

Compal Confidential

**EH50F/EH51F
EH5VF/EH70F**

MB Schematic Document

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LA-H501P

Rev:1A

2019.02.22

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2017/10/30	Deciphered Date	2018/10/30	Title	Cover Sheet
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Vcc	3.3V +/- 5%					
Ra	100K +/- 1%					
Board ID	Rb	V _{BI} D min	V _{BI} D typ	V _{BI} D max	EC AD	
0	0		0.000 V	0.300 V	0x00 - 0x13	
1	12K +/- 1%	0.347 V	0.345 V	0.360 V	0x14 - 0x1E	
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	
8	75K +/- 1%	1.398 V	1.414 V	1.430 V	0x65 - 0x76	
9	100K +/- 1%	1.634 V	1.650 V	1.667 V	0x77 - 0x87	
10	130K +/- 1%	1.849 V	1.865 V	1.881 V	0x88 - 0x96	
11	160K +/- 1%	2.015 V	2.031 V	2.046 V	0x97 - 0xA4	
12	200K +/- 1%	2.185 V	2.200 V	2.215 V	0xA5 - 0xAF	
13	240K +/- 1%	2.316 V	2.329 V	2.343 V	0xB0 - 0xB7	
14	270K +/- 1%	2.395 V	2.408 V	2.421 V	0xB8 - 0xBF	
15	330K +/- 1%	2.521 V	2.533 V	2.544 V	0xC0 - 0xC9	
16	430K +/- 1%	2.667 V	2.677 V	2.687 V	0xCA - 0xD4	
17	560K +/- 1%	2.791 V	2.800 V	2.808 V	0xD5 - 0xDD	
18	750K +/- 1%	2.905 V	2.912 V	2.919 V	0xDE - 0xF0	
19	NC	3.000 V	3.000 V		0xF1 - 0xFF	

BUS	Device	Address(7 bit)	Address(8bit)	
			Write	Read
I2C_0 (+3VS)				
I2C_1 (+3VS)	TM-P3393-003 (Touch Pad)			
	SA577C-12A0 (Touch Pad)			
PCH_SMBCLK (+3VS)	DIMM1			
	DIMM2			
PCH_SML1CLK EC_SMB_CK2 (+3VS)	N18P-G0/N17P-G0-K1 (VGA)	0x9E		
	Thermal Sensor (W83L771)	1001_100xb	1001_1001b	1001_1000b
	PCH	0x90		
EC_SMB_CK1 (+3VLP)	BQ24780 (Charger IC)	0x12		
	BATTERY PACK	0x16		
EC_SMB_CK3 (+3VALW)	LED driver	0xC0		

[illegible]

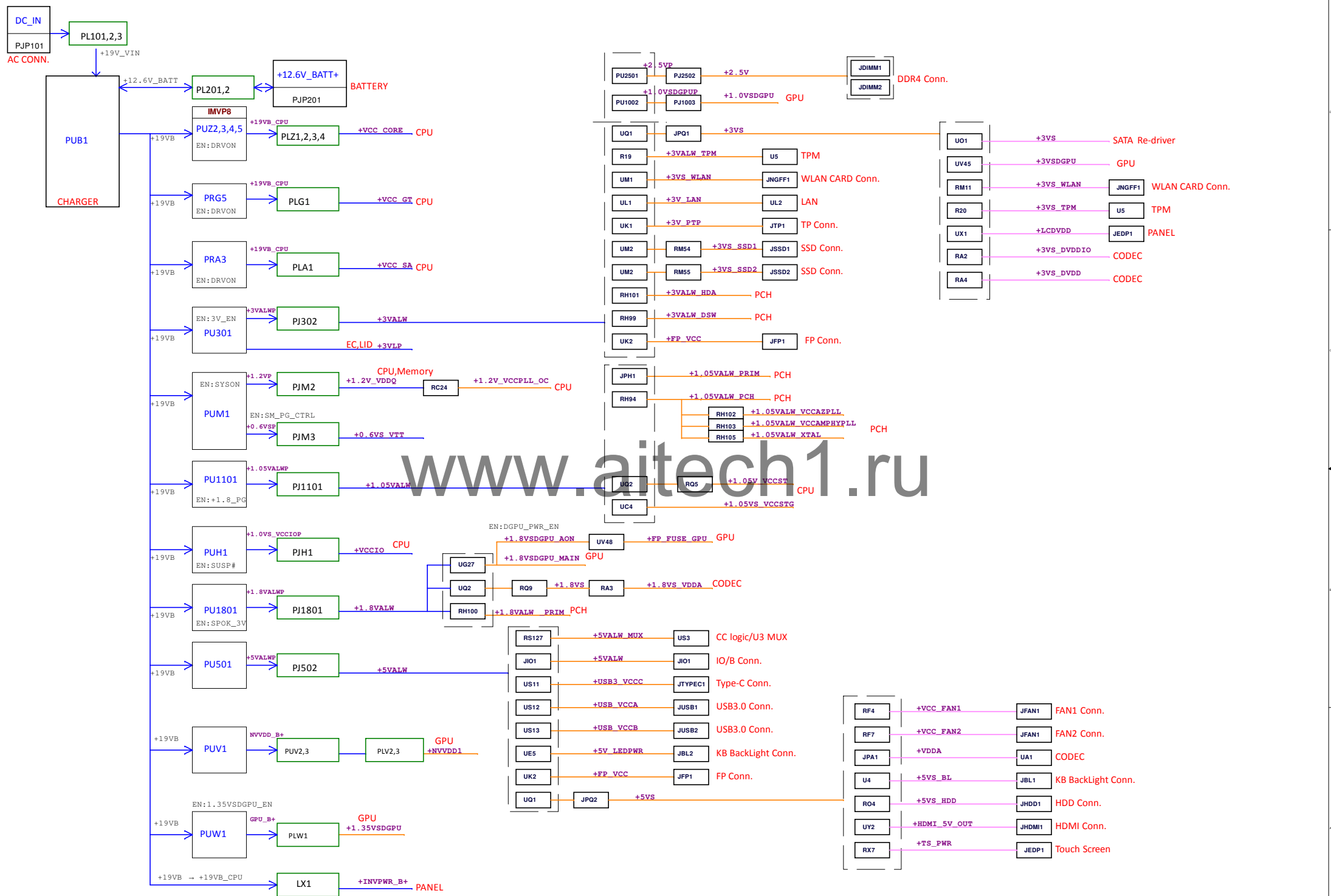
BOM Option Table	
Item	BOM Structure
Unpop	@
Connector	CONN@
CMC	CMC@
dGPU circuit	VGA@
N18P GPU	N18P@
N17P GPU	N17P@
TPM	TPM@
For Acer IOAC	IOAC@
No Acer IOAC	NIOAC@
KB backlight	KBLED@
KB LED driver	LED14P@
OVRM-ON	ON_X76@
OVRM-uPI	uPI_X76@
Thermal sensor	TMS@
for SW debug board	UART@
Intel CNVi	CNVi@
Finger Print	FP@
FinerPrint(with PBA)	PBA@
EMI requirement	EMI@
EMI require reserve	XEMI@
ESD requirement	ESD@
ESD require reserve	XESD@
FP ESD requirement	FPESD@
Pidgey ESD requirement	PGESD@
SATA HDD W REDRIVER	SATARD@
SATA HDD WO REDRIVER	SATANRD@
I5 CPU	I5@
I7 CPU	I7@
H62 CPU	H62@
H82 CPU	H82@
LAN LDO mode	LDO@
LAN Switch mode	SWR@

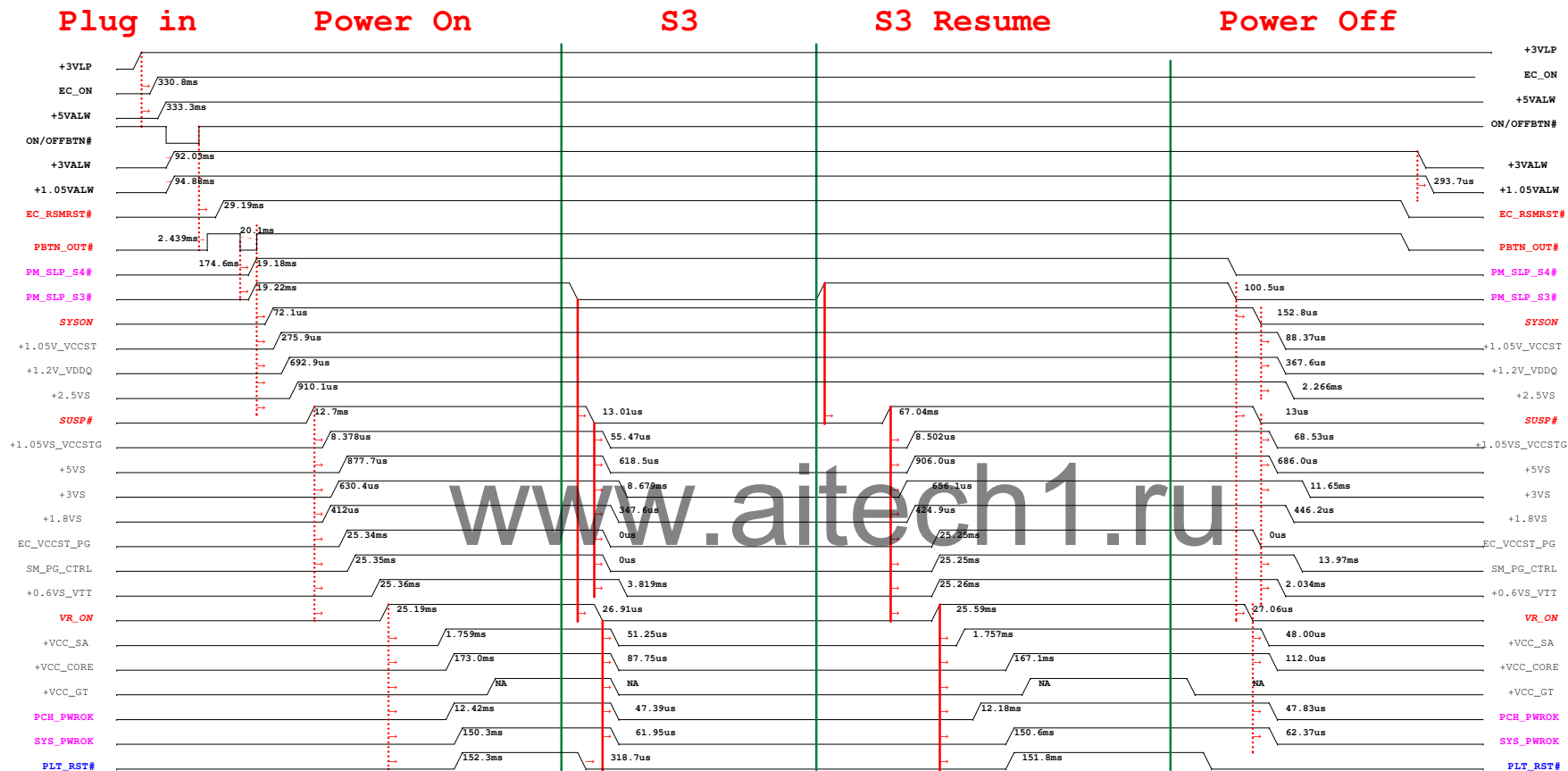
<i>SIGNAL</i>	<i>SLP_S3#</i>	<i>SLP_S4#</i>	<i>SLP_S5#</i>	<i>+VALW</i>	<i>+V</i>	<i>+VS</i>	<i>Clock</i>
<i>S0 (Full ON)</i>	<i>HIGH</i>	<i>HIGH</i>	<i>HIGH</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>
<i>S3 (Suspend to RAM)</i>	<i>LOW</i>	<i>HIGH</i>	<i>HIGH</i>	<i>ON</i>	<i>ON</i>	<i>OFF</i>	<i>OFF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

Power Plane	Description	S0	S3	S4	S5
+RTCVCC	RTC Battery Power	ON	ON	ON	ON
+19V_VIN	Adapter power supply	N/A	N/A	N/A	N/A
+12.6V_BATT	Battery power supply	N/A	N/A	N/A	N/A
+19VB	AC or battery power rail for power circuit.	N/A	N/A	N/A	N/A
+3VLP	+19VB to +3VLP power rail for suspend power	ON	ON	ON	ON
+5VALW	+5V Always power rail	ON	ON	ON	ON
+3VALW	System +3VALW always on power rail	ON	ON	ON	ON*
+3VALW_DSW	+3VALW power for PCH DSW rails	ON	ON	ON	ON
+1.05VALW	+1.05V Always power rail	ON	ON	ON	ON
+1.2V_VDDQ	DDR4 +1.2V power rail	ON	ON	OFF	OFF
+1.05V_VCCST	Sustain voltage for processor in Standby modes	ON	ON	OFF	OFF
+5VS	System +5V power rail	ON	OFF	OFF	OFF
+3VS	System +3V power rail	ON	OFF	OFF	OFF
+1.05VS_VCCSTG	+1.05VALW_PRIM Gated version of VCCST	ON	OFF	OFF	OFF
+0.6VS_VTT	DDR +0.6VS power rail for DDR terminator .	ON	OFF	OFF	OFF
+VCC_CORE	Core voltage for CPU	ON	OFF	OFF	OFF
+VCC_GT	Sliced graphics power rail	ON	OFF	OFF	OFF
+VCCIO	CPU IO +0.95VS power rail	ON	OFF	OFF	OFF
+VCC_SA	System Agent power rail	ON	OFF	OFF	OFF
+1.8VSDGPU_AON	+1.8VS power rail for GPU(AON rails)	ON	OFF	OFF	OFF
+1.8VSDGPU_MAIN	+1.8VS power rail for GPU GC6	ON	OFF	OFF	OFF
+NVVDD1	Core voltage for VGA (merge core & core_s)	ON	OFF	OFF	OFF
+1.35VSDGPU	+1.35VS power rail for GPU	ON	OFF	OFF	OFF
+1.0VSDGPU	+1.0VS power rail for GPU	ON	OFF	OFF	OFF
+1.8VALW	System +1.8VALW always on power rail	ON	ON	ON	ON*

Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.

Board ID	PCB Revision	Board ID	PCB Revision
0	2050 Rev0.1	10	
1	2050 Rev0.2	11	
2	2050 Rev0.3	12	
3	2050 Rev1.0/1A	13	
4	2060 Rev0.1	14	
5	2060 Rev0.2	15	
6	2060 Rev0.3	16	
7	2060 Rev1.0	17	
8		18	
9		19	



BIOS ver: V0.02W1
EC: ver: V002AT04



PCB10@

PCB EH5VF LA-H501P LS-H501P/H502P
DAZ2K700100



PCB1A@

PCB EH5VF LA-H501P LS-H501P/H502P
DAZ2K700101

Coffee Lake-H CPU SKU



UC1

S IC CL806840373522 SR3Z0 U0 2.3G ABO!
SA0000BPJ40



UC1

S IC CL8068404121905 QRR5 U0 2.4G FCBGA
SA0000COG00



UC1

S IC CL8068403359524 SR3YY U0 2.2G ABO!
SA0000BPZ40



UC1

S IC CL8068404121817 QRR2 U0 2.6G FCBGA 1440
SA0000COF10



UC1

S IC CL806840373522 QP89 U0 2.3G BGA
SA0000BPJ10

Cannon Lake PCH SKU



UH1

S IC FH82HM370 SR40B B0 BGA 874P PCH-H ABO!
SA0000BVP10



UH1

S IC FHHM370 QNYF B0 BGA 874P PCH-H
SA0000BPF10

NV GPU SKU



UV1

S IC N17P-G0-K1-A1 FCBGA 908P GPU ABO !
SA0000CFM20



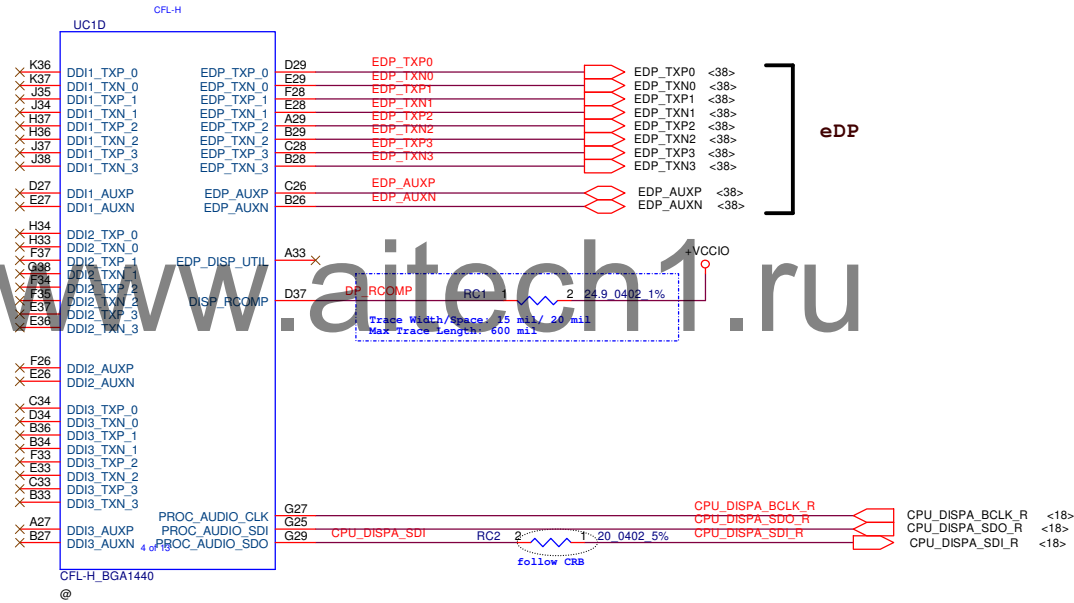
UV1

S IC N18P-G0-A1 QS FCBGA 960P GPU ABO !
SA0000CK210



UV1

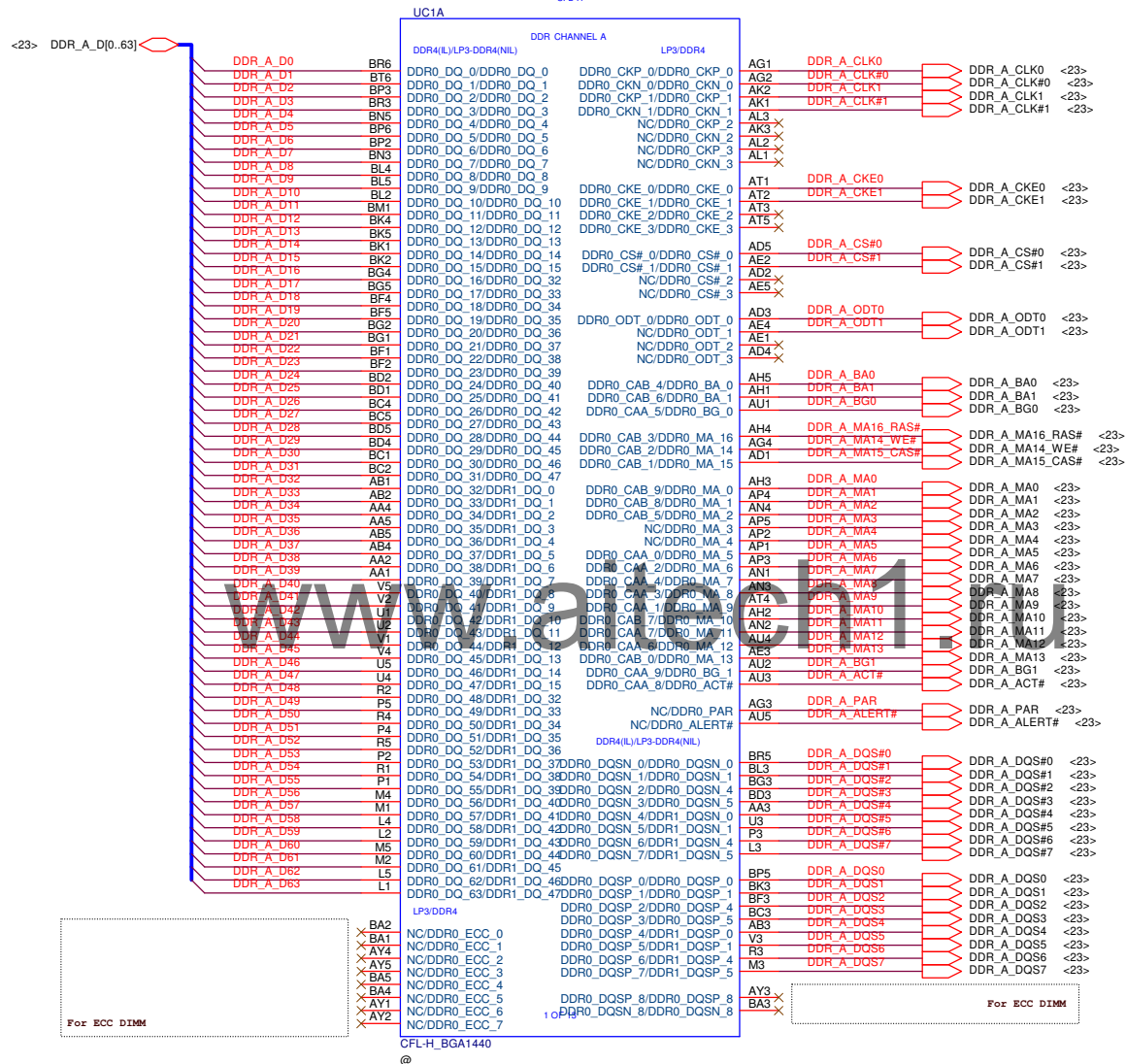
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SA0000CK230



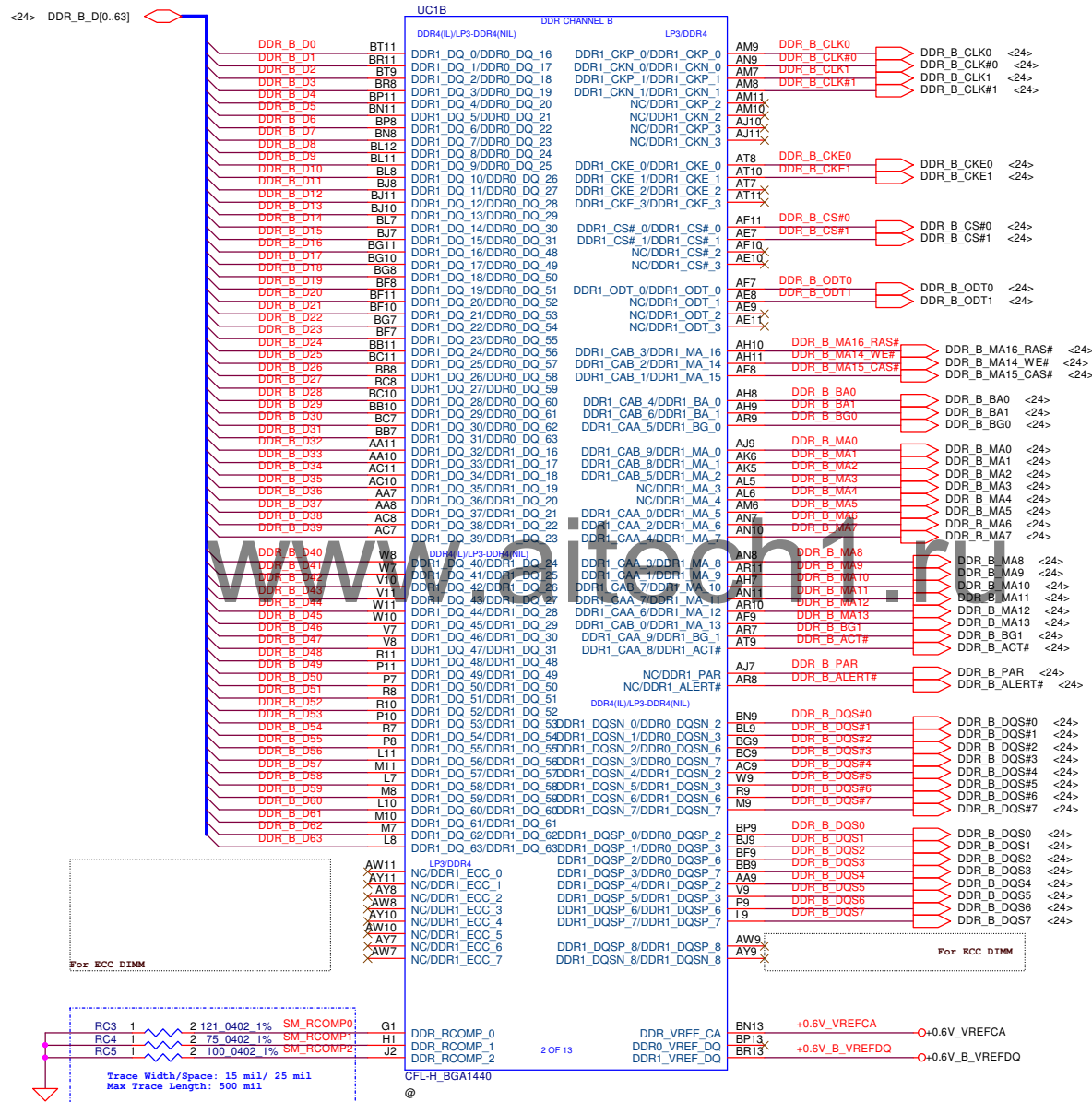
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Issued Date				2017/10/30		Deciphered Date		2018/10/30		Title	
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										Document Number	
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CHANNEL-A

Interleaved Memory



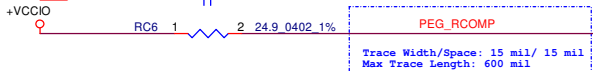
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PEG&DMI

