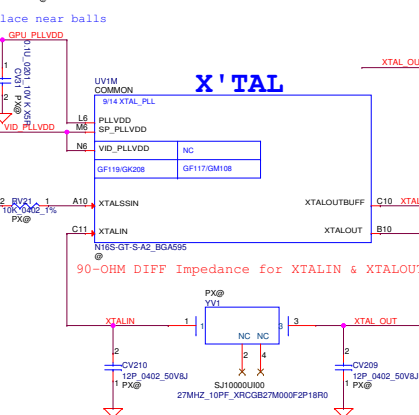
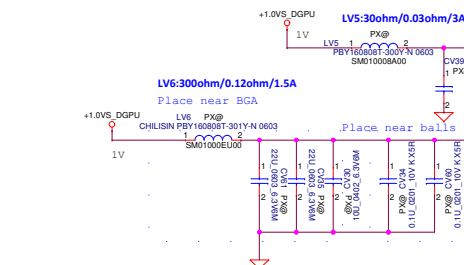
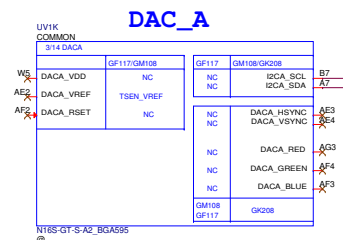
VREF traces should be at least 20 mils wide with 20 mils spacing to other signals

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GPU Package	PLL Rails	Capacitor Type	Footprint	Population	Location
GB2-64	SP_PLLVDD	0.1 $\mu$ F	X7R	0402	1 per ball
GB2B-64	(+ VID_PLLVDD) <sup>1</sup>	10 $\mu$ F	X5R	0603	1
GB4B-128		47 $\mu$ F	X5R	0805	1
GB3B-256					
<b>Bead Type</b>					
		300 $\Omega$ (ESR=0.2 $\Omega$ )	0603	1	Near GPU

03	1	Near GPU
05	1	Near GPU
03	1	Near GPU

for customers who either do not use  
lower than 1024 x 768 with a 240 Hz

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Title: **Document Number**  
 Date: **LA-H323P**  
 Transferred: **November 13, 2014**  
 (Sheet: **2** of **58**)

Rev: **V0**









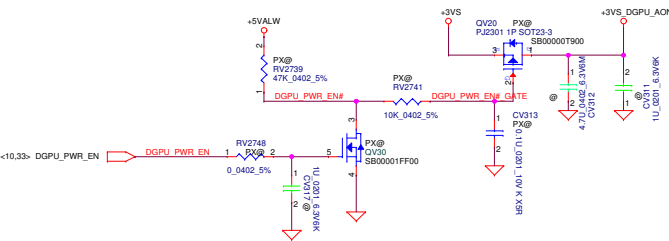
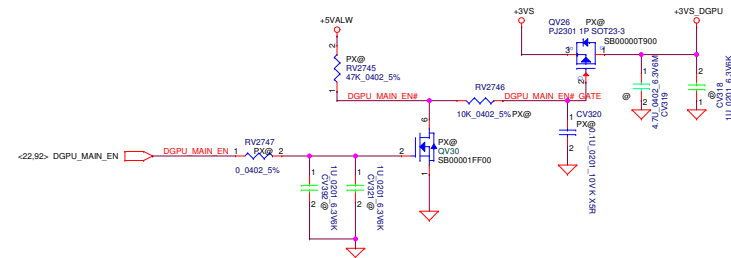




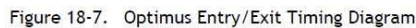




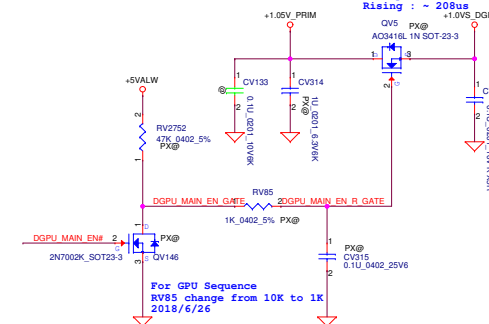




Constraint Parameter	Requirement
FBVDDQ/FBVDD	1.5 V (DDR3) or 1.35V (DDR3L)
DC tolerance	± 3%
AC tolerance	Transient noise tolerance: 80 mV pk-pk within 20 MHz BW High frequency noise tolerance: 200 mV pk-pk within 1 GHz BW



Symbol	Description	Min	Max	Units
T0	PEX_RST# assertion to GPU_PWR_EN=0	>0	5	ms
T1	All GPU power rail up and stable to PEX_RST# de-assertion	0.1	5	ms



Products	VRAM Type	GPU Core	GPU FBIO		FB Total <sup>1, 5</sup>		1.05V Total <sup>2</sup>	3.3V Total
		—	1.5V <sup>4</sup>	1.35V <sup>4</sup>	1.5V <sup>4</sup>	1.35V <sup>4</sup>	1.05V <sup>4</sup>	3.3V <sup>4</sup>
		(A)	(A)	(A)	(A)	(A)	(A)	(A)
N16S-GMR	GDDR5	19.0	—	2.0	—	4.2	0.80	0.06
	DDR3/L	21.0	1.4	1.4	2.4	2.3	0.80	0.06
N16S-GTR	GDDR5	26.5	—	2.0	—	4.2	0.80	0.06
	DDR3/L	26.0	1.4	1.4	2.4	2.3	0.80	0.06

GPU Package	Power Rails	Voltage	Transient Noise
GB2-64/ GB2B-64	PEX_IOVDD/Q and PEX_PLLVDD	1.05 V $\pm$ 30 mV or 1.0 V $\pm$ 15mV	100 mV pk-pk within 20 MHz (1.05V) or 70 mV pk-pk within 20 MHz (1.0V)

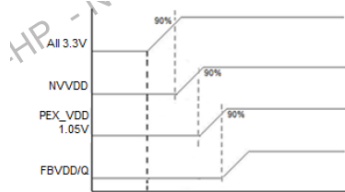
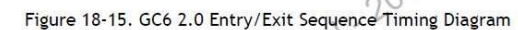


Figure 3-7. Example of Power-Up Sequencing Order

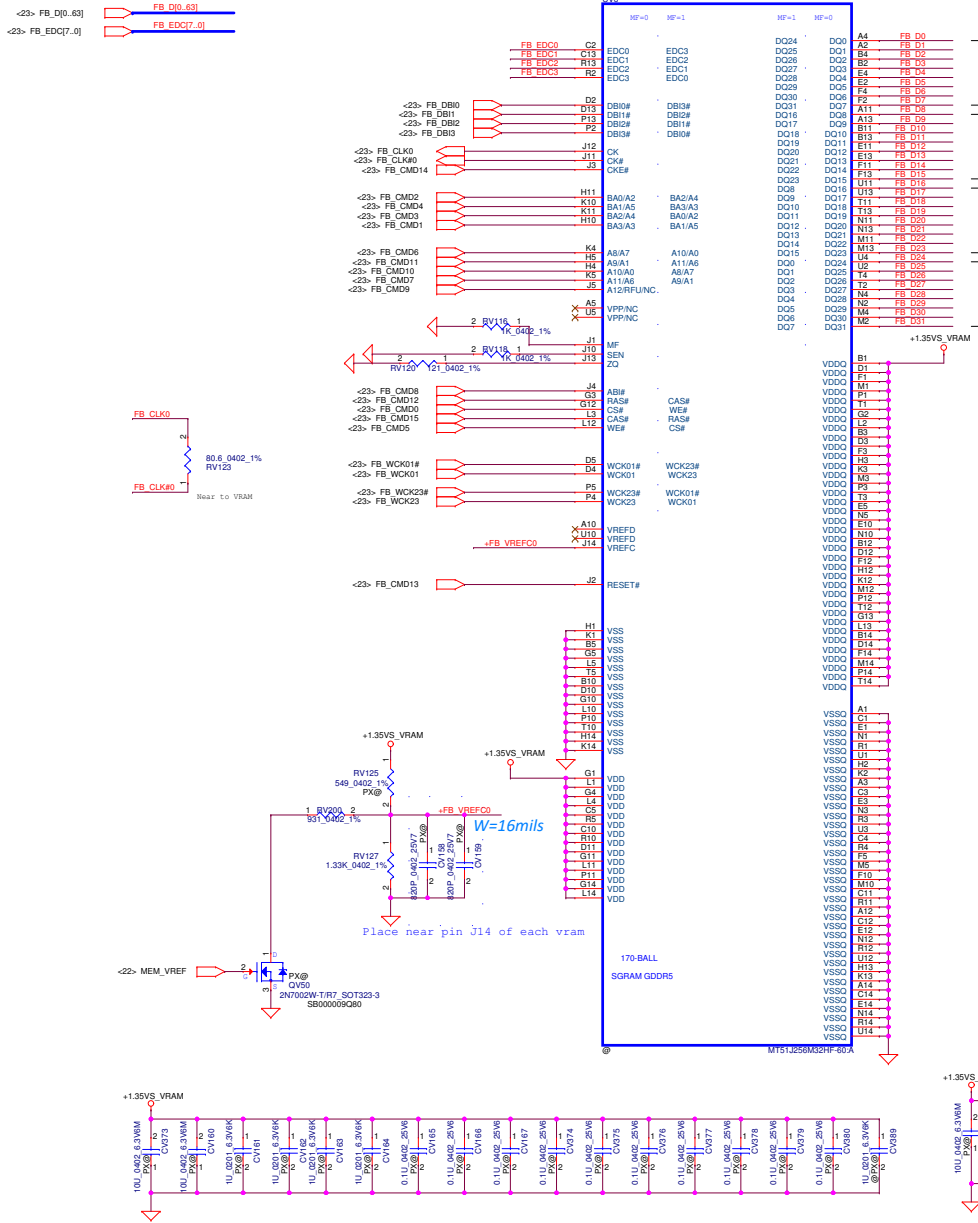
Symbol	Description	Min	Max	Unit
T0	GPU_EVENT# assertion period	0.001	N/A	ms
T1	3V3_MAIN_EN assertion to all power rails up and stable	0.04	4	ms

