

Compal Confidential

C5PM2 MB Schematic Document

LA - E361P

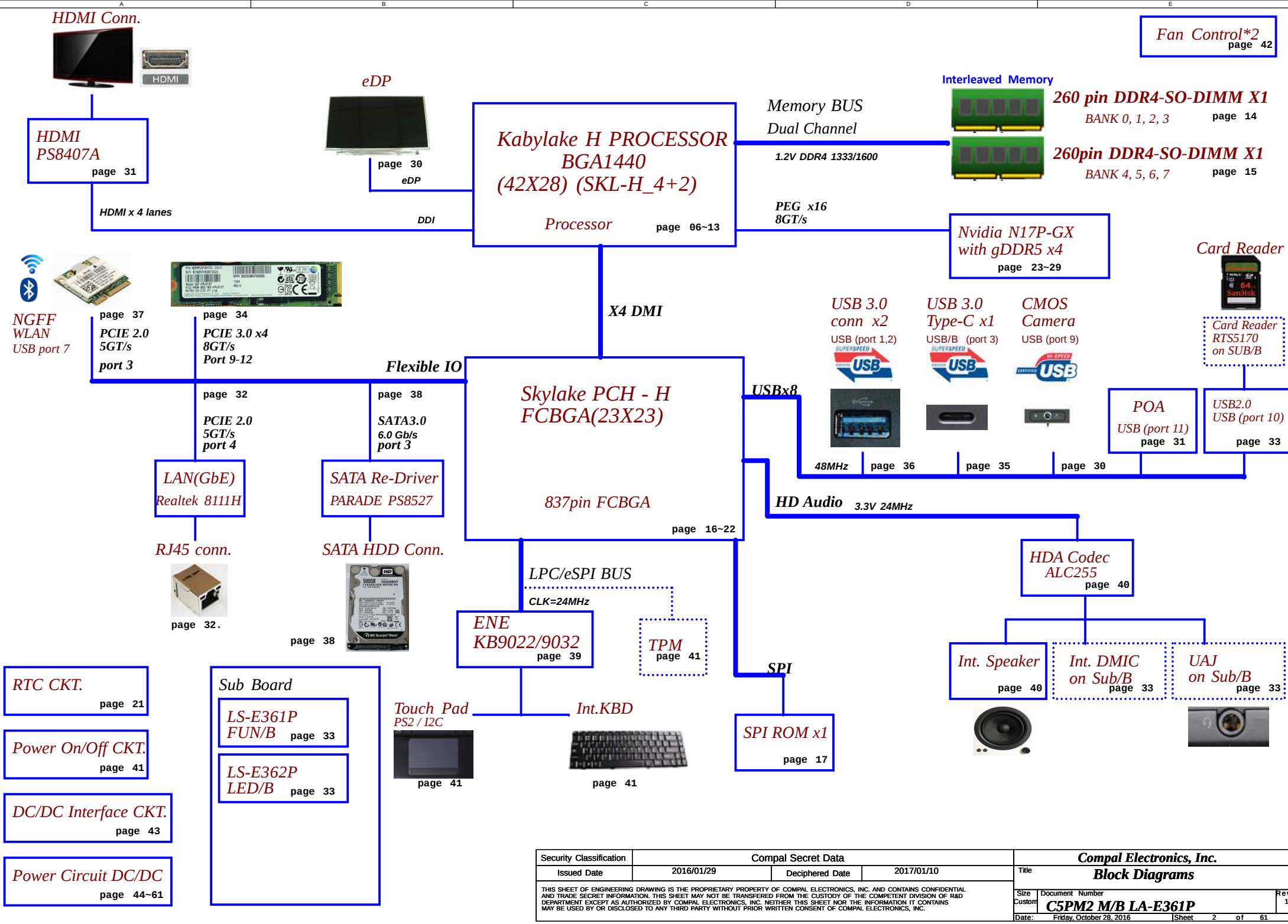
Rev:1.0

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2016.10.27

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Vcc	3.3V +/- 5%				
Ra	100K +/- 5%				
Board ID	Rb	V_{BID} min	V_{BID} typ	V_{BID} 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)	Touch Panel	reserved		
I2C_1 (+3VS)	TM-P2969-001 (Touch Pad)			
	SB8787-1200 (Touch Pad)			
PCH_SMBCLK (+3VS)	DIMM1			
	DIMM2			
	LIS3DHTR(G-sensor)	0x30		
PCH_SML1CLK (+3VS)	N17P-GX (VGA)	0x9E		
	EC			
EC_SMB_CK1 (+3VLP)	BQ24780 (Charger IC)	0x12		
	BATTERY PACK	0x16		

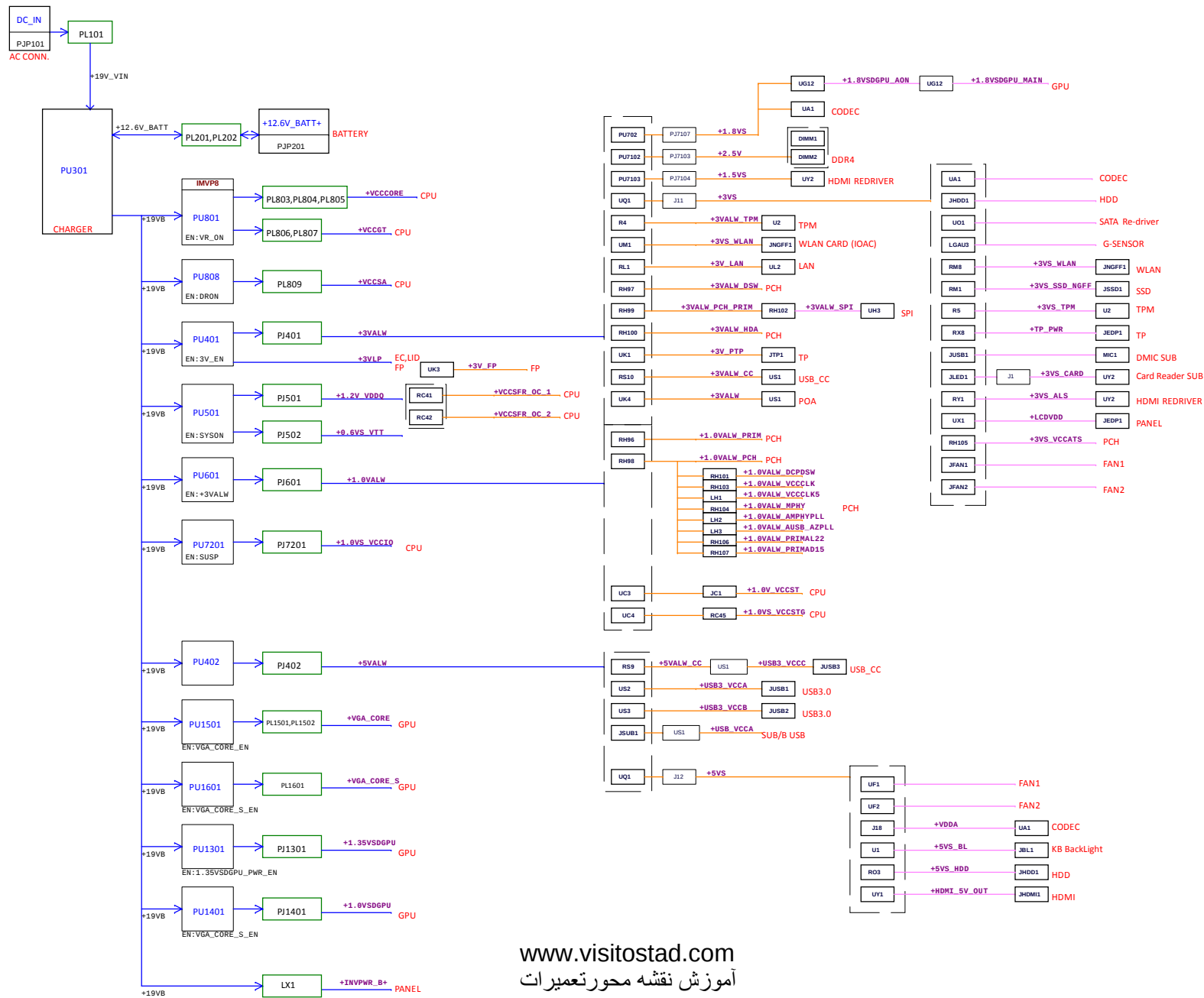
[illegible]

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

[illegible]

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
+3VALW_PCH_PRIM	+3VALW power for PCH power rails	ON	ON	ON	ON*
+3VALW_SPI	+3VALW_PRIM supply for the SPI IO	ON	ON	ON	ON
+1.0VALW	+1.0V Always power rail	ON	ON	ON	ON
+1.2V_VDDQ	DDR4 +1.2V power rail	ON	ON	OFF	OFF
+1.0V_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
+1.0VS_VCCSTG	+1.0VALW_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 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
+VGA_CORE	Core voltage for VGA	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
+VGA_CORE_S	Core voltage for VGA				
Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.					

Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	1.0
4	
5	
6	
7	



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BIOS ver: V0.01
EC: ver: V0.01

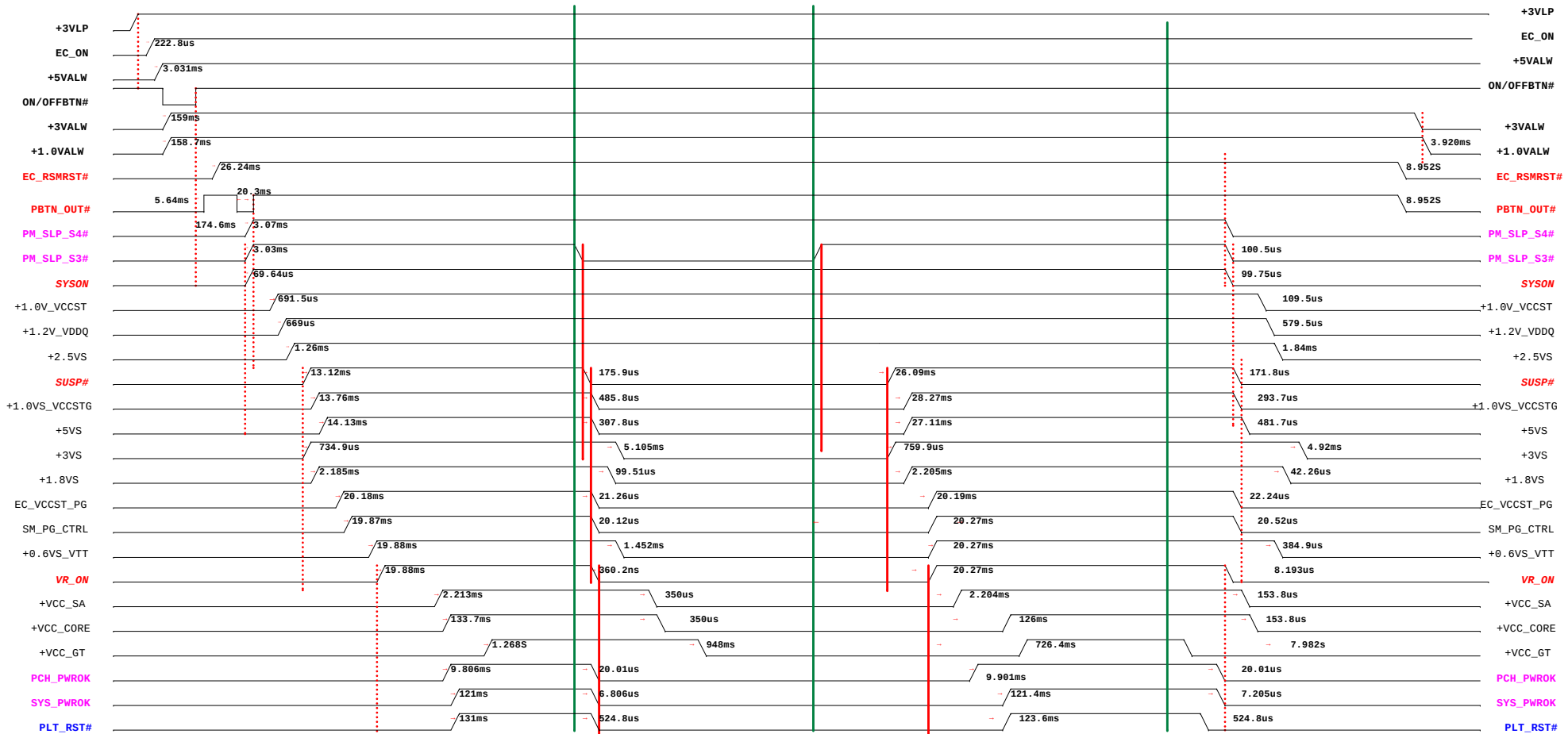
Plug in

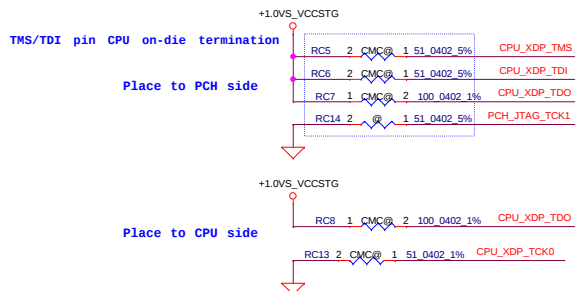
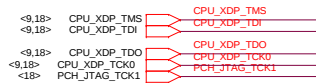
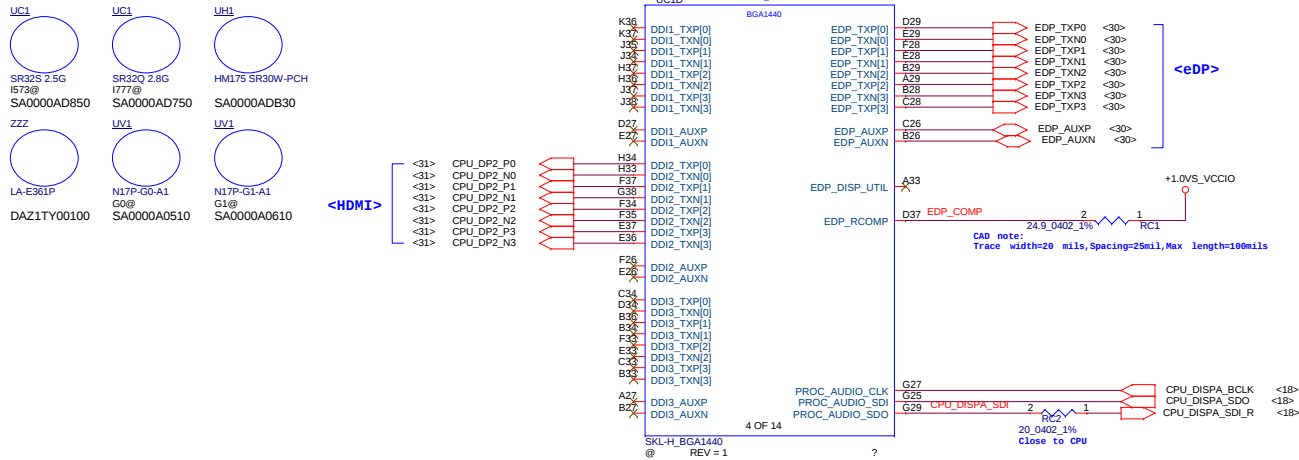
Power On