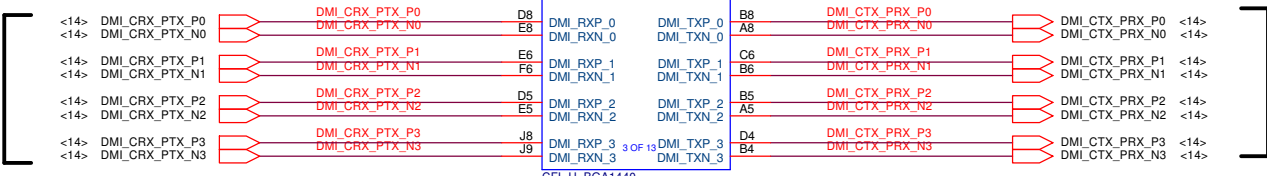
To DGPU
PEG Lane Reversed

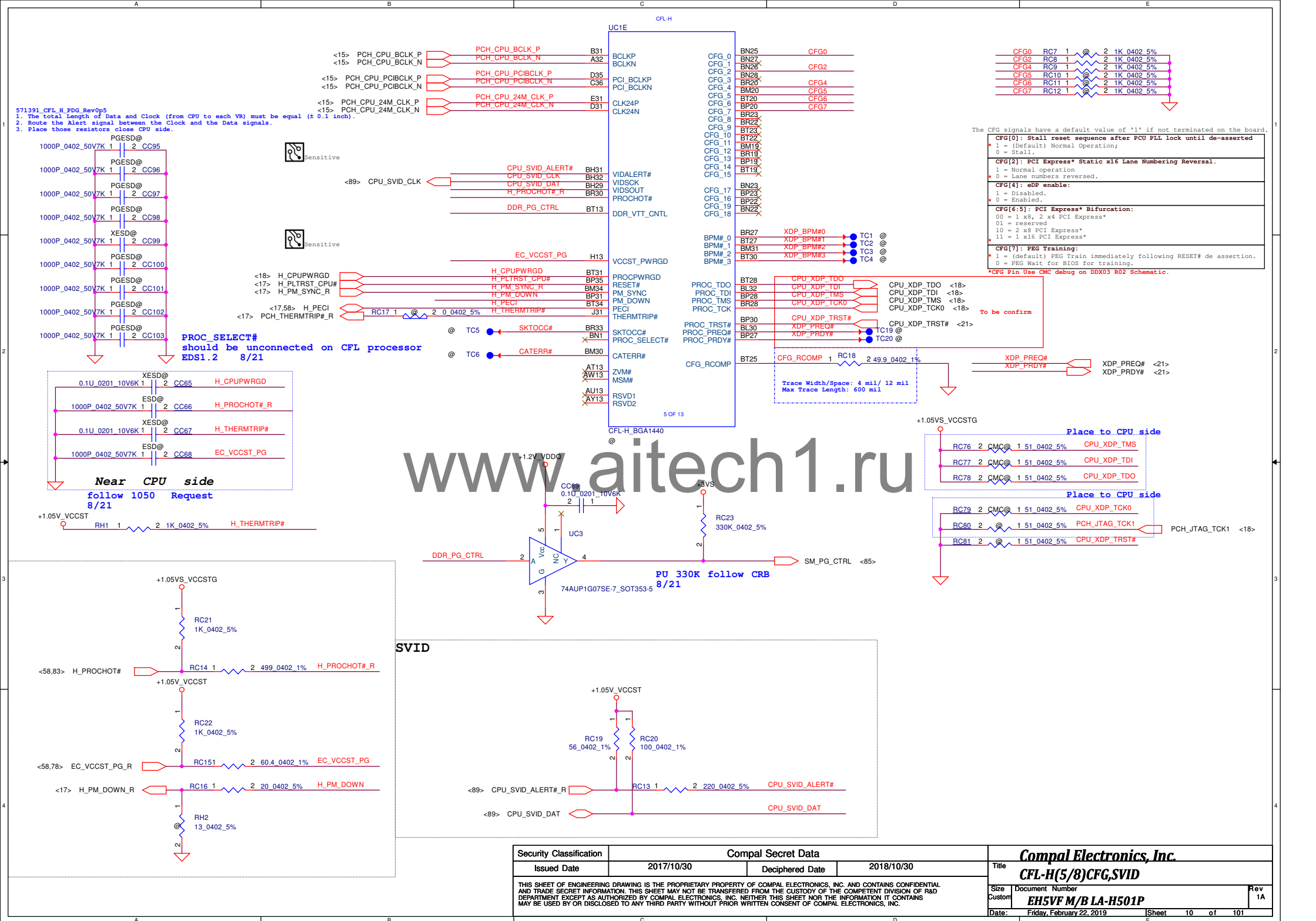
To DGPU
PEG Lane Reversed

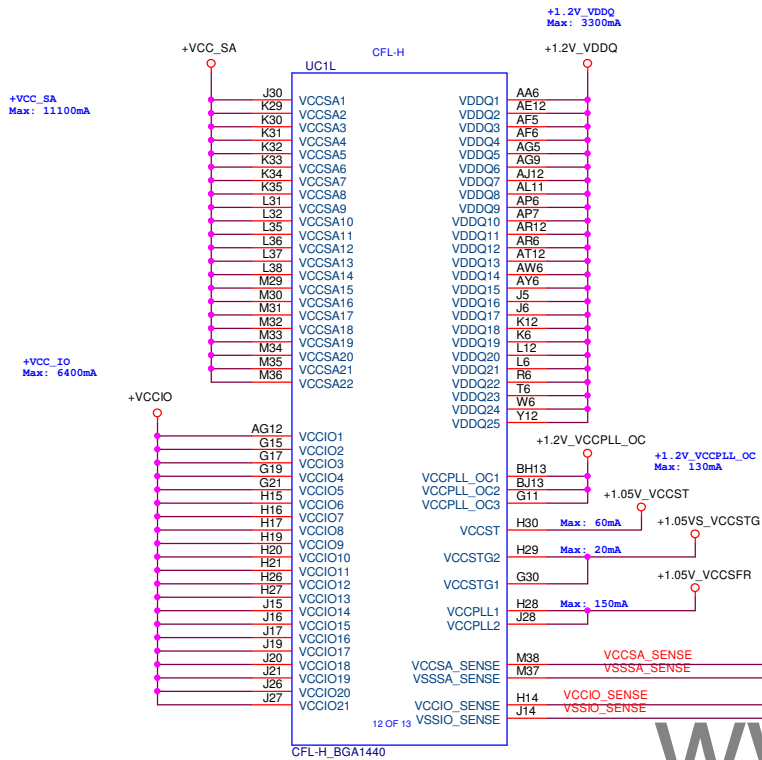


To PCH

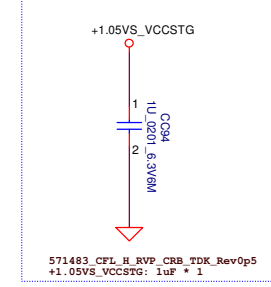
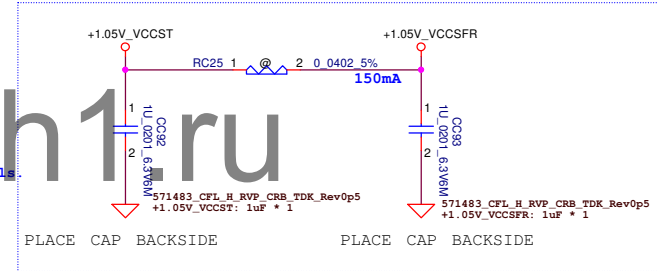
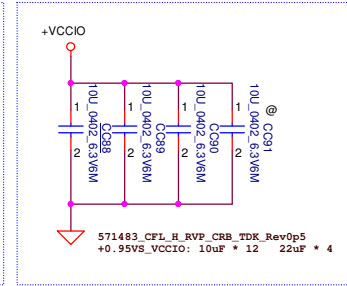
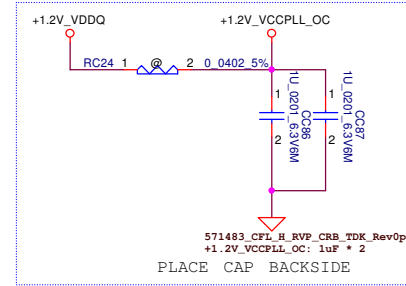
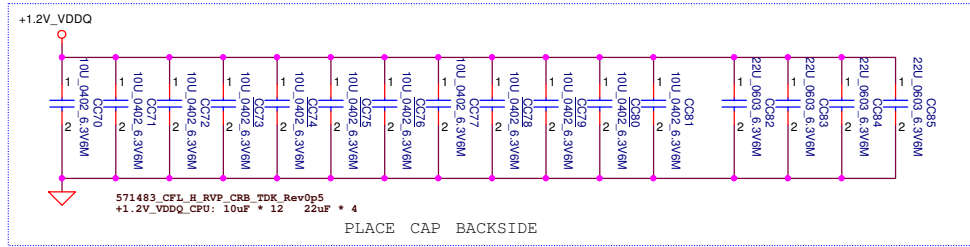
To PCH



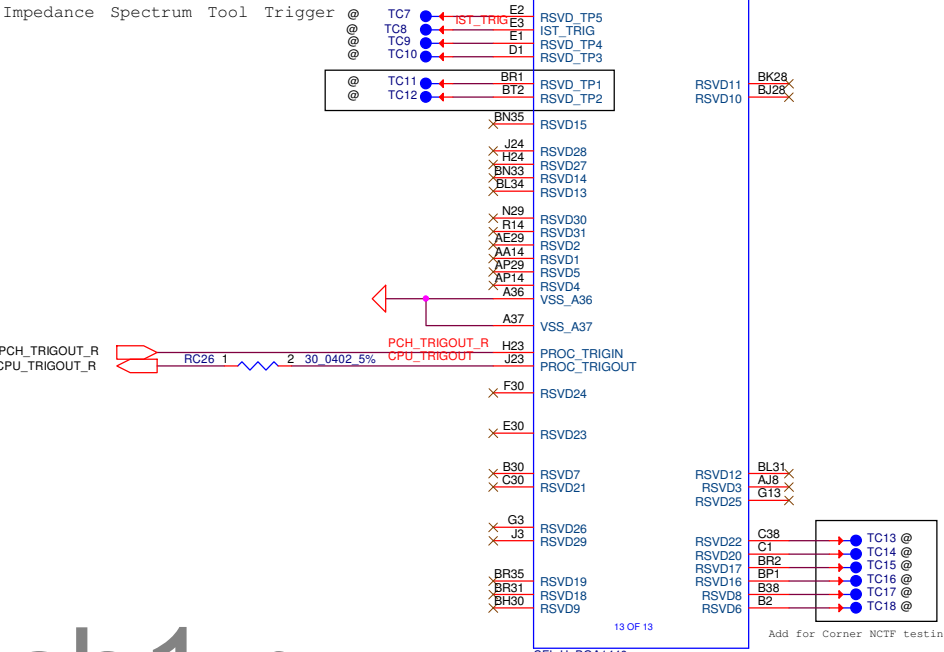
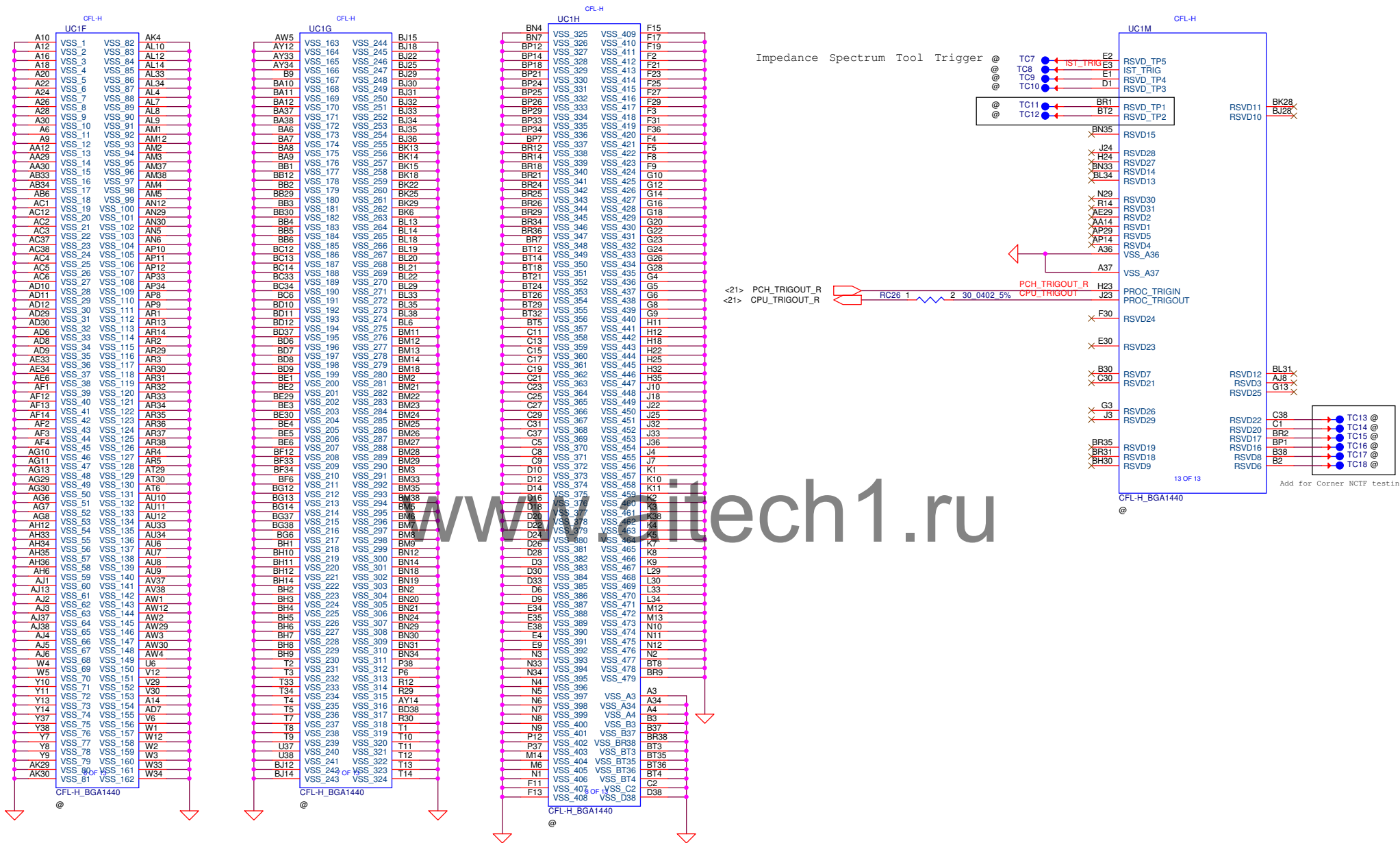




1. VccGT_SENSE / VssGT_SENSE Trace Length Match < 25 mils
2. Maintain 25-mil separation distance away from any other dynamic signals.



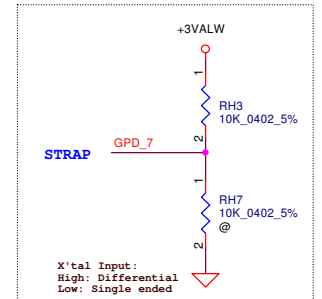
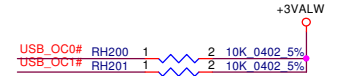
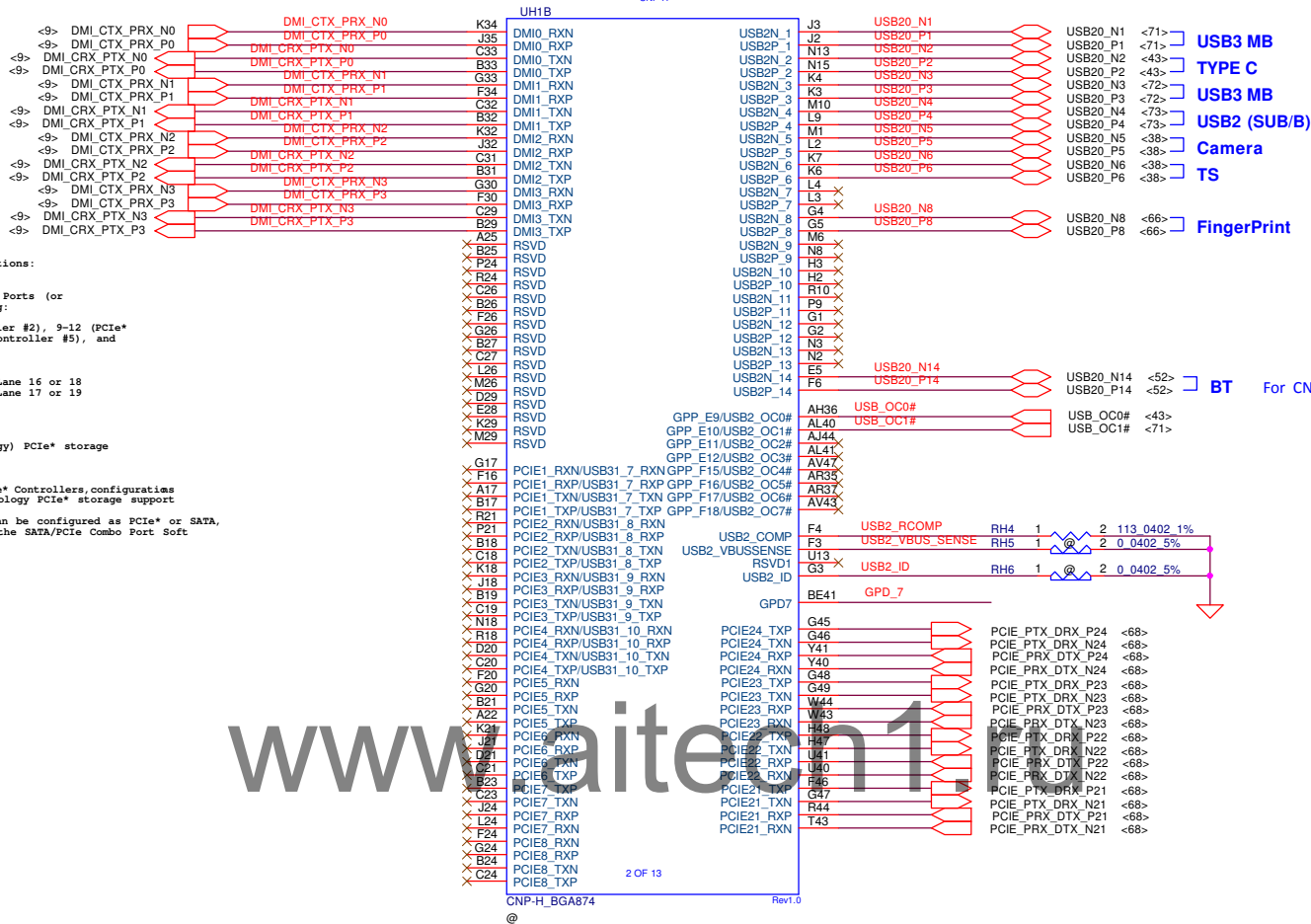
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The 30 HSIO lanes on PCH-H supports the following configurations:

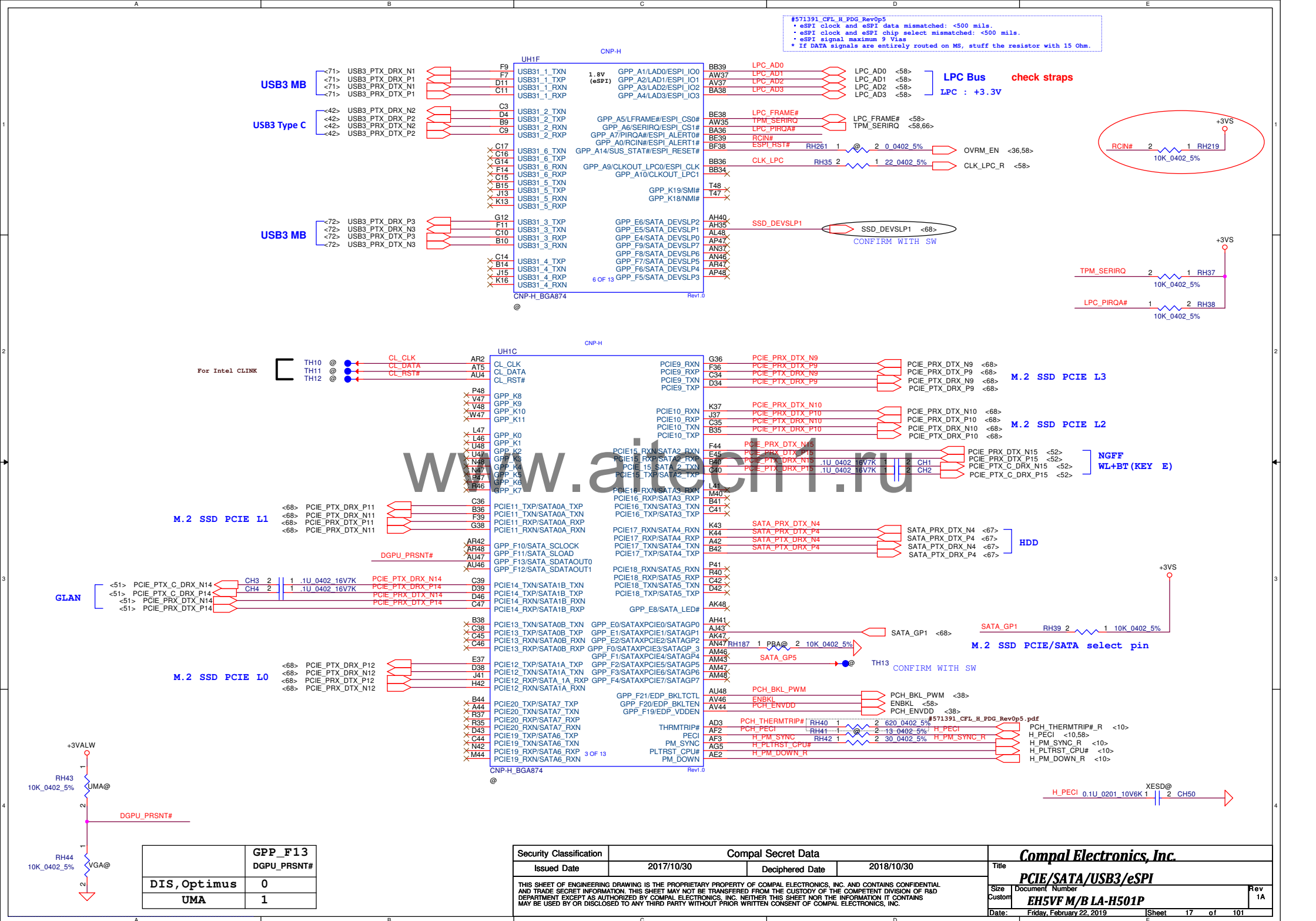
- Up to 24 PCIe* Lanes
 - A maximum of 16 PCIe* Ports (or devices) can be enabled
 - When a GbE Port is enabled, the maximum number of PCIe* Ports (or devices) that can be enabled reduces based off the following:
 - Max PCIe* Ports (or devices) = 16 - GbE (0 or 1)
 - PCIe* Lanes 1-4 (PCIe* Controller #1), 5-8 (PCIe* Controller #2), 9-12 (PCIe* Controller #3), 13-16 (PCIe* Controller #4), 17-20 (PCIe* Controller #5), and 21-24 (PCIe* Controller #6) can be individually configured
- Up to 6 SATA Lanes
 - A maximum of 6 SATA Ports (or devices) can be enabled
 - SATA Lane 0 has the flexibility to be mapped to Flex I/O Lane 16 or 18
 - SATA Lane 1 has the flexibility to be mapped to Flex I/O Lane 17 or 19
- Up to 10 USB 3.1 Lanes
 - A maximum of 10 USB 3.1 Ports (or devices) can be enabled
- Up to 4 GbE Lanes
 - A maximum of 1 GbE Port (or device) can be enabled
- Supports up to 3 Remapped (Intel® Rapid Storage Technology) PCIe* storage devices
 - x2 and x4 PCIe* NVMe SSD
 - x2 Intel® Optane™ Memory Device
 - See the "PCI Express* (PCIe*)" chapter for the PCH PCIe* Controllers, configurations, and lanes that can be used for Intel® Rapid Storage Technology PCIe* storage support
- For unused SATA/PCIe* Combo Lanes, Flex I/O Lanes that can be configured as PCIe* or SATA, the lanes must be statically assigned to SATA or PCIe* via the SATA/PCIe Combo Port Soft Straps discussed in the SPI Programming Guide and through the Intel® Flash Image Tool (FIT) tool.