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				Sheet	54 of 58

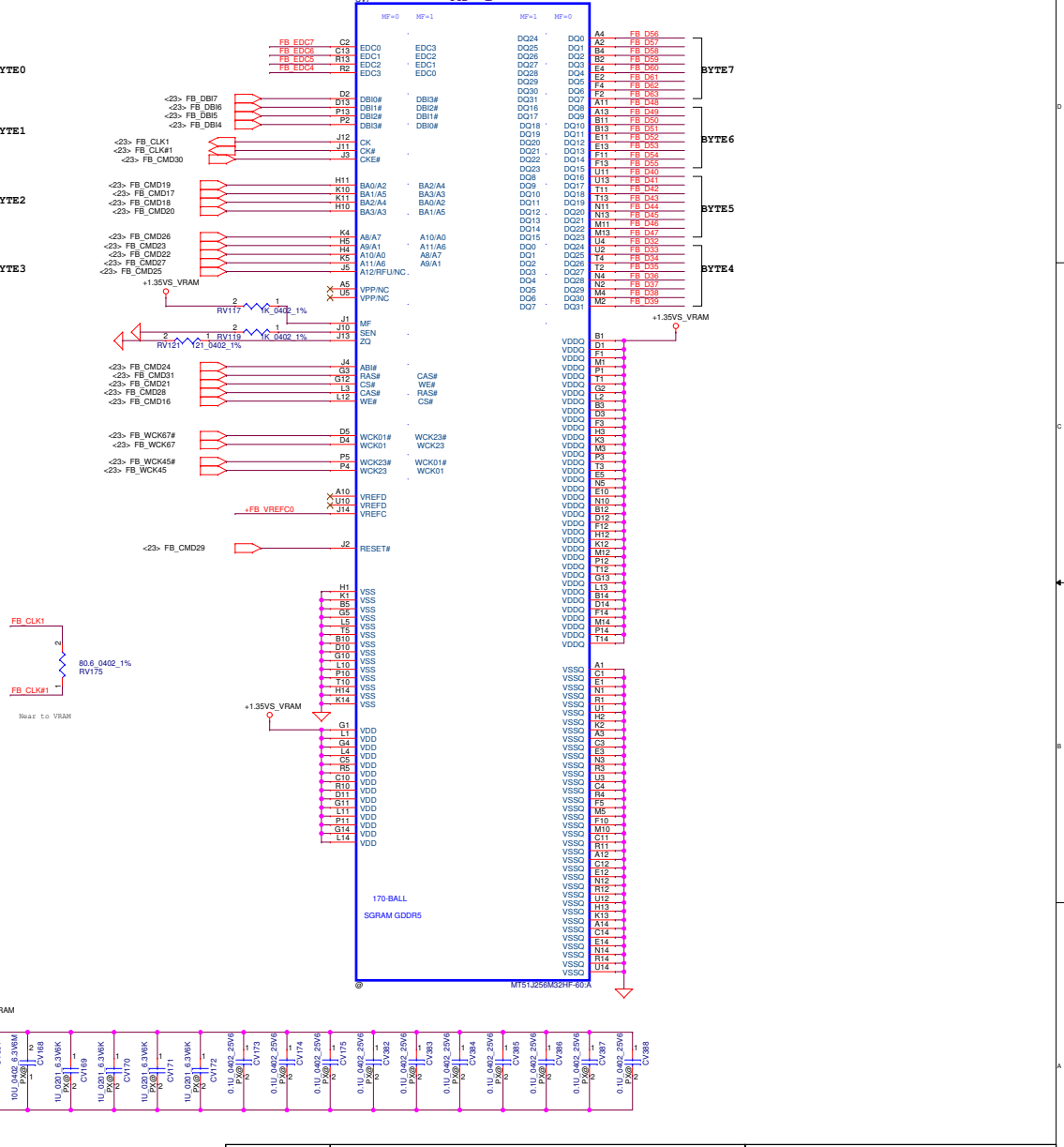


Memory Partition A

MF=0



MF=1



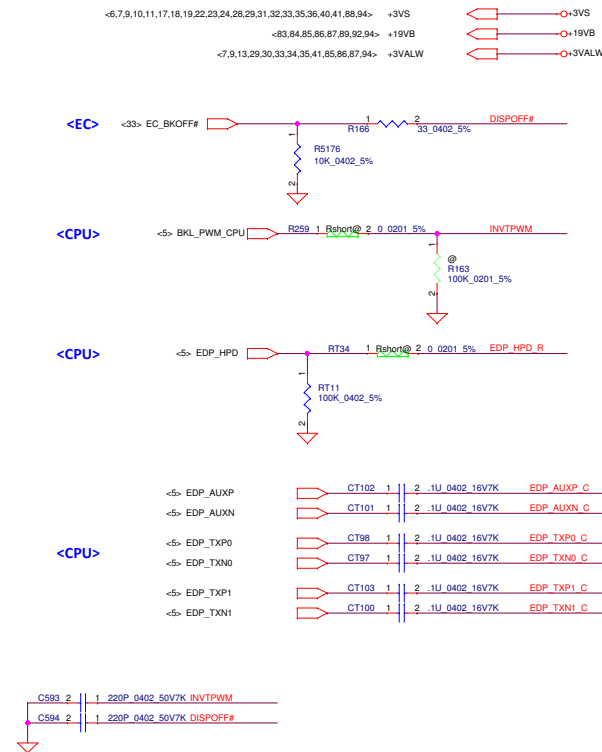
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@ESD@  
 USB20\_P7 R 2  
 USB20\_N7 R 3  
 YSLC05CH\_SOT23-3  
 SCA00000U10  
 <1> USB20\_N7  
 <1> USB20\_P7  
 SM07000S1U00  
 MURATA DLM05N900GHY2D  
 EMI@  
 R173 1 2 0.0201\_5%  
 R174 1 2 0.0201\_5%  
 R175 1 2 0.0201\_5%  
 R176 1 2 0.0201\_5%  
 R5187 1 2 0.0402\_5%  
 TS\_GPIO\_EC  
 TS\_GPIO

The top diagram shows the connection of the SA00004ZA00 power switch to the FQ4 IC (TS0). The switch is connected to the OUT pin of FQ4, which is also connected to the IN pin of FQ4. The switch is also connected to the GND pin of FQ4. The switch is labeled G5250Q1T73U SOT-23 3P POWER SWITCH. The switch is connected to the +3VS\_TOUCH pin of the board. The switch is also connected to the 4.7uF 0.402 6.3VBM capacitor. The switch is connected to the 0.1uF 0.402 16V4Z capacitor. The switch is connected to the 20mil pin of the board. The switch is connected to the 3VS pin of the board.

The bottom diagram shows the connection of the SA00004ZA00 power switch to the FQ2 IC (CTS6). The switch is connected to the OUT pin of FQ2, which is also connected to the IN pin of FQ2. The switch is also connected to the GND pin of FQ2. The switch is labeled G5250Q1T73U SOT-23 3P POWER SWITCH. The switch is connected to the +5VS\_TOUCH pin of the board. The switch is also connected to the 4.7uF 0.402 6.3VBM capacitor. The switch is connected to the 0.1uF 0.402 16V4Z capacitor. The switch is connected to the 20mil pin of the board. The switch is connected to the 5VS pin of the board.



Pin connection diagram for the ESP8266 module. The diagram shows the module's pins (1-32) connected to various components. Pins 1-10 are connected to a J1EDP CONN02 header. Pins 11-18 are connected to a Touch screen (USB20 P7 R, USB20 N7 R, USB20 P7 R, USB20 N7 R, INTPWM, TS GPIO). Pins 19-20 are connected to INVFWIR\_B+. Pins 21-23 are connected to +5VS\_TOUCH and +3VS\_TOUCH. Pins 24-26 are connected to +3VS\_CAMERA. Pins 27-30 are connected to a Camera (USB20 N5 R, USB20 P5 R). Pins 31-32 are connected to GND1 and GND2. The module is labeled @ESD@ DM1 SC600001600.

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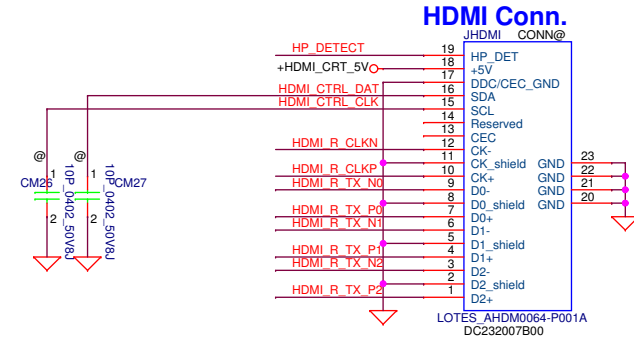
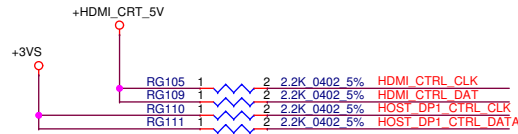
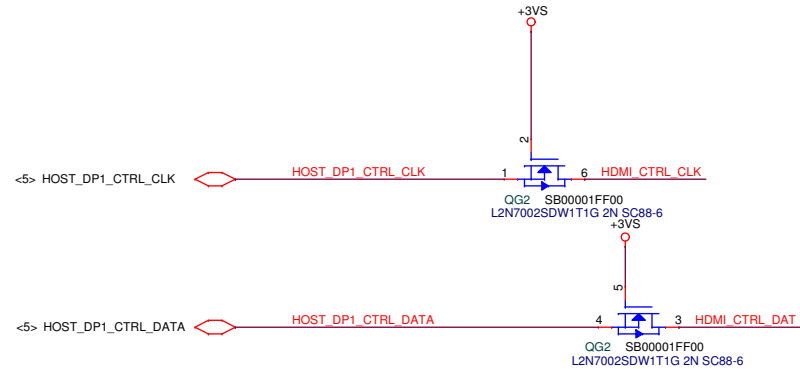
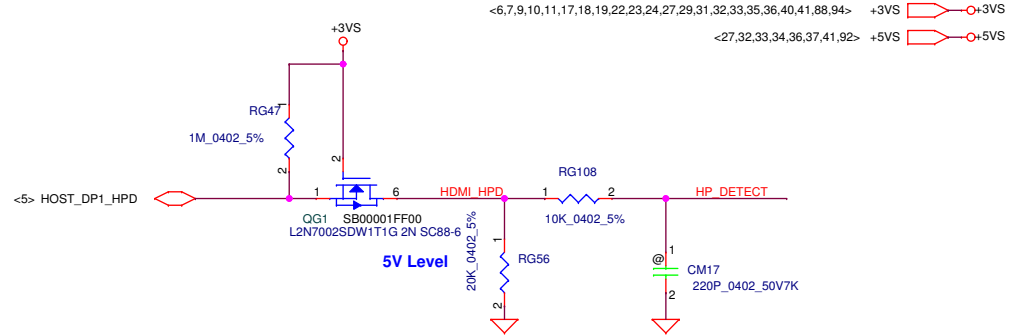
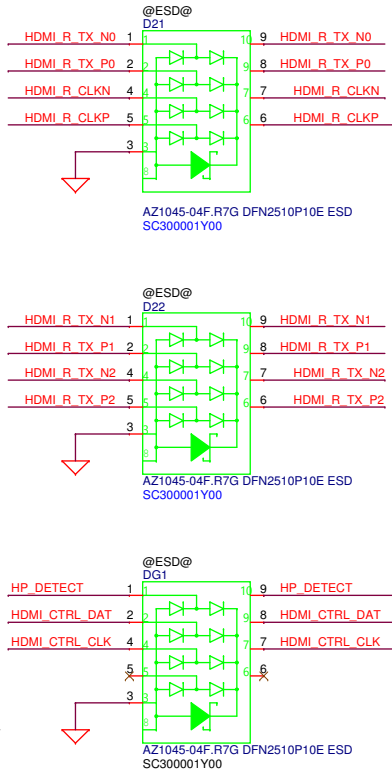
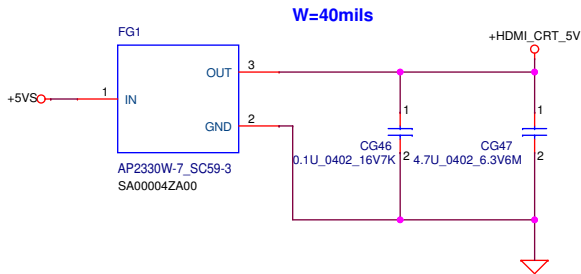
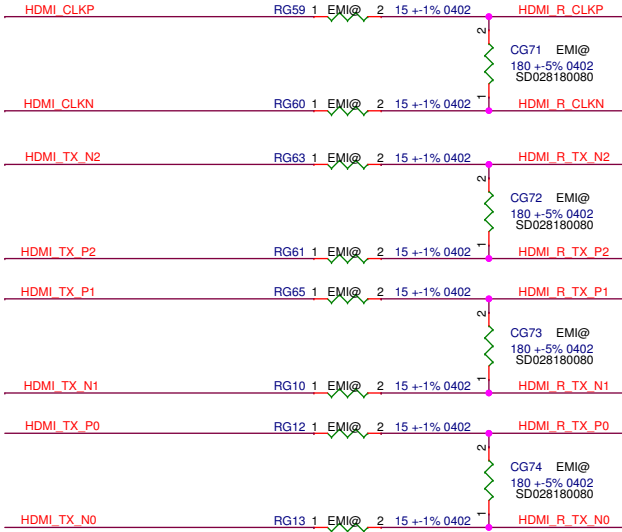
<CPU>

### 1.3.2 Digital Display Interface Signal Mapping

Table 1-4. Digital Display Interface Signal Mapping

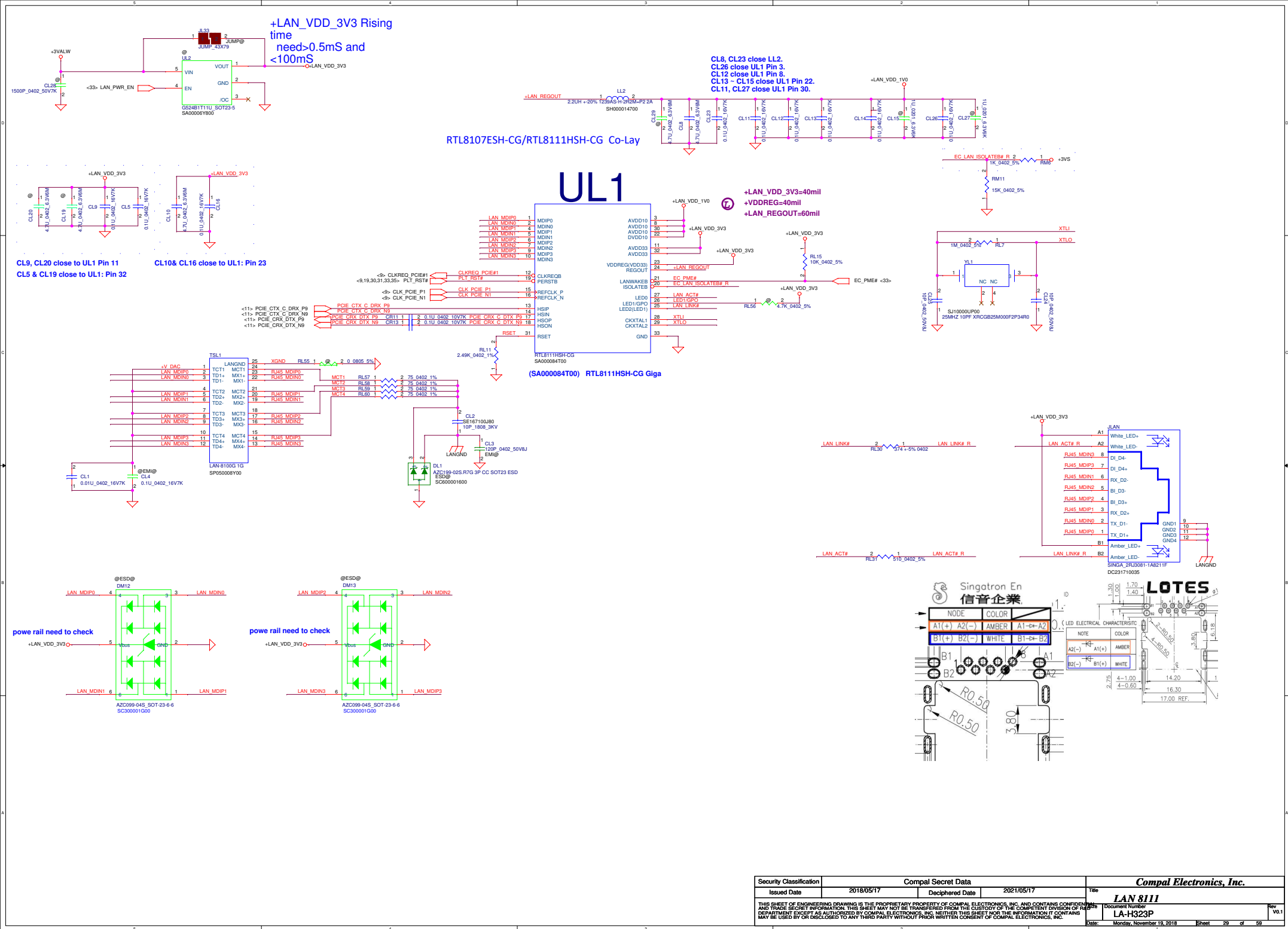
Port	DDI PROCESSOR Pin Names	Display Port Mapping	HDMI* Mapping
Port 1	DDI1_TXN[0]	DDI1_LANE0_DN	HDMI_KC_TX2_DN
	DDI1_TXP[0]	DDI1_LANE0_DP	HDMI_KC_TX2_DP
	DDI1_TXN[1]	DDI1_LANE1_DN	HDMI_KC_TX1_DN
	DDI1_TXP[1]	DDI1_LANE1_DP	HDMI_KC_TX1_DP
	DDI1_TXN[2]	DDI1_LANE2_DN	HDMI_KC_TX0_DN
	DDI1_TXP[2]	DDI1_LANE2_DP	HDMI_KC_TX0_DP
	DDI1_TXN[3]	DDI1_LANE3_DN	HDMI_KC_CLK_DN
	DDI1_TXP[3]	DDI1_LANE3_DP	HDMI_KC_CLK_DP
	DDPB_HPD	DDI1_HPD_Q	DDI1_HPD_Q
	DDPB_CTRLCLK	NA	DDI1_CTRL_CLK
	DDPB_CTRLDATA	NA	DDI1_CTRL_DATA
	DDI1_TXN[0]	DDI1_LANE0_DN	HDMI_KC_TX2_DN
	DDI1_TXP[0]	DDI1_LANE0_DP	HDMI_KC_TX2_DP
	DDI1_TXN[1]	DDI1_LANE1_DN	HDMI_KC_TX1_DN
	DDI1_TXP[1]	DDI1_LANE1_DP	HDMI_KC_TX1_DP