S3

S3 Resume

Power Off

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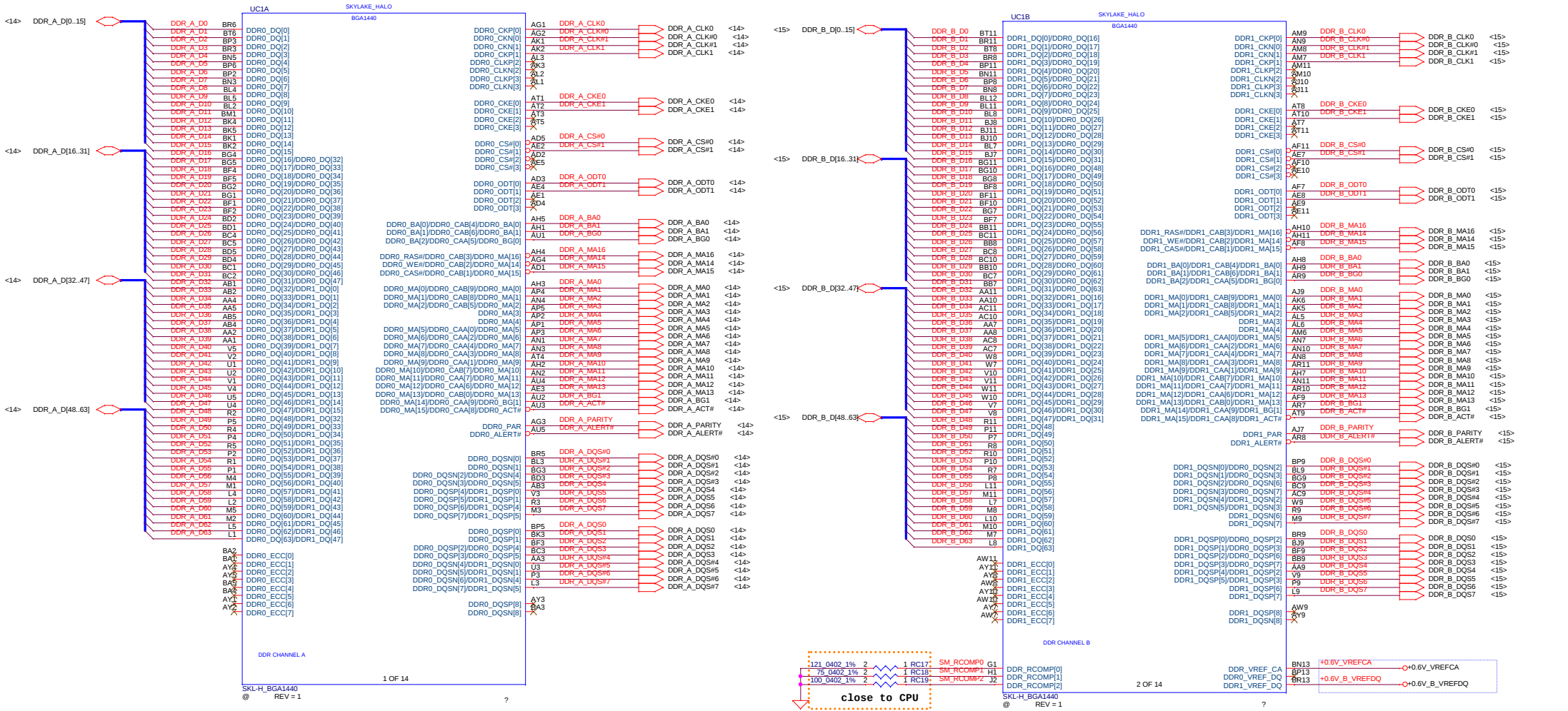


If need debug from usb port. this cmc@ need pop

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Interleaved Memory



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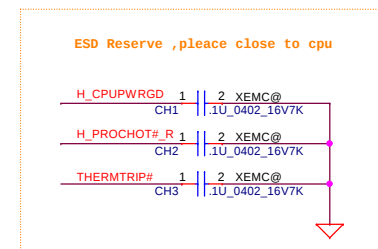
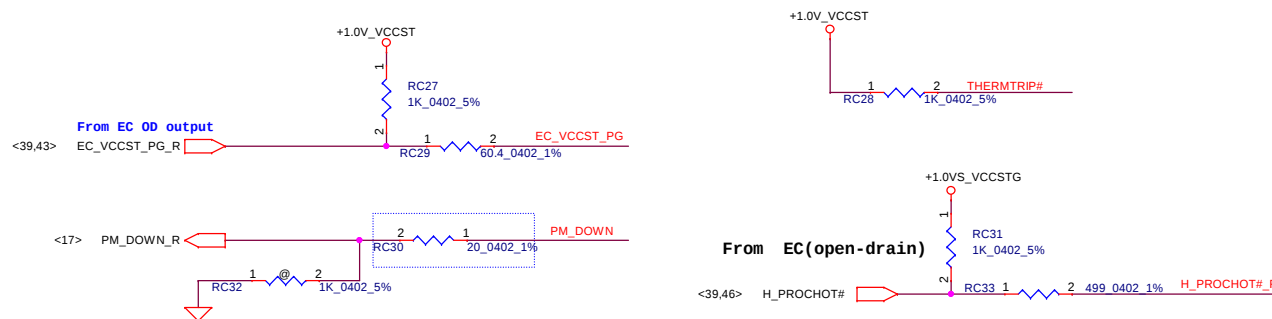
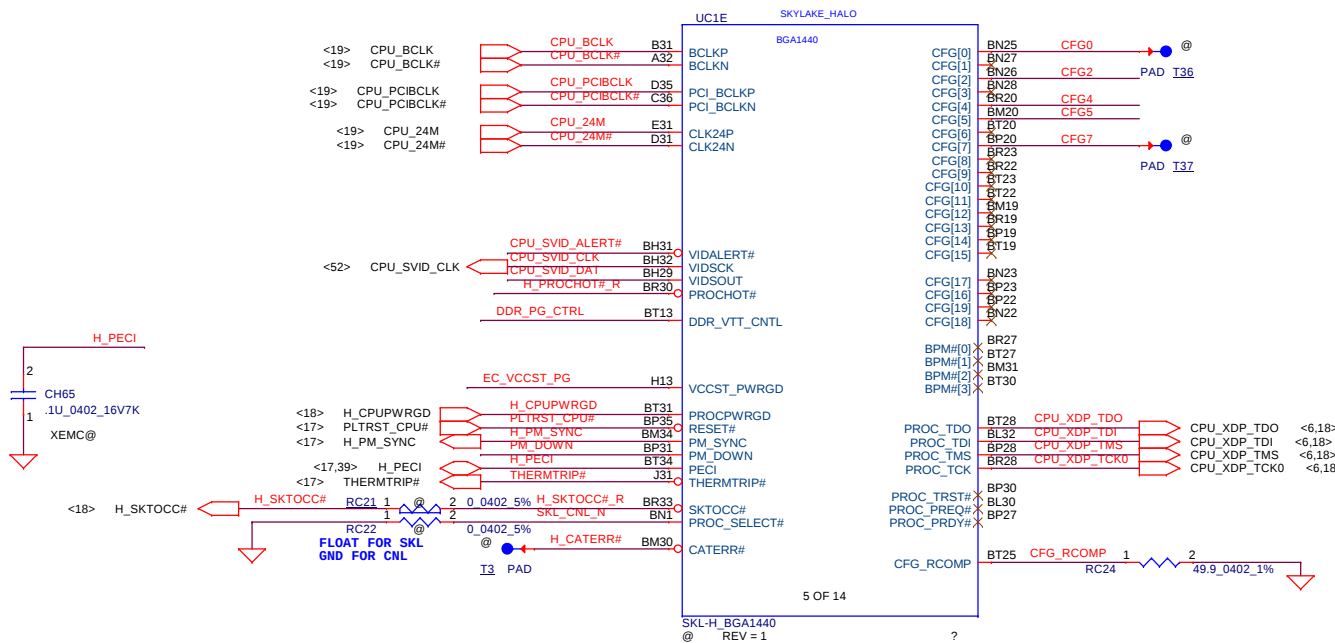
CAD note:
Trace width=12 mils, Spacing=15mil, Max length=400mils



Reference SKL EDS 0.85 Table 6-8
CFG signals internal PH default value = 1

	Description
CFG[0] *	Stall reset sequence after PCU PLL lock until de-asserted - 1 = (Default) Normal Operation; - 0 = Stall.
CFG[4] *	Enable eDP - 1 = Disabled. - 0 = Enabled.
CFG[7] *	PEG Training: - 1 = (default) PEG Train immediately following RESET# de assertion. - 0 = PEG Wait for BIOS for training
CFG[1] CFG[3] CFG[8:19]	Reserved configuration lane.

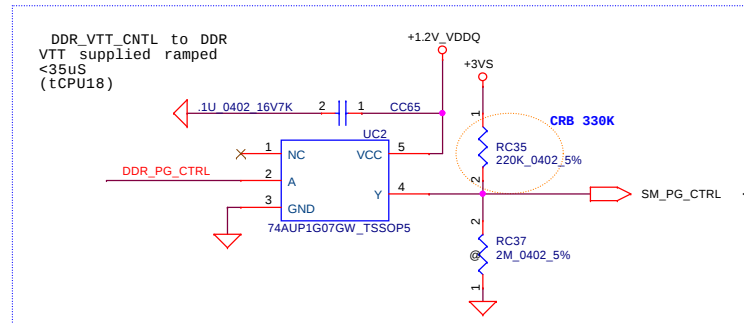
PCIe pore assign	Config. Signals		
	CFG[6]	CFG[5]	CFG[2]
1 x 16	1	1	1
1 x 16 reverse	1	1	0
2 x 8	1	0	1
2 x 8 reverse	1	0	0
1 x 8 + 2 x 4	0	0	1
1x8+2x4 reverse	0	0	0



SVID ALERT

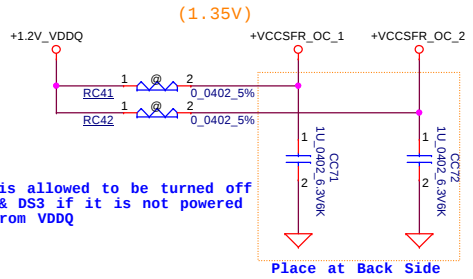
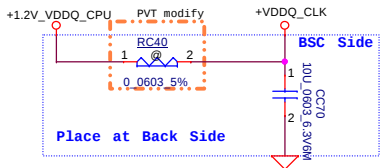
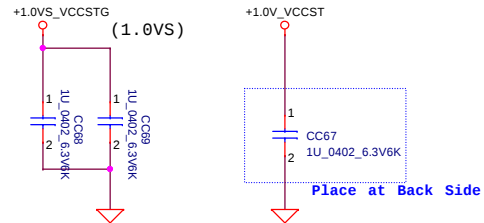
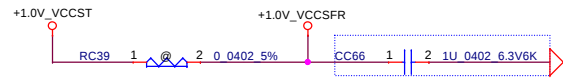


SVID DATA

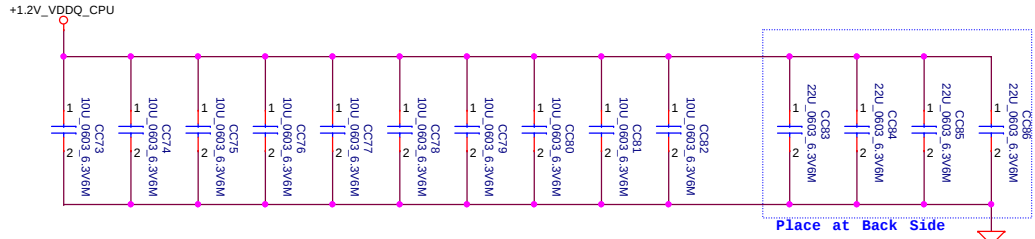


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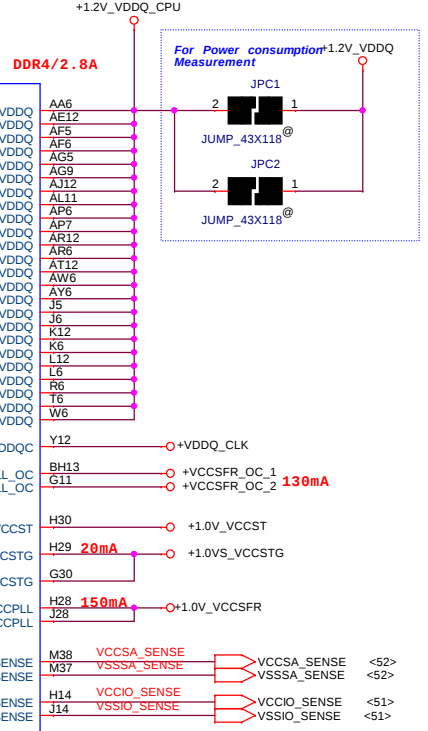
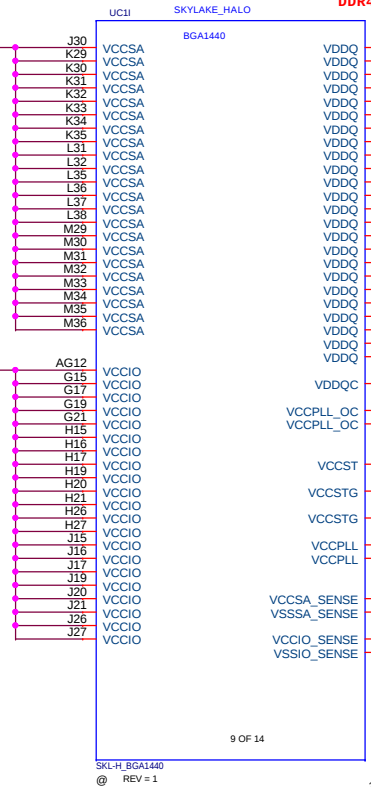
NOTE:
VCCPLL_OC is allowed to be turned off during S3 & DS3 if it is not powered directly from VDDQ



+1.2V_VDDQ_CPU : 10UF/6.3V/0603 *10
22UF/6.3V/0603 * 4
update CRB cap QTY

RVP11 47u*1,10u*7,1u*3
CAP place on PWR side.
+VCC_SA_O
H-4+2/11.1A

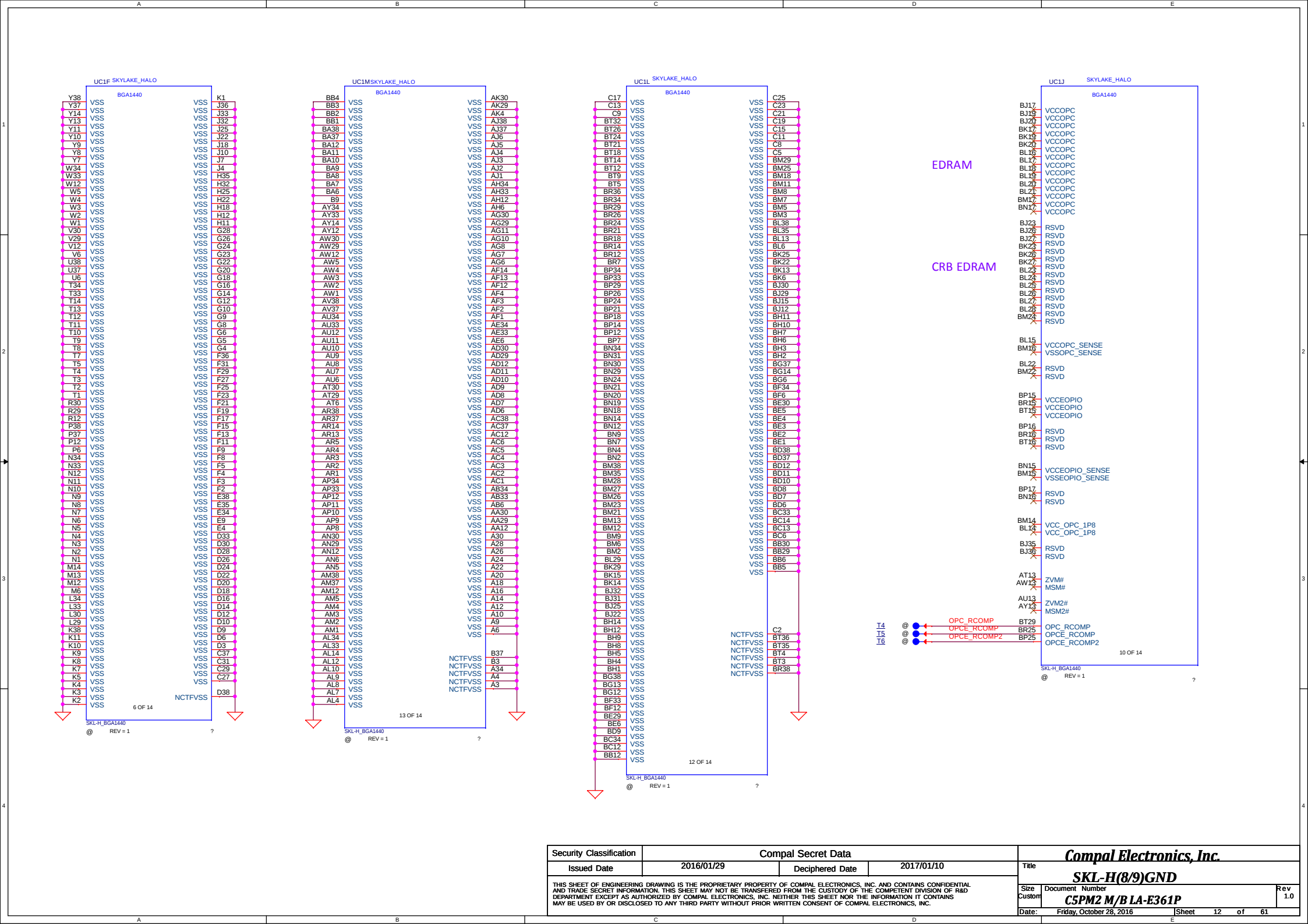
RVP11
PWR NEED PROVIDE
0.95V FOR VCCIO
+1.0VS_VCCIO
H /5.5A