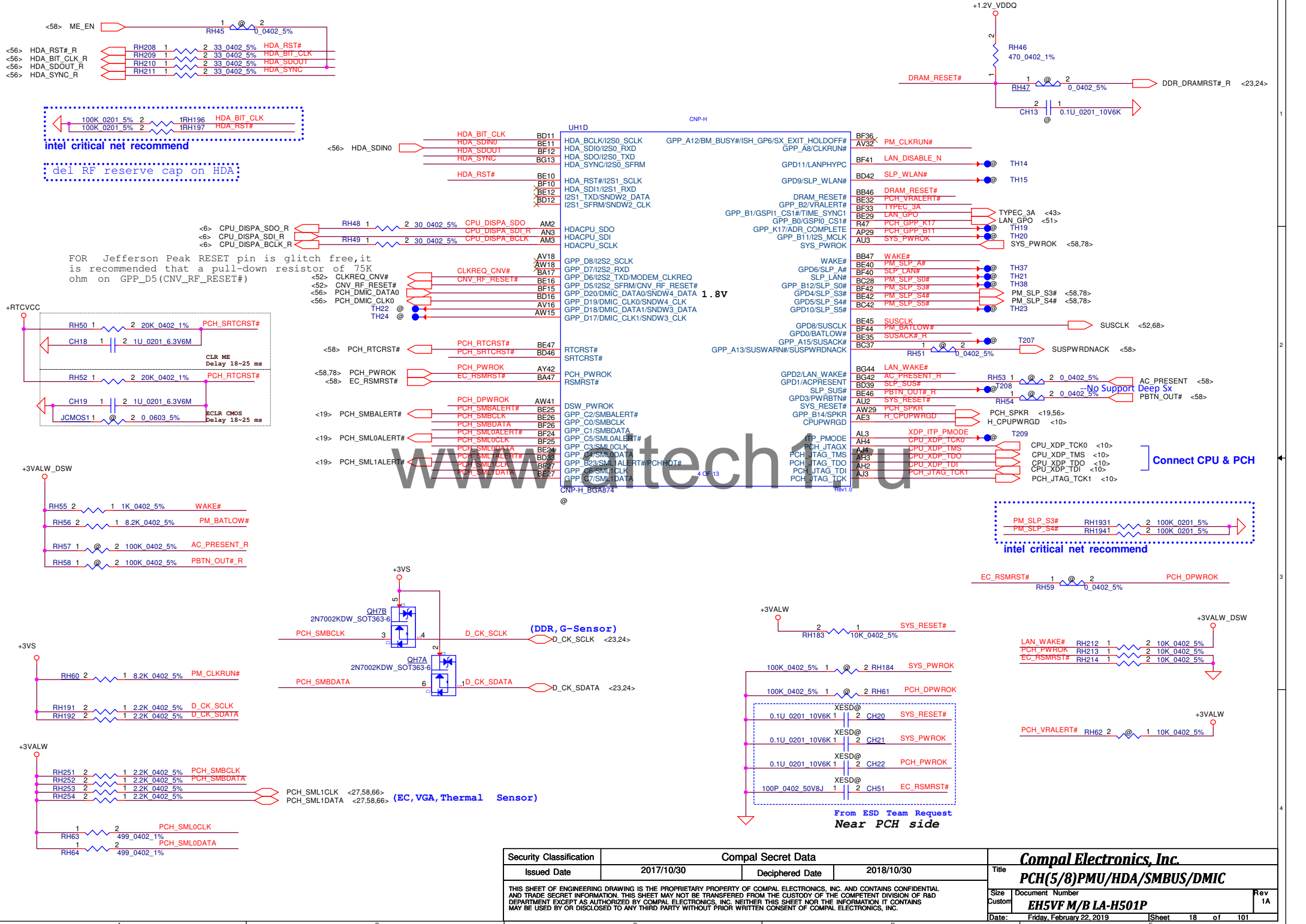


Flex I/O Lane	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29										
High Speed I/O (HSIO) Type and Lane	USB3.1 #1	USB3.1 #2	USB3.1 #3	USB3.1 #4	USB3.1 #5	USB3.1 #6	USB3.1 #7	PCIe* #1	PCIe* #2	USB3.1 #9	PCIe* #3	USB3.1 #8	PCIe* #4	PCIe* #5	PCIe* #6	PCIe* #7	PCIe* #8	PCIe* #9	PCIe* #10	PCIe* #11	PCIe* #12	SATA 1a	SATA 1b	PCIe* #13	SATA 2	PCIe* #14	SATA 3	PCIe* #15	SATA 4	PCIe* #16	SATA 5	PCIe* #17	PCIe* #18	PCIe* #19	PCIe* #20	PCIe* #21	PCIe* #22	PCIe* #23	PCIe* #24	
Intel® RST Support								No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support	No Support

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	GPP_D10	GPP_D9
Reserved	0	0
Reserved	0	1
Reserved	1	0
for 8 Layer	1	1

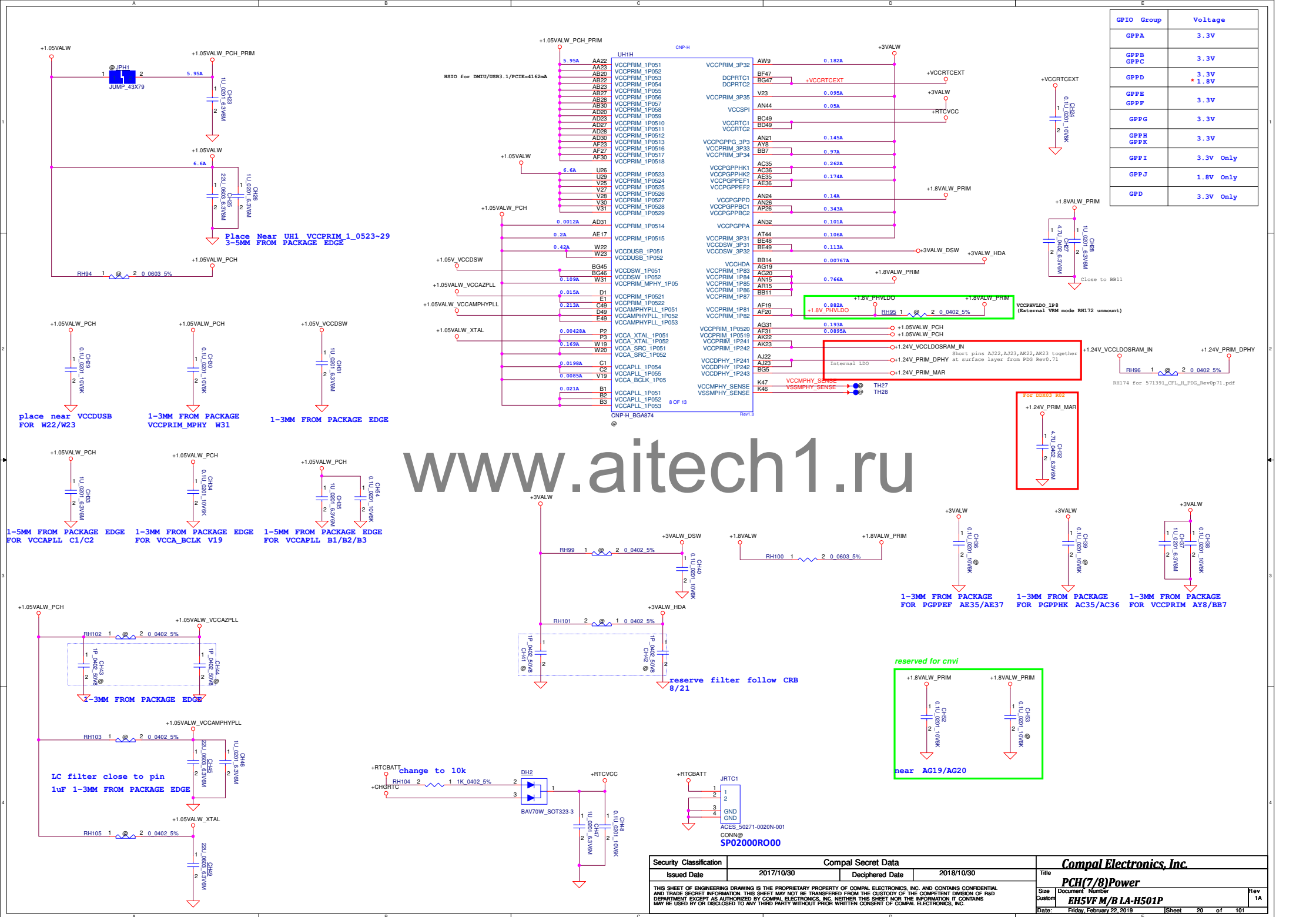
Project ID	Project ID1 GPP_D12	Project ID0 GPP_D11
EH50F(2060 WO RD)	0	0
EH50F(2060 W RD)	0	1
EH5VF(2050 WO RD)	1	0
*EH5VF(2050 W RD)	1	1

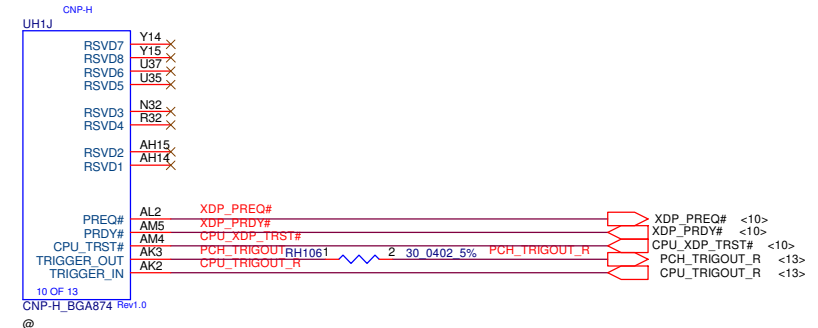
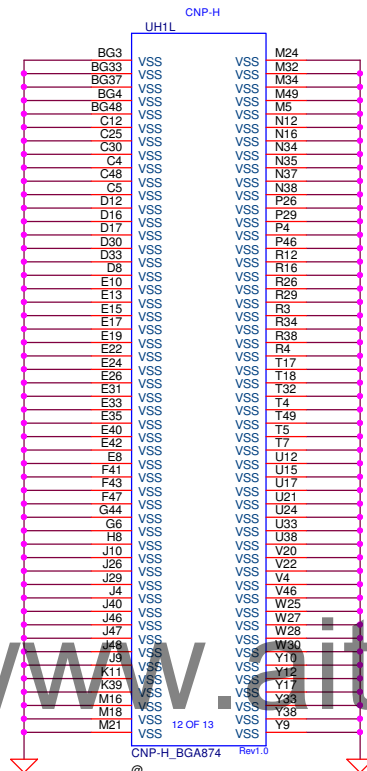
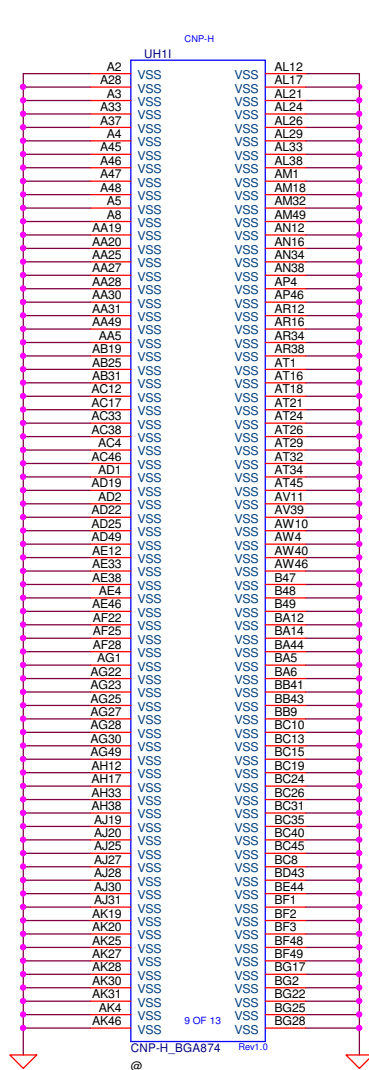
SCI capability is available on all GPIOs
PCH GPIOs that can be routed to generate SMI# or NMI:
• GPP_B14, GPP_B20, GPP_B23
• GPP_C[23:22]
• GPP_D[4:0]
• GPP_E[8:0]
• GPP_I[3:0]
• GPP_G[7:0] (support SMI# only).

The voltage of all GPIO pads in each GPP group is determined by the voltage supplied to the group (either 3.3V or 1.8V), except for GPP_I and GPP_G, (which are 3.3V only), and GPP_J group (which is 1.8V only).

All GPIOs have programmable internal pull-up/pull-down resistors which are off by default. The internal pull-up/pull-down for each GPIO can be enabled by BIOS programming.

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Interleaved Memory

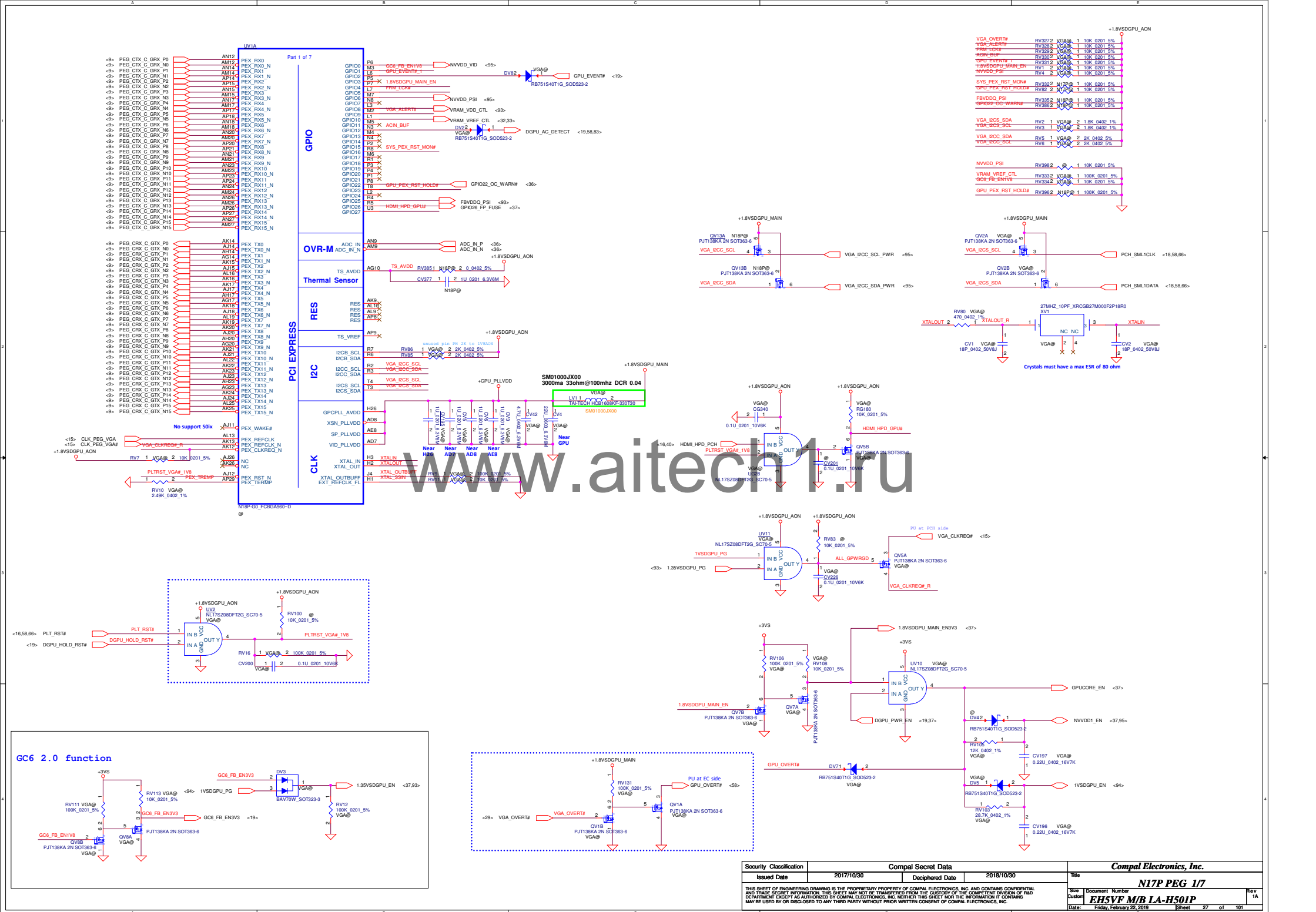
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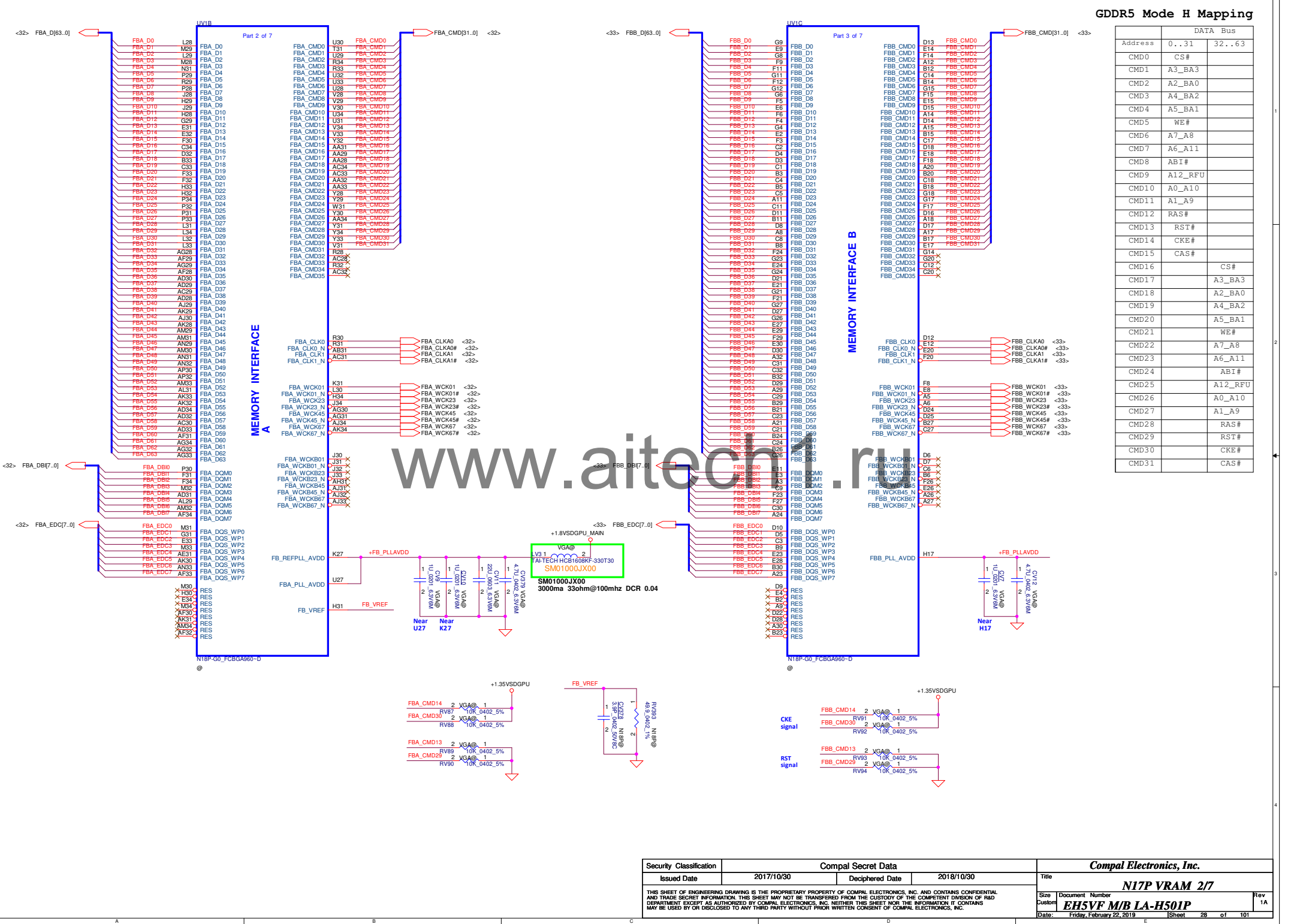
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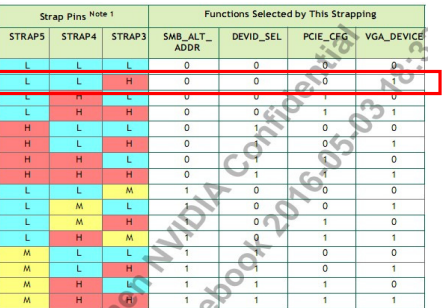
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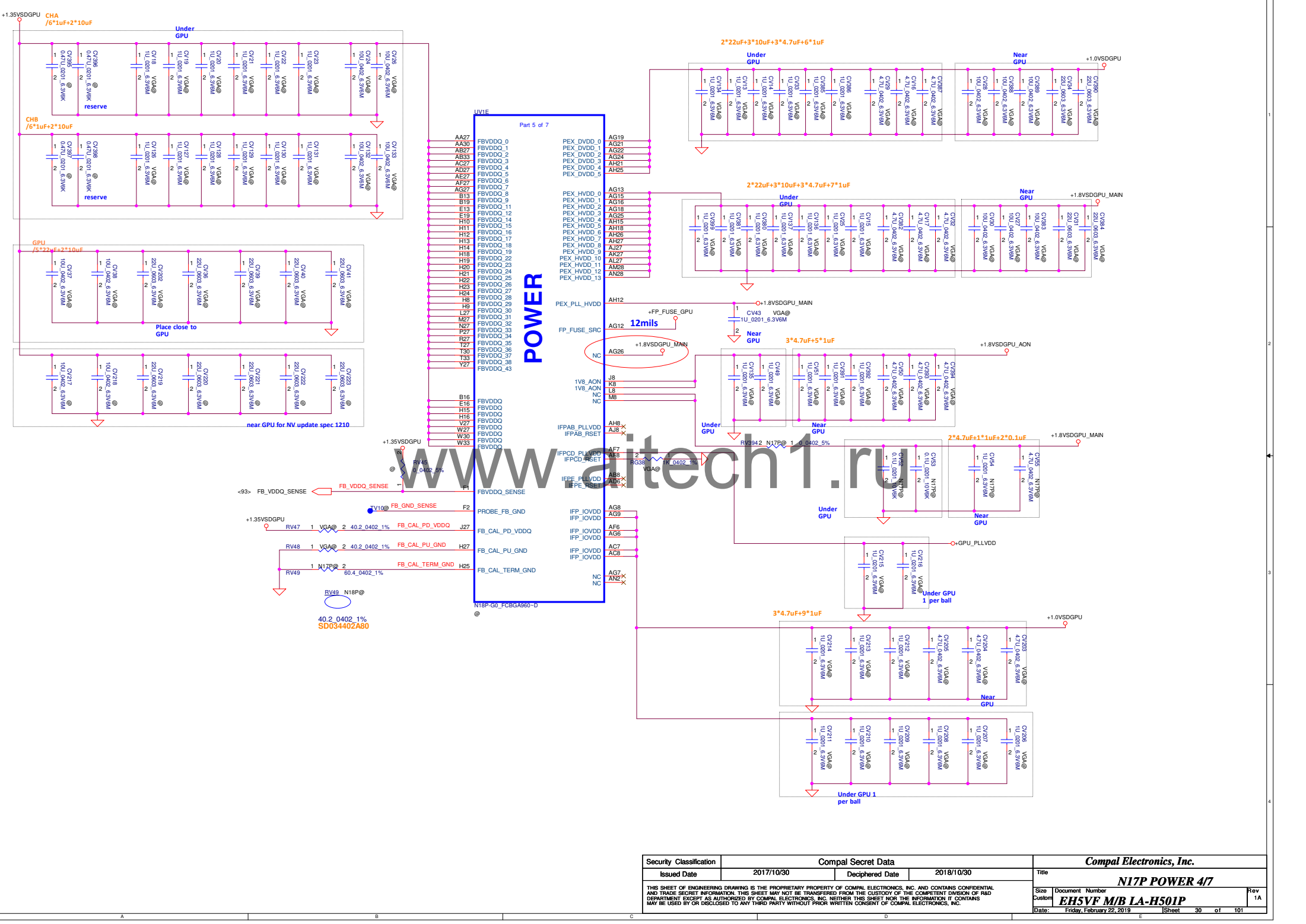


GDDR5 Mode H Mapping

Address		DATA	Bus
CMD0		0...31	32..63
CMD1		A3_BA3	
CMD2		A2_BA0	
CMD3		A4_BA2	
CMD4		A5_BA1	
CMD5		WE#	
CMD6		A7_A8	
CMD7		A6_A11	
CMD8		AB1#	
CMD9		A12_RFU	
CMD10		A0_A10	
CMD11		A1_A9	
CMD12		RAS#	
CMD13		RST#	
CMD14		CKE#	
CMD15		CAS#	
CMD16			CS#
CMD17			A3_BA3
CMD18			A2_BA0
CMD19			A4_BA2
CMD20			A5_BA1
CMD21			WE#
CMD22			A7_A8
CMD23			A6_A11
CMD24			AB1#
CMD25			A12_RFU
CMD26			A0_A10
CMD27			A1_A9
CMD28			RAS#
CMD29			RST#
CMD30			CKE#
CMD31			CAS#