\*DDA30\_LA-F292PR02: RS\_8.2ohm\_RP\_360ohm



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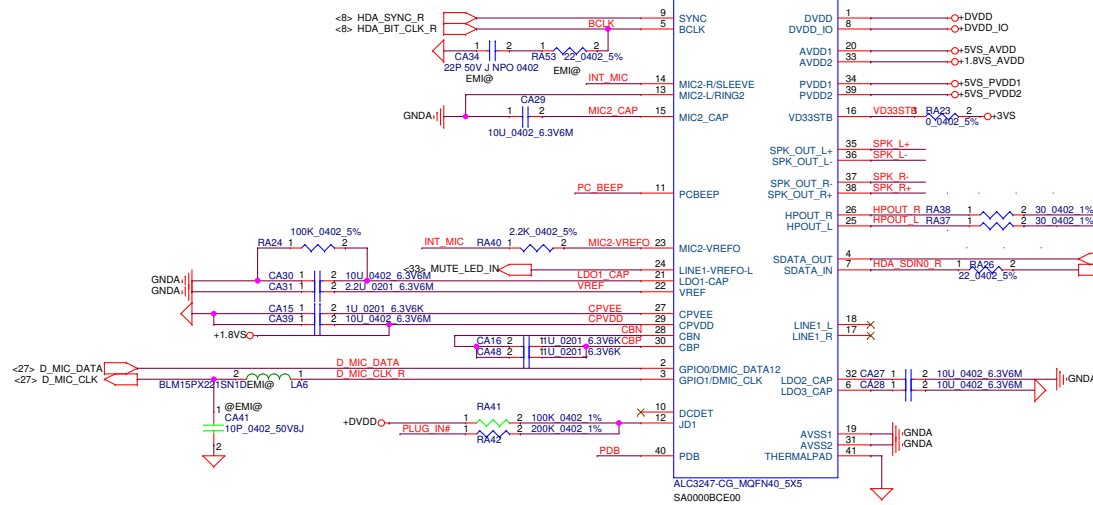






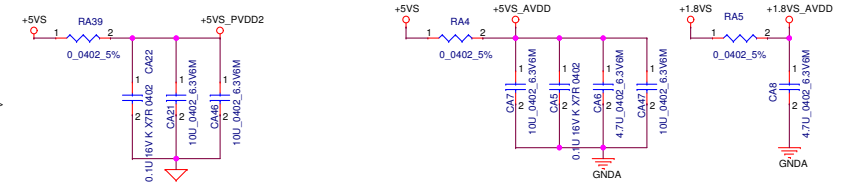


# UA1



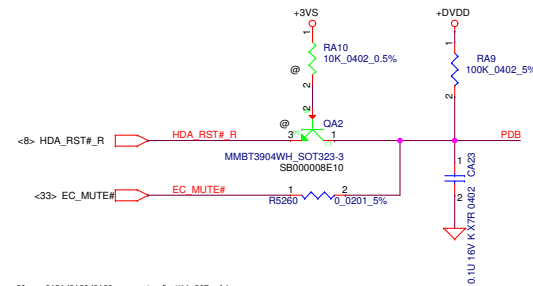
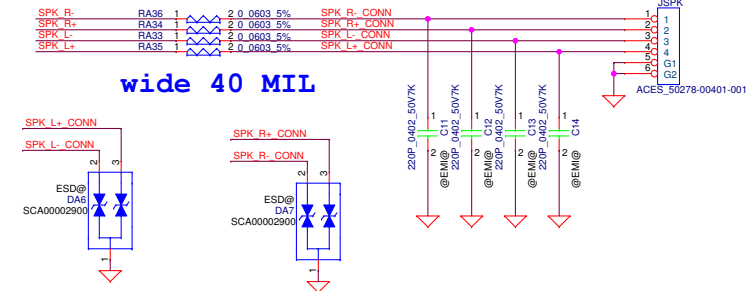
Headphone

2018/06/28  
Add CA45, CA46, CA47

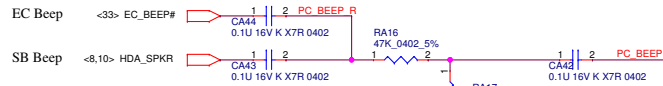


Internal SPK

wide 40 MIL

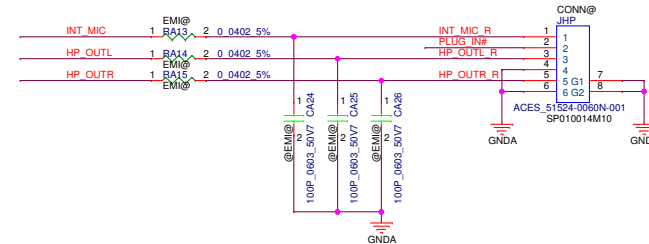
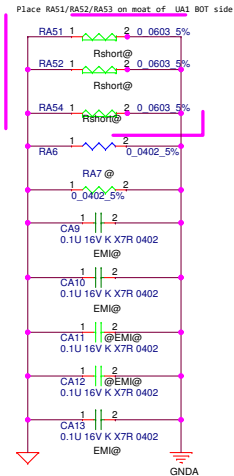


PC BEEP



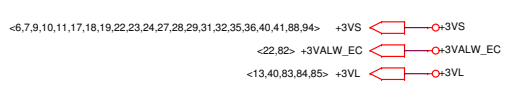
Close to Codec pin34

2018/06/22  
RA17 10K Change to 20K

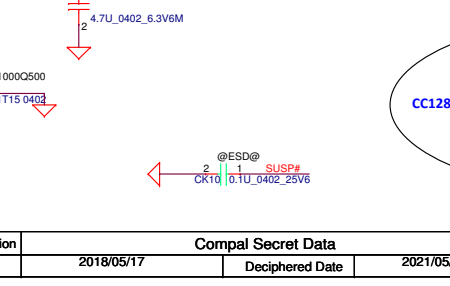
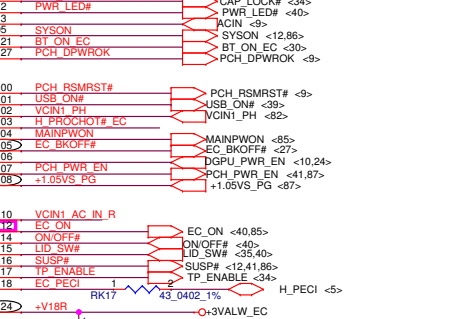
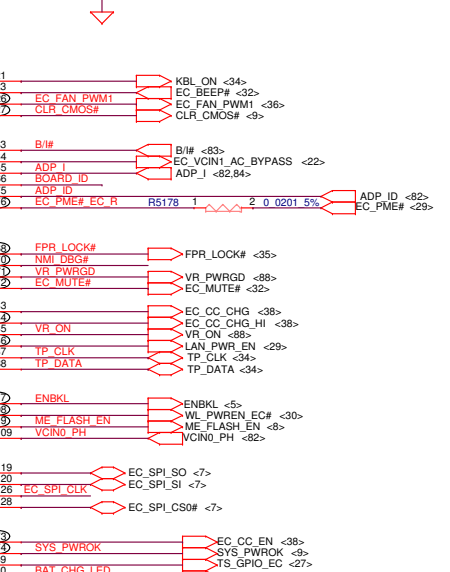
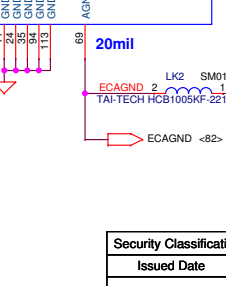
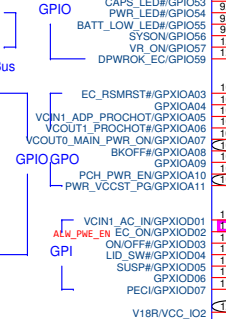
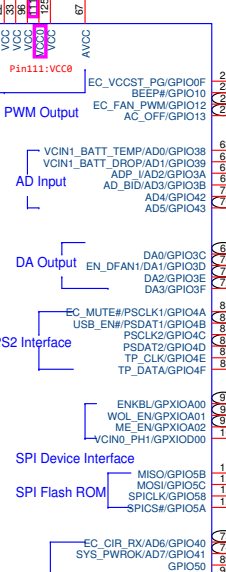
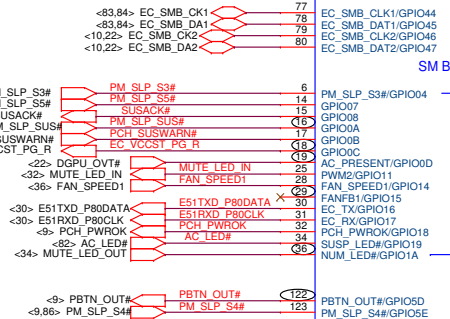
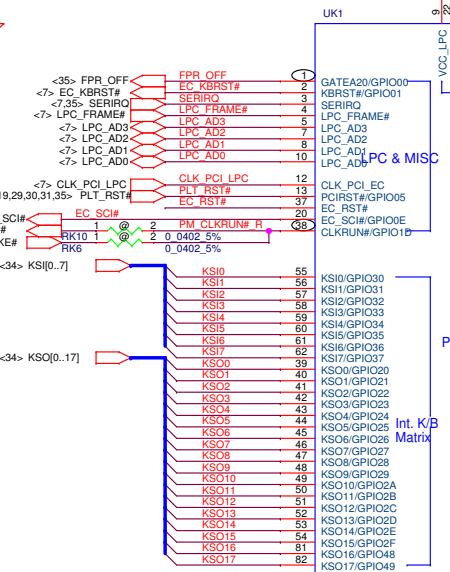
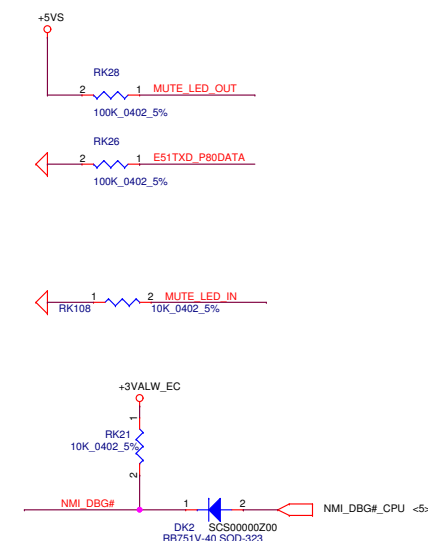
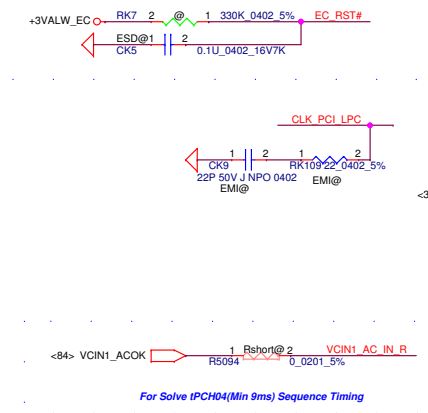