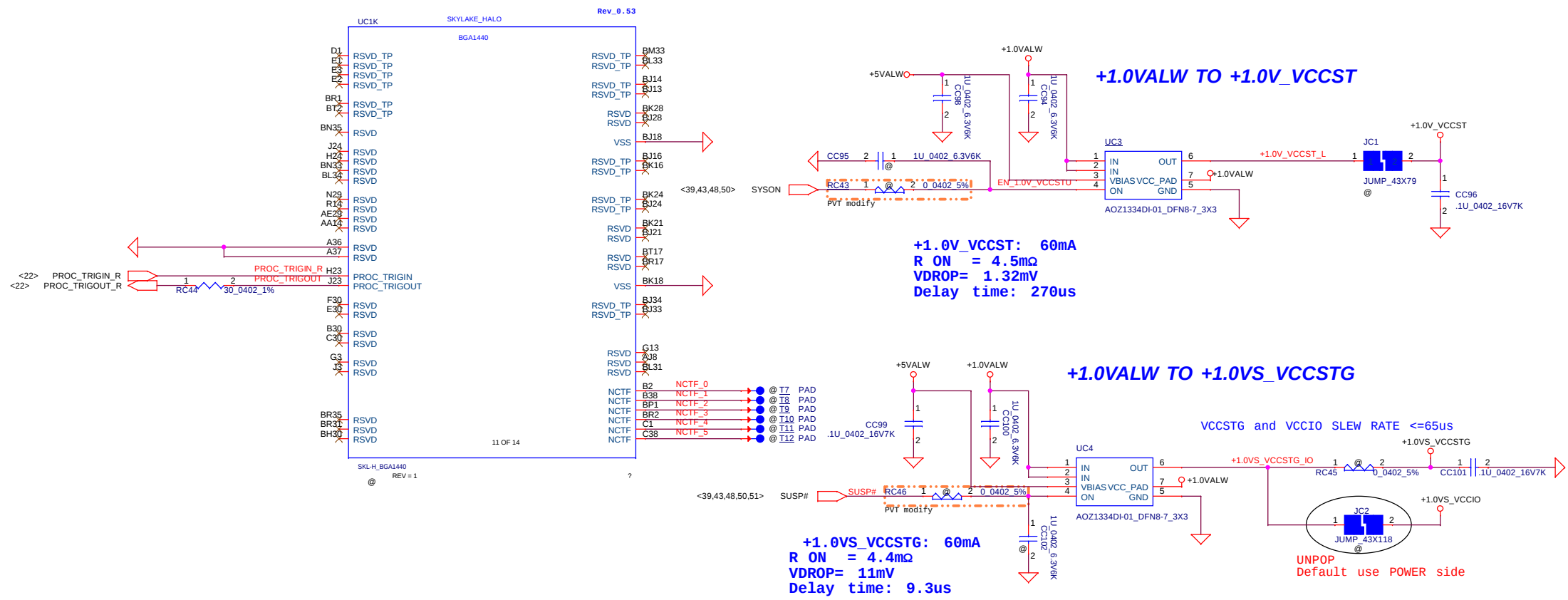


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CPU_CORE/VCCGT/VCCSA decoupling capacitor place to PWR side

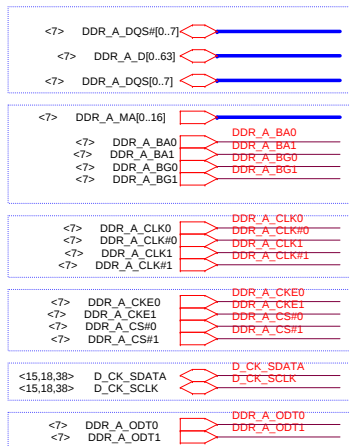
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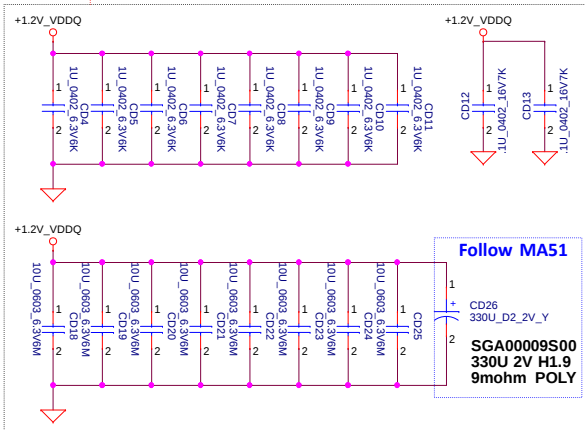
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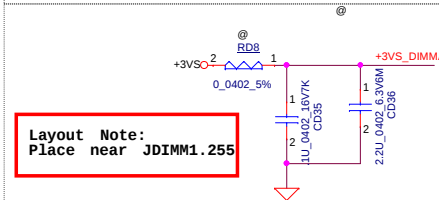
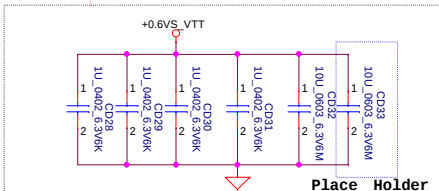


Layout Note:
Place near JDIMM1

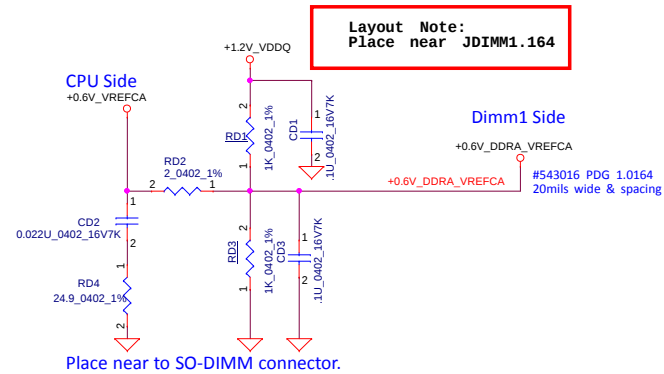
Note:
place caps close to DIMM 4 on each side of DIMM



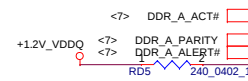
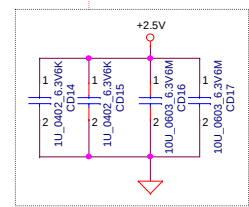
Layout Note:
Place near JDIMM1.258



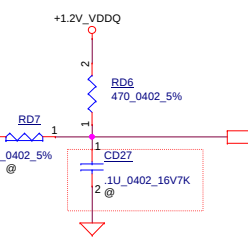
Layout Note:
Place near JDIMM1.255



Layout Note:
Place near JDIMM1.257/259



SPD Address for CHANNEL0
Write Address 0xA0
Read Address 0xA1
SA0=0;SA1=0;SA2=0

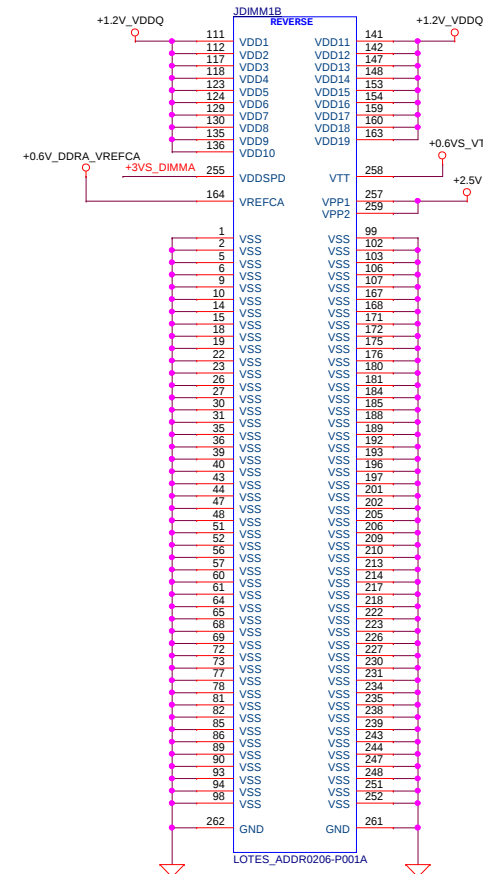
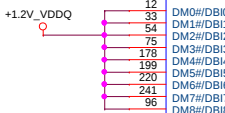
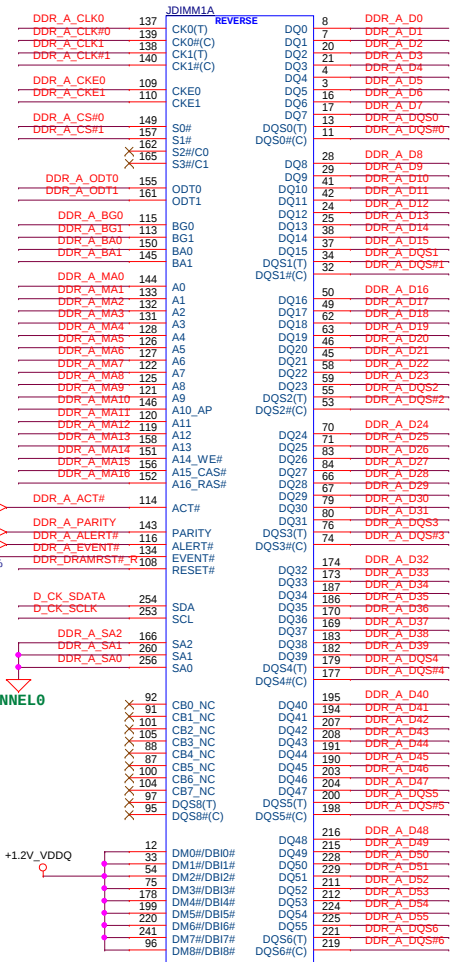


Layout NOTE
PLACE THE CAP within 200m1 from Pin108

*2015MOW02, Can't install Cap on DRAMRST

Layout Note:
Place near JDIMM1.164 within 200m1s

Layout Note:
Place near JDIMM1.164



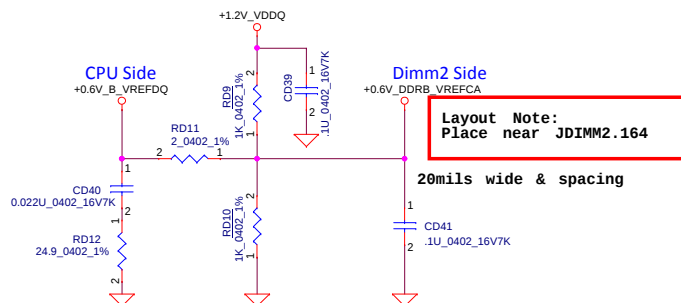
Reverse Type-4H
2-3A to 1 DIMMs/channel

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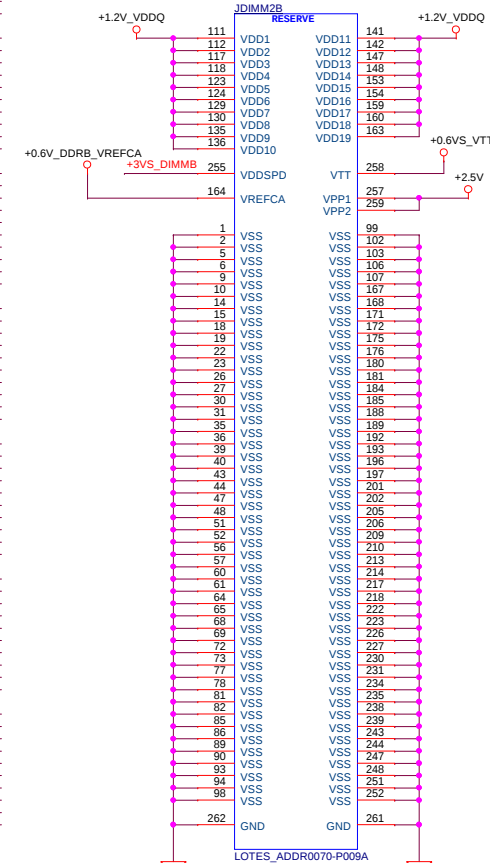
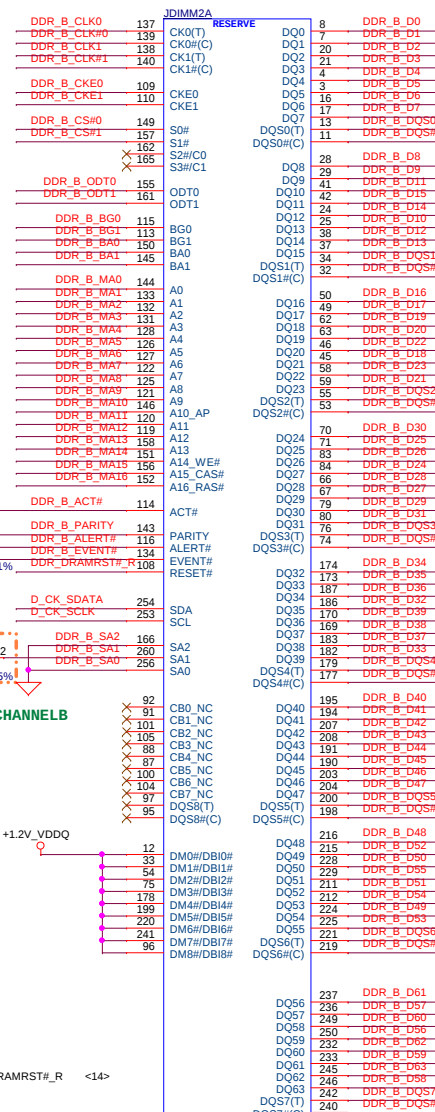
Interleaved Memory

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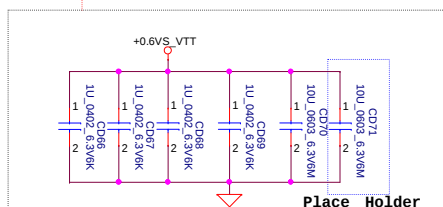
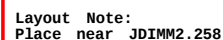
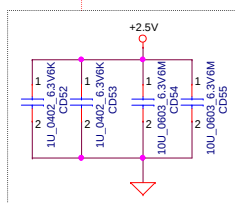
2-3A to 1 DIMMs/channel



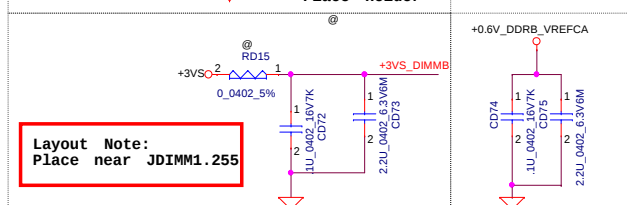
Place near to SO-DIMM connector.