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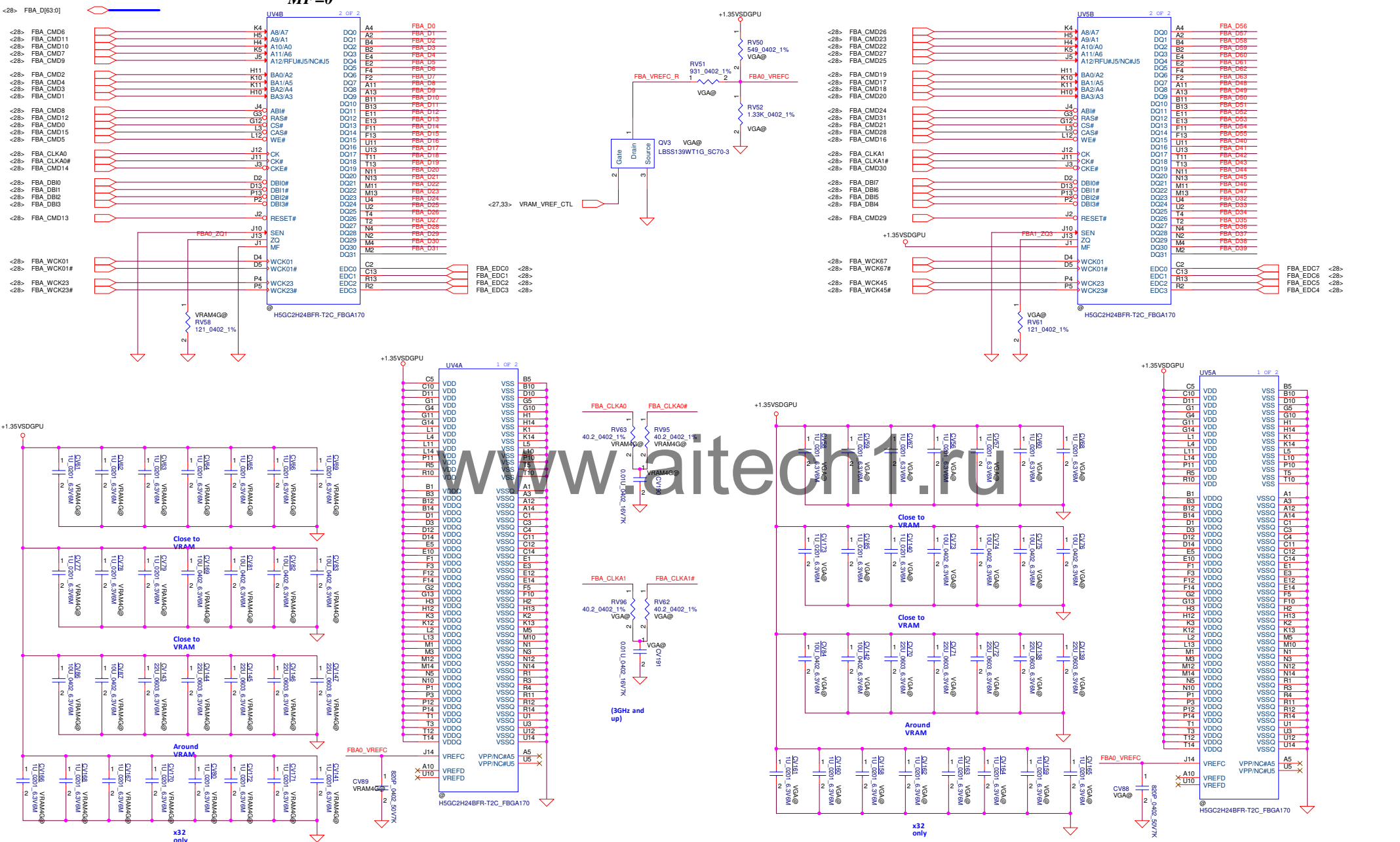
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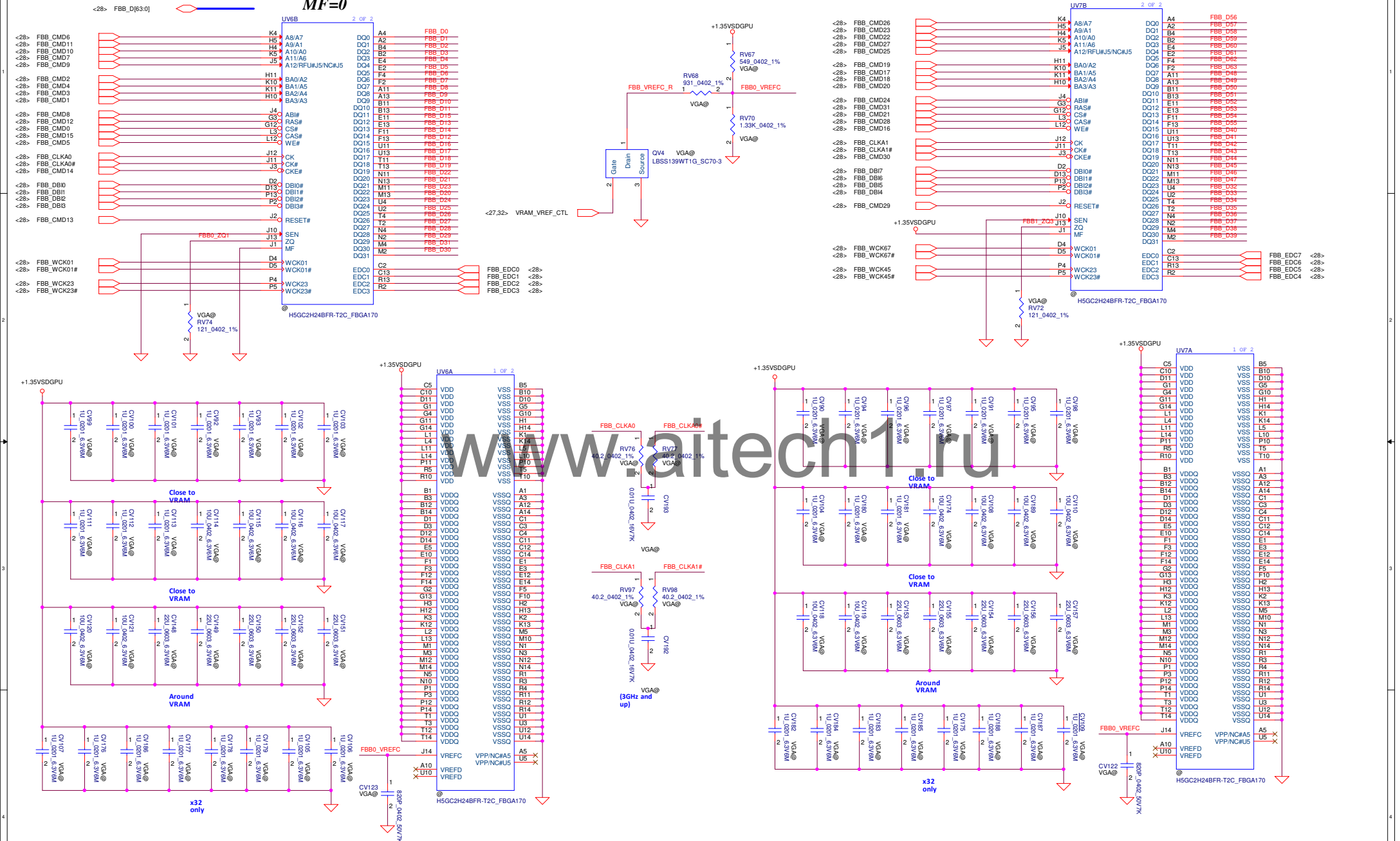
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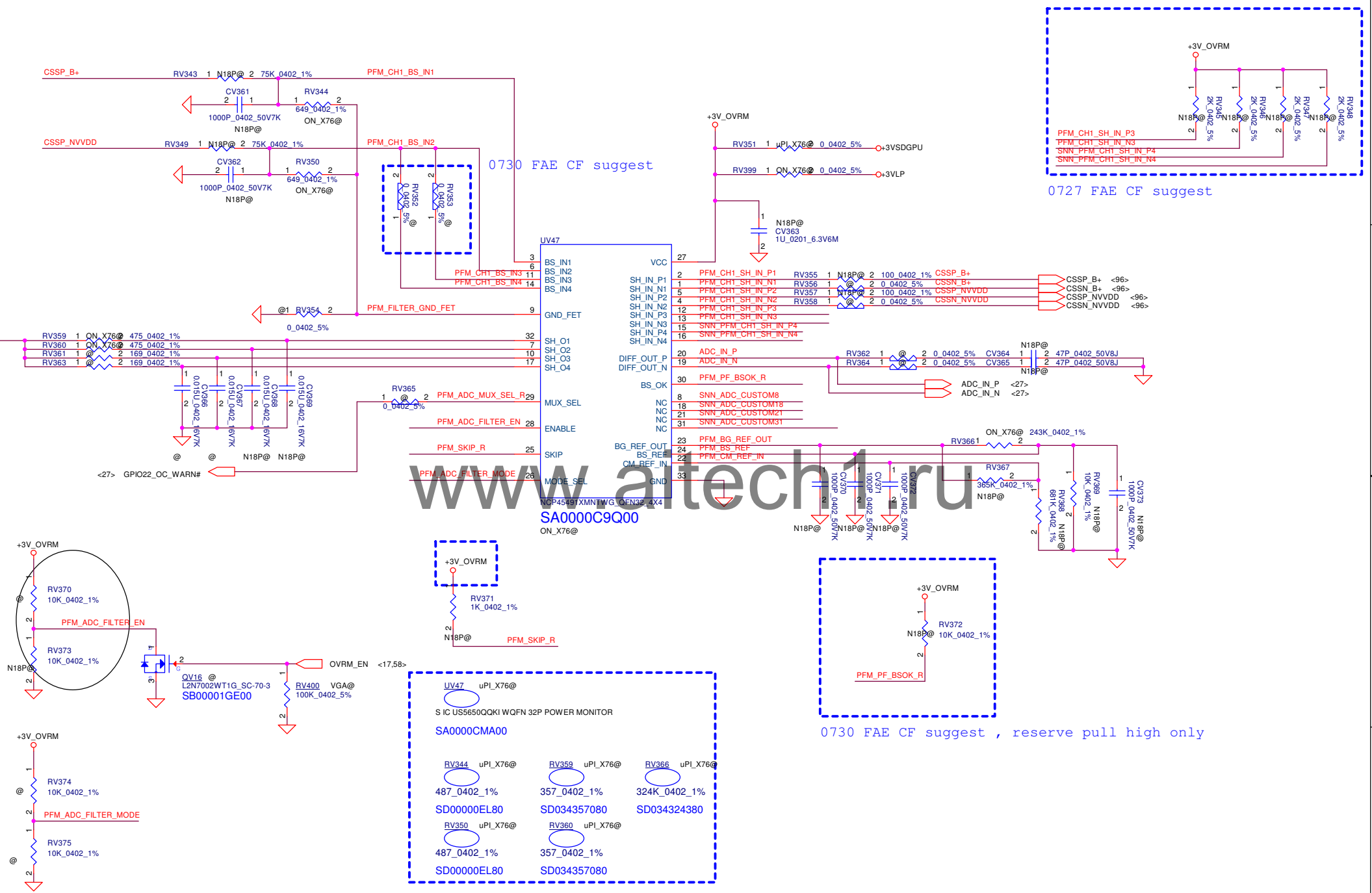
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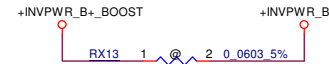
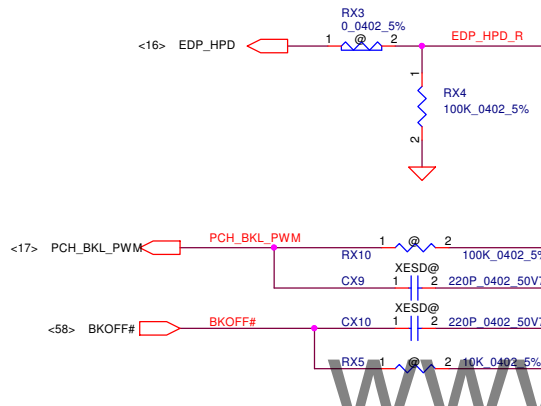
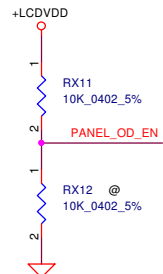
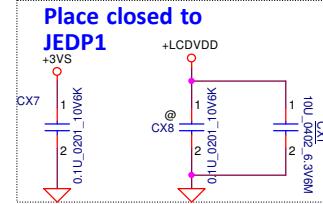
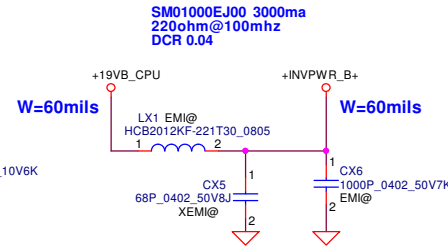
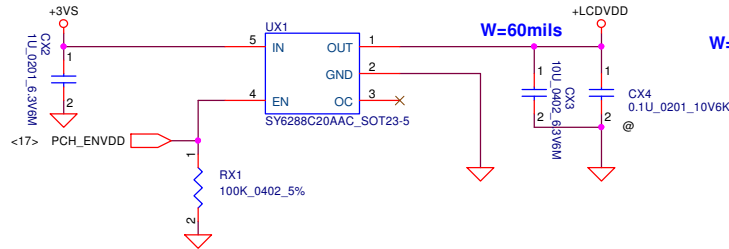
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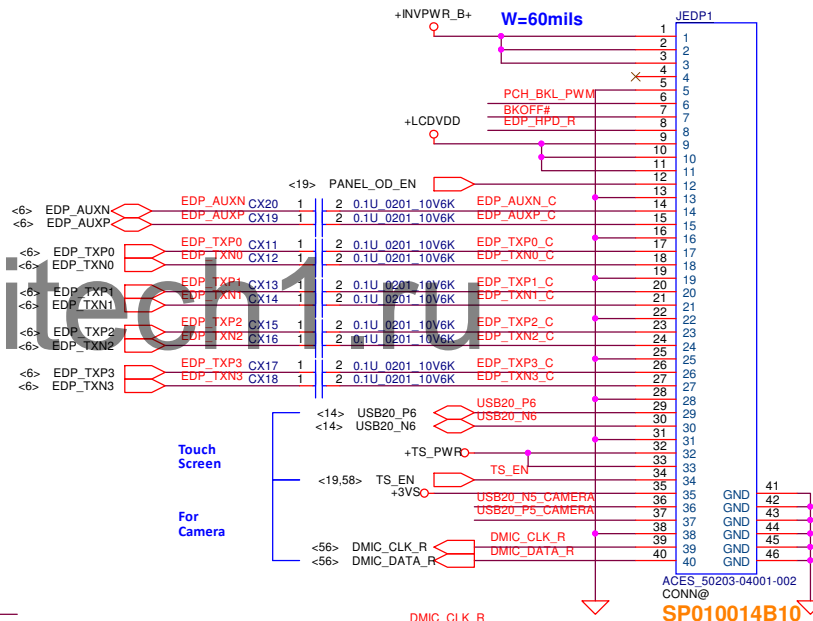


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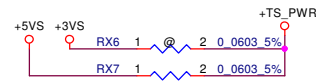
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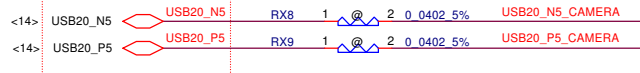
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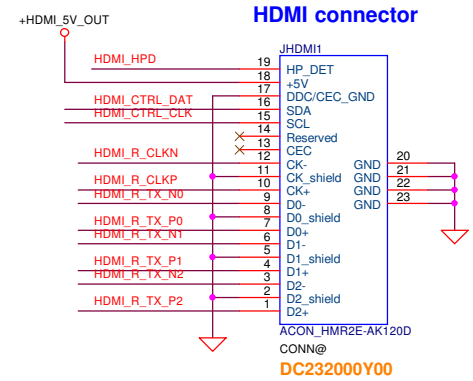
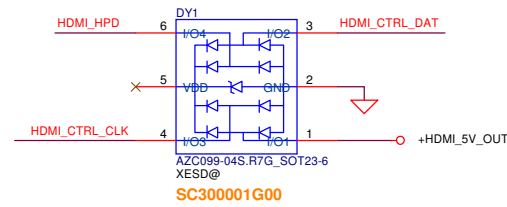
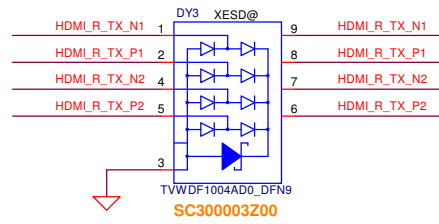
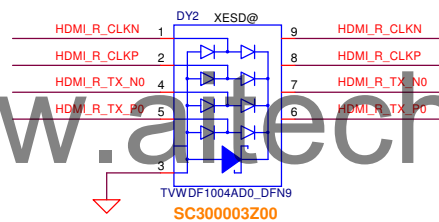
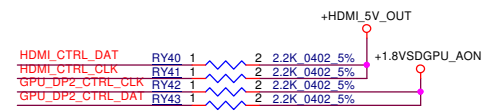
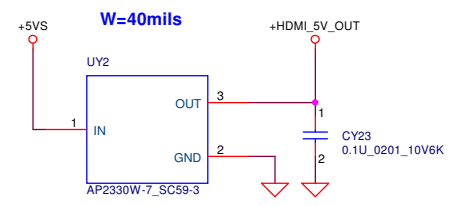
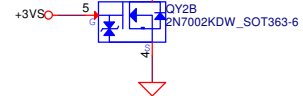
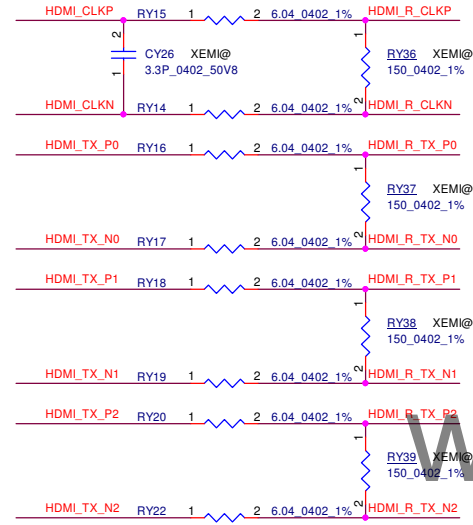
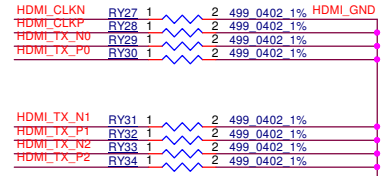
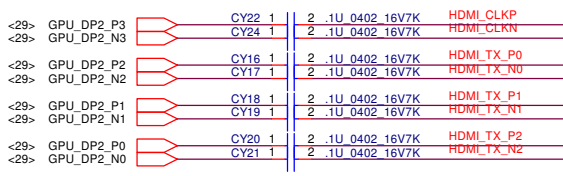
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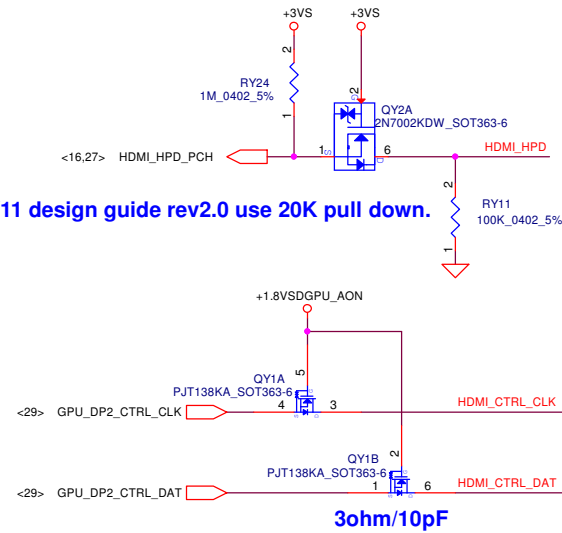
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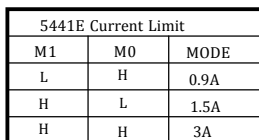
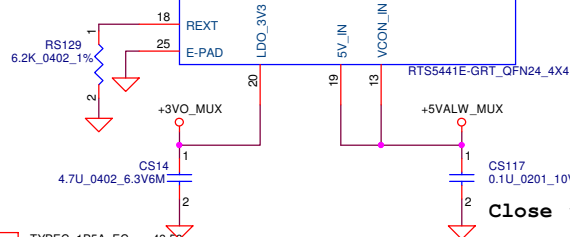
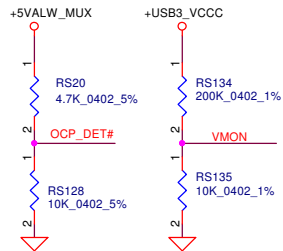
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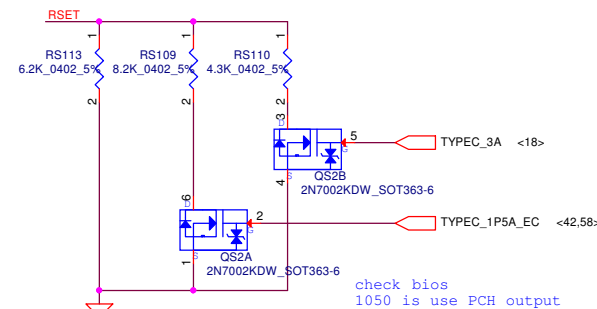
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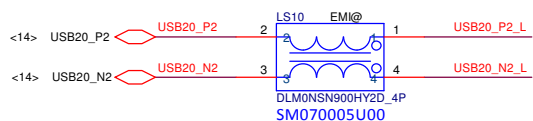
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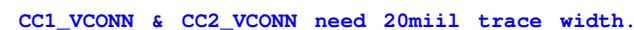
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G518 MOS Current Limit				
GPP_B1 TYPEC_1P5A	GPP_B4 TYPEC_3A	RSET(kΩ)	MODE	limit point
L	L	6.2	0.9A	1.09A
L	H	3.53	1.5A	1.92A
H	L	2.54	2A	2.67A
*H	H	1.94	3A	3.5A



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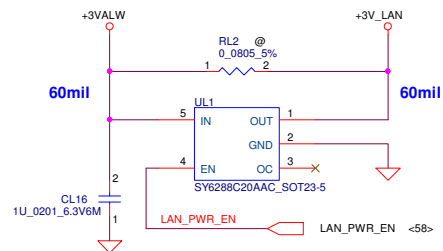
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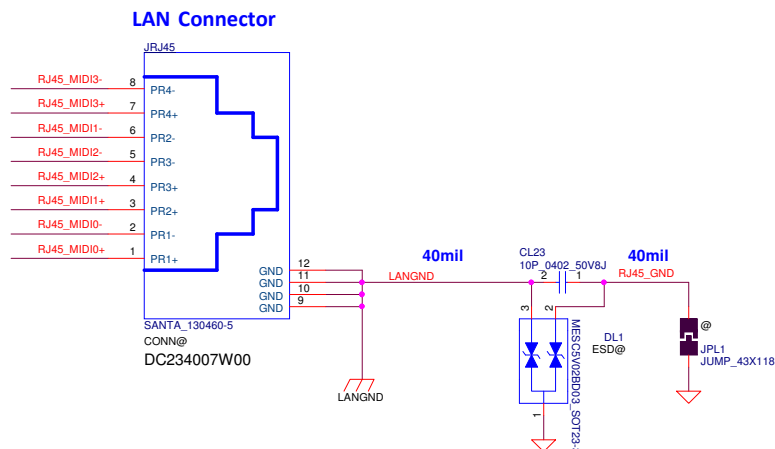
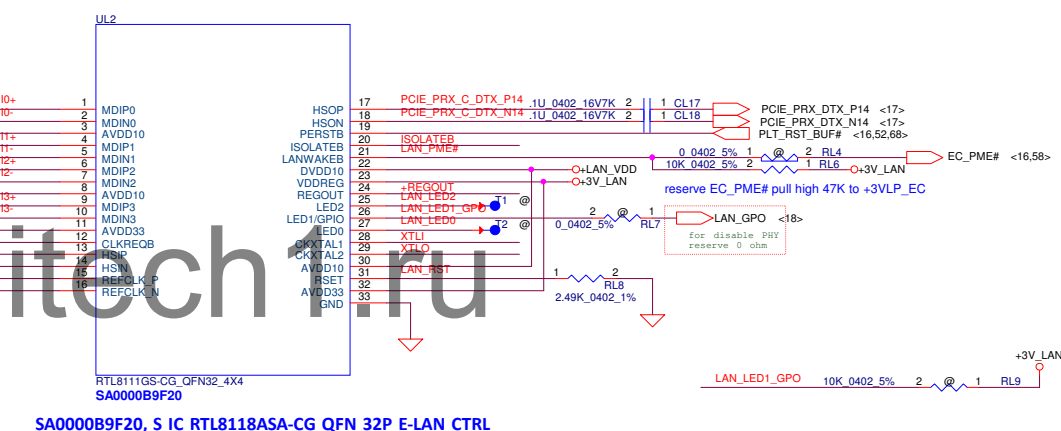
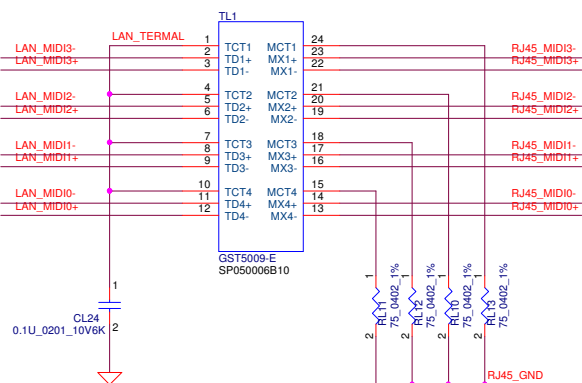
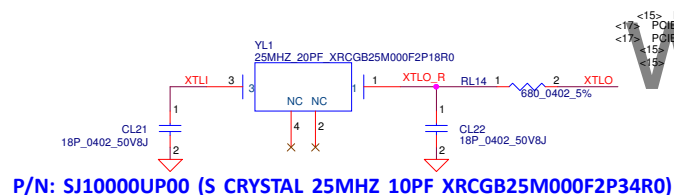
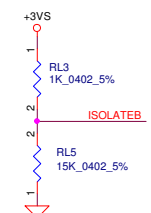
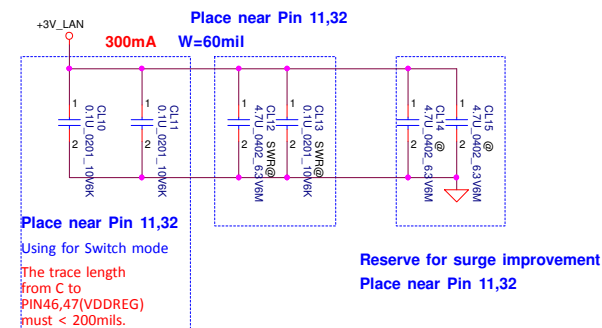
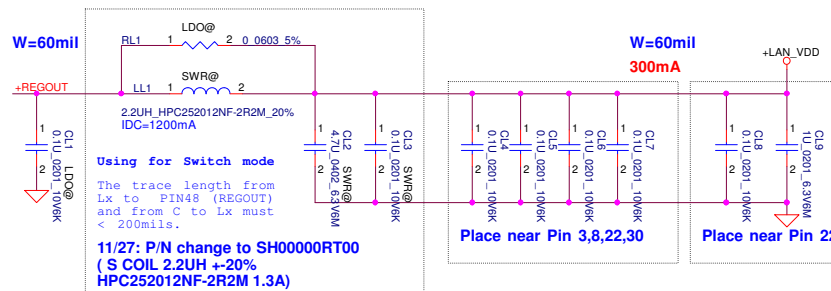
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RTL8111H LDO mode
RTL8118ASA SWR mode
```



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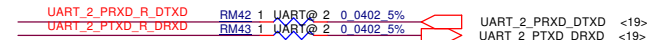
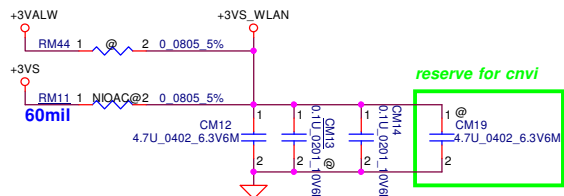
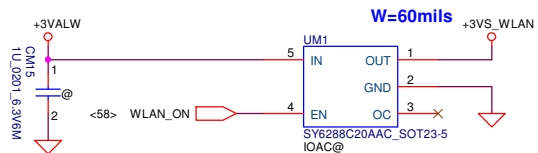
From EC
High active.
EN threshold voltage min:1.2V
typ:1.6V max:2.0V
Current limit threshold 1.5~2.8A
+3V_LAN Rising time must >0.5ms