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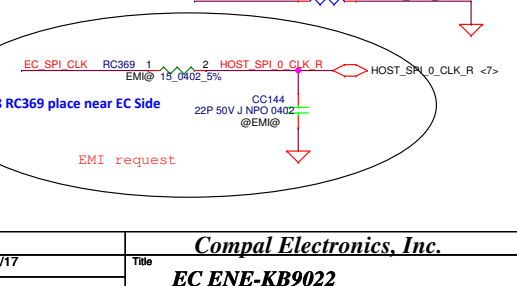
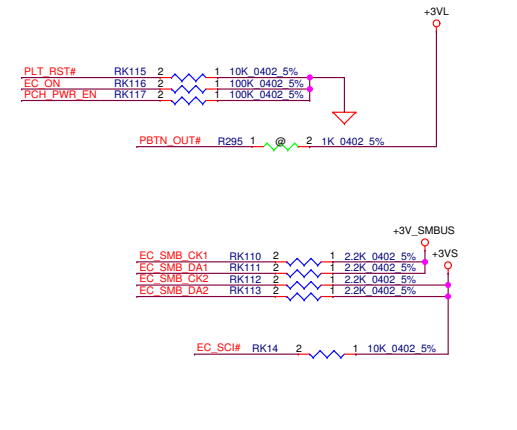
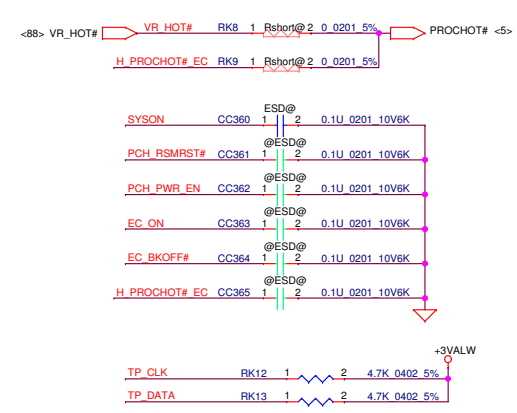
2018/06/11  
Close to UK1 Pin 111



# EC Board ID (UMA, DIS, phase) control table

RK4	WHL-U			
	DB	SI	PV	MV
UMA	0	15K	27K	43K
DIS	12K	20K	33K	56K

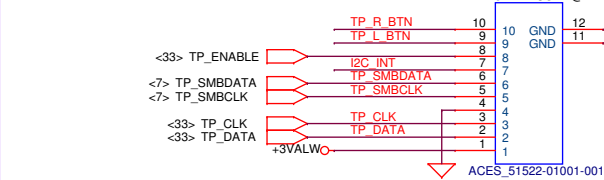
Reserve EC\_CLR\_CMOS for clear CMOS  
(2017-03-04 : Confirm Intel platform not support EC\_Clear CMOS function)  
(2017-10-05 : 29180PP Add EC\_Clear CMOS function)



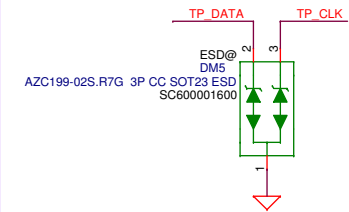


## 10 pin to TP Module

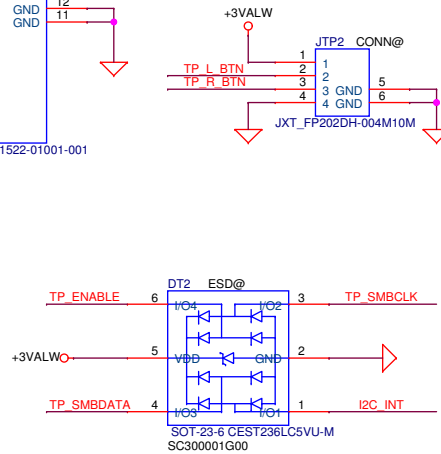
PS2+I2C



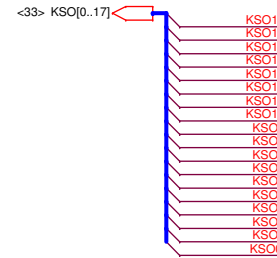
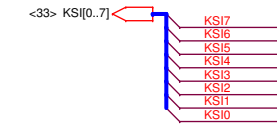
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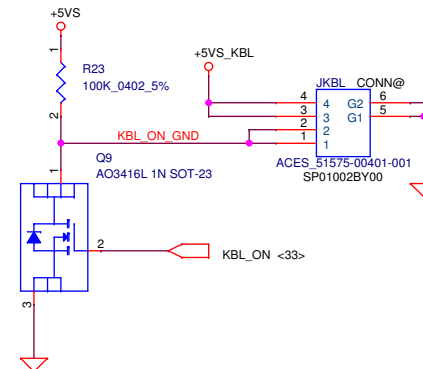
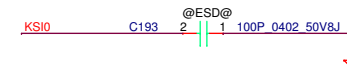
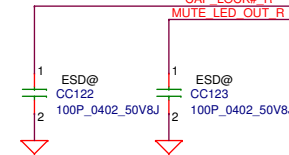
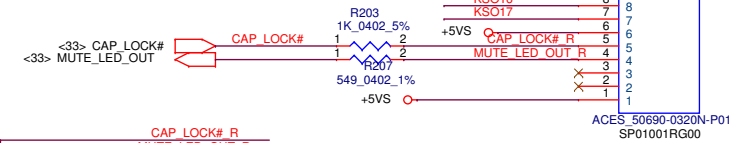
## 4 pin to TP S/B



## Keyboard conn



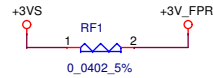
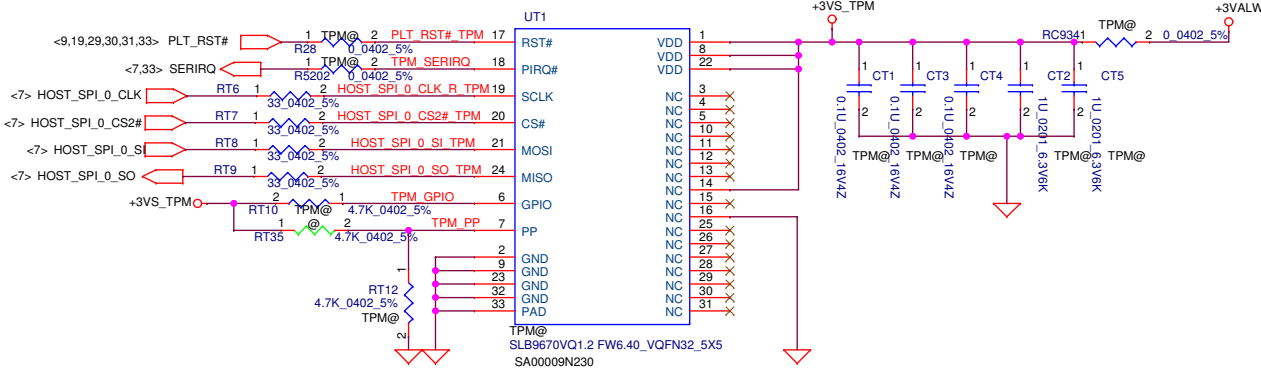
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Pin32	5V	5V



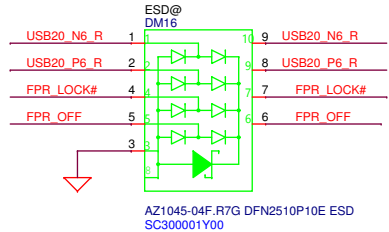
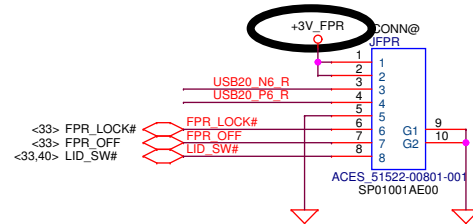
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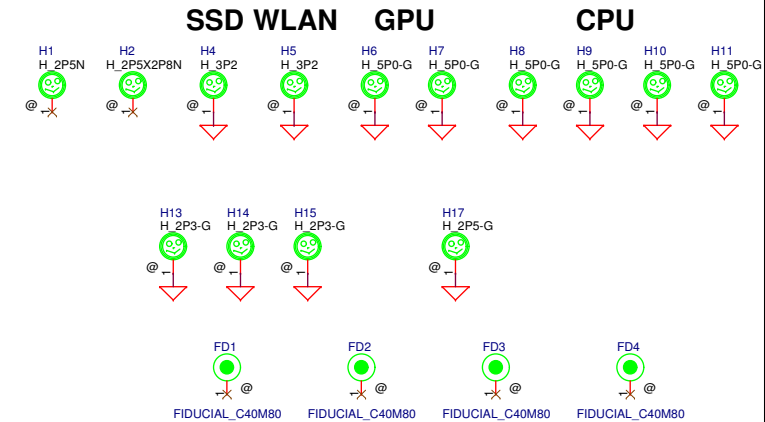
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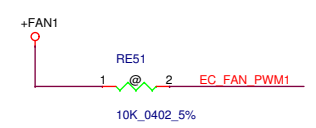
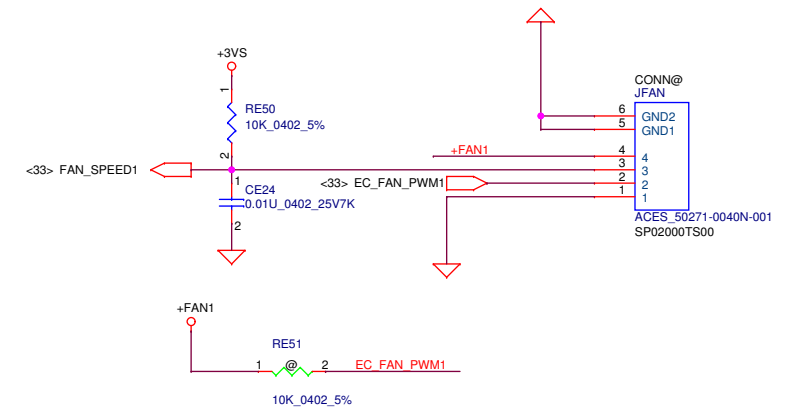
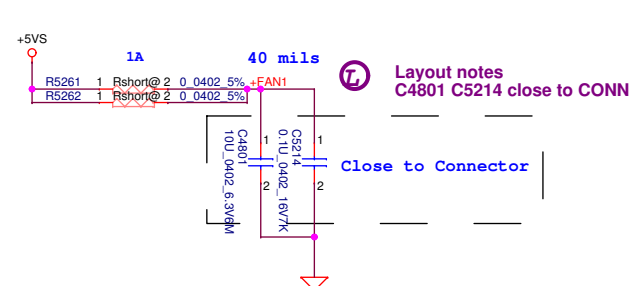


# Screw Hole



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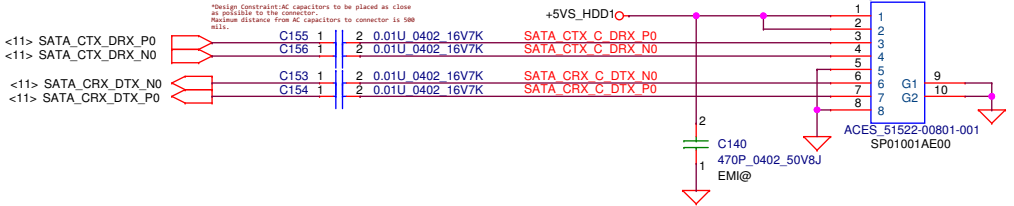
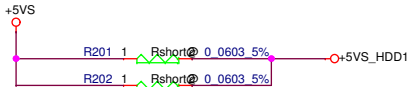