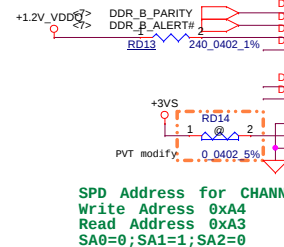
Note:
place caps close to DIMM
4 on each side of DIMM



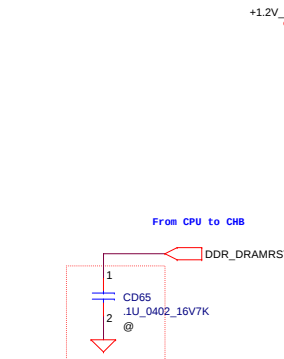
Place Holder



Layout Note:
Place near JDIMM1.164
within 200mils



```
SPD Address for CHANNELB
Write Address 0xA4
Read Address 0xA3
SA0=0;SA1=1;SA2=0
```



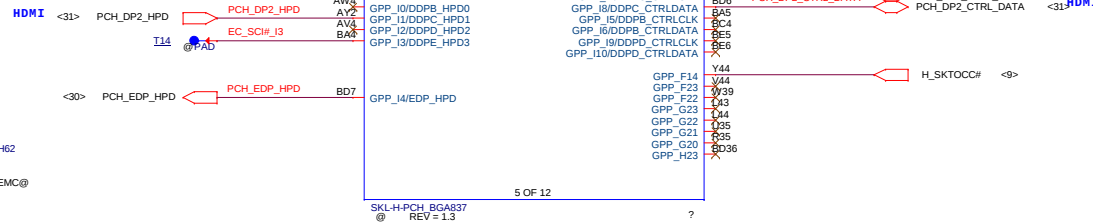
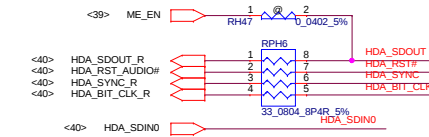
From CPU to CHB

Layout NOTE
PLACE THE CAP within 200mil from Pin108

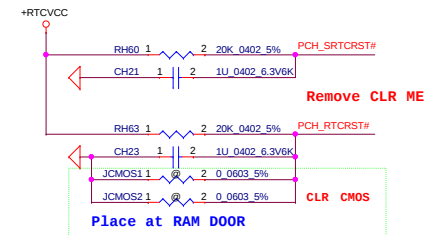
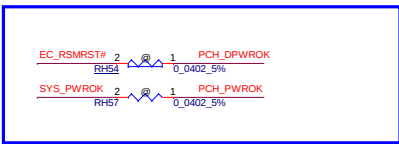
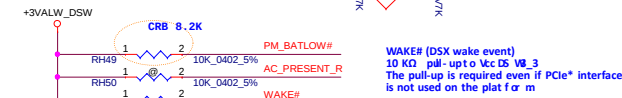
*2015MOW02. Can't install Cap on DRAMBS

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				Size	Document Number	
				Custpm	CSPM2 M/B LA-E361P	
				Date:	Friday, October 28, 2016	
				Sheet	15 of 61	

HDA for AUDIO



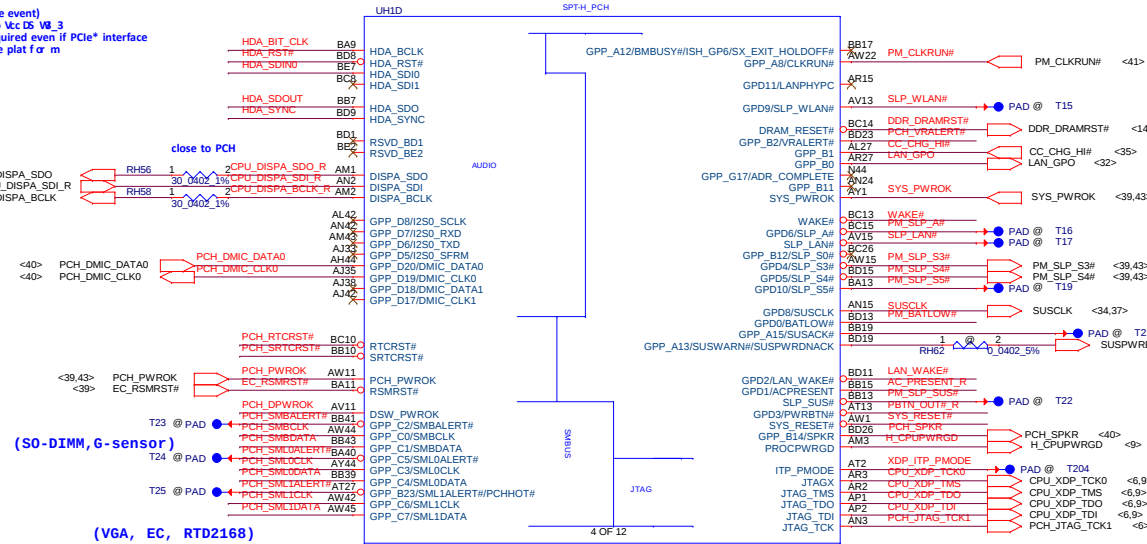
Follow 543016 SKL_U_Y_PD6_0_9



Remove CLR ME

CLR CMOS

Place at RAM D00R



Functional Strap Definitions

SMBALERT# / GPP_C2

int. PD
0 = Disable Intel ME (TLS) (Default)
1 = Enable Intel ME (TLS)

SML0ALERT# / GPP_C5

int. PD
0 = LPC is selected for EC. (Default)
1 = eSPI is selected for EC.

SML1ALERT# / PCHHOT# / GPP_B23

int. PD

SPKR / GPP_B14

int. PD

0 = Disable " Top Swap" mode (Default)
1 = Enable " Top Swap" mode.

HDA SDO

int. PD

0 = Enable security measures defined in the Flash Descriptor. (Default)
1 = Disable Flash Descriptor Security (override).

DDPB_CTRLDATA / GPP_I6

int. PD

0 = Port B is not detected.
1 = Port B is detected. (Default)

DDPC_CTRLDATA / GPP_I8

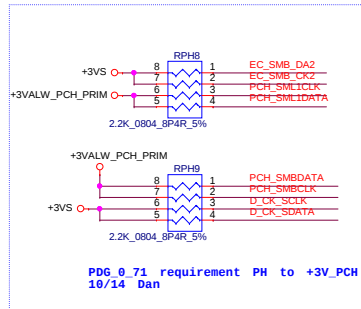
int. PD

0 = Port C is not detected.
1 = Port C is detected. (Default)

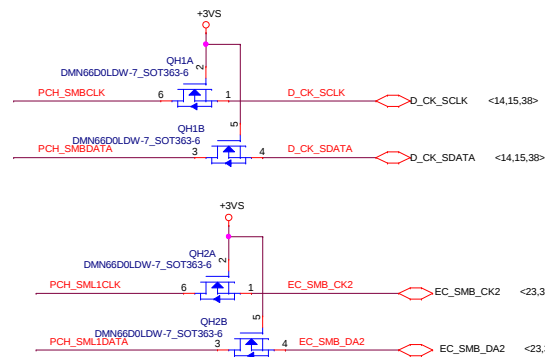
DDPD_CTRLDATA / GPP_I10

int. PD

0 = Port D is not detected. (Default)
1 = Port D is detected.



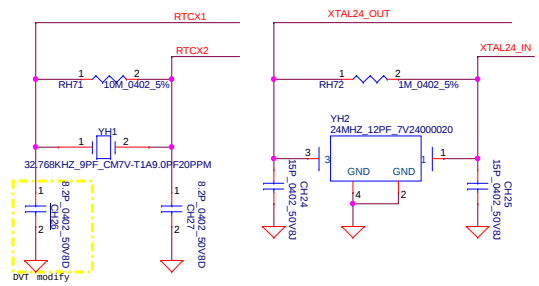
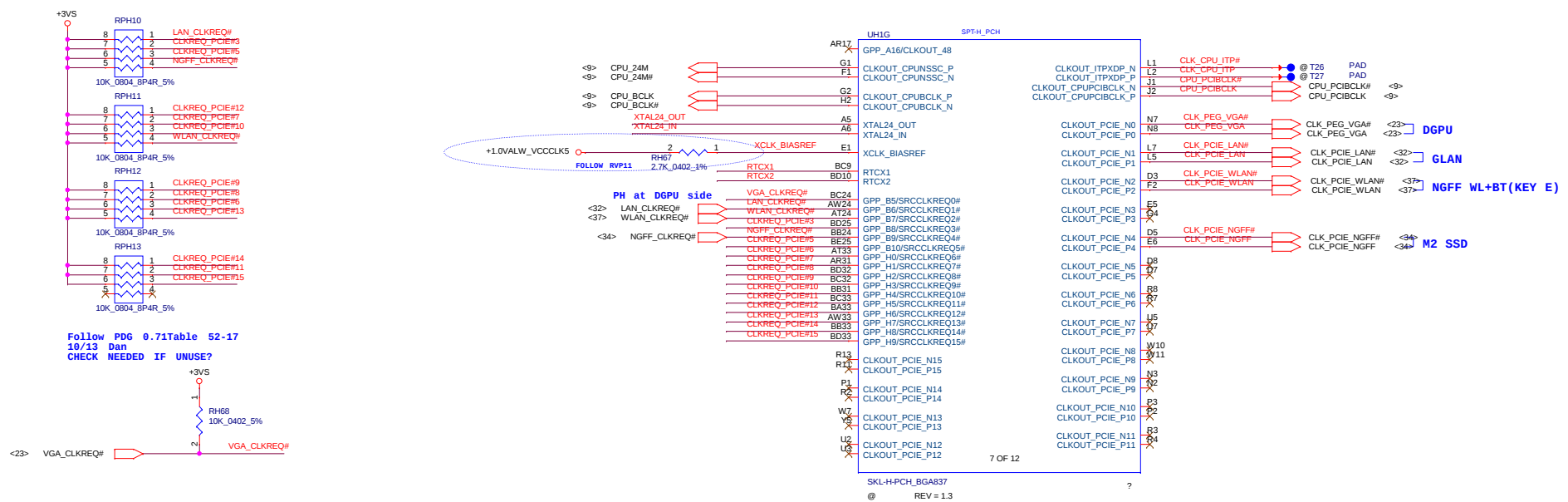
PD6 0.71 requirement PH to +3V_PCH 10/14 Dan



(DDR, G-Sensor)

(EC, VGA)

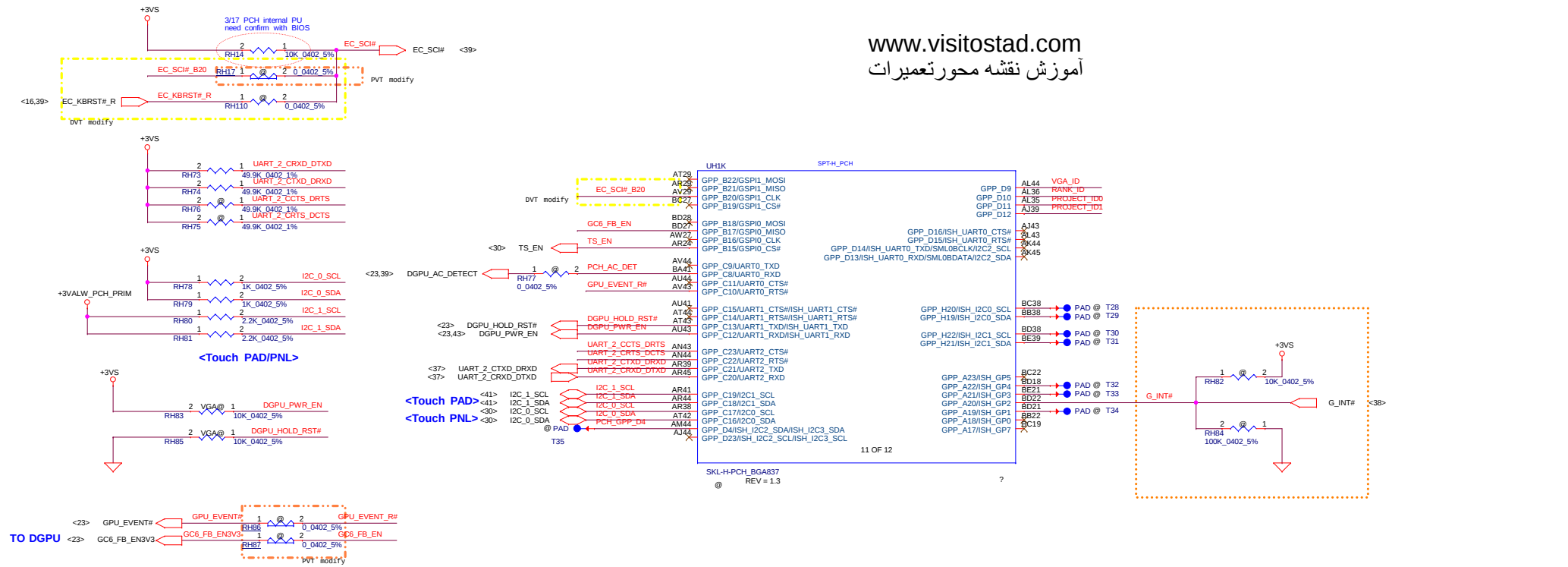
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
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				Custom	CSPM2 M/B LA-E361P
				Date	Friday, October 28, 2016
				Sheet	18 of 61
				Rev	1.0



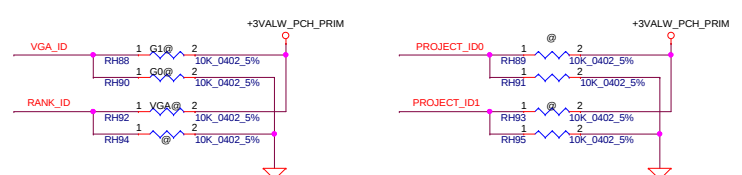
Functional Strap Definitions

GSPi1_MOSI / GPP_B22
 int. PD
 Boot BIOS Destination
 0 = SPI (Default)
 1 = LPC

GSPi0_MOSI / GPP_B18
 int. PD
 0 = Disable " No Reboot " mode (Default)
 1 = Enable " No Reboot " mode (PGH will disable the TCO
 Timer system reboot feature).



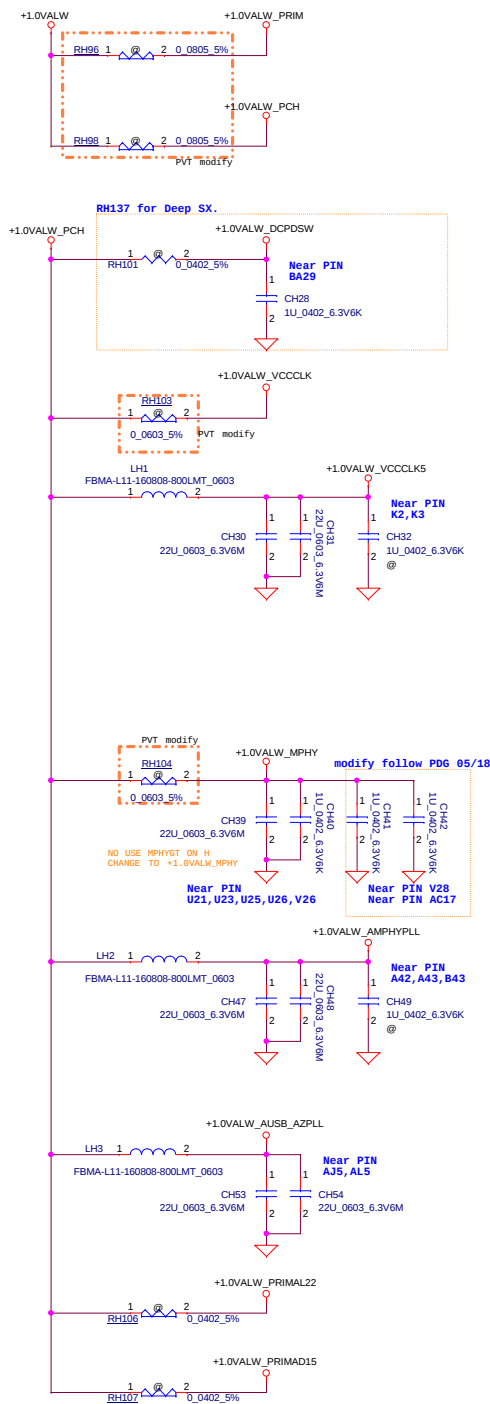
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VGA_ID	GPP_D9
G0	0
G1	1

RANK_ID	GPP_D10
DR	0
SR	1

Project ID	Project_ID1 GPP_D12	Project_ID0 GPP_D11
*C5PM2	0	0
Reserved	0	1
Reserved	1	0
Reserved	1	1



PCH EDS Table10-4
12/38 J

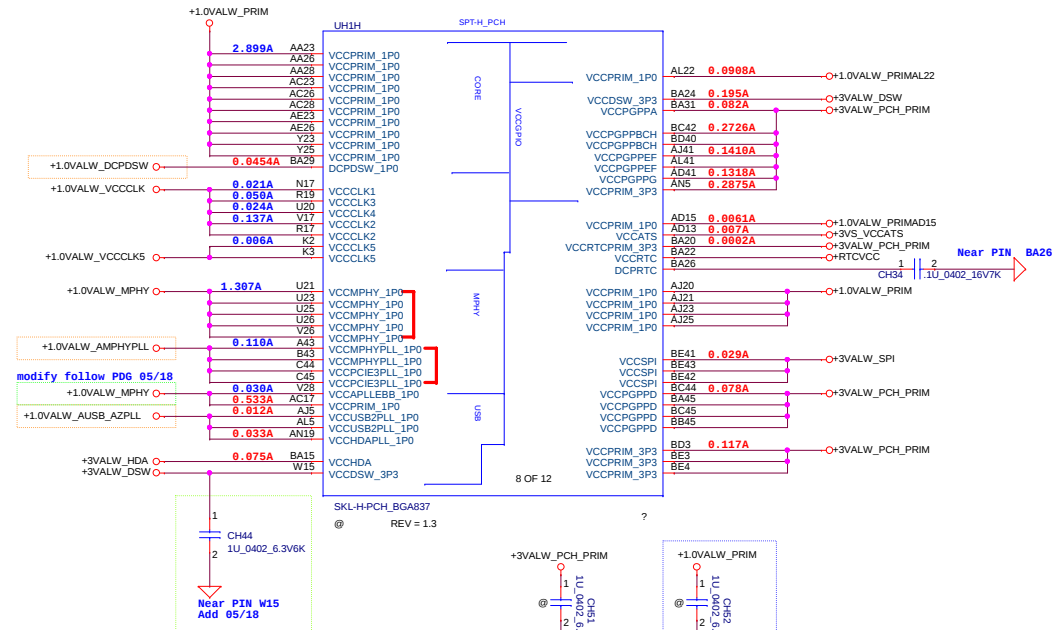
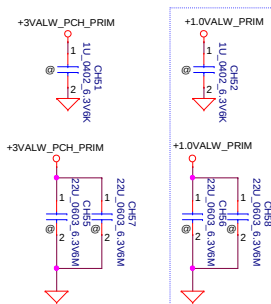


Table 10-6. PCH-H VCCMPHY_1p0 Icc Adder Per HSIO Lane

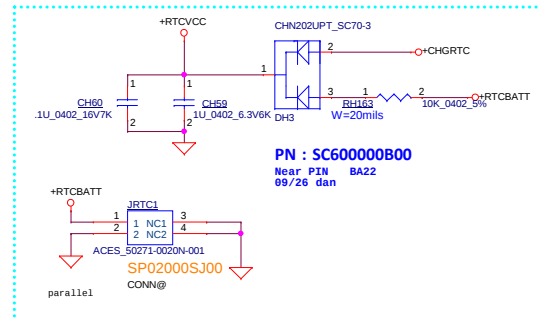
Icc (mA)	Details
700	All HSIO disabled. Assumes DME v4 Running 100%.
132	Each USB 3.0 Port
154	Each PCIe Gen3 Lane
54	First SATA Gen3 Port
132	Each Additional SATA Gen3 Port
102	Each PCIe Gen2 Lane
44	GBE Port

VCCMPHY power defined by HSIO lane qty.