```

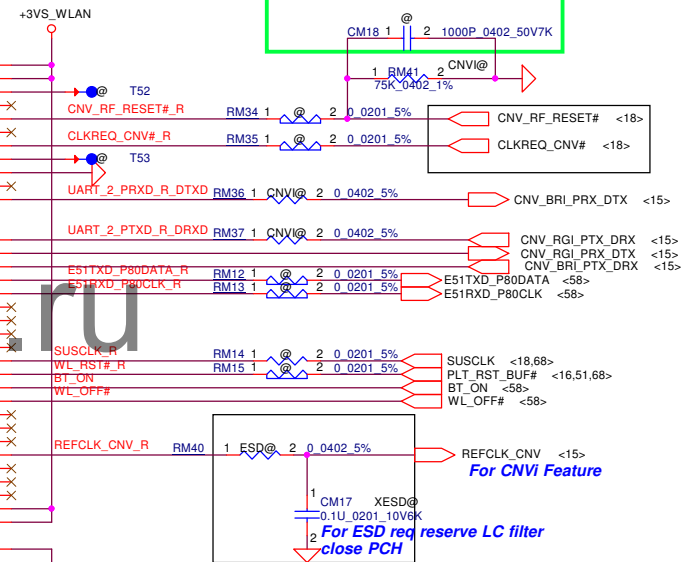
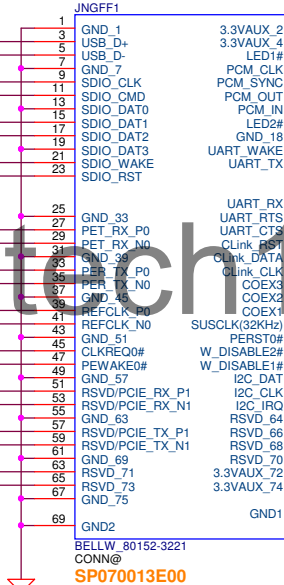
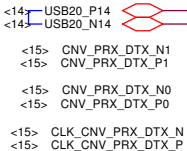
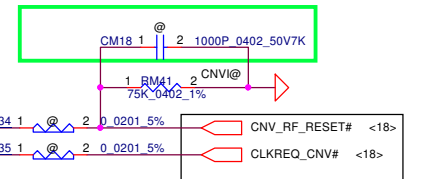


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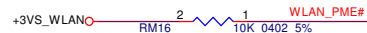
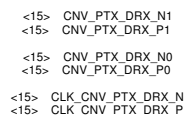
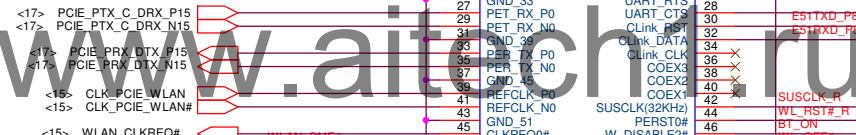
Wireless LAN



Co-layout with CNVi for SW debug



For CNVi Feature



NGFF WL+BT (KEY E)

74	3.3v	GND	75
72	3.3v	RESERVED/REFCLKN1	73
		RESERVED/REFCLKP1	71
70	UM_Power_SMC/GPIO/PEWale#	GND	69
68	UM_Power_SMC/CURCQ12	Reserved/PEPn1	67
66	UM_SWP/PERSt18	Reserved/PEPn1	65
64	RESERVED	GND	63
62	ALERT# (I/O)(3.3)	Reserved/PETn1	61
60	QCC CLK# (I/O)(3.3)	Reserved/PCTp1	59
58	QCC DATA (I/O)(3.3)	GND	57
56	W_DISABLE1 (O)(3.3v)	PEWaleOR# (O)(3.3v)	55
54	Reserved/W_DISABLE1 (O)(3.3v)	CLKREQ# (I/O)(3.3v)	53
52	PEBSTOP (I/O)(3.3v)	GND	51
50	SUSCLK(32MHz) (I/O)(3.3v)	REFCLKN	49
48	CODE1 (I/O)(0.1v)	REFCLKP0	47
46	CODEX3(O)(0.1v)	GND	45
44	CODEX3(O)(0.1v)	PEBn0	43
42	VENDOR DEFINED	PEBp0	41
40	VENDOR DEFINED	GND	39
38	VENDOR DEFINED	PETh0	37
36	UART RTS (O)(0.1v)	PETp0	35
34	UART CTS (I/O)(0.1v)	GND	33
32	UART Tx (I/O)(0.1v)	Reserved/PEWaleOR# (O)(3.3v)	
	Reserved/PEWaleOR# (O)(3.3v)	Reserved/PEWaleOR# (O)(3.3v)	
	Reserved/PEWaleOR# (O)(3.3v)	Reserved/PEWaleOR# (O)(3.3v)	
	Reserved/PEWaleOR# (O)(3.3v)	Reserved/PEWaleOR# (O)(3.3v)	
22	UART Rx (I/O)(0.1v)	SDIO Reset# (O)(0.1v)	23
20	UART Wake# (I/O)(3.3v)	SDIO Wake# (I/O)(0.1v)	21
18	GND	SDIO DATY(O)(O)(0.1v)	19
16	LED#2 (I)(VDD)	SDIO DATY(O)(O)(0.1v)	17
14	PCM_OUT/IS_SD_OUT (I/O)(0.1v)	SDIO DATY(O)(O)(0.1v)	15
12	PCM_IN/IS_SD_IN (I/O)(0.1v)	SDIO DATY(O)(O)(0.1v)	13
10	PCM_SYNC/IS WS (O)(0.1v)	SDIO CMD(O)(O)(0.1v)	11
8	PCM_CLK/IS SCK (O)(0.1v)	SDIO CLK(O)(O)(0.1v)	9
6	LED#1 (I)(VDD)	GND	7
4	3.3v	USB_0-	5
2	3.3v	USB_0+	3
		GND	1

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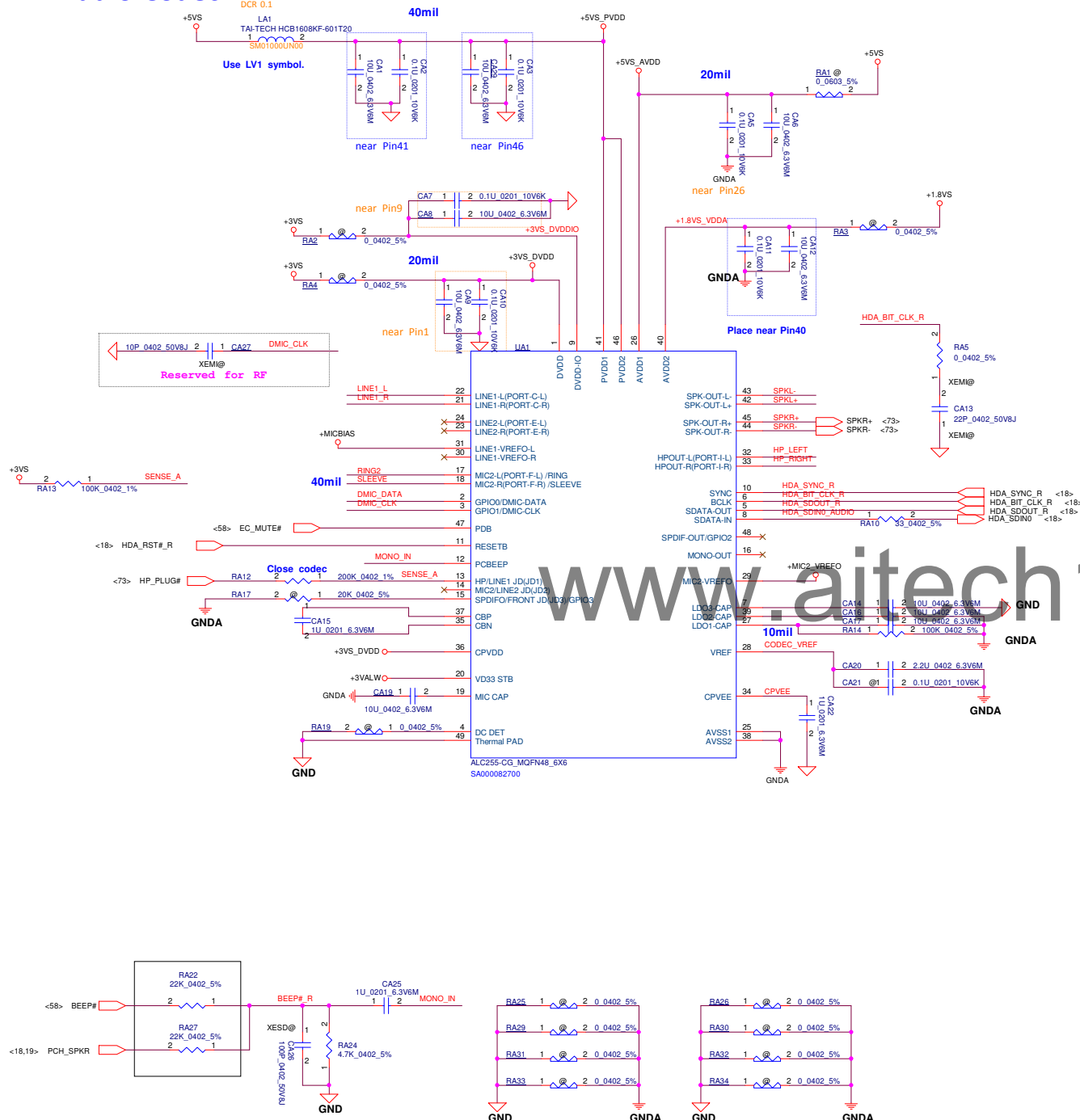
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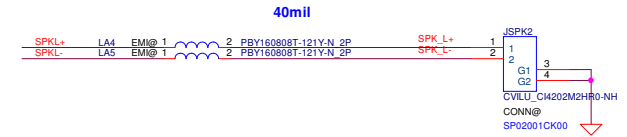
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DCR 0.1

Use LV1 symbol.

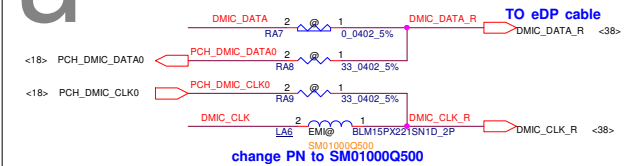


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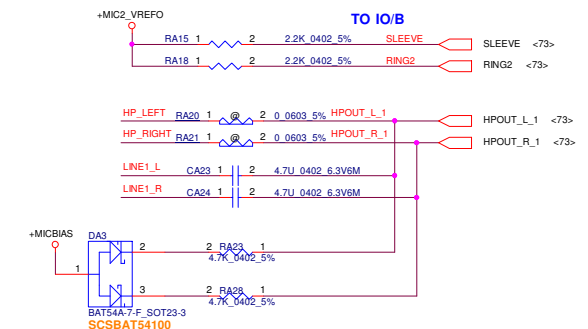


Digital MIC

MIC BOM upload by Audio Team



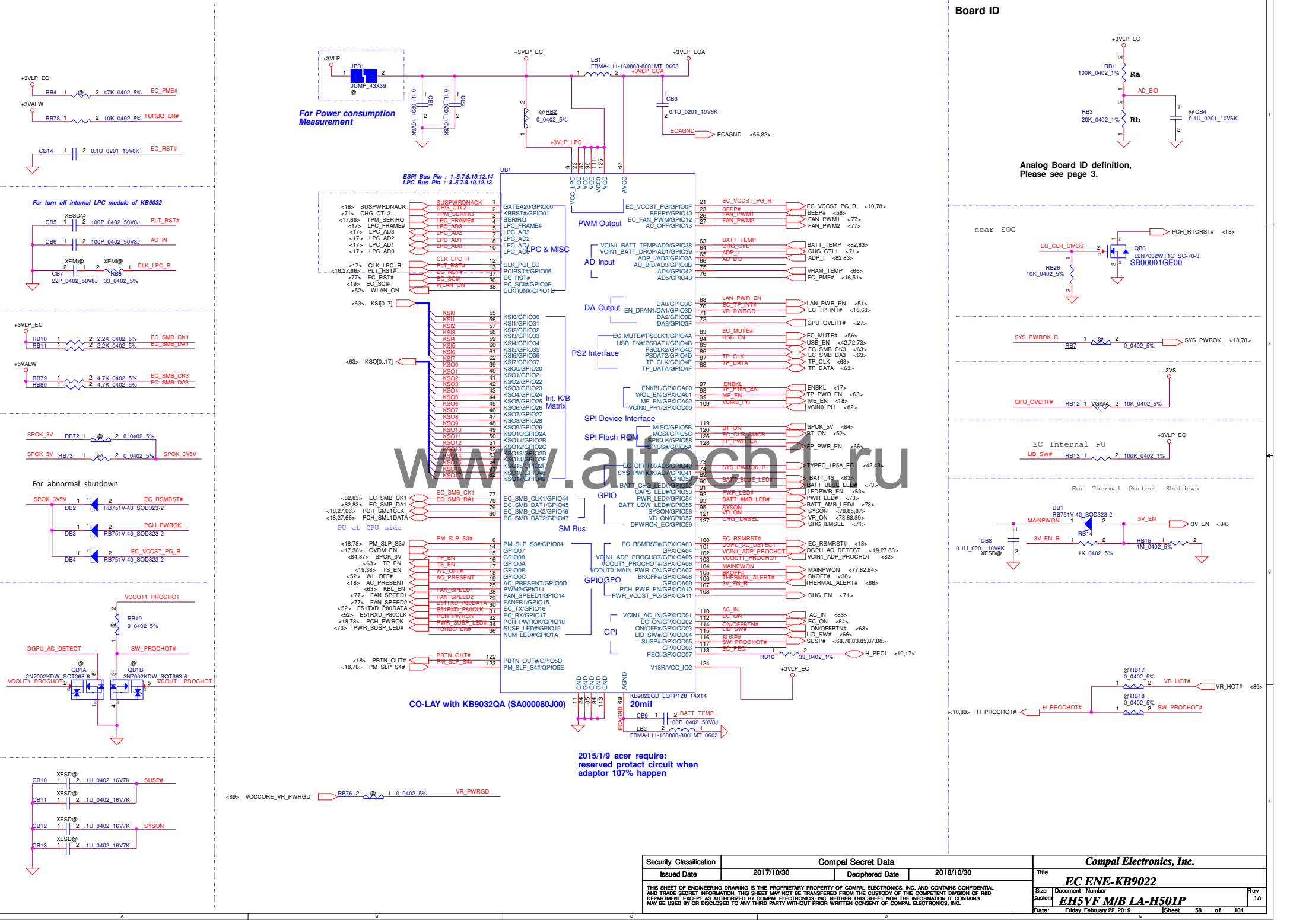
Headphone Out



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Board ID

Analog Board ID definition,
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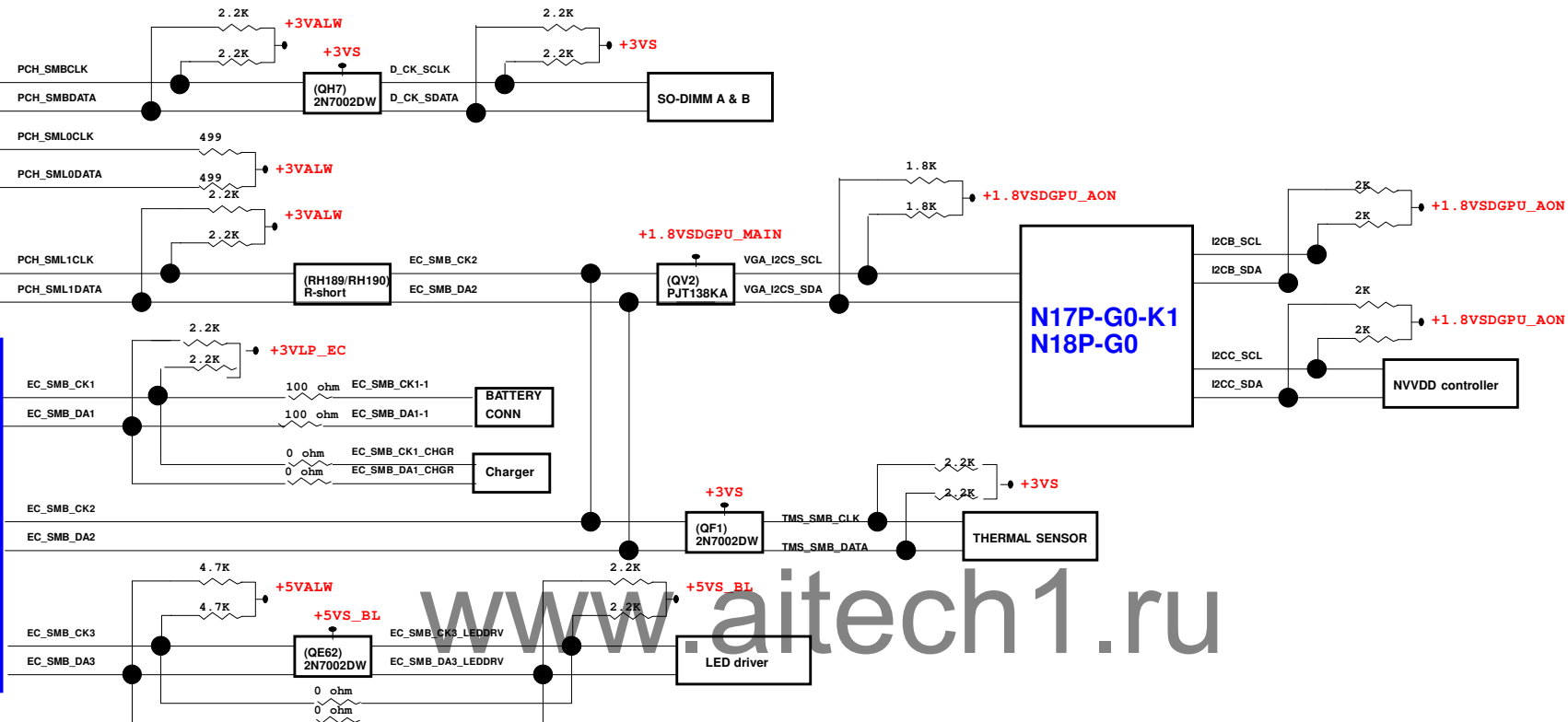
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Cannonlake
PCH - H

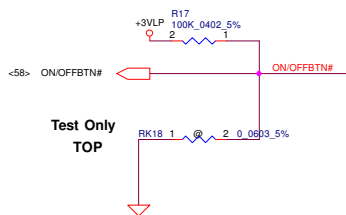
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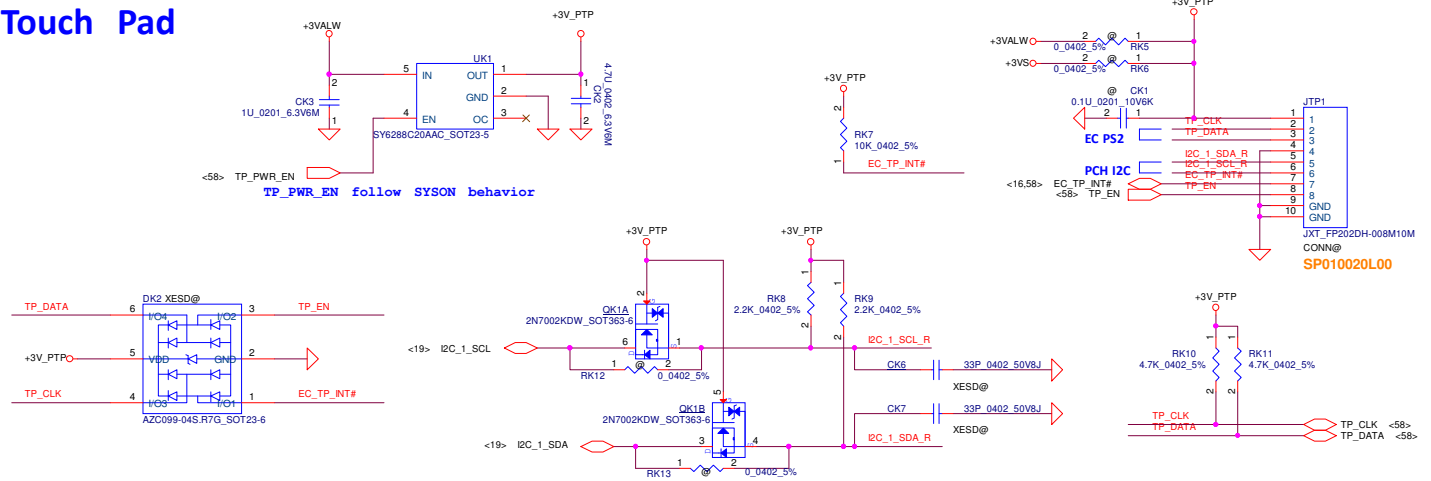
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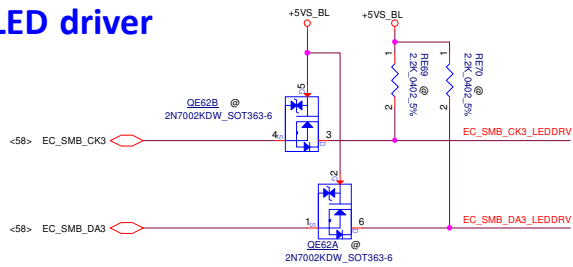
ON/OFF BTN



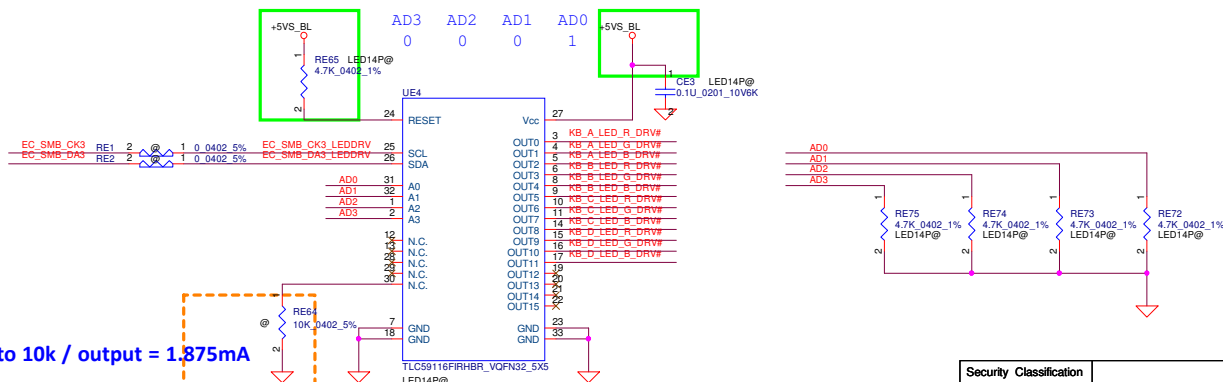
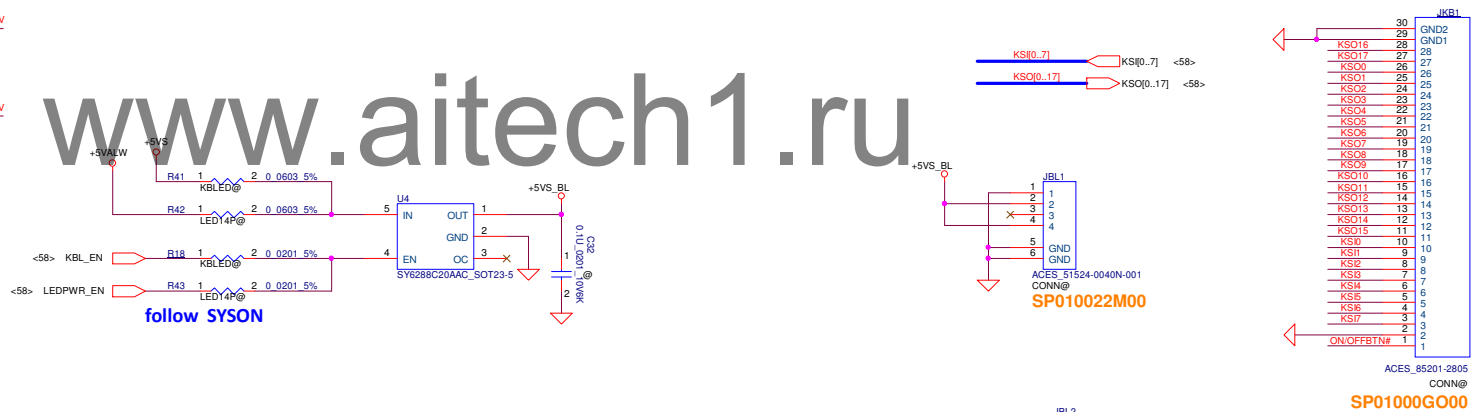
Touch Pad



LED driver



KB Conn. / Backlight



set RE7 to 10k / output = 1.875mA

Raptor: NC for 59116F

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				KB & TP & TPM Connector	
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<5B> LID_SW#

+3VLP

JHS1

1

2

3

4

5

6

GND

GND

0.1uF

100k

PGESD@

ACES_51524-0040N-001

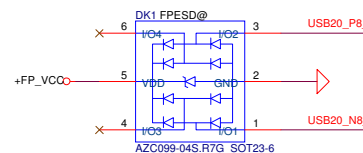
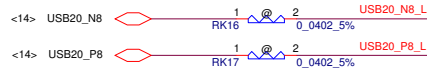
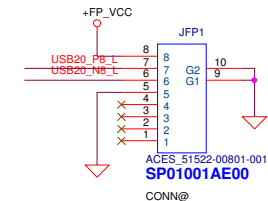
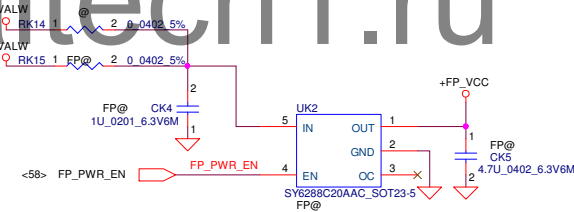
CONN@

SP010022M00

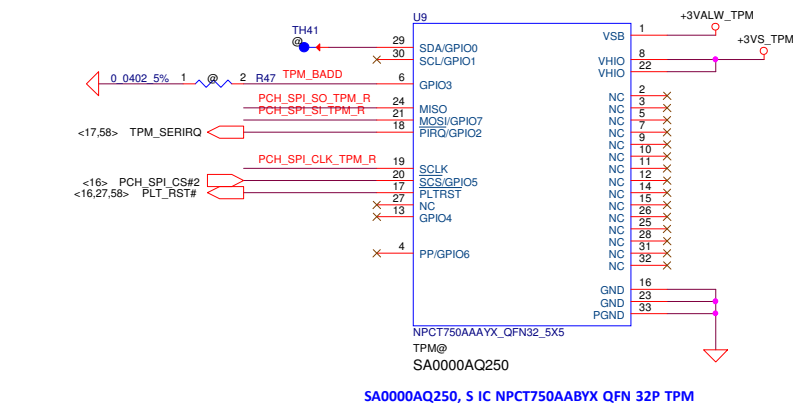
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Component	Value	Pin	Value	Pin	Value	Pin	Value	Pin
PCH_SPL_SO_R	R50	1	TPM@	2	33	0402	1%	PCH_SPL_SO_TPM_R
PCH_SPL_SI_R	R51	1	TPM@	2	33	0402	1%	PCH_SPL_SI_TPM_R
PCH_SPL_CLK_R	R52	1	TPM@	2	33	0402	1%	PCH_SPL_CLK_TPM_R

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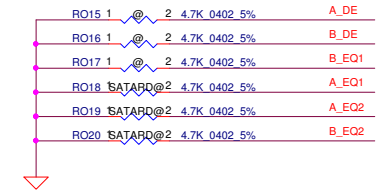
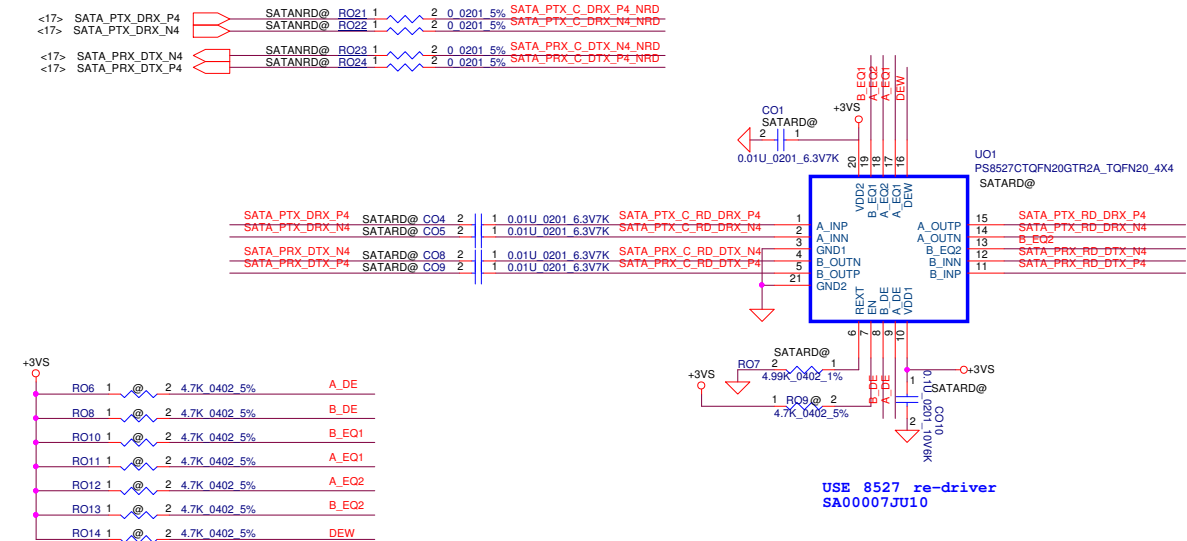


PIN	ETU801	FA577E-1200
1	+FP_VCC (5V)	+FP_VCC (3V)
2	USBP	D+
3	USBN	D-
4	GND	GND
5	NC	NC
6	NC	NC
7		NC
8		NC



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SATA Re-Driver and cable HDD Conn.