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				Customer			



2.5" SATA HDD

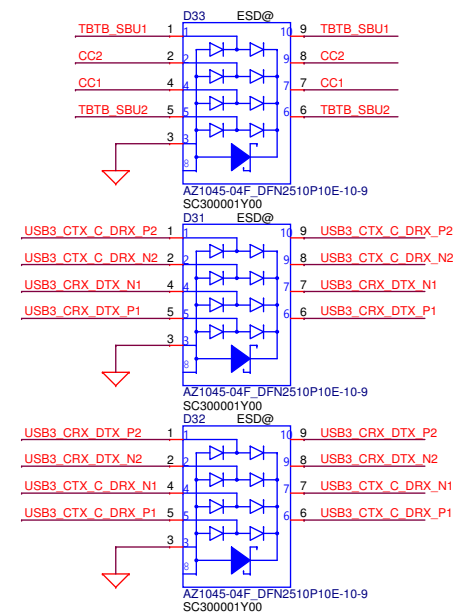
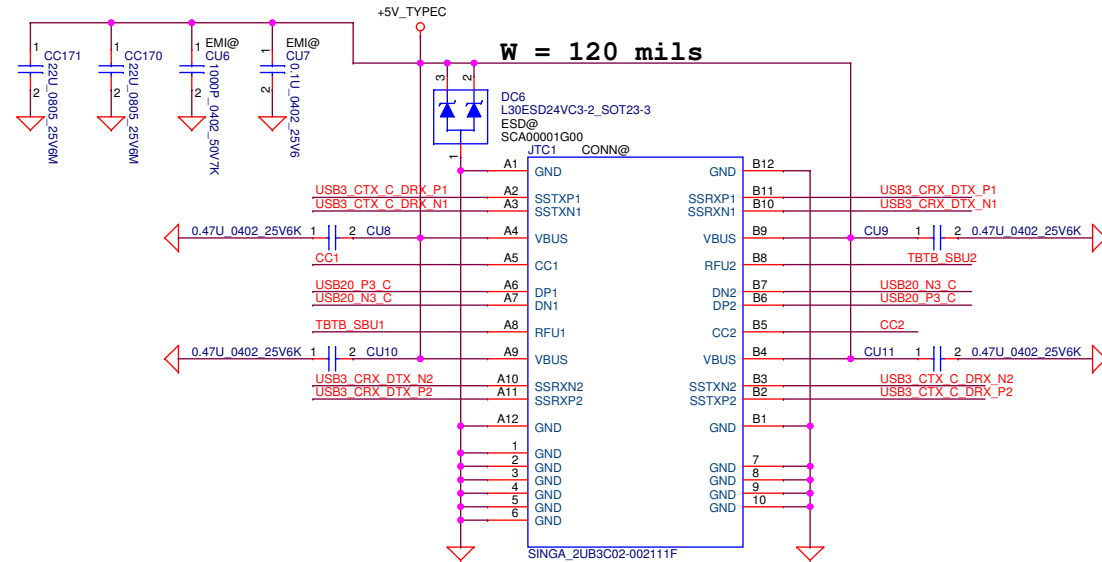
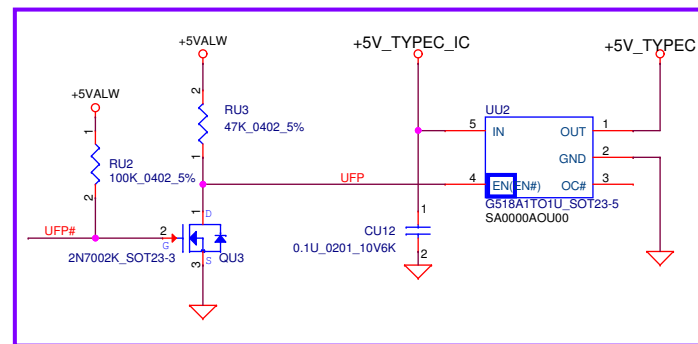
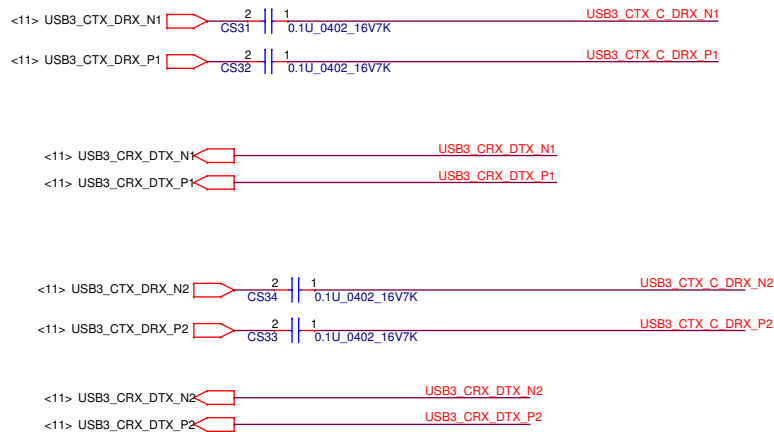
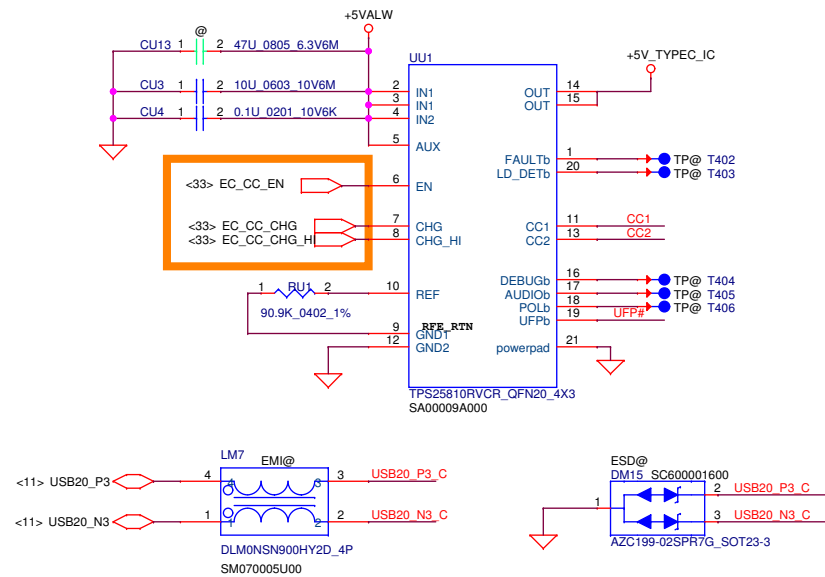
<PV> change short pad



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				Sheet	37 of 59

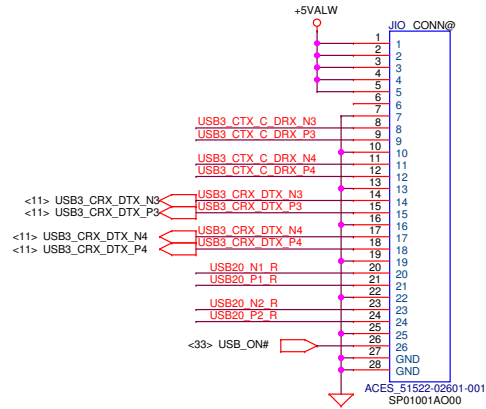
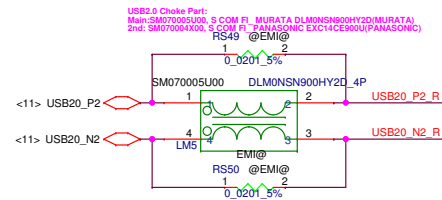
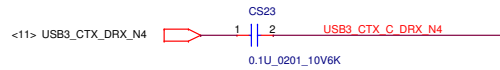
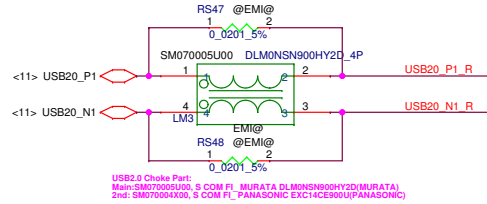
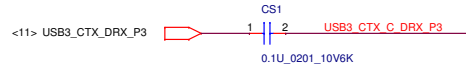


## Type-C - USB only



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				Date:	Monday, November 19, 2018
				Sheet	38 of 59



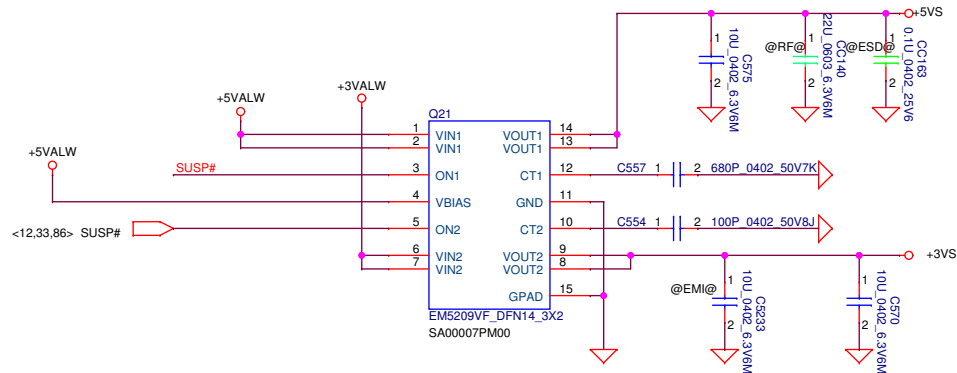


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								LA-H323P		V0.1			
Date:		Thursday, November 15, 2018		Sheet		39		of		59			

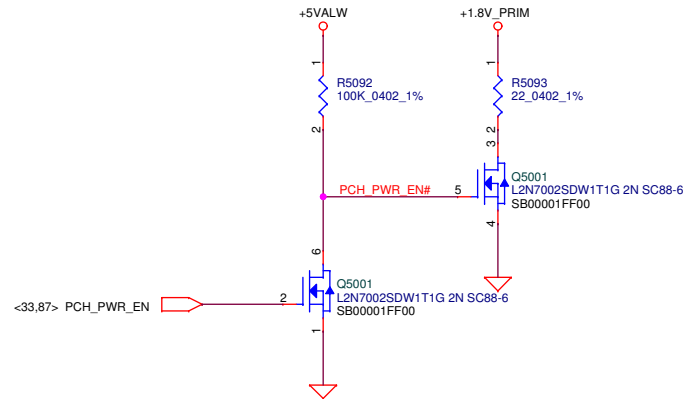








### For +1.8V\_PRIM Discharge



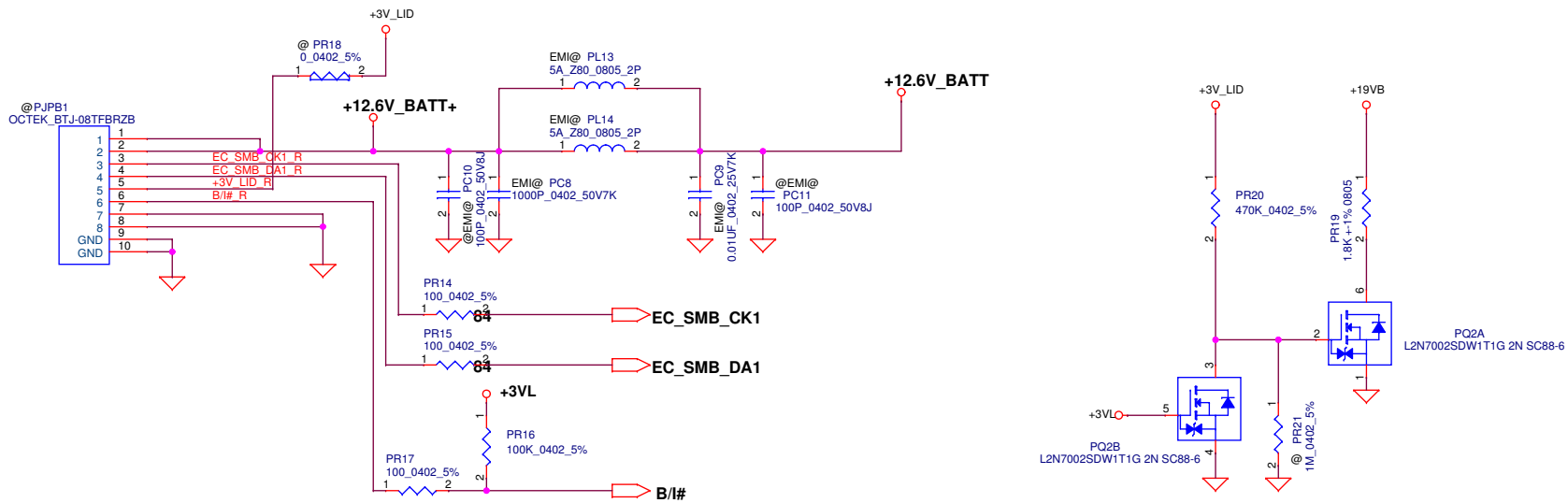
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										LA-H323P	
										Date	
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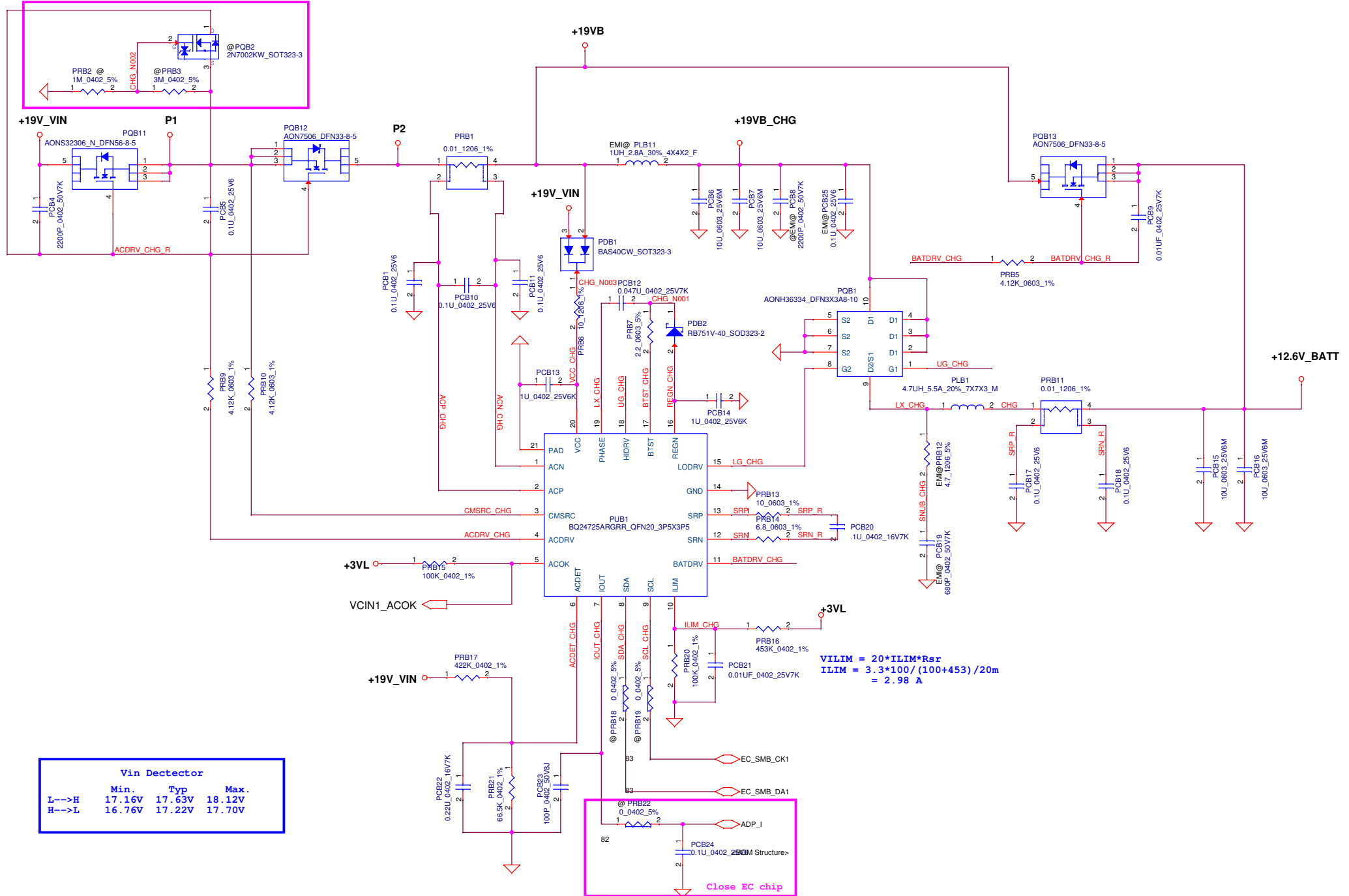