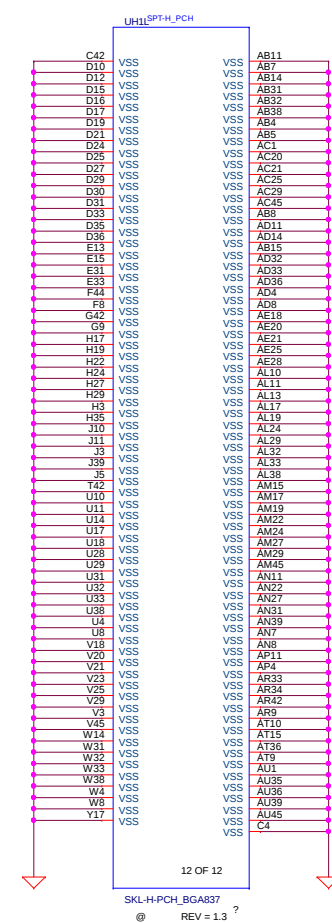
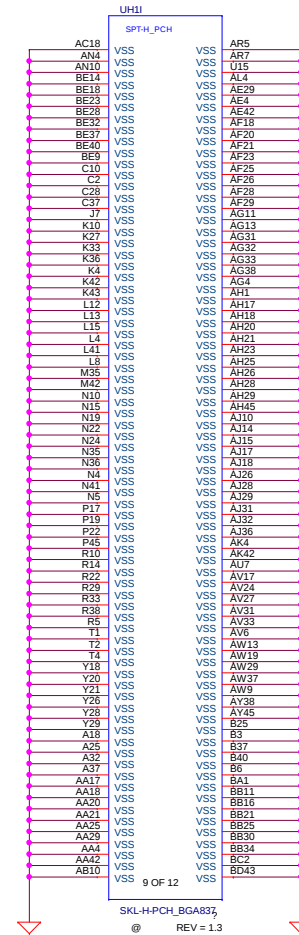
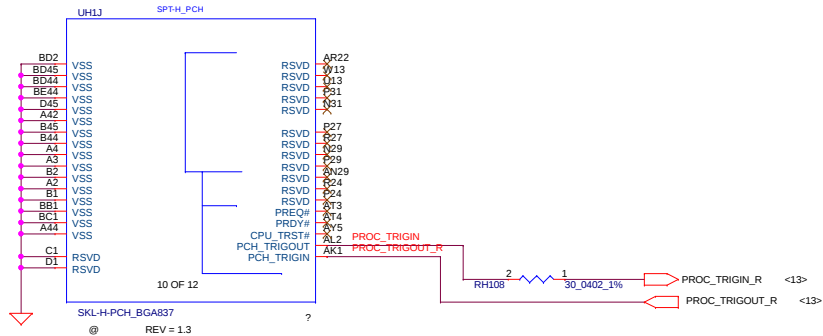
Power Rail	Voltage
+CH6RTC	3.383V(MAX)
BAT54C(VF)	240 mV
+3VL_RTC	3.143V
Result	Pass

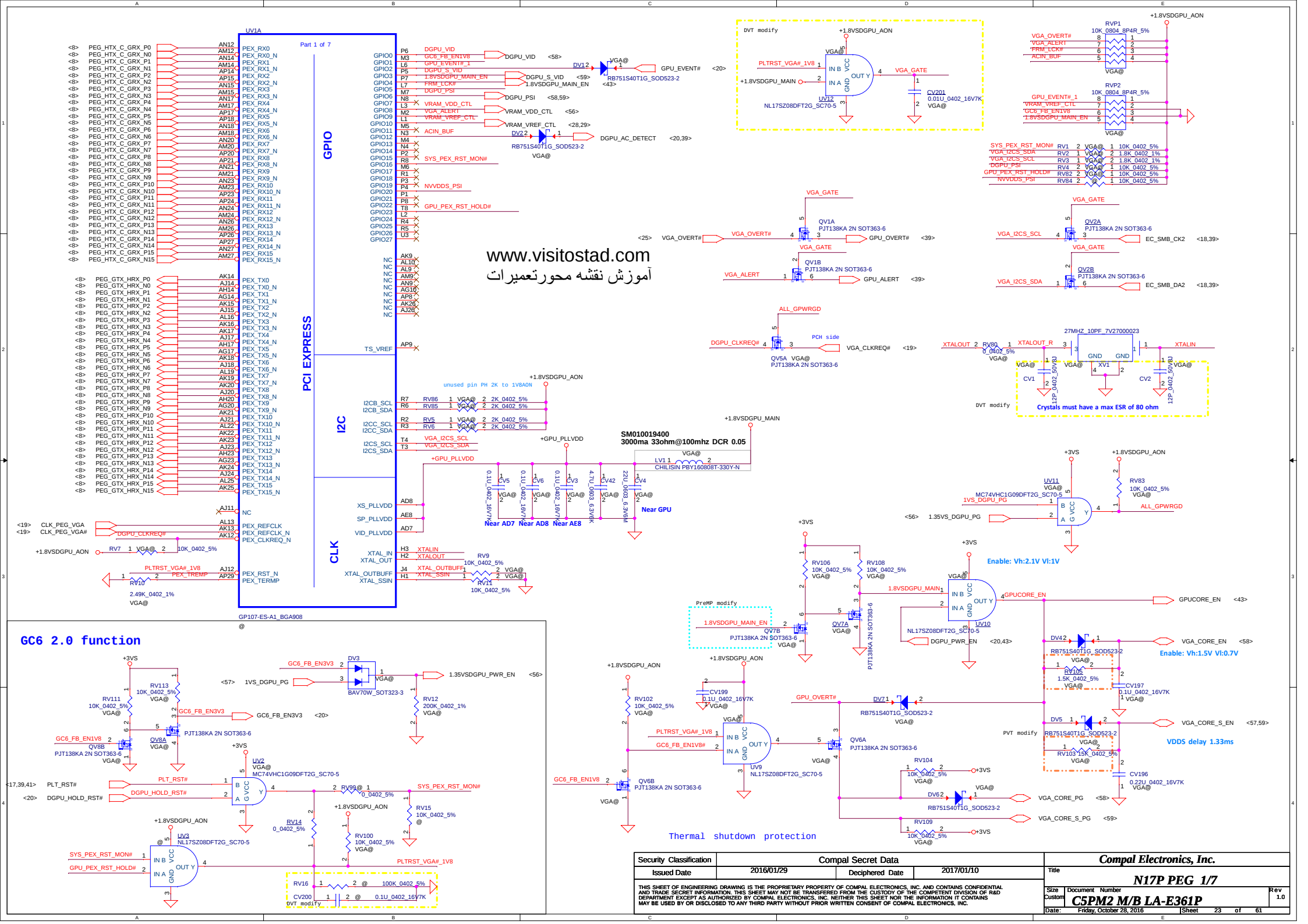
RTC Battery



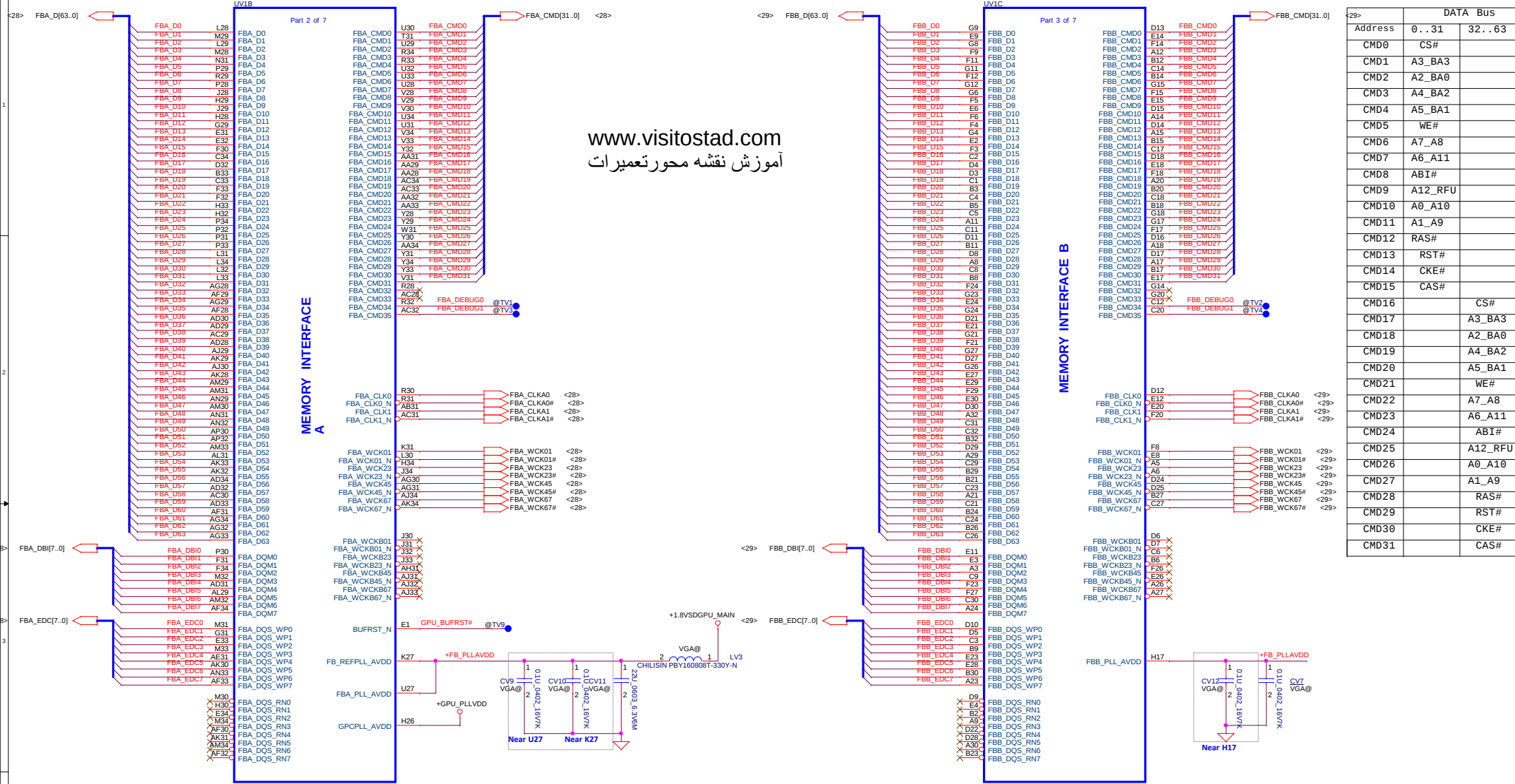
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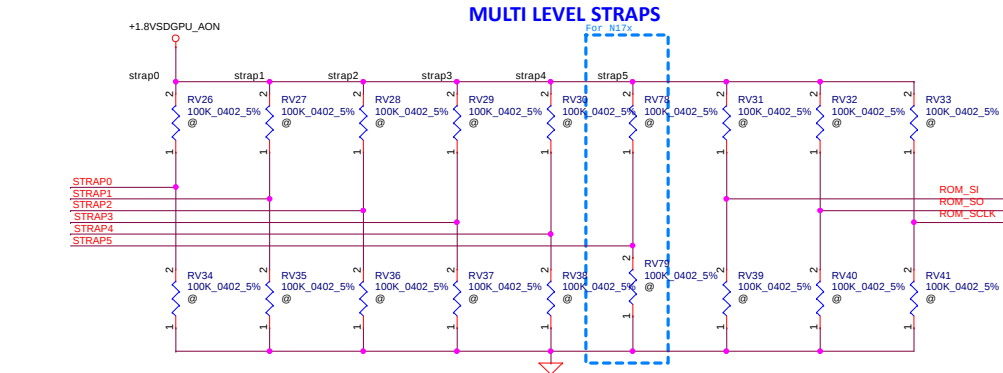
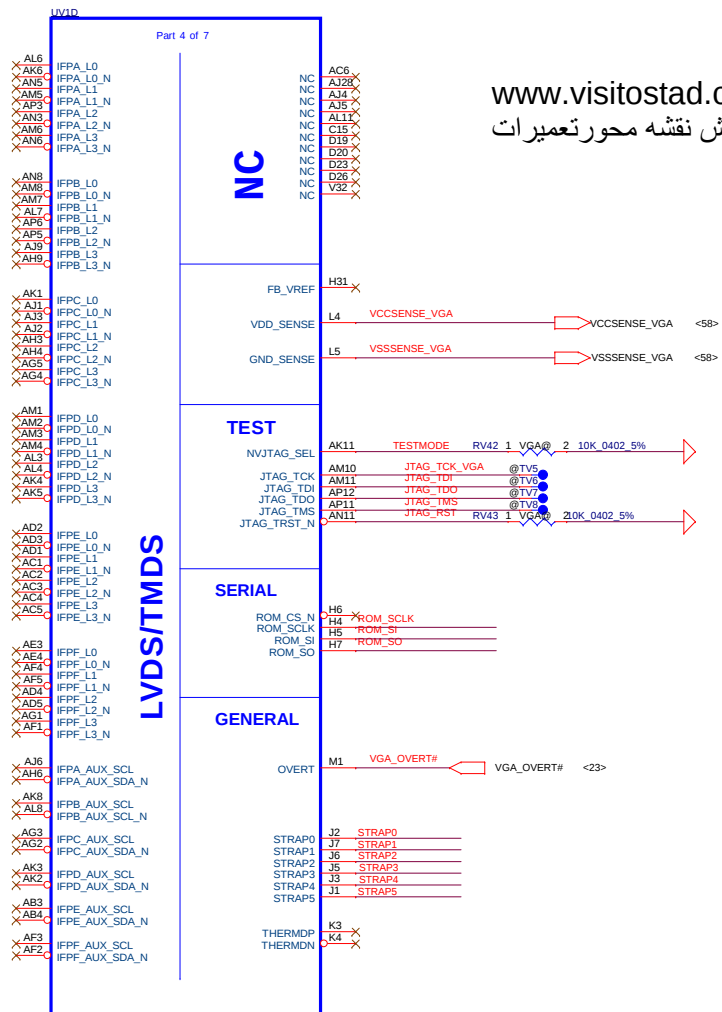