Chip Enable. Internally pulled up at ~150KΩ

EN	Status
L	Chip disabled
H	Chip enabled(default)

Programmable output de-emphasis level setting for channel A.
Internally tied to VDD/2(M status).

A_DE	De_Emphasis
M	-3.5dB(Default)
L	0dB
H	-6dB

Programmable output de-emphasis level setting for channel B.
Internally tied to VDD/2(M status).

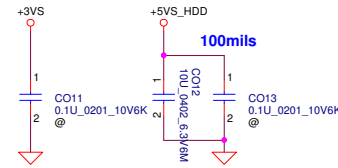
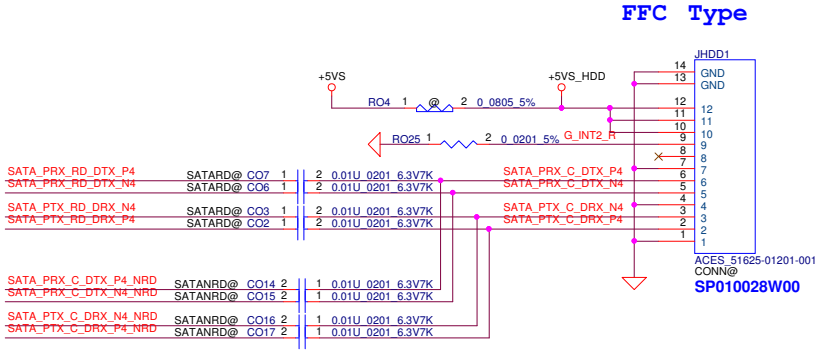
B_DE	De_Emphasis
M	-3.5dB(Default)
L	0dB
H	-6dB

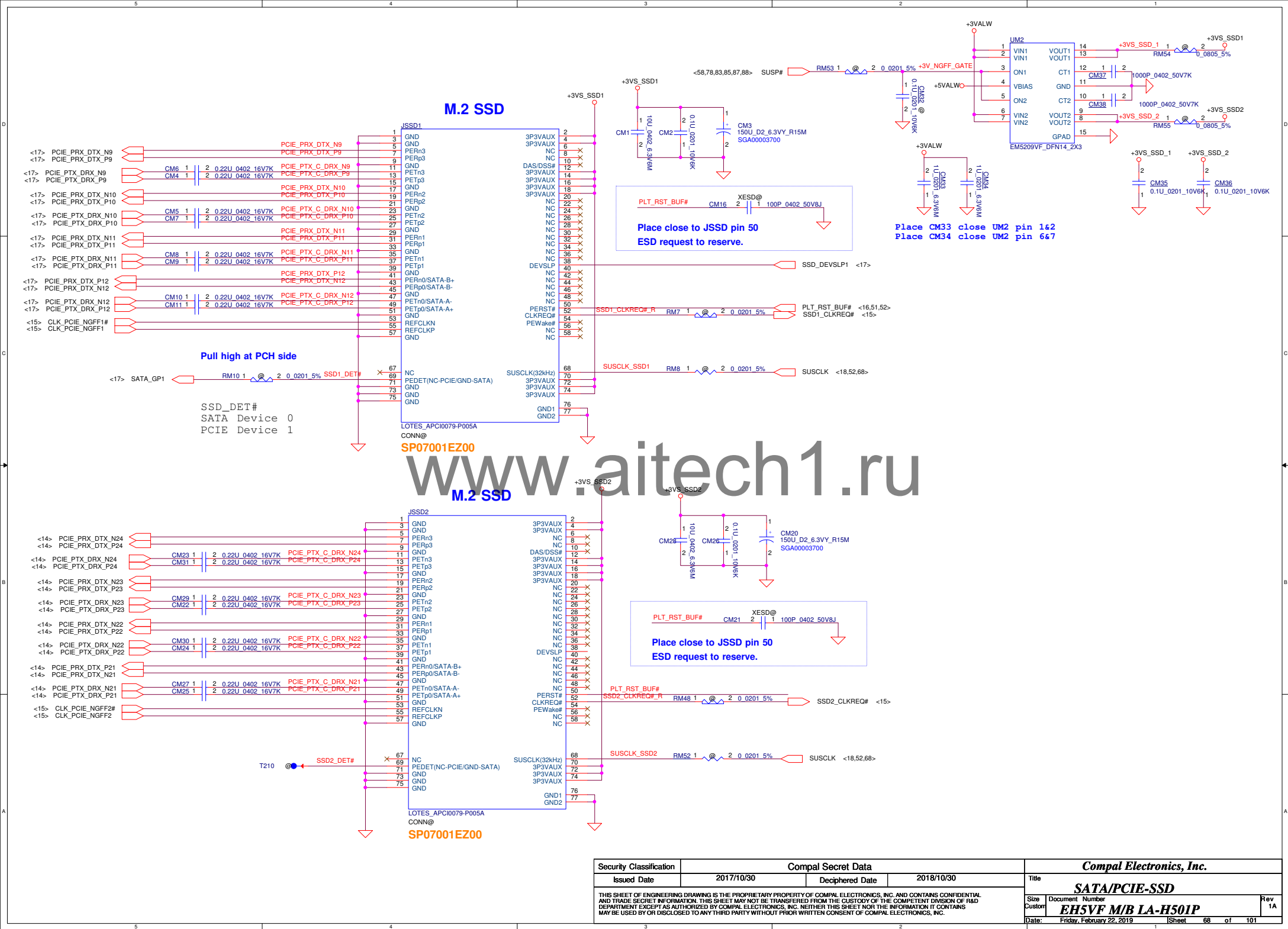
Equalizer control and program for channel A.
Internally tied to VDD/2 (M status).

A_EQ2	A_EQ1	EQ for channel loss
L	M	2.4dB
L	L	7.4dB
L	H	14.4dB
M	M	12.2dB(default)
M	L	9.4dB
M	H	13.3dB
H	M	6.2dB
H	L	11.2dB
H	H	5dB

Equalizer control and program for channel B.
Internally tied to VDD/2(M status).

B_EQ2	B_EQ1	EQ for channel loss
L	M	2.4dB
L	L	7.4dB
L	H	14.4dB
M	M	12.2dB(default)
M	L	9.4dB
M	H	13.3dB
H	M	6.2dB
H	L	11.2dB
H	H	5dB





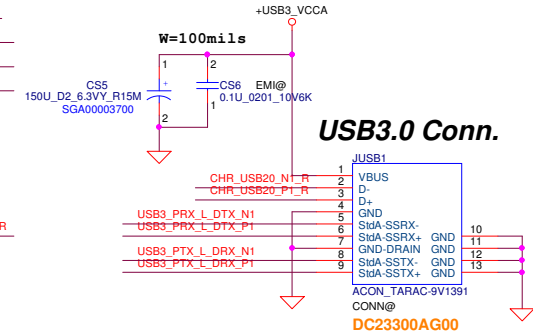
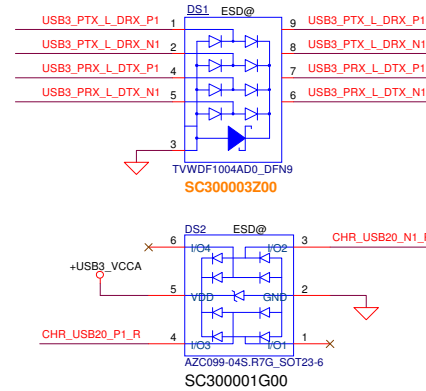
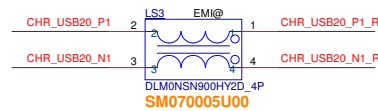
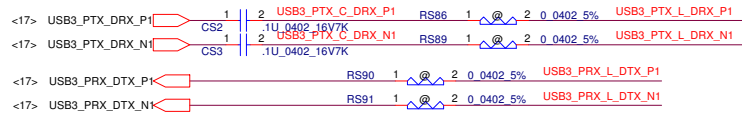
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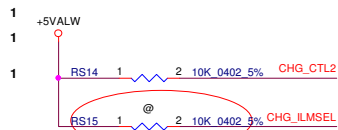
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USB3.0



USB Host Charger

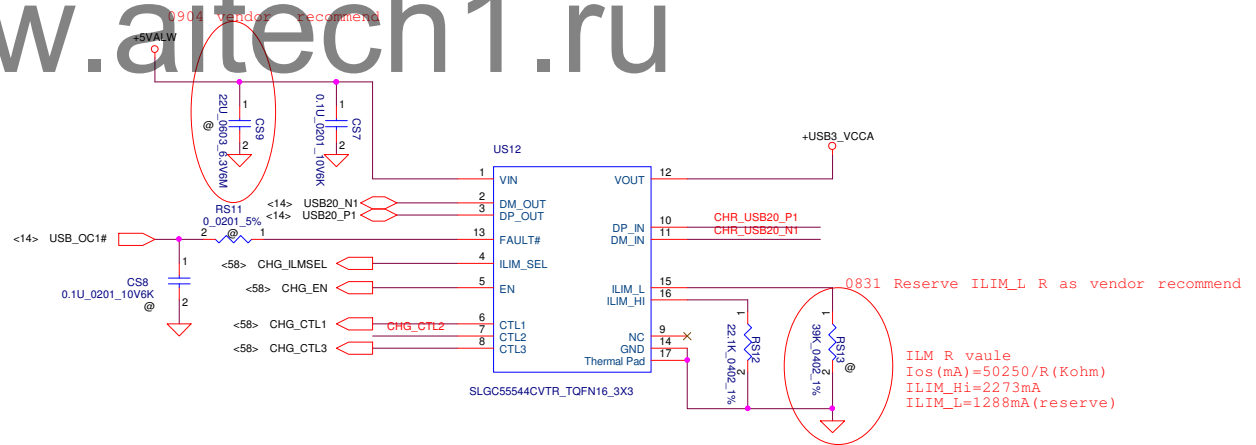


0911 Reserve PU, vendor suggest to EC control if future need support SDP2

USB Host Charger Truth Table

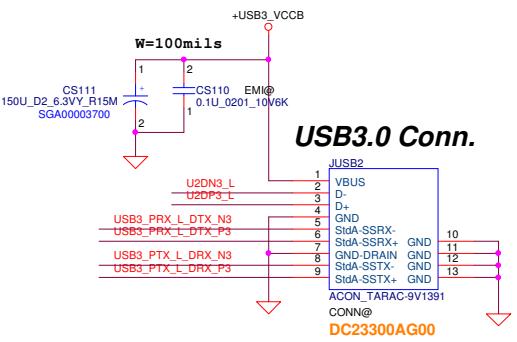
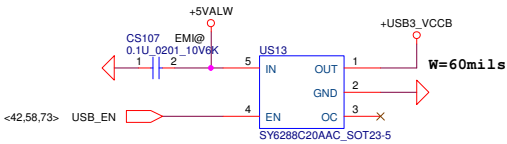
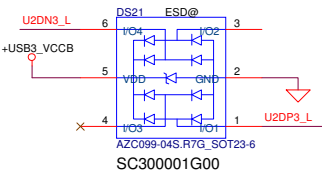
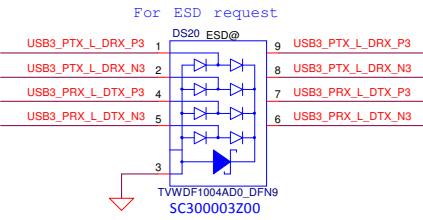
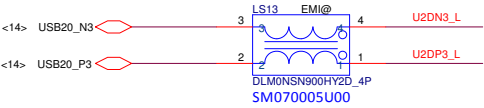
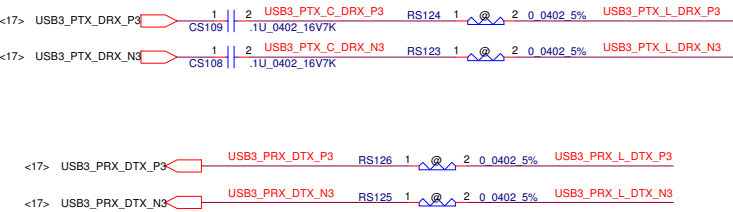
CHG_EN	CTL1	CTL2	CTL3	ILIM_SEL	MODE	Current Setting	Limit	Note
	0	1	0	1	SDP1-OFF	ILIM_H		Port power off
	0	1	0	1	SDP1	ILIM_H		Data Lines Connected
	0	1	1	1	DCP Auto	ILIM_H		Data Lines Disconnected
	1	1	1	1	CDP	ILIM_H		Data Lines Connected

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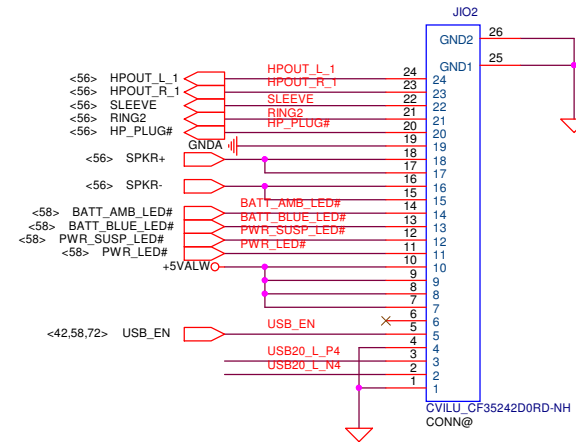
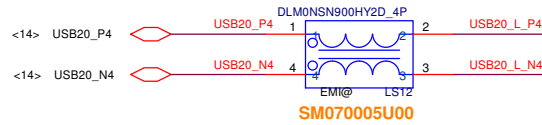
USB3.0



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IO/B CONN



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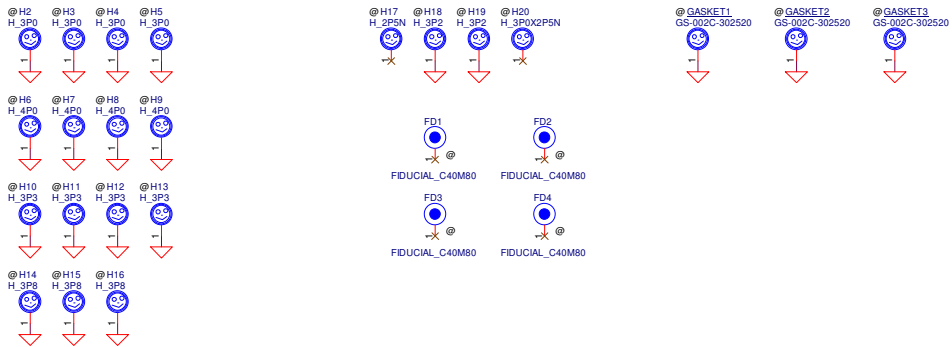
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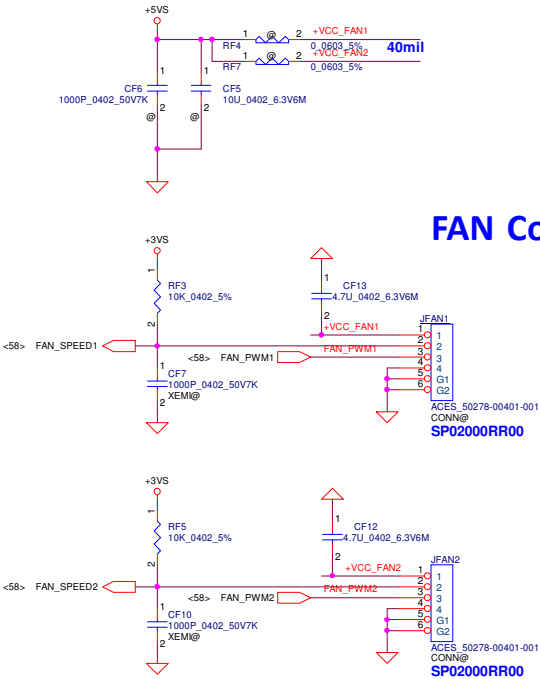
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Screw Hole

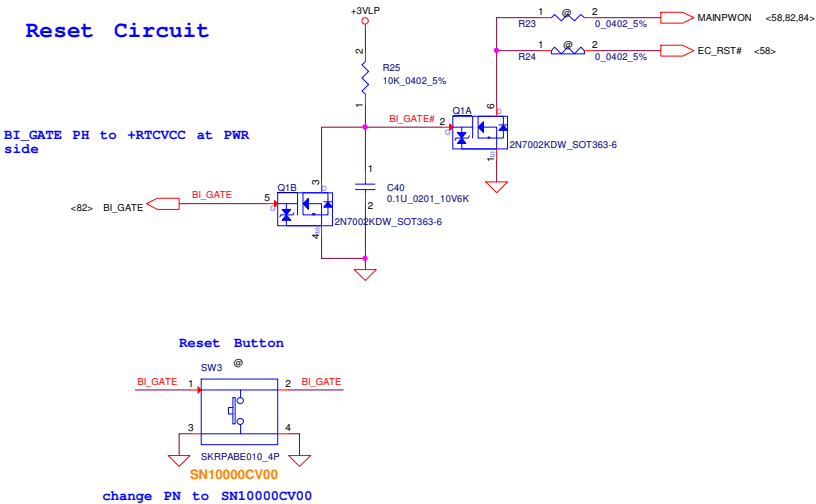


FAN Conn



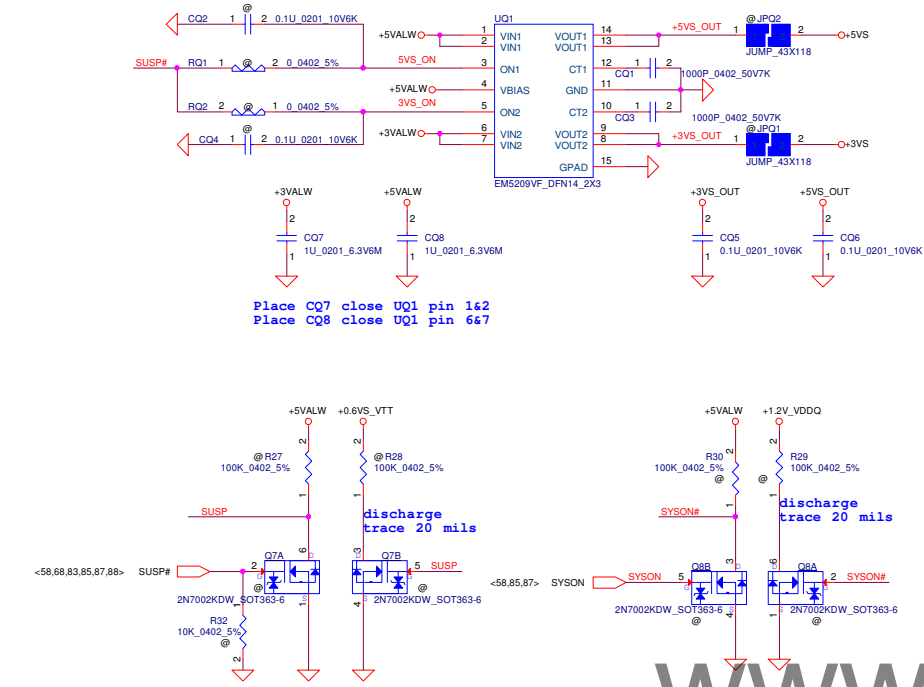
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Reset Circuit

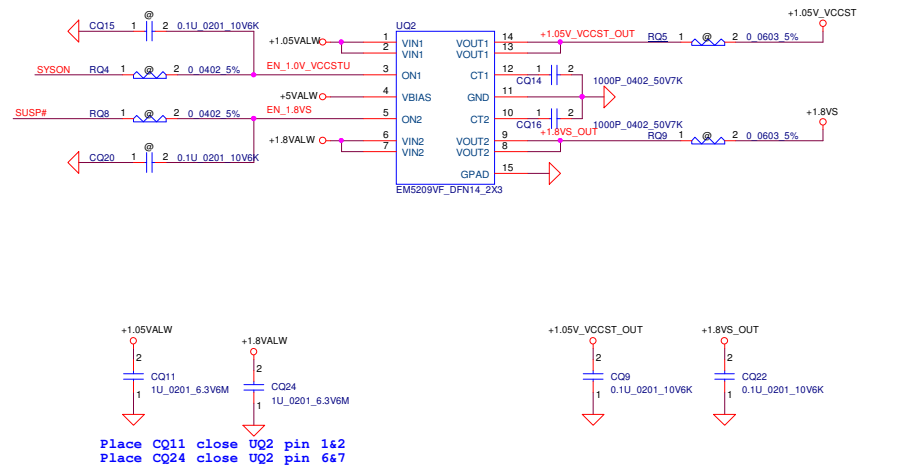


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				FAN & Screw Hole	
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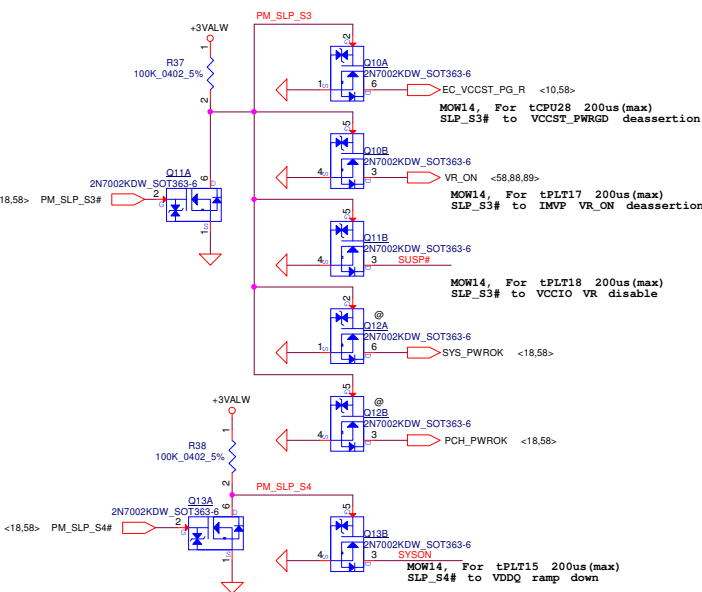
System DC interface