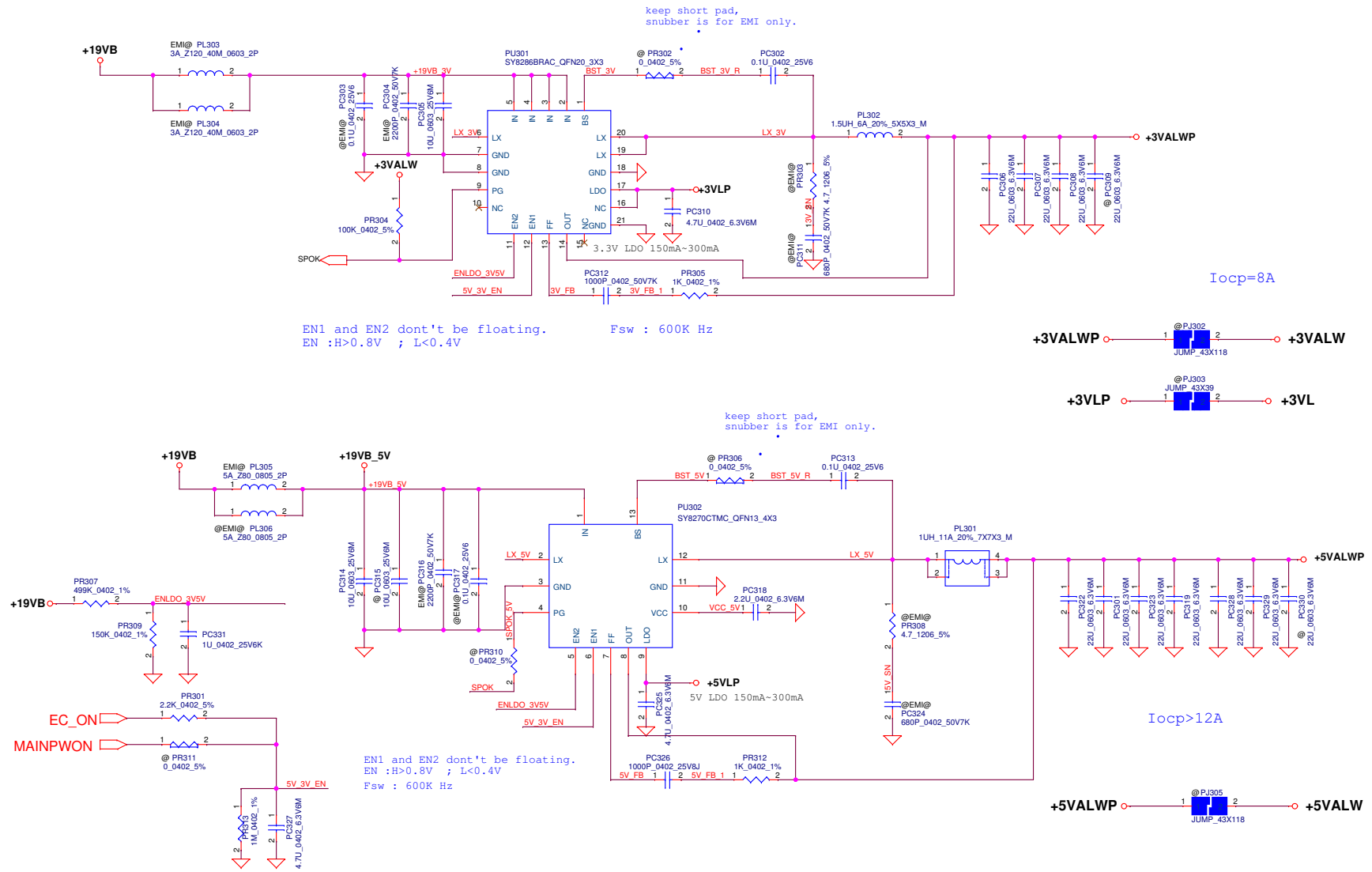
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Protection for reverse input

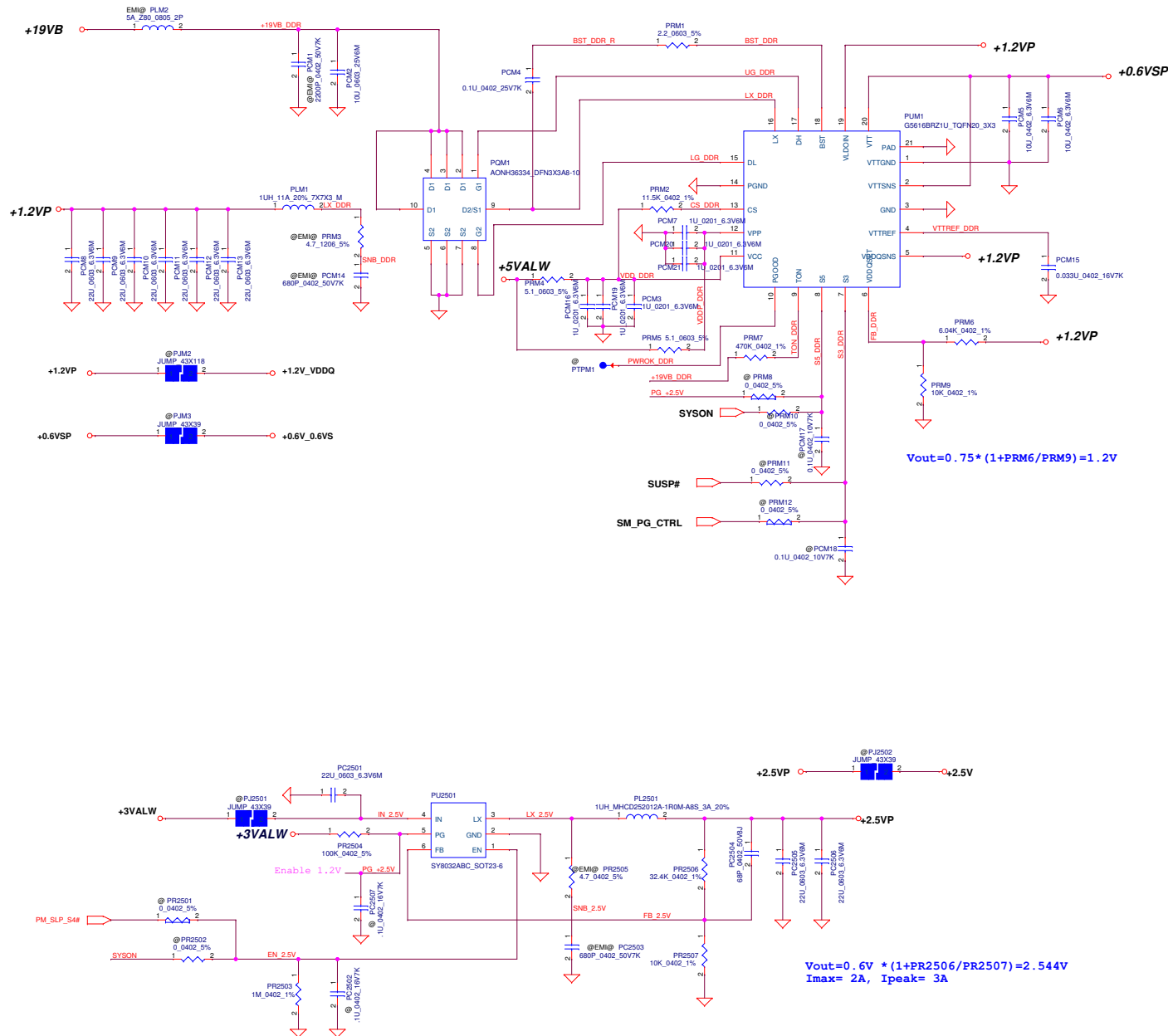






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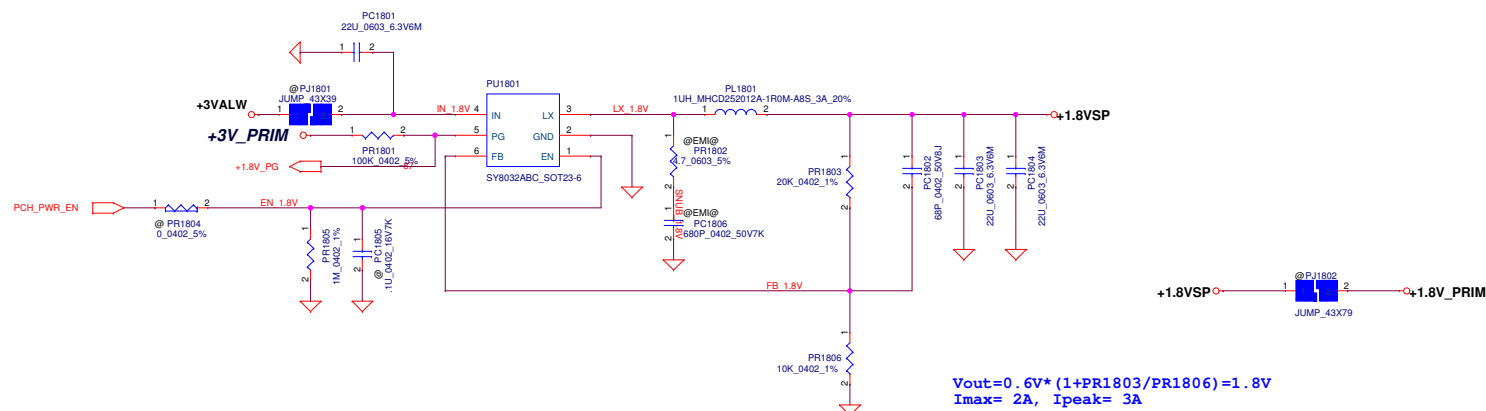
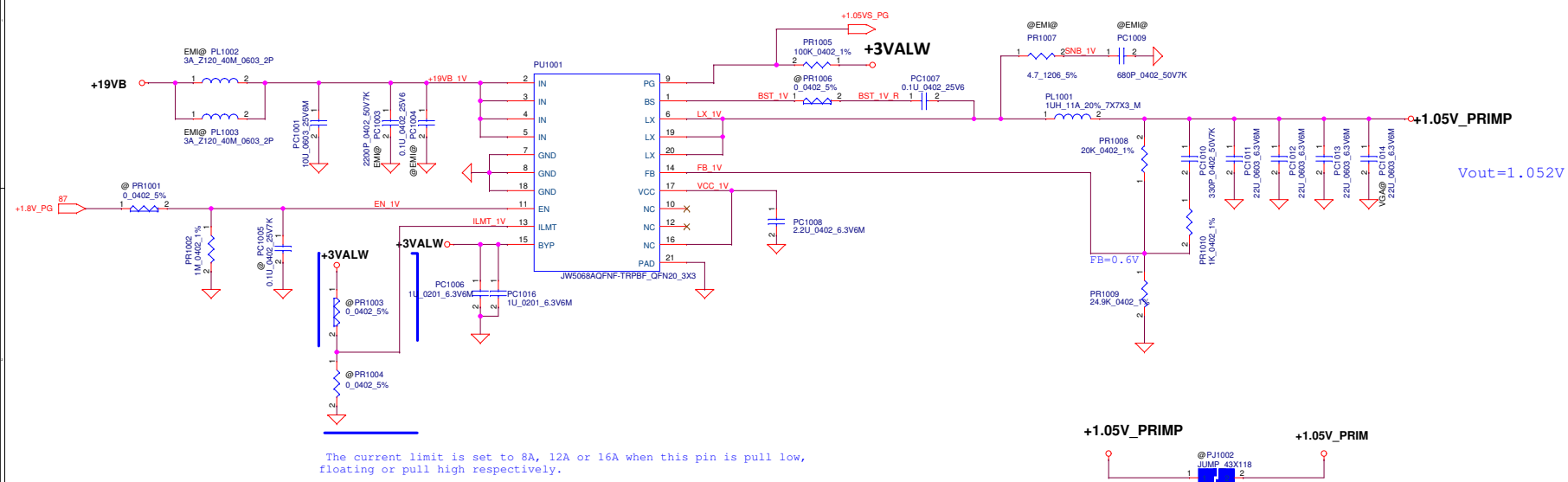