GDDR5 Mode H Mapping



DATA Bus	
Address	0..31 32..63
CMD0	CS#
CMD1	A3_BA3
CMD2	A2_BA0
CMD3	A4_BA2
CMD4	A5_BA1
CMD5	WE#
CMD6	A7_A8
CMD7	A6_A11
CMD8	ABI#
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	ABI#
CMD25	A12_RFU
CMD26	A0_A10
CMD27	A1_A9
CMD28	RAS#
CMD29	RST#
CMD30	CKE#
CMD31	CAS#



Memory Density	Allowed Memory Configuration	FBVDD/Q	Vendor	Manufacturer Part Number	Die Revision	Strap	Memory Speed Grade	Date Code Alert	Qual Plan	Status
8 Gb	256Mx32	1.35V and 1.5V ²	Samsung	K4G80325FB-HC28	B-die	0x0	7 Gbps	N/A	Full	Production candidate
			Micron	MT51J256M32HF-70:A	A-die	0x1	7 Gbps	N/A	Full	Production candidate
			Hynix	H5GC8H24MJR-R0C	M-die	0x2	7 Gbps	N/A	Full	Post production candidate
4 Gb	128Mx32	1.35V and 1.5V ²	Samsung	K4G41325FE-HC28	E-die	0x7	7 Gbps	N/A	Full	Production candidate
			Hynix	H5GC4H24AJR-R0C	A-die	0x6	7 Gbps	N/A	Full	Production candidate
			Micron	EDW4032BABG-70-F	A-die	0x8	7 Gbps	N/A	Full	Post production candidate

Table 5.2 RAMCFG

Strap Pins	Strap Pins	Strap Pins	RAMCFG Setting Number
STRAP2	STRAP1	STRAP0	(see Memory RVL for memory configs corresponding to these numbers)
L	L	L	0 (0x0000)
L	L	H	1 (0x0001)
L	H	L	2 (0x0002)
L	H	H	3 (0x0003)
H	L	L	4 (0x0004)
H	L	H	5 (0x0005)
H	H	L	6 (0x0006)
H	H	H	7 (0x0007)
L	L	M	8 (0x0008)
L	M	L	9 (0x0009)
L	M	H	10 (0x000A)
L	H	M	11 (0x000B)
M	L	L	12 (0x000C)
M	L	H	13 (0x000D)

Table 5.4 SORx_EXPOSED Strap Enablement for Down Designs

Row Index	Strap Pins see Note			Resulting SORx_EXPOSED Enablements			
	ROM_SO	ROM_SI	ROM_SCLK	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
15	L	L	L	ENABLED	ENABLED	ENABLED	ENABLED
14	L	L	H	ENABLED	ENABLED	ENABLED	disabled
13	L	H	L	ENABLED	ENABLED	disabled	ENABLED
12	L	H	H	ENABLED	ENABLED	disabled	disabled
11	H	L	L	ENABLED	disabled	ENABLED	ENABLED
10	H	L	H	ENABLED	disabled	ENABLED	disabled
8	H	H	H	ENABLED	disabled	disabled	disabled
0	H	H	M	disabled	disabled	disabled	disabled
	M	X	X	(Reserved; do not configure)			
	All other Strap Configurations			(Reserved)			

GP107-ES-A1_BGA908

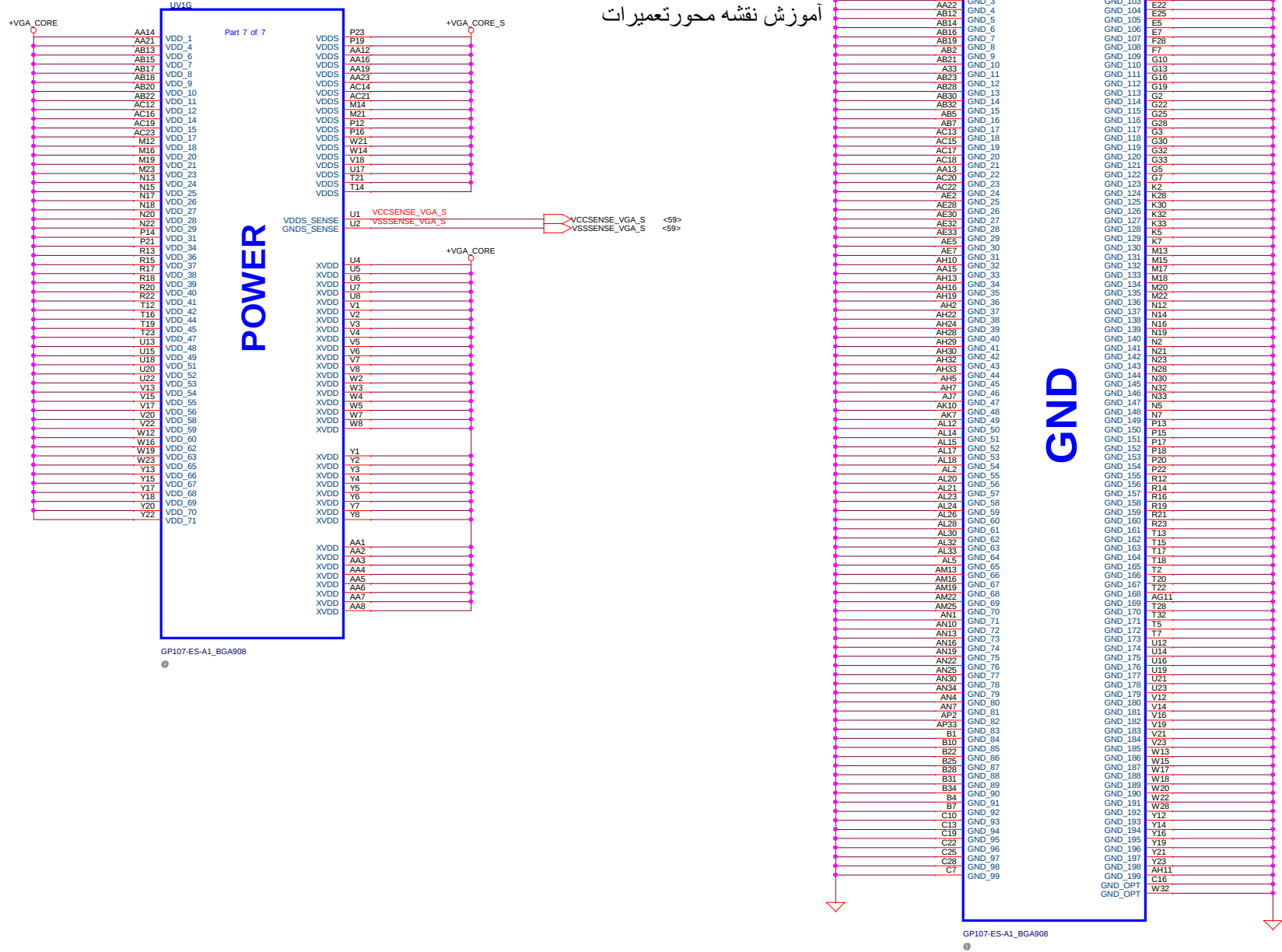
Strap Pins Note 1			Functions Selected by This Strapping			
STRAP5	STRAP4	STRAP3	SMB_ALT_ ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
L	L	L	0	0	0	0
L	L	H	0	0	0	1
L	H	L	0	0	1	0
L	H	H	0	0	1	1
H	L	L	0	1	0	0
H	L	H	0	1	0	1
H	H	L	0	1	1	0
H	H	H	0	1	1	1
L	L	M	1	0	0	0
L	M	L	1	0	0	1
L	M	H	1	0	1	0
L	H	M	1	0	1	1
M	L	L	1	1	0	0
M	L	H	1	1	0	1
M	H	L	1	1	1	0
M	H	H	1	1	1	1

SMB_ALT_ADDR	
Low	Single GPU
High	Dual GPU
DEVID_SEL	
Low	Orig. Device ID
High	Support G-Sync GPUID
VGA_DEVICE	
Low	3D Device
High	VGA Device
PCIE_CFG	
Low	Normal signal swing
High	Reduce the signal amplitude

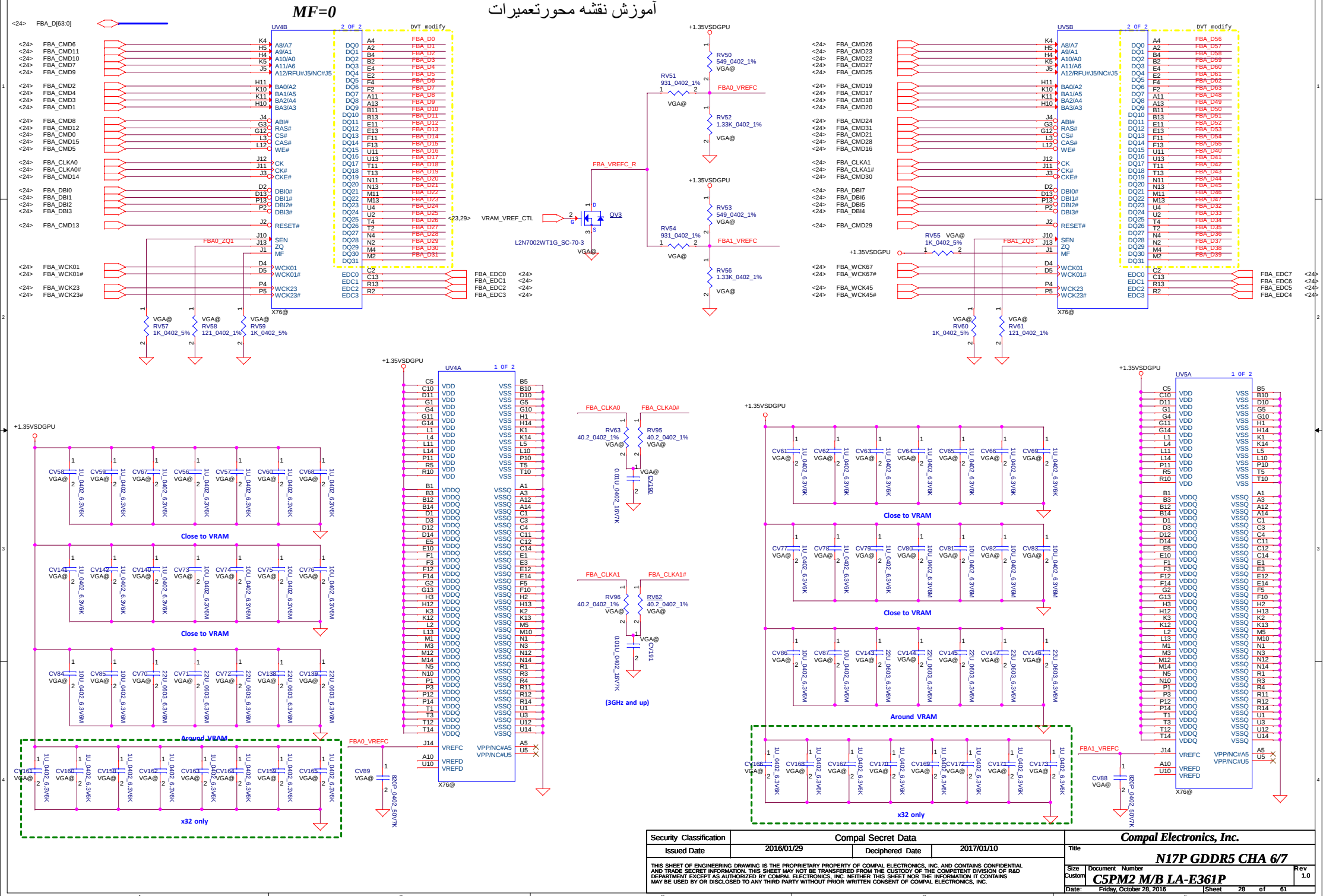
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Size	Document	Number	Rev	1.0
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Date:	Friday, October 28, 2016	Sheet	25	of 61

N17P VDD5
1uF*5/4.7uF*5 (under GPU)
330uF*1/22uF*3/10uF*2/4.7uF*2

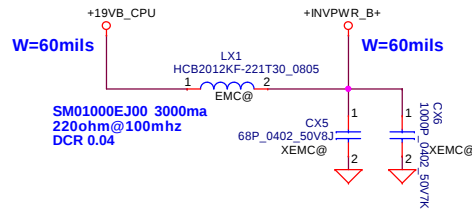
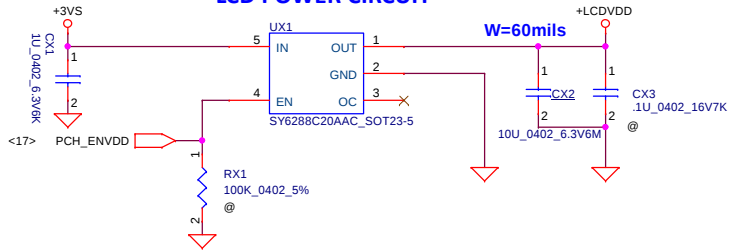
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Size		Document Number		Rev	
Custom		C5PM2 M/B LA-E361P		1.0	
Date:		Friday, October 28, 2016		Sheet 27 of 61	



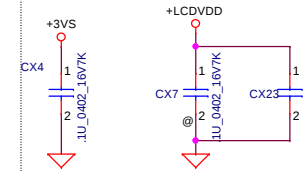
LCD POWER CIRCUIT



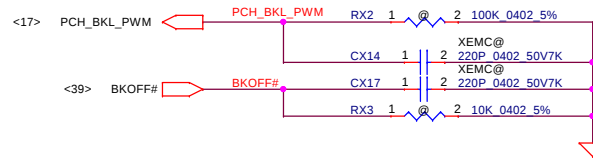
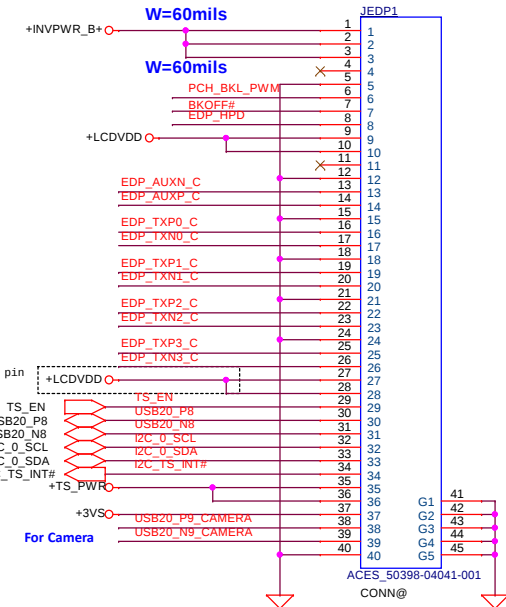
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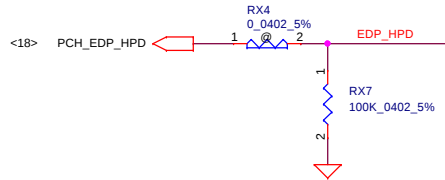
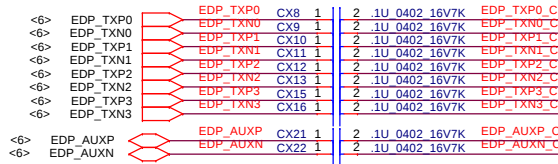
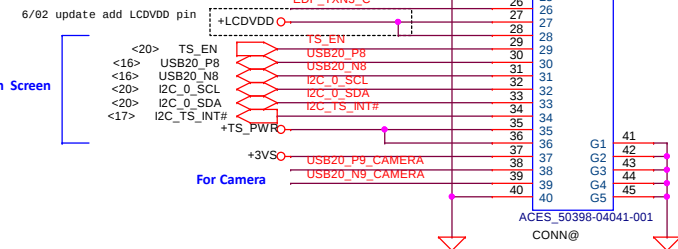
Place closed to JEDP1



LED PANEL Conn.