+1.05VALW TO +1.05V_VCCST /+1.8VALW TO +1.8VS

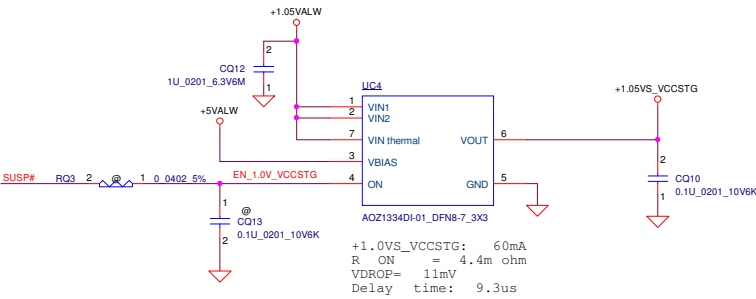


For Power ON/Off Sequence



P/N: SB00000E000 footprint use SB00000ZU00

+1.05VALW TO +1.05VS_VCCSTG



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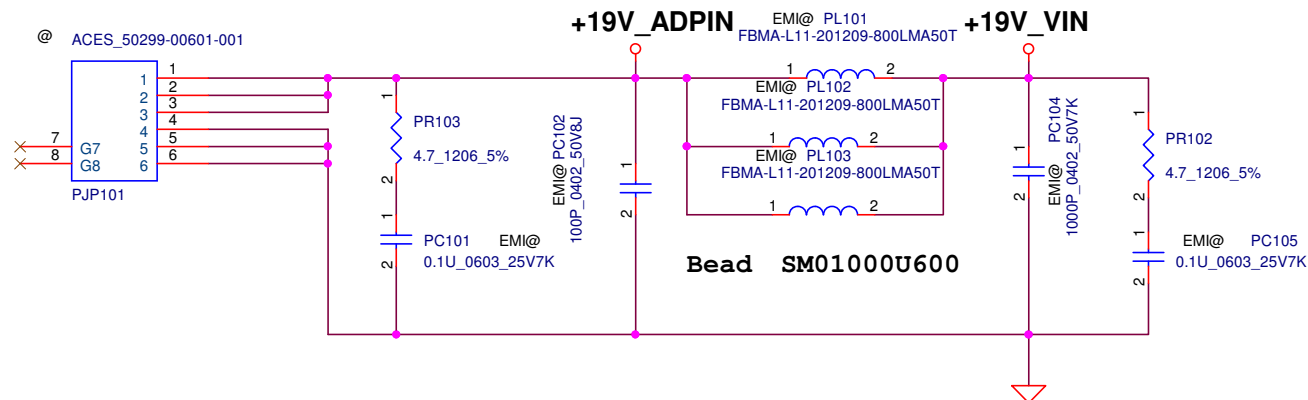
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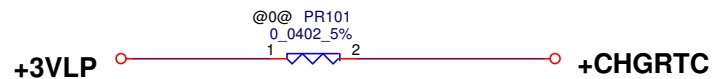
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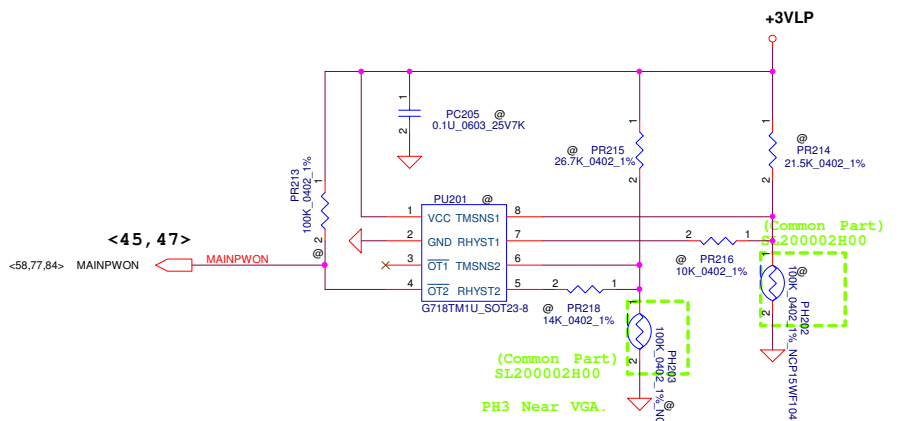
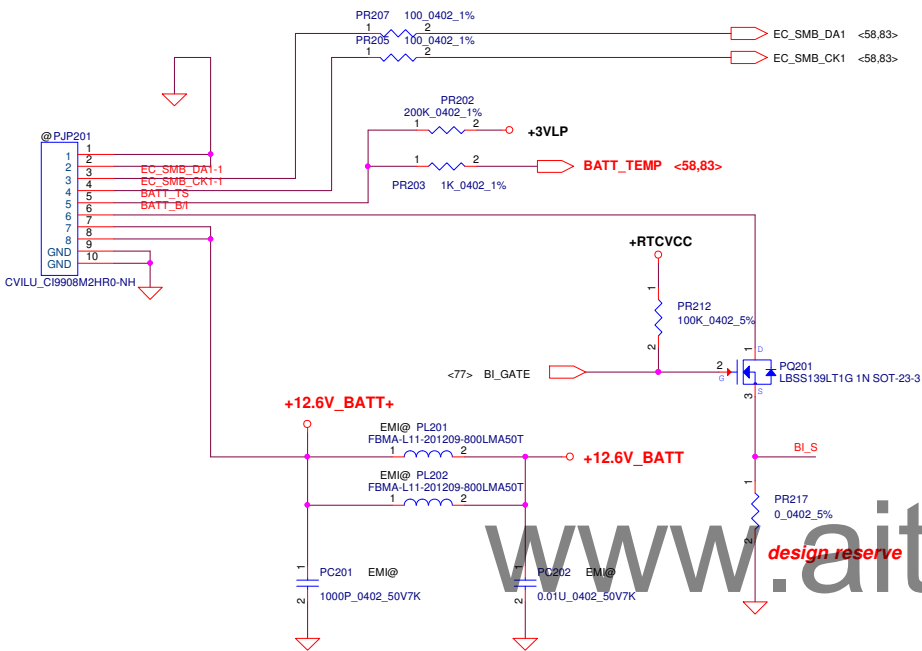
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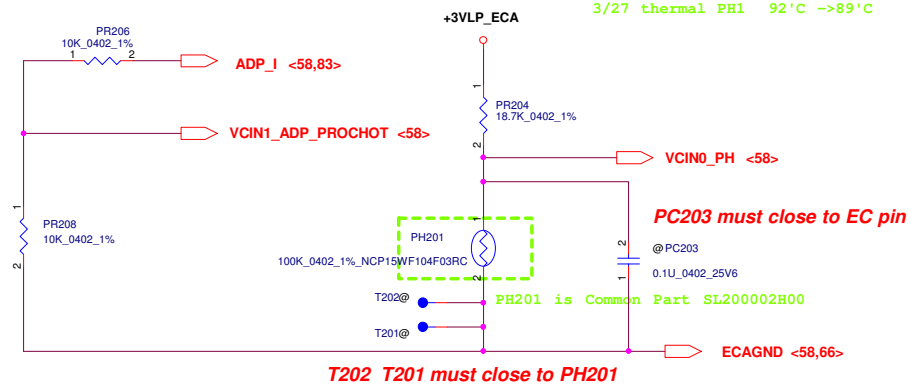
Battery Bot Side

- PIN1 GND
- PIN2 GND
- PIN3 SMD
- PIN4 SMC
- PIN5 TEMP
- PIN6 BI
- PIN7 Batt+
- PIN8 Batt+

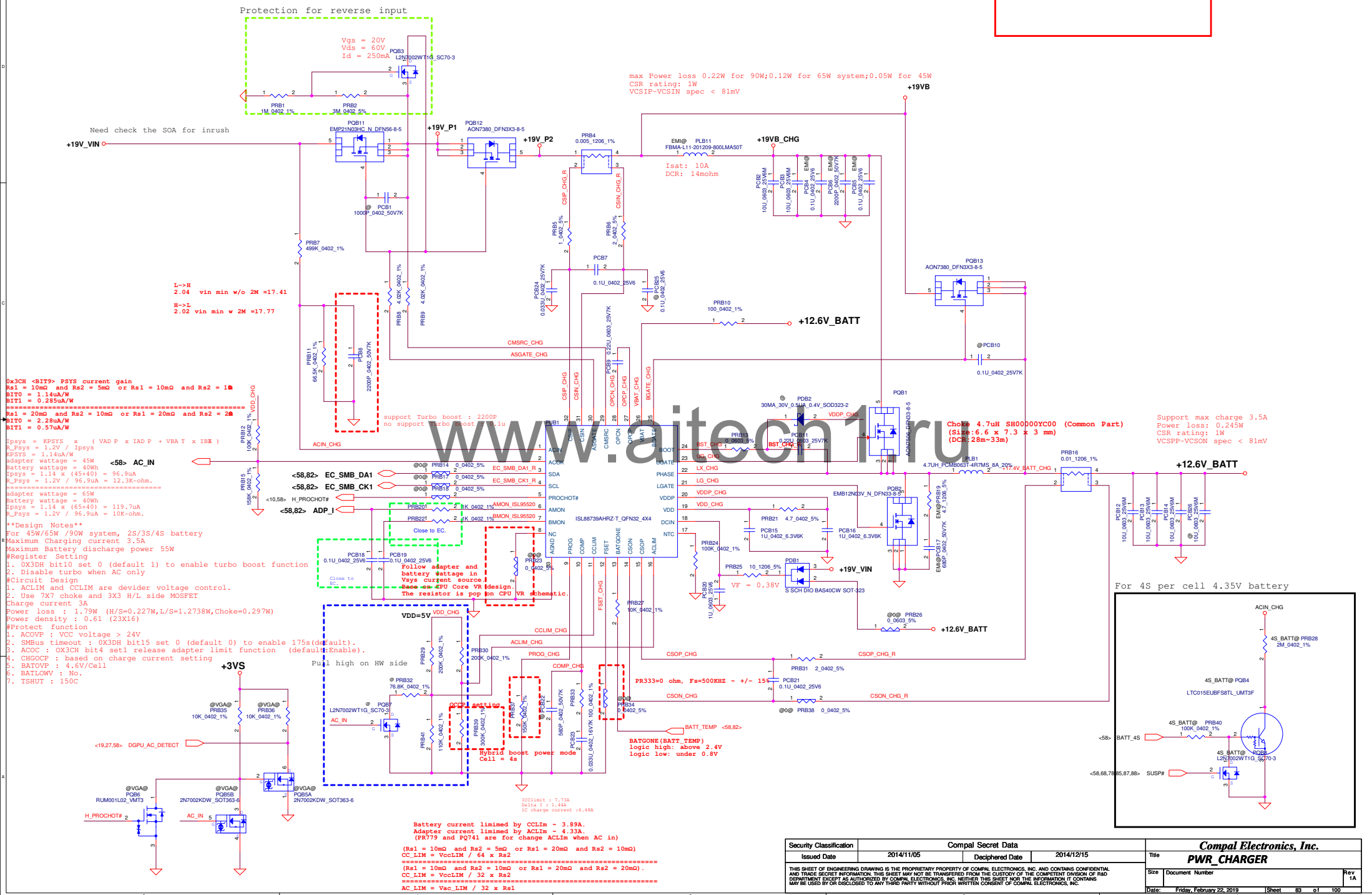


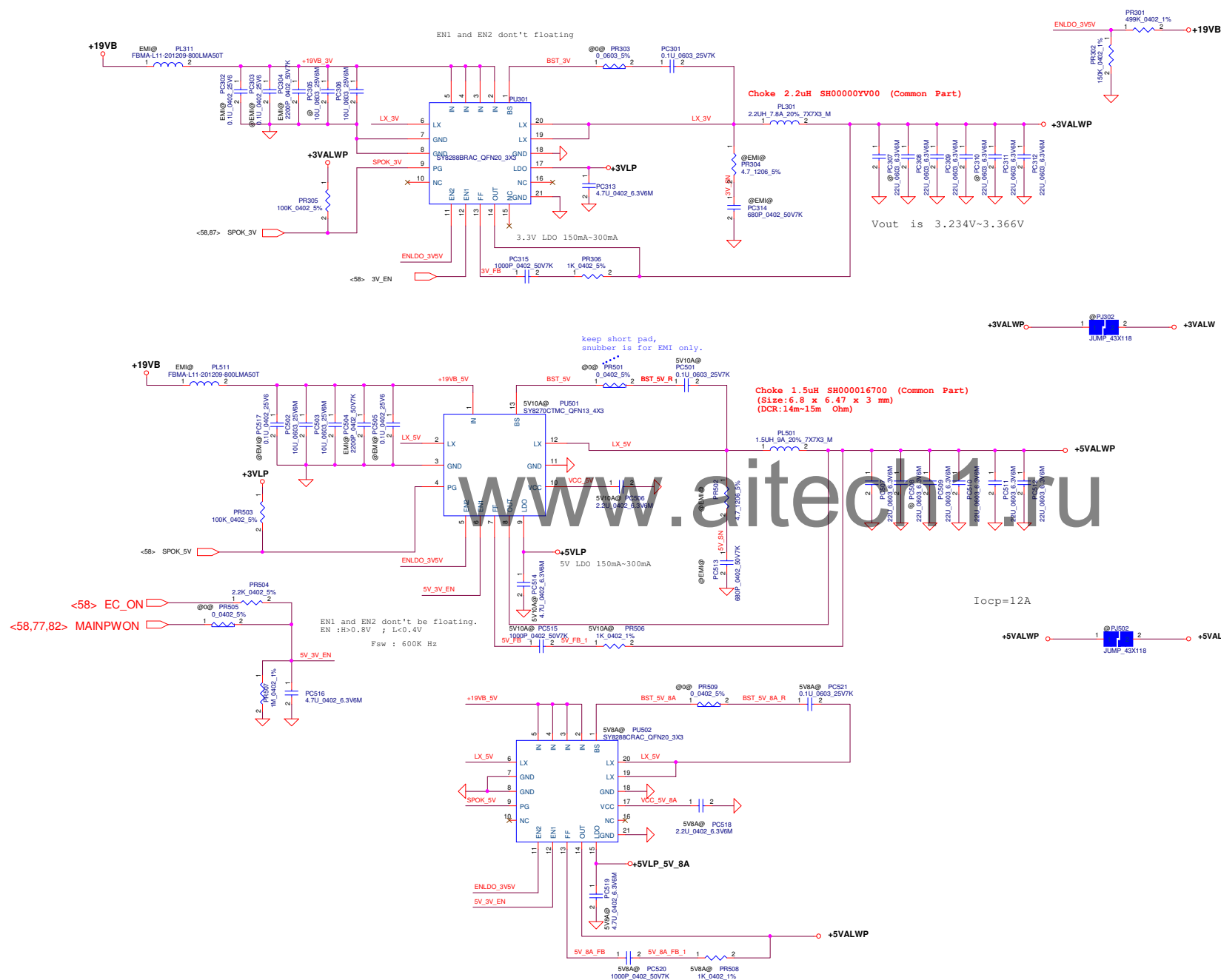
When PR204=18.7K

For KB9022 OTP	Active	Recovery
VCIN0_PH(V)	89'C, 1V	56'C, 2V
PH202 (ohm)	8.0524K	26.11K

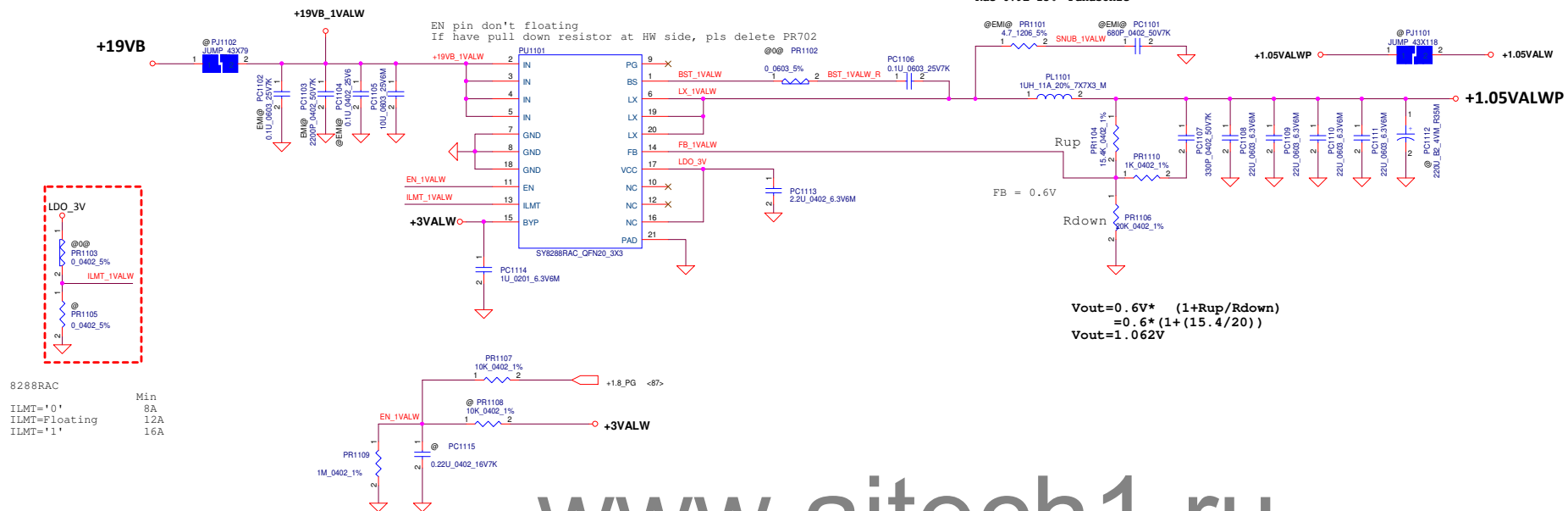


$$ADP_I = 20 * I(\text{adapter}) * 0.01$$
$$I(\text{adapter}) = \text{adapter (W)} * 130\% / 19$$





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				Date	Friday, February 22, 2019
				Sheet	84 of 100



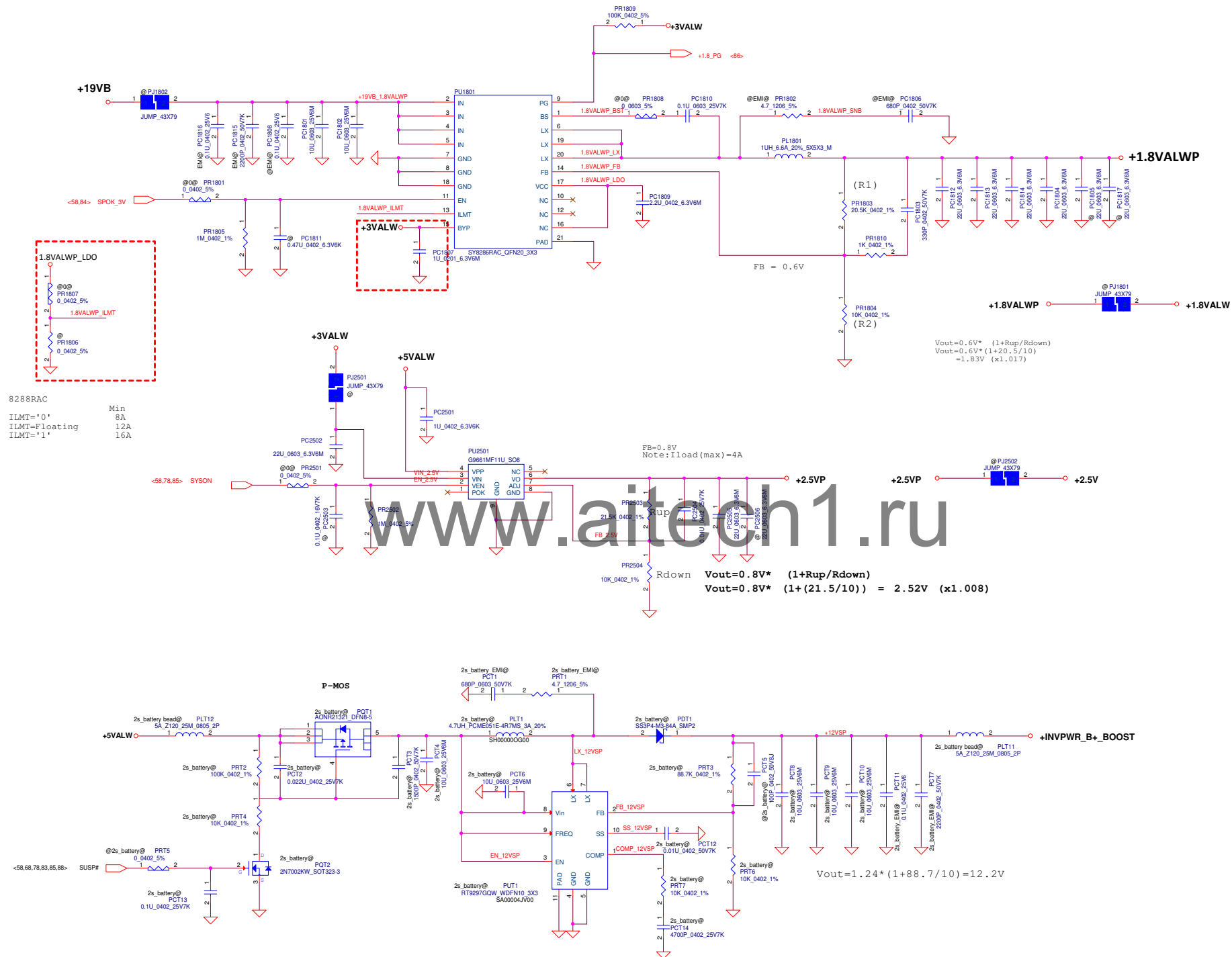
Choke 1uH SH00000YE00 (Common Part)
(Size:6.86 x 6.47 x 3 mm)
(DCR:6.2m~7.2m Ohm)
Choke: SH00000YE00 Size:7x7x3 (Common Part)
Rdc=6.7mohm(Typ), 7.4mohm(Max) CYNTEC
Rdc=Xmohm(Typ), 11mohm(Max) TOKO
Rdc=6.2mohm(Typ), 7.2mohm(Max) Maglayers
Rdc=8.3mohm(Typ), 10mohm(Max) Tai-Tech
Rdc=6.7mohm(Typ), 7.4mohm(Max) Chilisun
Rdc=6.9± 15% Panasonic

$$V_{out} = 0.6V * (1 + R_{up}/R_{down})$$

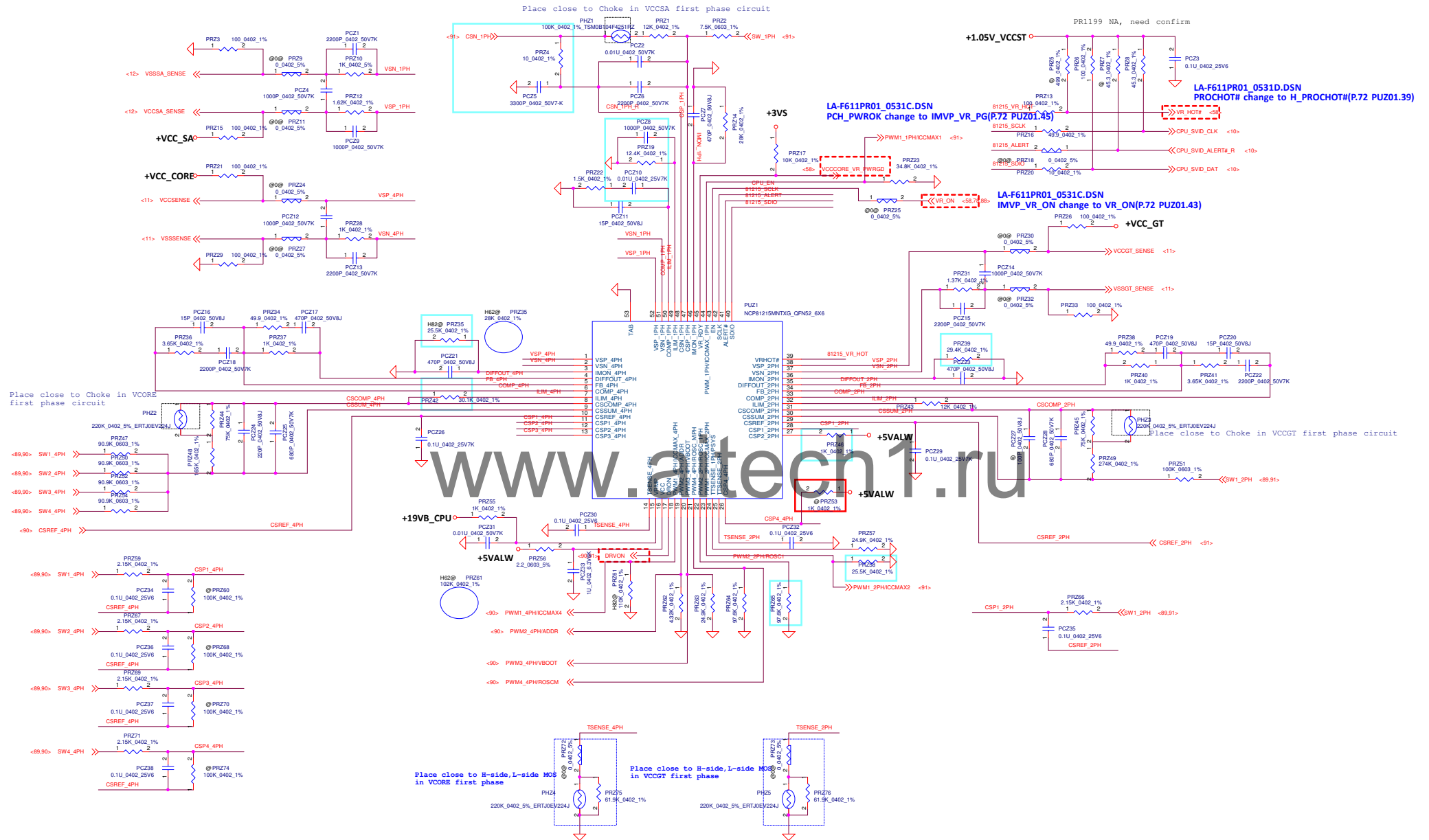
$$= 0.6 * (1 + (15.4/20))$$

$$V_{out} = 1.062V$$

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				1A
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				Size Document Number
				EH5VF M/B LA-H501P
				Rev 1A
				Date: Friday, February 22, 2019
				Sheet 87 of 100