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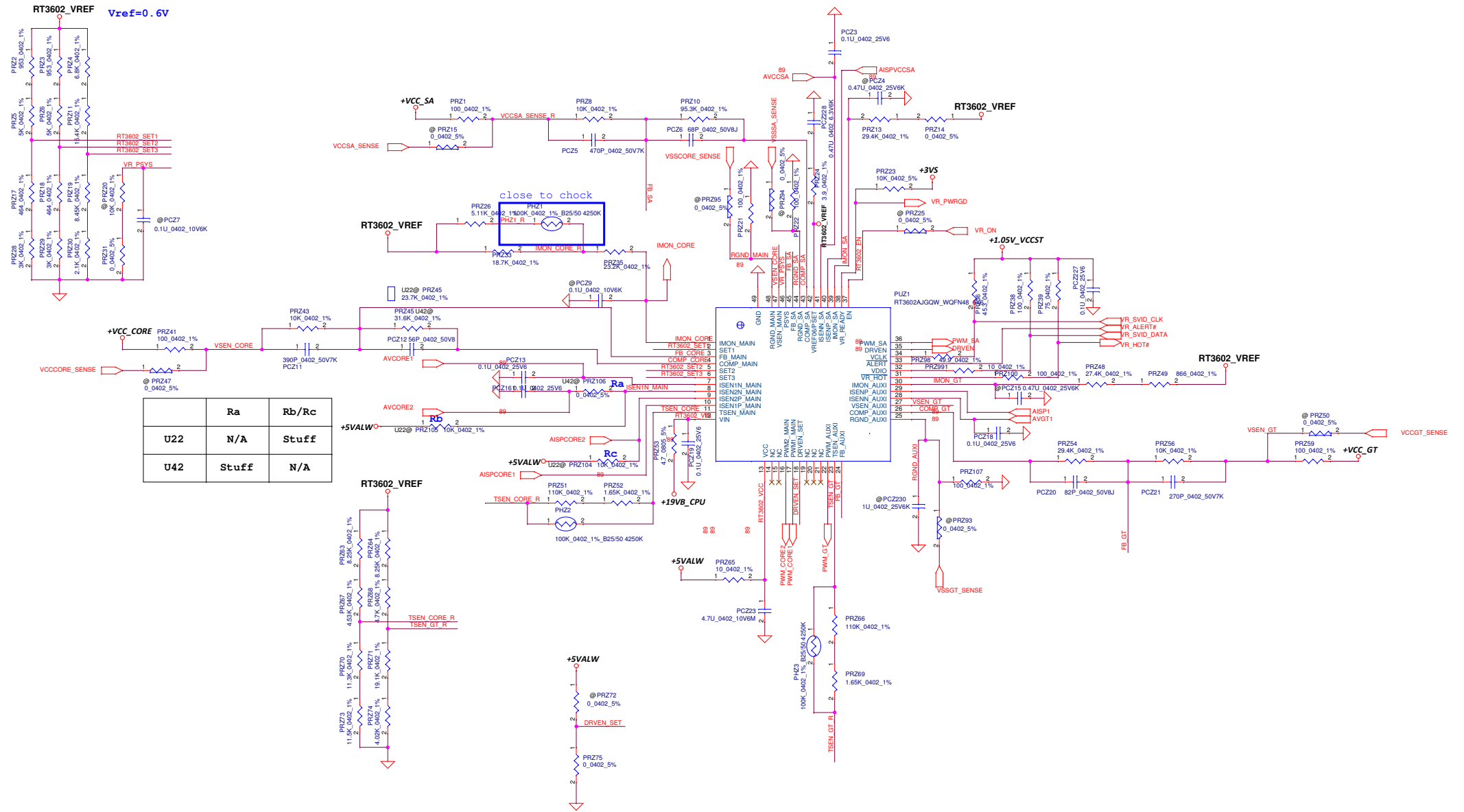




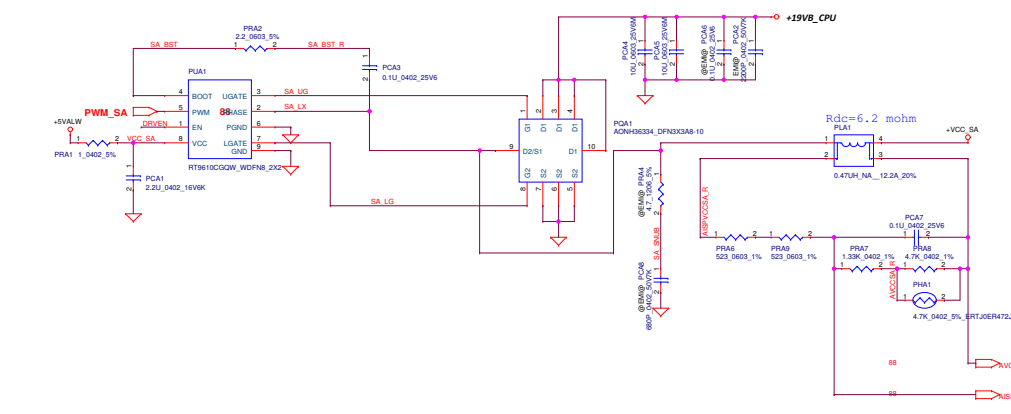
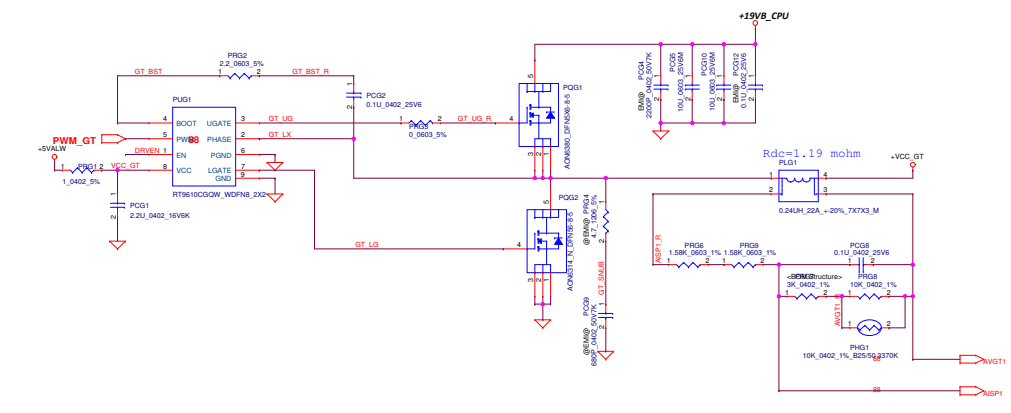
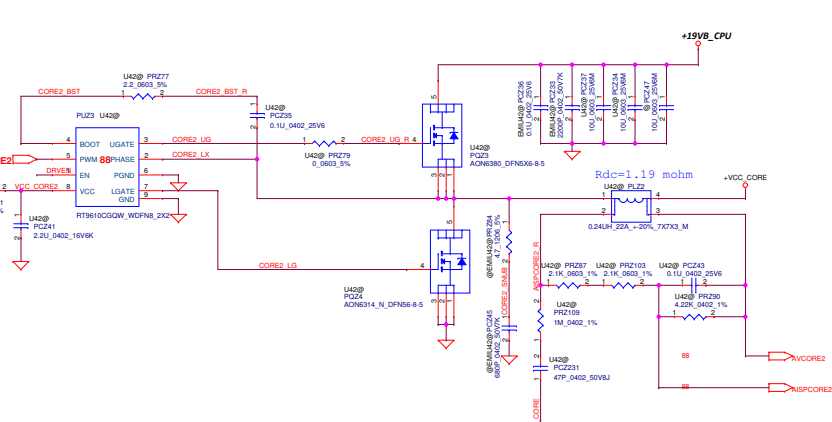
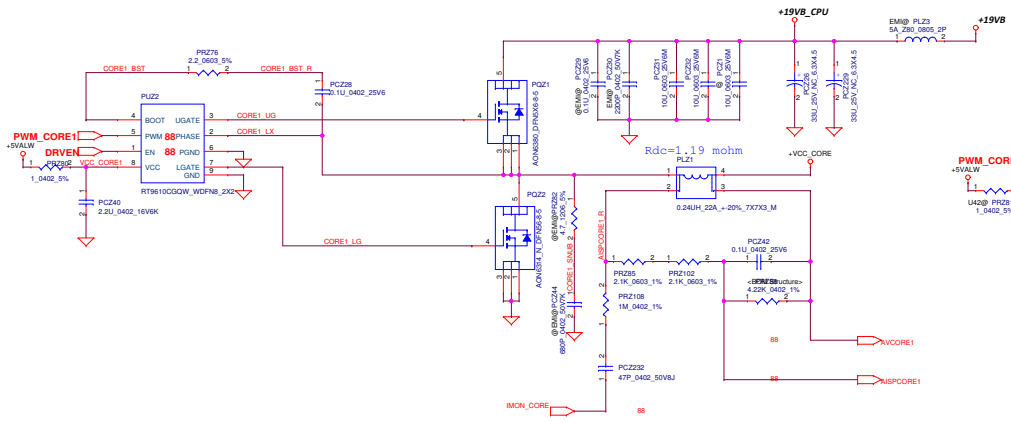










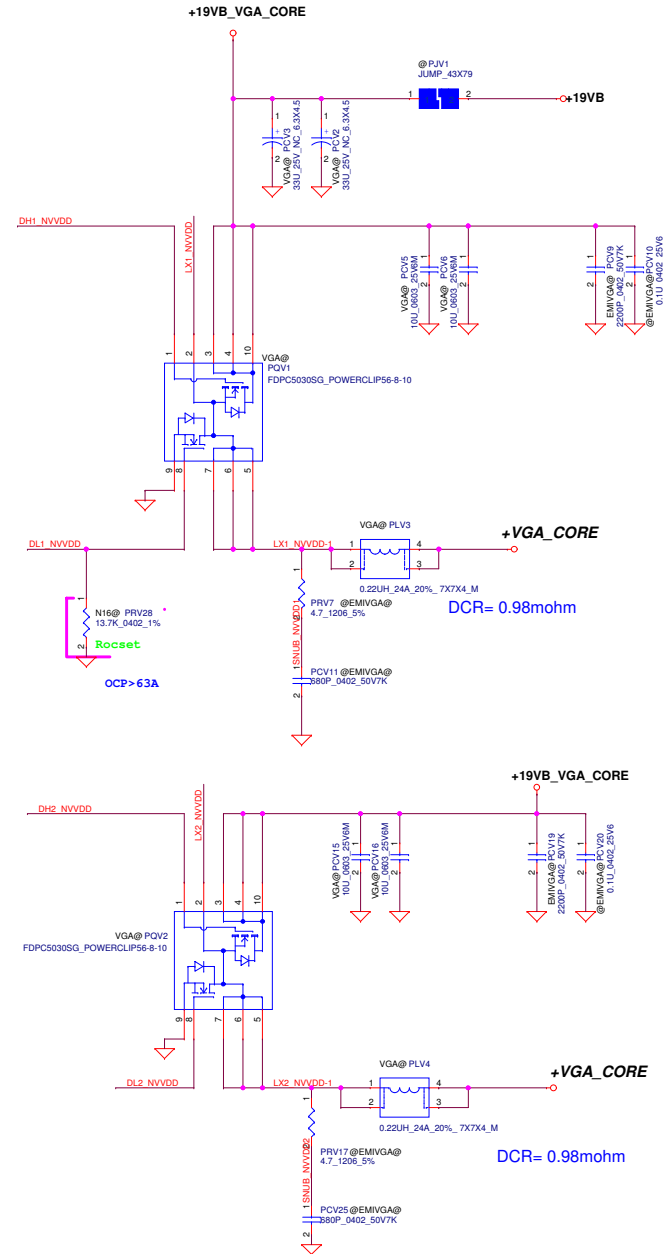
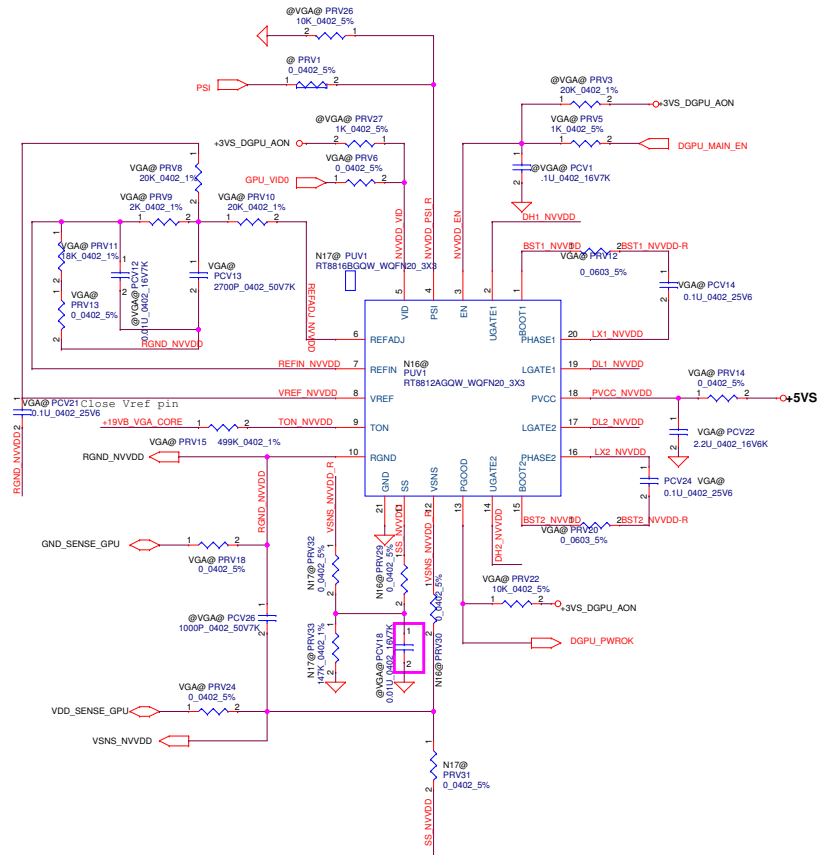