Touch Screen

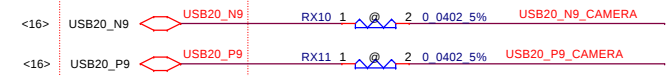


I2C Touch Screen

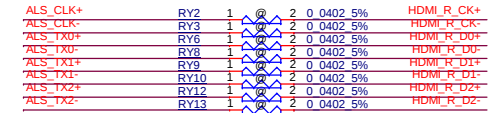


SPI touch RST follow CRB #544669 P.8

Camera



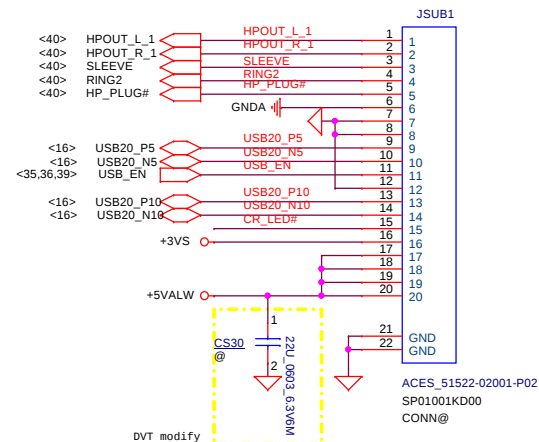
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						Size		Document Number		Rev	
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						Date:		Friday, October 28, 2016		Sheet 30 of 61	



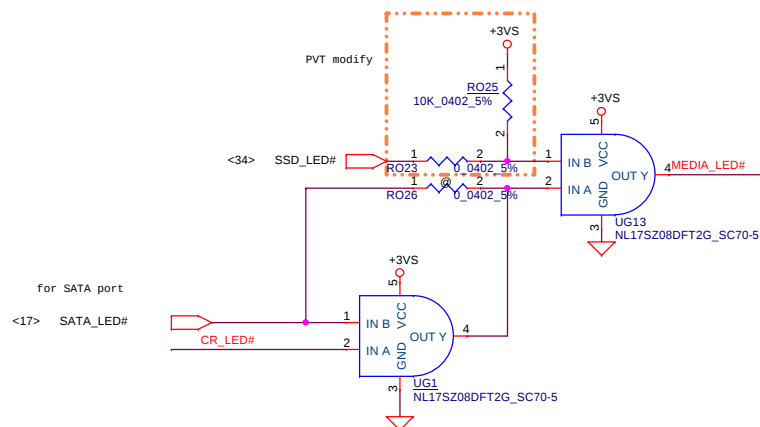
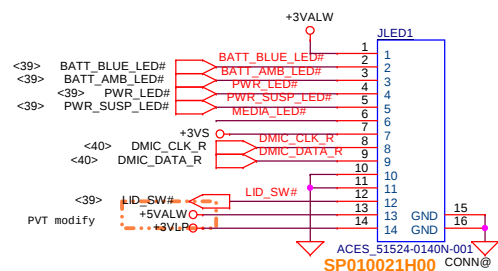
ZZZ1

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						Size		Document Number		Rev	
						C5PM2 M/B LA-E361P				1.0	
						Date: Friday, October 28, 2016		Sheet		31 of 61	

To Fun/B (USB Port 5, + AUDIO)

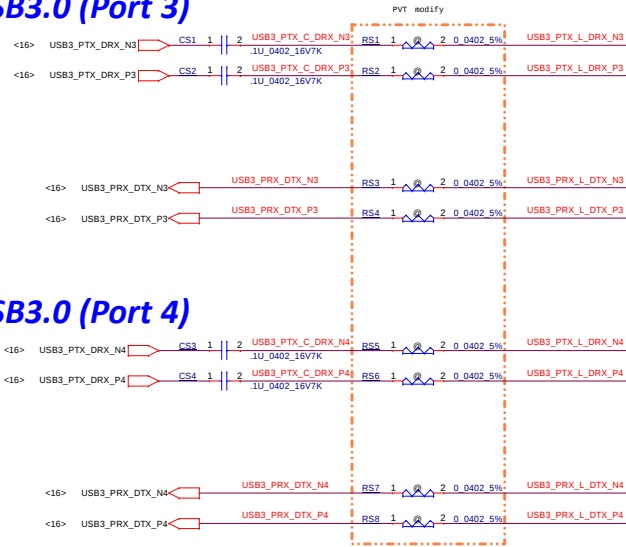


To LED/B

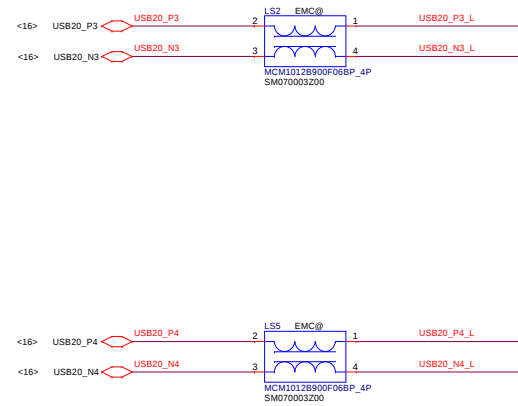
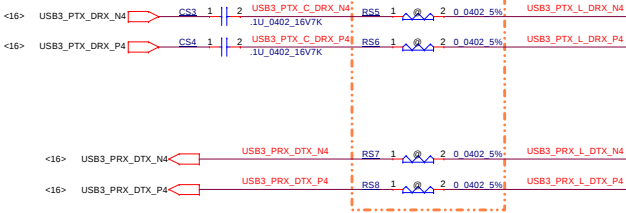


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USB3.0 (Port 3)



USB3.0 (Port 4)



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For ESD request

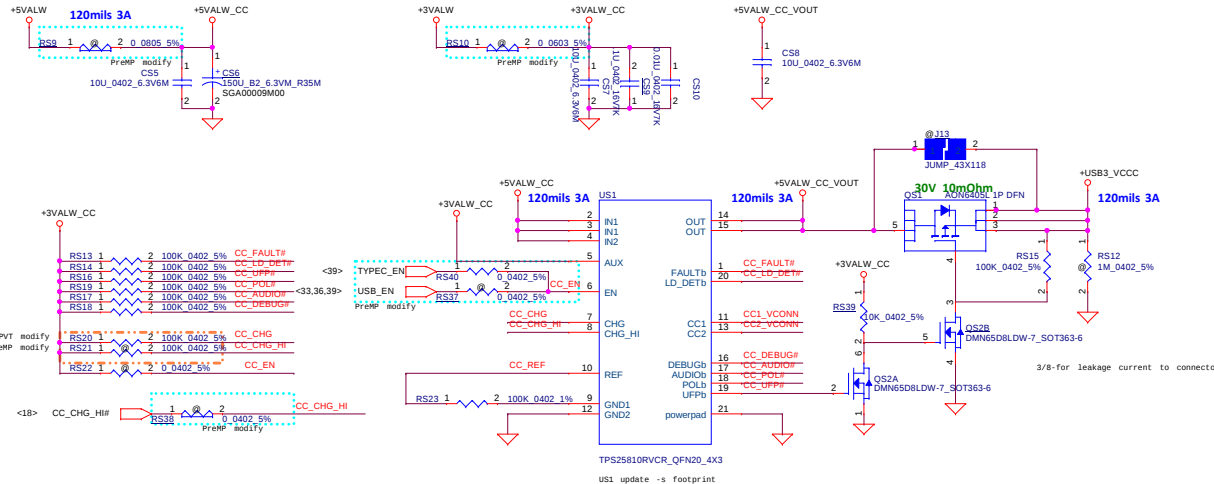
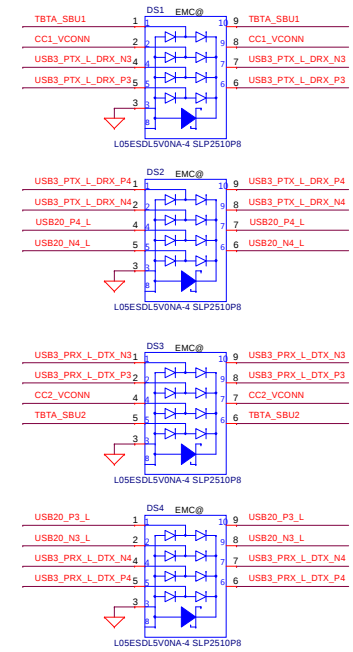
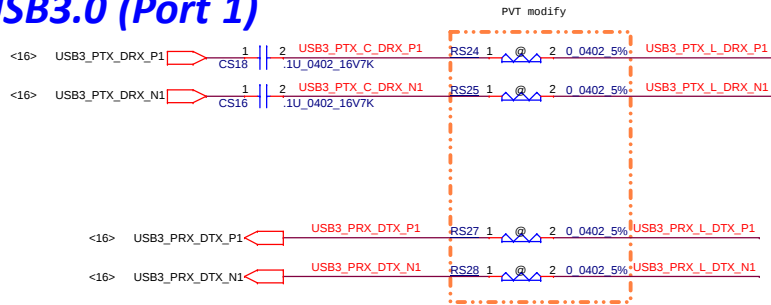


Table 3. USB Type-C Current Advertisement

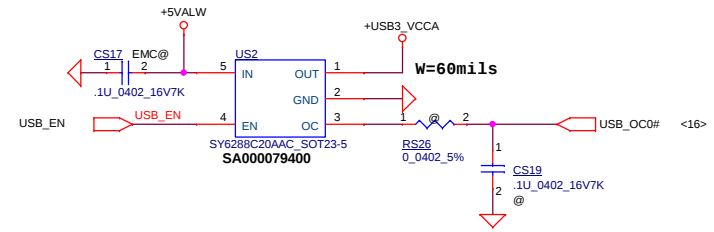
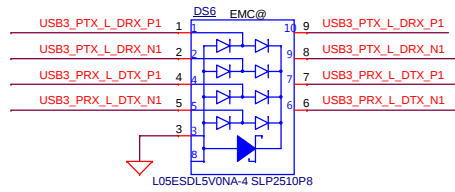
CHG	CHG_HI	CC CAPABILITY BROADCAST	CURRENT LIMIT (typ)	LOAD DETECT THRESHOLD (typ)
0	0	STD	1.7 A	NA
0	1	STD	1.7 A	NA
1	0	1.5 A	1.7 A	NA
1	1	3 A	3.4 A	1.95 A

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USB3.0 (Port 1)

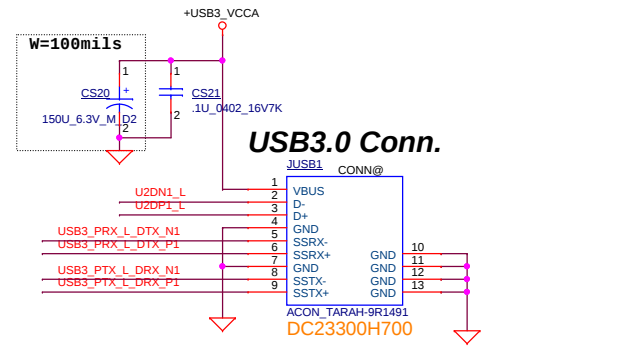
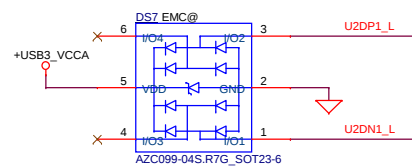
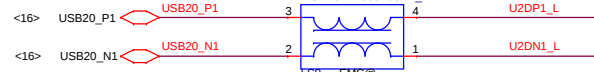


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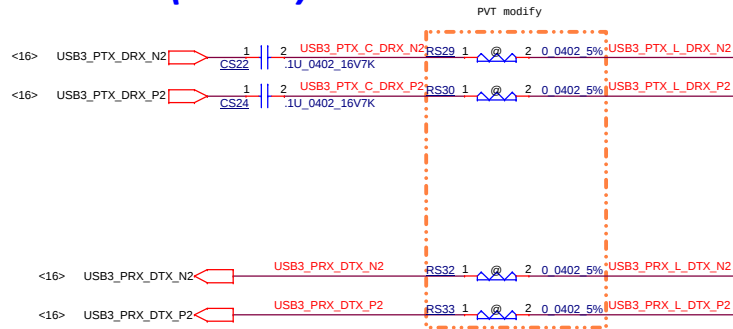


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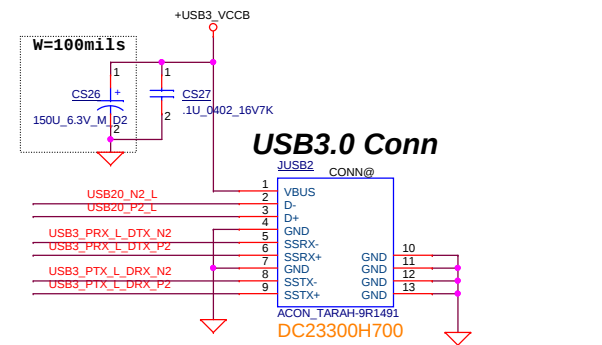
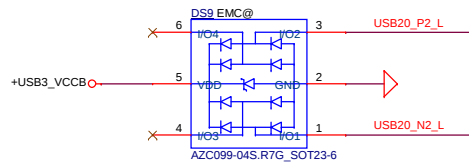
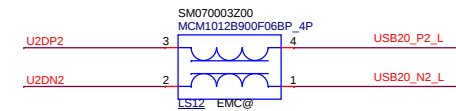
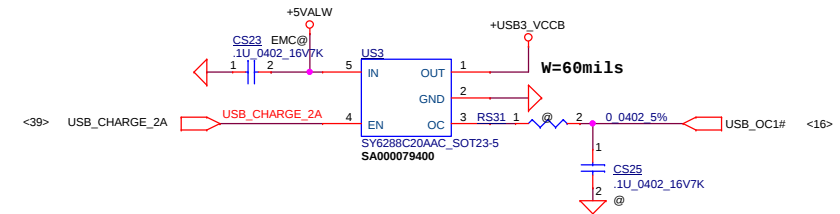
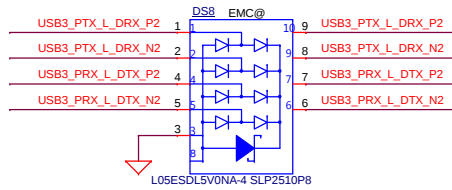
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USB3.0 (Port 2)

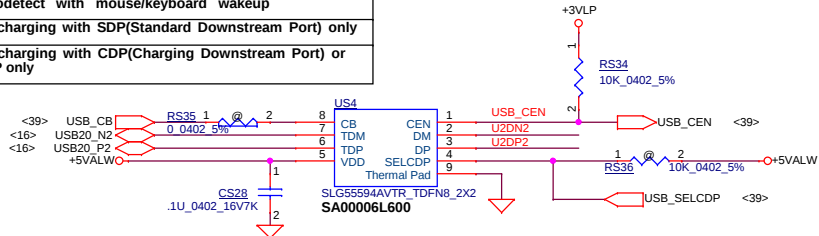


For ESD request



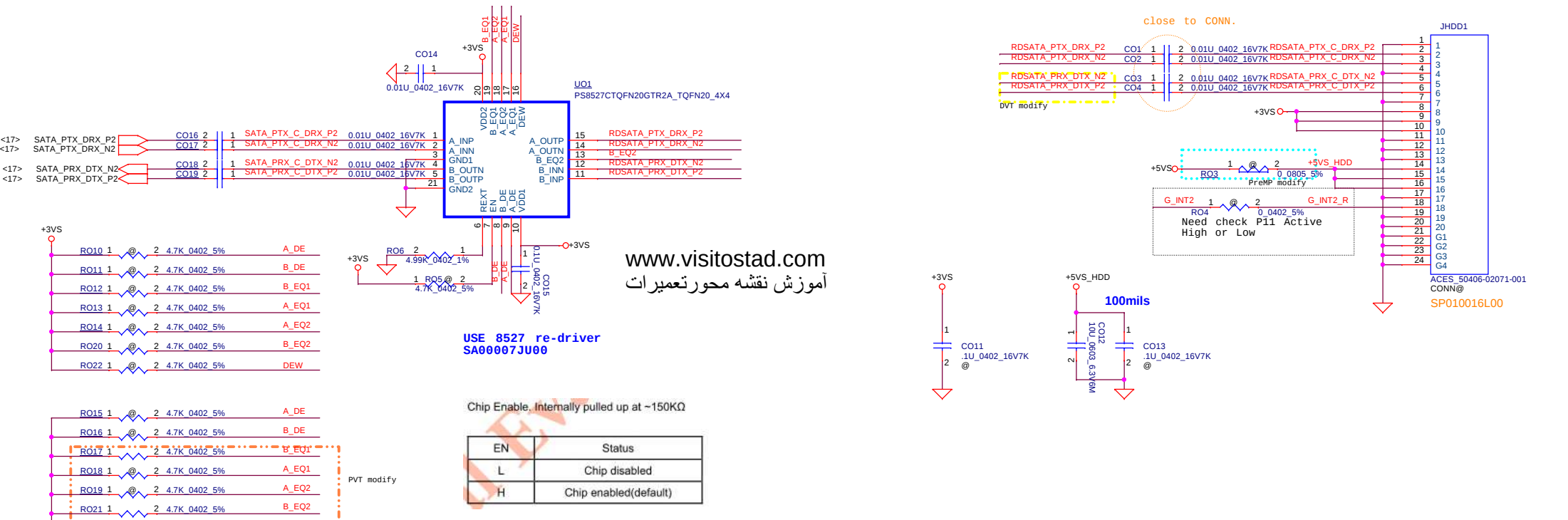
USB Host Charger

CB	SELCDP	
0	X	DCP(Dedicated Charging Port) autodetect with mouse/keyboard wakeup
1	0	S0 charging with SDP(Standard Downstream Port) only
1	1	S0 charging with CDP(Charging Downstream Port) or SDP only



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SATA Re-Driver and cable HDD Conn.