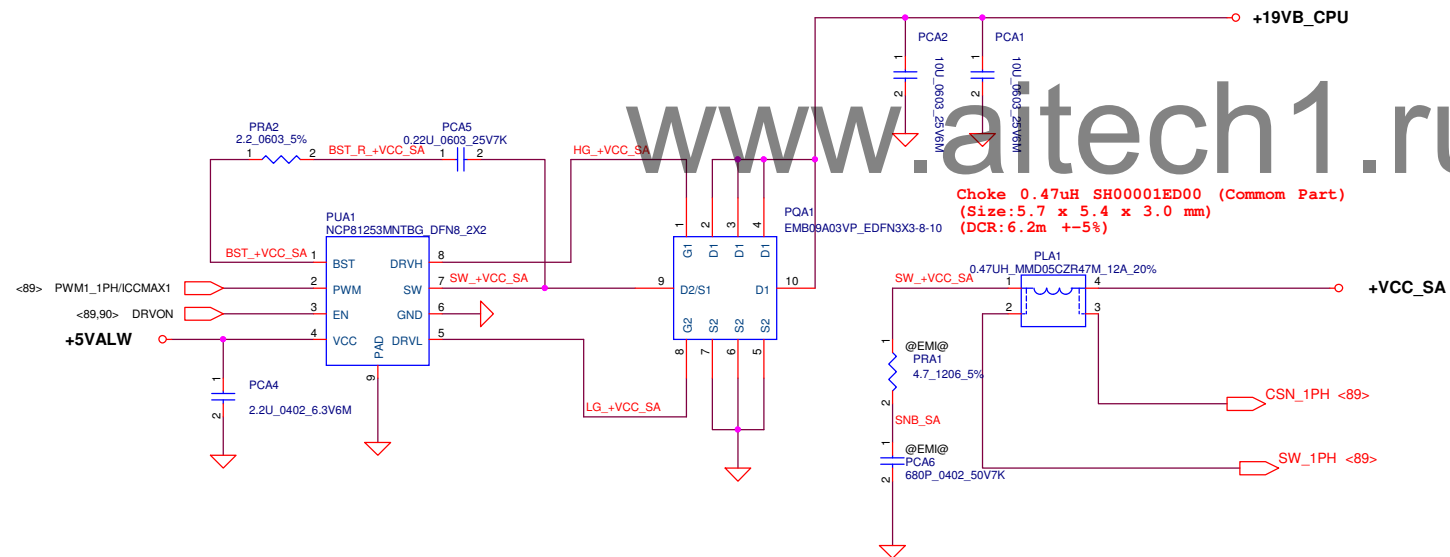
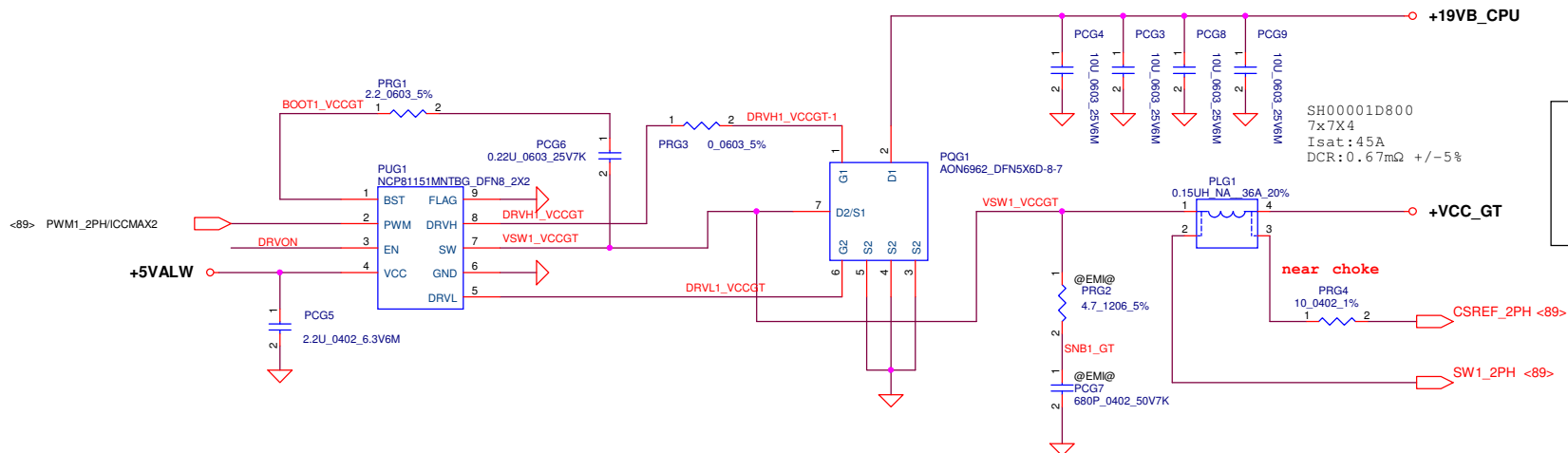
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Issued Date	2016/02/01	Deciphered Date	2017/12/31	Compal Electronics, Inc.	
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Document Number		CPU IC SKL H 42		1A	
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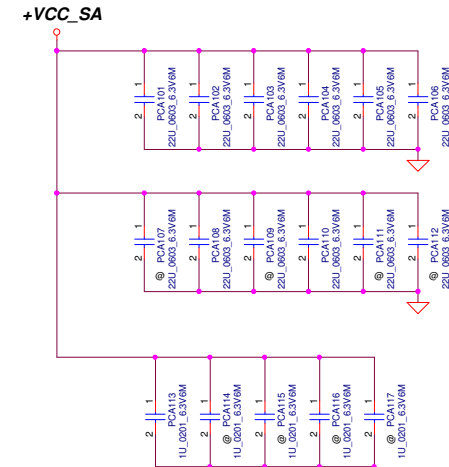
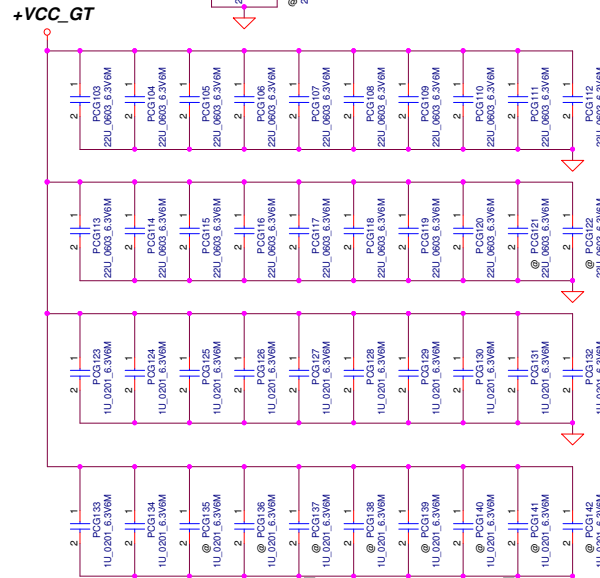


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Main Func = VCCGT/+VCCSA



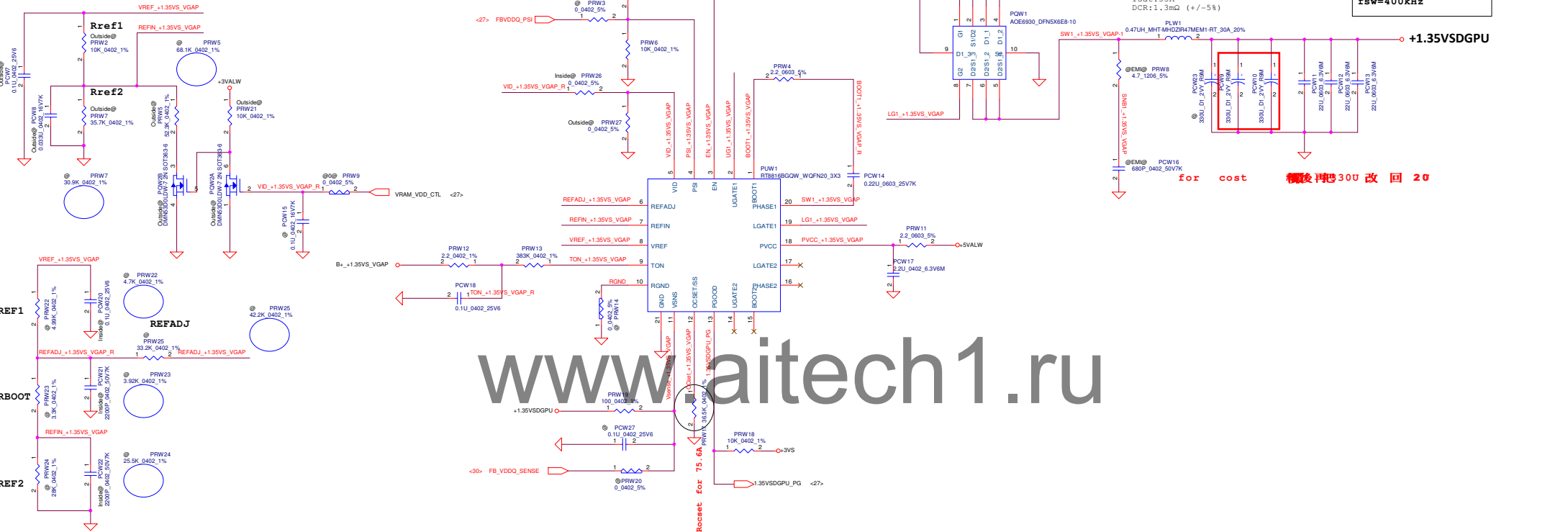
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Samsung VRAM
When, VRAM_VDD_CTL=High
 $V_{boot} = V_{ref} * R2 / (R1 + R2 + 80)$
 $= 2 * 35.7K / (10K + 35.7K + 80)$
 $= 1.56V$
When, VRAM_VDD_CTL=Low
 $V_{boot} = V_{ref} * R2 / (R1 + R2 + 80)$
 $= 2 * (35.7K / 52.3K) / (10K + (35.7K / 52.3K) + 80)$
 $= 1.356V$
Micron & Hynix VRAM
When, VRAM_VDD_CTL=High
 $V_{boot} = 2 * 30.9K / (10K + 30.9K + 80)$
 $= 1.51V$
When, VRAM_VDD_CTL=Low
 $V_{boot} = 2 * (30.9K / 68.1K) / (10K + (30.9K / 68.1K) + 80)$
 $= 1.36V$



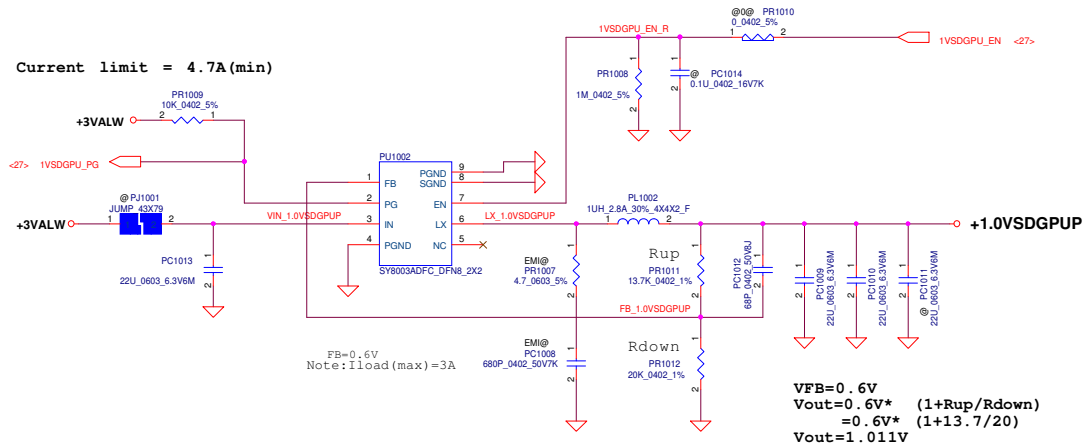
+1.35VSDGPU
TDC 14A
Peak Current 20A
OCP current 30A
fsw=400kHz

for cost 標後再30U改回20

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Issued Date	2016/02/01	Deciphered Date	2017/12/31	Title	PWR +1.5VRAM
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Current limit = 4.7A(min)

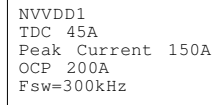


Choke 1uH SH00000YG00 (Common Part)
(Size:3.8 x 3.8 x 1.9 mm)
(DCR:20m~25m)
Choke: SH00000YG00 Size:4x4x2 (Common Part)
Rdc=27± 20% Taiyo
Rdc=20mohm(Typ), 25mohm(Max) Cyntec
Rdc=27± 20% 3L
Rdc=30± 20% Tai-Tech
Rdc=32± 20% Chilislin
Rdc=36mohm(Typ), Xmohm(Max) Maglayers

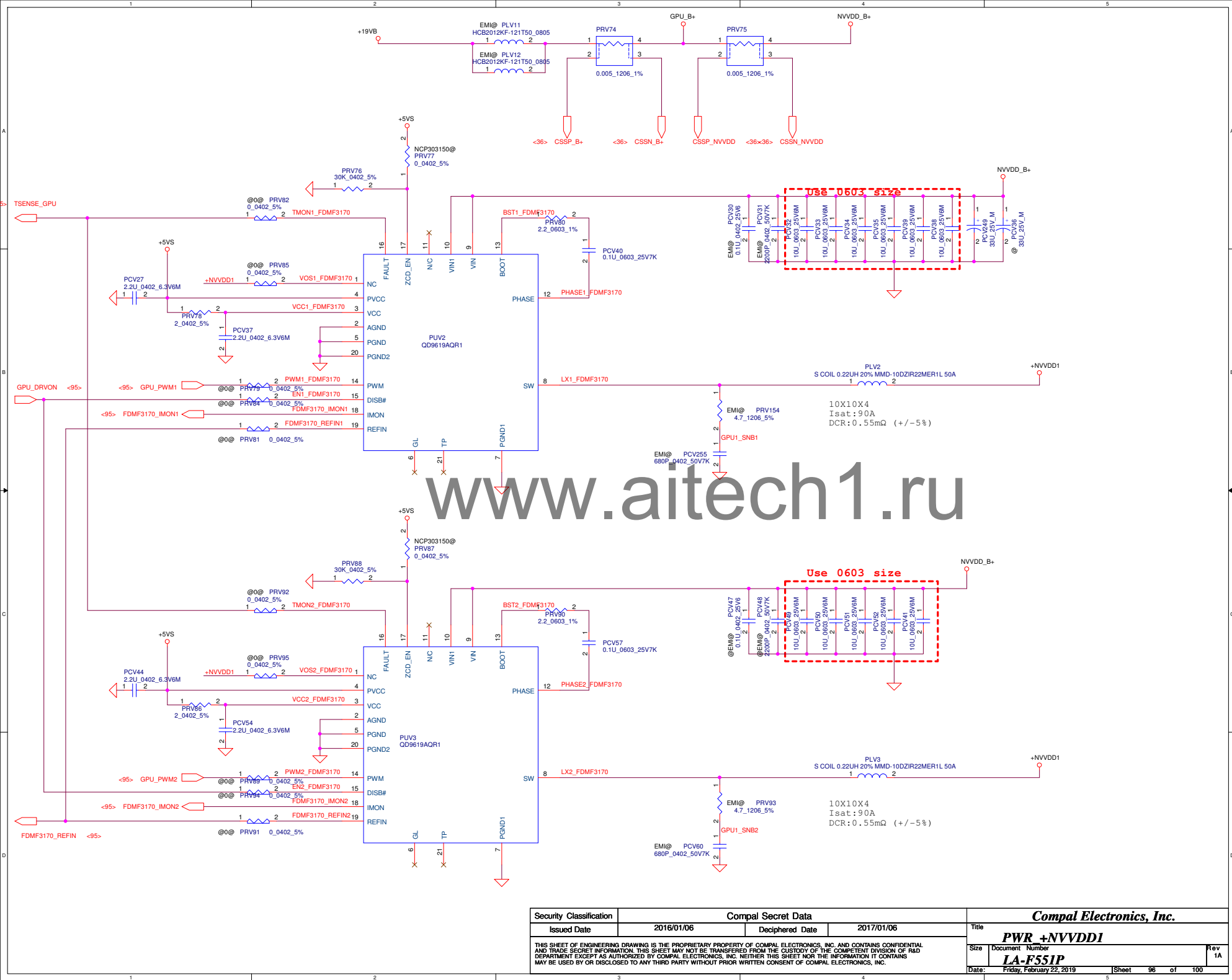


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				Document Number
				DH53F M/B LA-F991P
				Rev 1A
				Date: Friday, February 22, 2019 Sheet 94 of 100



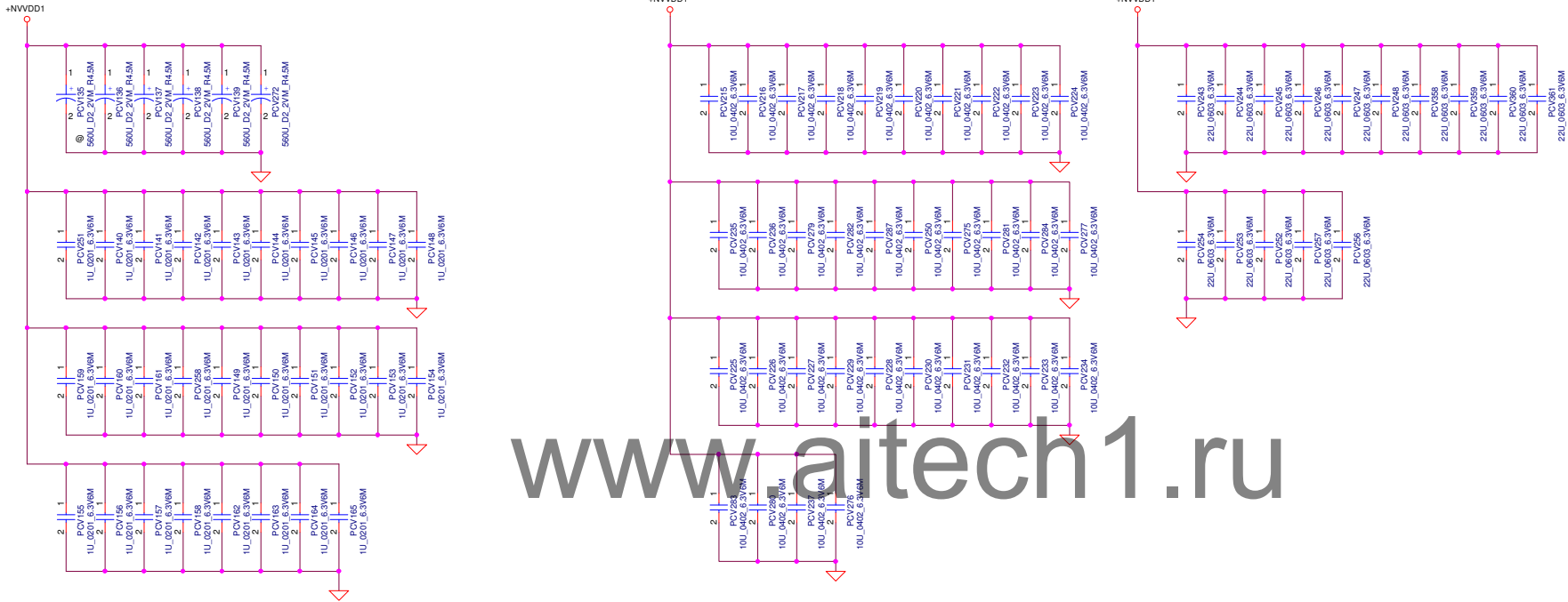
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Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2016/01/06	Deciphered Date	2017/01/06	Title	PWR +NVVDD1
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N18P-G0
+NVVDD
560uF X 6
22uF_0603 X 15
10uF_0402X 34
1uF_0201 X 28

Rail (GPU Ball) Name	Balls	Voltage	Filtering under GPU	Filtering Near GPU
GB4B-256 Package				
NVVDD		Varies	185 X 0.47uF (0201W X65) 23 X 10uF (0603 X65) 4 X 22uF (0805 X65) 3 X 47uF (0805 X65)	2 X 470uF (Poscap)
FBVDDQ (GPU side) ¹		1.25V 1.35V 1.5V 1.55V	48 X 0.47uF (0201 X65) 5 X 10uF (0603 X65)	7 X 10uF (0603 X65) 9 X 22uF (0603 X65)



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Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
01	Design Update	For EA Turning and HW sequence	93, 94 95, 97 89, 92	change PR1009 from 100K_0402_5% (SD028100380) to 10K_0402_5% (SD028100280) change PG pull high from +3VS to +3VALW change PRW1 from 20K_0402_1% (SD034200280) to 1K_0402_1% (SD034100180) Change the PCW27 from pop to un-pop, and . PCW27.2 net name change from +1.35VSDGPU to Vsense_+1.35VS_VGAP. unpop PCV135 Change the PUV8, PCV9 from pop to un-pop. Add location PRV51 0_0402_5% (SD028000080), and pop. Change the PCW21, PCW22 From 4700P_0402_50V (SE074472K80) to 2200P_0402_50V(SE074222K80). Delete PL1111 (HCB2012KF-121T50_0805)	11/14	A
02	Design Update	solution change	83, 85 90, 91	Change the PQB2,PQM2 from AON7506 (SB000010A00) to EMB12N03V (SB00001HV00) update location PRG5 PRA3 to PUG1 PUA1 PLZ1,PLG1,PLZ2,PLZ3,PLZ4 change to common part P/N (SH00001EE00) pop PQZ2, PQZ4 unpop PQZ1, PQZ3	11/16	A
03	Design Update	0 ohm to R-short	83, 85 90, 91	Change PRM10, PRM8, PRV82, PRV85, PRV92, PRV95, PRV79, PRV81, PRV84, PRV89, PRV91, PRV94, PRV54, PRV56, PRV70, PRV145, PRV146, PRZ72, PRZ73, PRZ25, PRZ30, PRZ32, PRZ18, PRZ9, PRZ11, PRZ24, PRZ27,PRV20, PRV34	11/16	A
04	Design Update	For CPU transient	89, 92	change PRZ12 from 1.78K_0402_1%(SD00000WY80) to 1.62K_0402_1%(SD000003380) change PRZ14 from 31.6K_0402_1%(SD034316280) to 28K_0402_1%(SD034280280) change PCZ24 from 470P_0402_50V8J(SE071471J80) to 220P_0402_50V8J(SE082221J80) change PRZ51 from 84.5K_0603_1%(SD014845280) to 100K_0603_1%(SD014100380) PRZ61=110k ohm @H82, PRZ61=102k ohm @H62 PRZ35=25.5k ohm @H82, PRZ35=28k ohm @H62 unpop PCZ101, PCZ103, PCG102 pop PCZ176 un pop PCZ120, PCZ104, PCZ105, PCZ118, PCZ111, PCZ108, PCZ126, PCZ124 for H82 un pop PCZ120, PCZ104, CZ105, PCZ118, PCZ111, PCZ108, PCZ126, PCZ124, PCZ123, PCZ127, PCZ107, PCZ113, PCZ116, PCZ114 for H62	11/19	A
05	Design Update	solution change	84	Change the PL501 1.5uH to common part Change the PCZ47, PCZ48, PCZ65, PCV36, PCV249 from 33U_25V_NC_6.3X4.5 (SF000007200) to 33U_25V_M (SF000007700) Chnage the PRZ43 from 121K_0402_1% (SD034121280) to 12K_0402_1% (SD034120280)	12/3	A
06	Design Update	solution change	87	unpop PC1811 0.47U_0402_6.3V6K (SE124474K80)	12/12	B
07	Design Update	solution change	83, 97	pop PCV149~PCV158, PCV162~PCV165, PCV258 (1U_0201_6.3V6M) reserve PDB2 for dead battery	12/18	B
08	Design Update	solution change	87, 93, 94	Change PR1010, PRW9, PR1801, PR2501 from 0ohm to r-short	12/18	B

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Document Number	Rev
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Item	Page	Title	Date	Issue Description	Solution Description	Phase	Rev.
1	6	Chipset	11/14	Update CPU,PCH,GPU PN.		DVT	0.2
2	43,68, 71,72	Source	11/14	Change material source.	1.Change CS95,CM3,CM20,CS5,CS111 to SGA00003700.	DVT	0.2
3	58	EC	11/14	Design change.	1.Add CB14 on EC_RST#.	DVT	0.2
4	27,37	GPU	11/14	Design change and fine tune sequence.	1.Remove RV397, pop RV335. 2.Reserve CV400, change RV106 to 100kohm. 3.Change RV105 to 10kohm, CV197 to 0.22uF, depop DV4. 4.Change RV22 to 200kohm. 5.Change UV45,UV48 to SA000070V00.	DVT	0.2
5	66	Sensor	11/15	Design change.	1.Remove R39,R40,C41,U6.	DVT	0.2
6	58	EC	11/16	Board ID.	1.Change RB3 to 12kohm.	DVT	0.2
7	43,56	Source	11/16	Change material source.	1.Change CS13 to SE00000X200,0603 size. 2.Change DS19 to SCA00004500. 3.Change LA4,LA5 to SM01000BW00. 4.Change UF2 to SA000067P00. 5.Change QV3,QV4 to SB00001GC00. 6.Change UH3 to SA000000H00. 7.Change UC3 to SA00007WE00.	DVT	0.2
8	32	VRAM	11/19	For N17P-G0-K1 SKU.	1.Change UV4 related component BOM structure to VRAM4G@.	DVT	0.2
9			11/20	Design change.	1.Change RV338,RH94,RH96,RH99,RH101,RH102,RH103,RH105,RX8,RX9 to R-short.	DVT	0.2
10	67	HDD	11/20	Follow DVR1012,HDD CONN P11 pull-down.	1.Add RQ25, remove T211.	DVT	0.2
11	10	ESD	11/21	For ESD request.	1.Add CC101,CC102,CC103, change CD10 to 33pF and pop.	DVT	0.2
12	27,51	Crystal	11/21	By Crystal EA result.	1.Add RL14, change CL21,CL22 to 18pF. 2.Change RV80 to 470ohm, CV1,CV2 to 18pF.	DVT	0.2
13	43	TYPEC	11/23	Update CONN symbol.	1.Change JTYPEC1 to DC23300RC00.	DVT	0.2
14	42,43 ,58	TYPEC	12/18	Follow 2018 Type-C spec.	1.Remove RS127, add US14. 2.Remove TYPEC_1P5A net from PCH. 3.Add TYPEC_1P5A_EC net from EC. 4.Add RS137.	DVT	0.3
15	36	GPU	12/18	OVRM issue.	1.Change RV399 power source to +3VLP. 2.Change RV345~RV348,RV370,RV371,RV372,RV374 power rail to +3V_OVRM. 3.Add QV16,RV400,OVRM_EN net to EC/PCH, reserve RH261.	DVT	0.3
16	58	EC	12/18	Update board ID.	1.Change RB3 to 15k.	DVT	0.3
17			12/27	Design change.	1.Change RA7,RQ1,RQ2,RQ3,RQ4,RQ8,RV352,RV353,RV356,RV358,RV362,RV364,RV365,RV382,RM53 to R-short.	PVT	1.0
18	63,77	ESD/EMI	01/03	For ESD/EMI request.	1.Reserve DK2,CK6,CK7 for ESD. 2.Add SPRING1~3 for EMI.	PVT	1.0
19	58	EC	01/03	Update board ID.	1.Change RB3 to 20k.	PVT	1.0
20	66	ESD	01/31	For ESD request.	1.Add C60.	PVT	1A

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				Size Document Number	
				EHSVF M/B LA-H501P	
				Date:	Friday, February 22, 2019
				Sheet	101 of 101