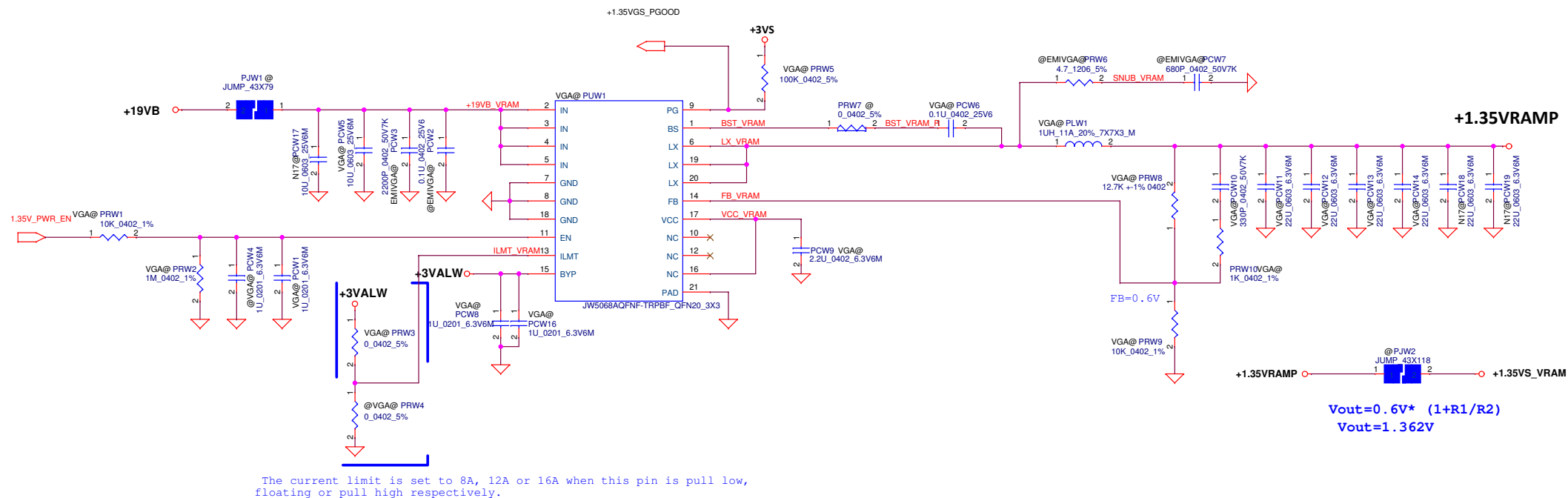
# PWM-VID Spec and component Values

PWM-VID Spec		Config B
Vmin		0.6V
Vmax		1.2V
Vboot		0.9V
Voltage		0.25mV
N of Voltage level		96
Rrefadj	PRV10	20K
Rref1	PRV8	20K
Rboot	PRV9	2K
Rref2=PRV8+PRV11	PRV11	18K
	PRV13	0
C	PCV13	2.7nF

VGA Chip	N16S-GTR
OpenVReg Configurations	Config B
Rated TDP	18W
Power at 50/100% GPU Total at Tj=102C	23W
EDP-Continuous at Tj=102C	26A
EDP-Peak at Tj=102C	51A
Istep max (Evaluation)	36.36A
OCF Setting	61A
RUCSET	9.76K
Recommendation	2phase

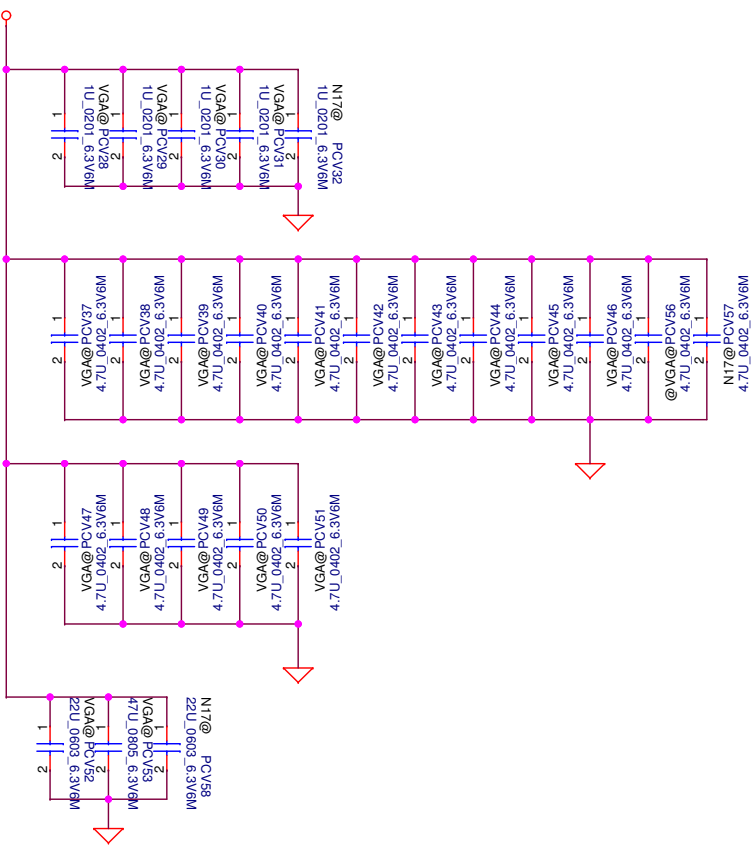




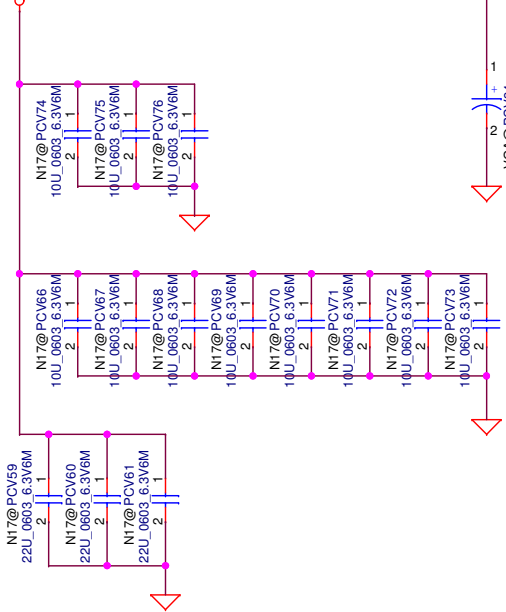




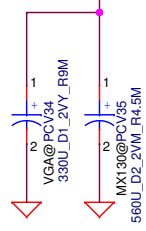
+VGA\_CORE



+VGA\_CORE



+VGA\_CORE



MX110@ PCV35  
330U\_D1\_2VY\_R9M  
N17@ PCV35  
560U\_D2\_2VM\_R4.5M

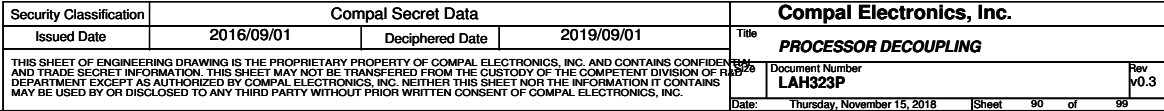
MX110  
330uF X 2  
47uF\_0603X1  
22uF\_0603 X 1  
1uF\_0201 X 4  
4.7uF\_0402 X15

MX130  
330uF X 1  
560uF X 1  
47uF\_0603X1  
22uF\_0603 X 1  
1uF\_0201 X 4  
4.7uF\_0402 X15

MX250 (N17@)  
330uF X 1  
560uFX1  
47uF\_0603X1  
22uF\_0603 X 4  
1uF\_0201 X 5  
10uF\_0603X11  
4.7uF\_0402 X16

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SOC SMBUS Address Table

SOC_SMBUS Net Name	Power Rail	Device	Address (7 bit)	Address (8bit)	
				Write	Read
SMBCLK SMBDATA	+3V_PRIM	DIMM1	0x50	0xA0	0xA1
		DIMM2	0x52	0xA4	0xA5
		Touch PAD	0x2C	0x58	0x59

EC SMBUS Address Table (TBC)

EC_SMBUS Port	Power Rail	Device	Address (7 bit)
SMBUS Port 1	+3VL_EC	BAT	0x16
		CHGR	0x12
SMBUS Port 2	+3VS	dGPU	
		Thermal Sensor	0x90
		PCH	

Power State

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

<USB2.0 port>

USB2.0 port	DESTINATION
1	USB3.0(S/B)
2	USB3.0(S/B)
3	USB3.0 Type-C
4	Card Reader
5	Camera
6	FPR
7	TS
8	X
9	X
10	BT

<PCI-E,SATA,USB3.0/CLK>

Lane#	PCI-E	SATA	USB3.0	DESTINATION	CLK
0	1		1	USB3.0 Type-C	X
1	2		2		
2	3		3	USB3.0(S/B)	X
3	4		4	USB3.0(S/B)	X
4	5		5	GPU(DIS only)	CLK0
5	6		6		
6	7				
7	8			LAN	CLK1
8	9				
9	10			WLAN	CLK2
10	11	0		HDD	X
11	12	1a		X	X
12	13			PCIe x4	X
13	14				
14	15	1b			
15	16	2		SATA SSD	X

Power rail	Control (EC)	Source (CPU)
+RTCVCC	X	X
VIN	X	X
BATT+	X	X
B+	X	X
+VL	X	X
+3VL	X	X
+5VALW	EC_ON	X
+3VALW	EC_ON	X
+3VALW_EC	EC_ON	X
+3V_PCH	PCH_PWR_EN	X
+1.2V_VDDQ	SYSON	PM_SLP_S5#/PM_SLP_S4#
+5VS	SUSP#	PM_SLP_S3#
+3VS	SUSP#	PM_SLP_S3#
+1.5VS	SUSP#	PM_SLP_S3#
+1.05VS	SUSP#	PM_SLP_S3#
+0.6V_0.6VS	SUSP#	
+VCC_CORE	X	VR12.5_VR_ON

BOM Structure Table (1/2)

Function	Stuff	Un-Stuff
DGPU SKU	PX@	
UMA SKU	UMA@	
TPM	TPM@	

ZZZ WHL-2G PCB 2G@ DA68023X000 PCB 2DM LA-Q77FP REV0 M/B 3	ZZZ WHL-2G PCB 4G@ DA8001H5000 PCB 2H LA-H324P REV0 M/B 5
--	---

ZZZ EMC for EE 2G_X4E@ X4EAPU03L01 SMT EMC FOR EE AH323 FPW50	ZZZ EMC for EE 4G_X4E@ X4EADQ32L01 SMT EMC FOR EE AH324 FPW50
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45@	ROYALTY HDMI W/LOGO
Part Number	Description
80000002188	HDMI W/Logo/RO050002188
RO0000003HM	

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				Notes List
				Document Number
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