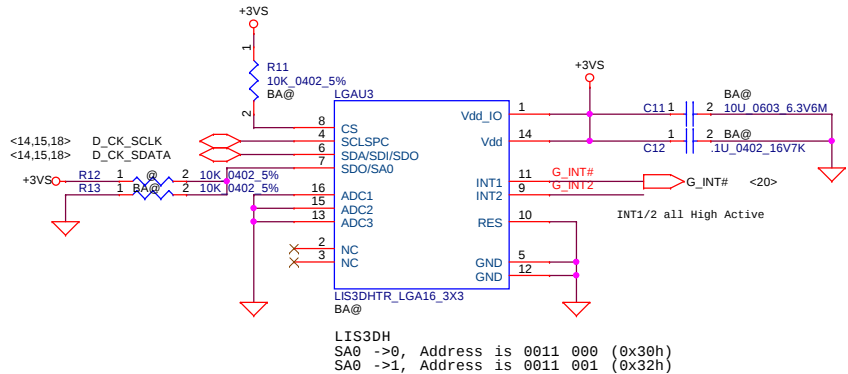
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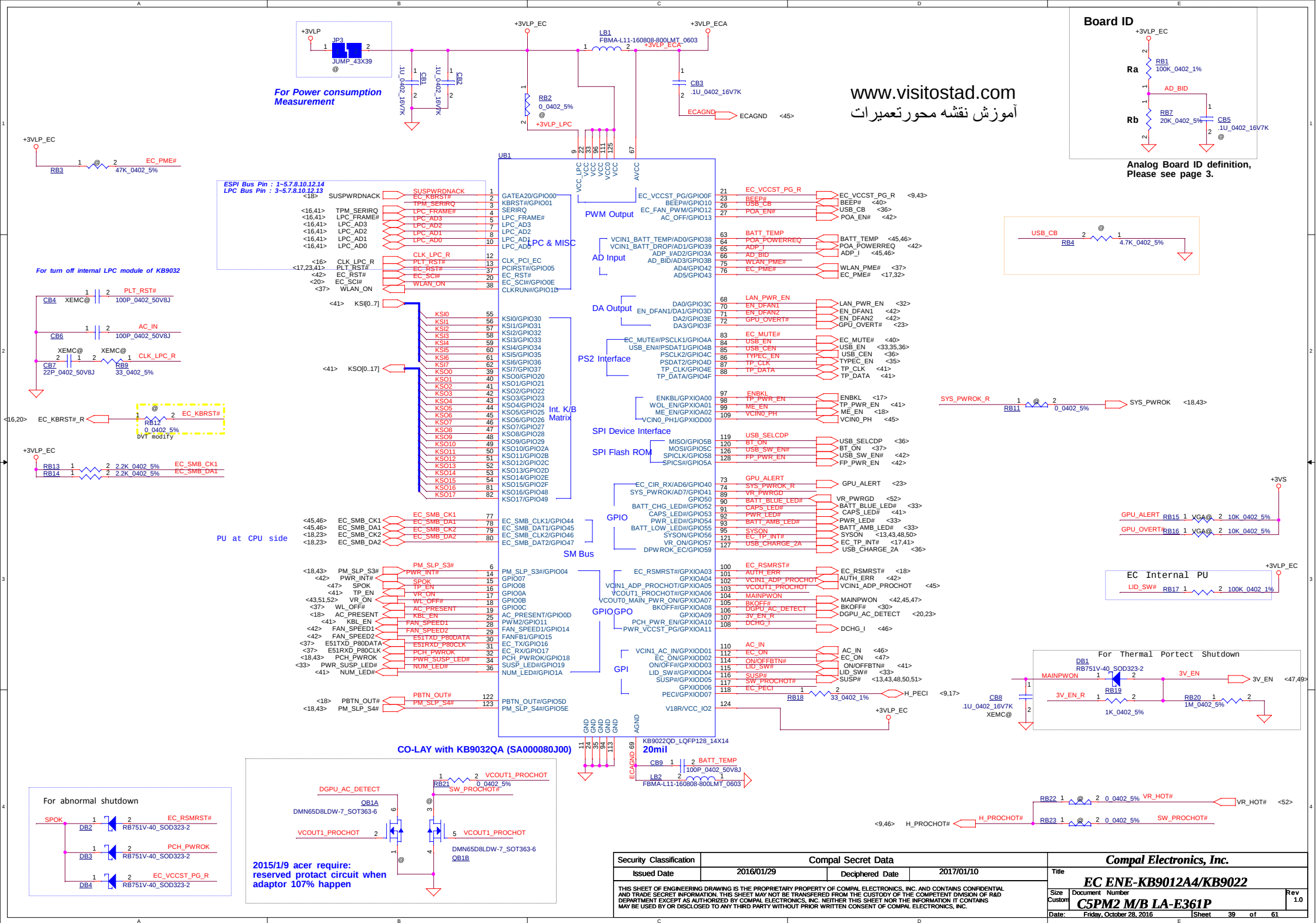
G-Sensor reserved for BA serial

Programmable output de-emphasis level setting for channel A.		Programmable output de-emphasis level setting for channel B.	
Internally tied to VDD/2(M status).		Internally tied to VDD/2(M status).	
A_DE	De_Emphasis	B_DE	De_Emphasis
M	-3.5dB(Default)	M	-3.5dB(Default)
L	0dB	L	0dB
H	-6dB	H	-6dB

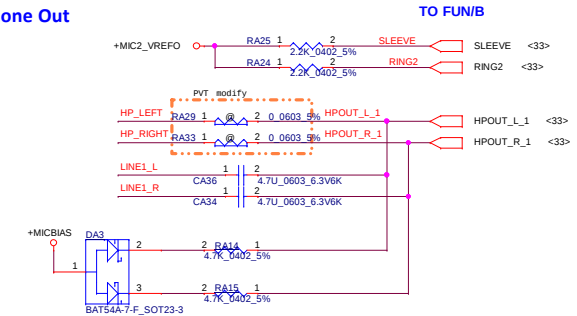
Equalizer control and program for channel A.		
Internally tied to VDD/2 (M status).		
A_EQ2	A_EQ1	EQ for channel loss
L	M	2.4dB
L	L	7.4dB
L	H	14.4dB
M	M	12.2dB(default)
M	L	9.4dB
M	H	13.3dB
H	M	6.2dB
H	L	11.2dB
H	H	5dB

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



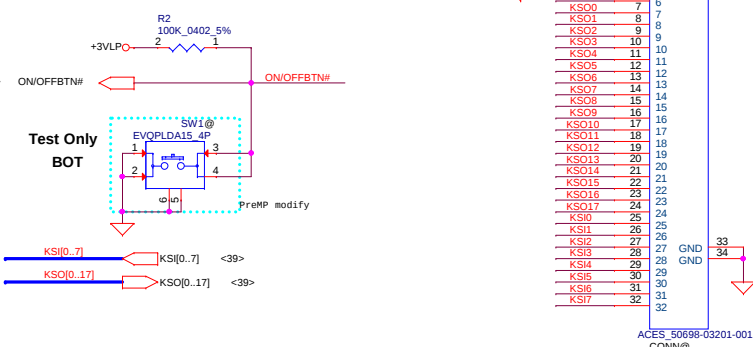


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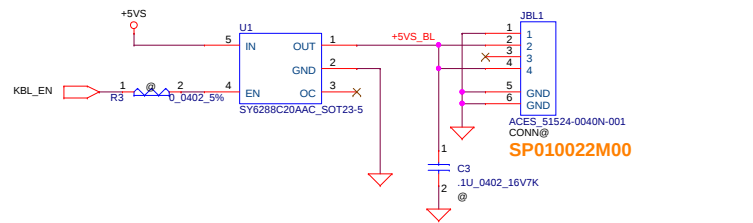


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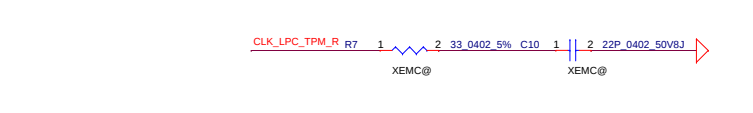
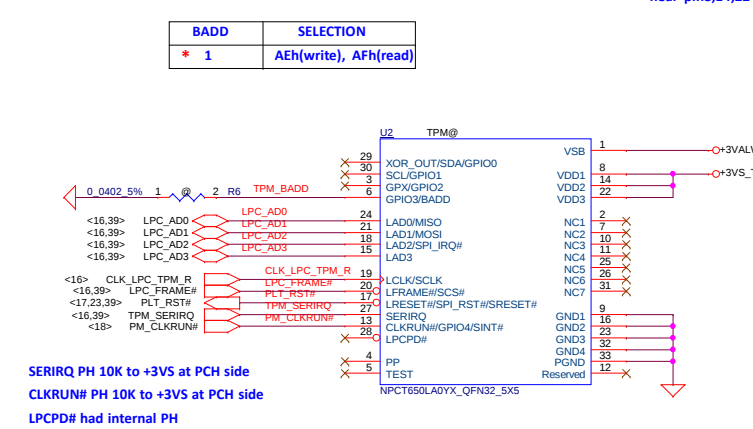
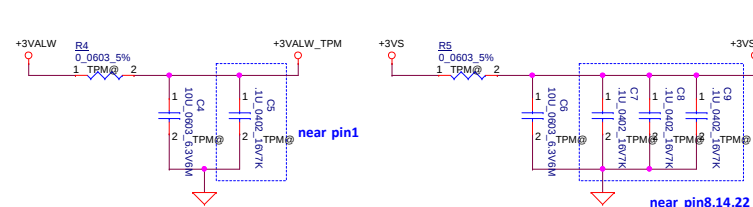
ON/OFF BTN



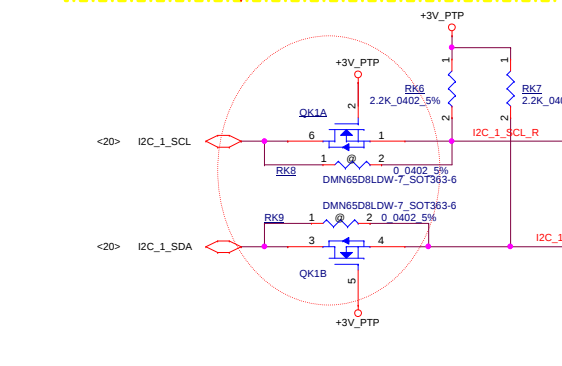
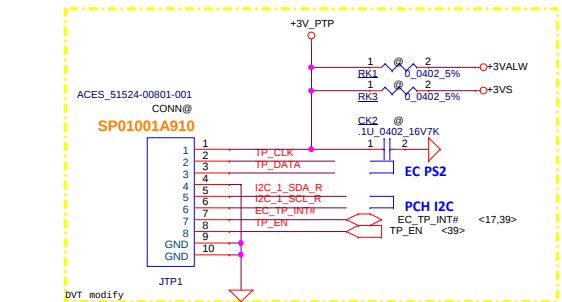
KB BackLight



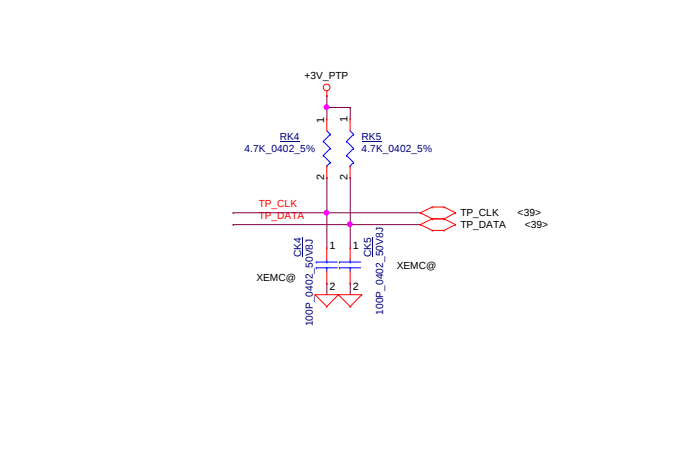
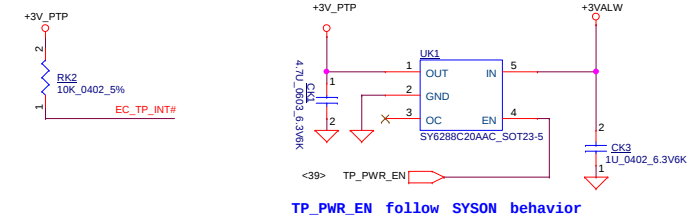
TPM



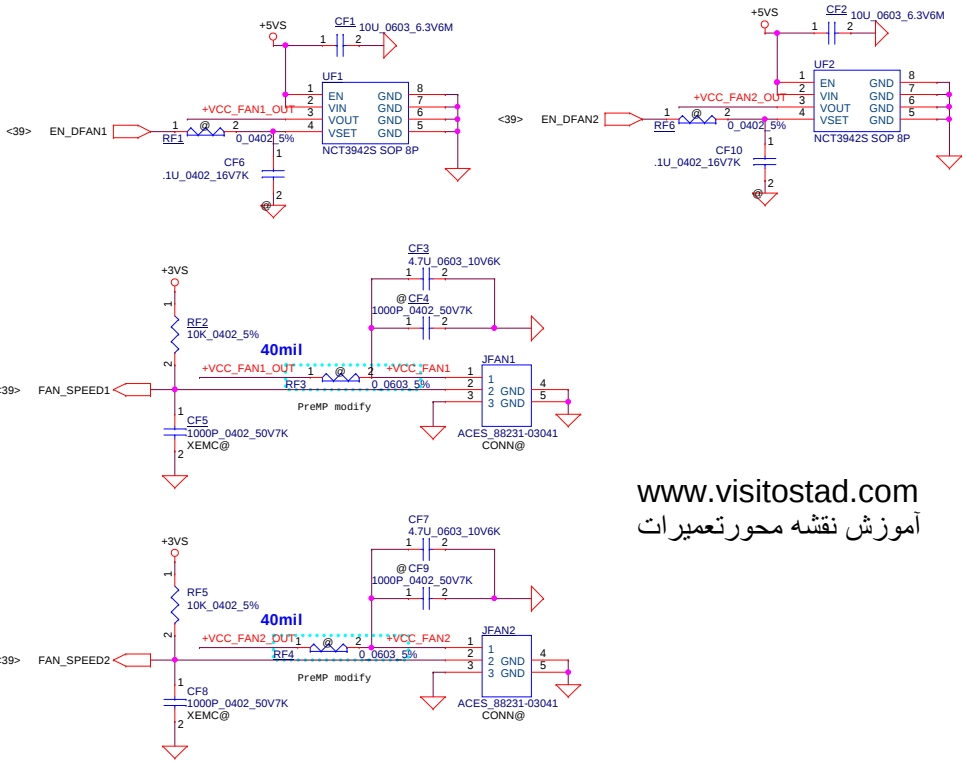
TP/B Conn.



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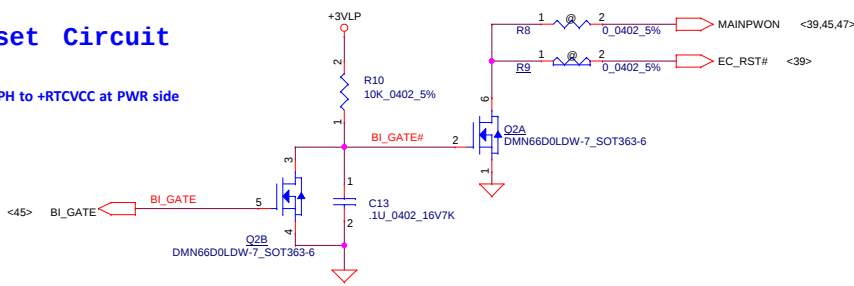
FAN Conn



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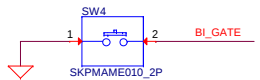
Reset Circuit

BI_GATE PH to +RTCVCC at PWR side

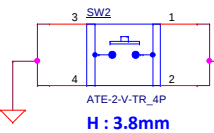


Reset But ton

Reset But ton

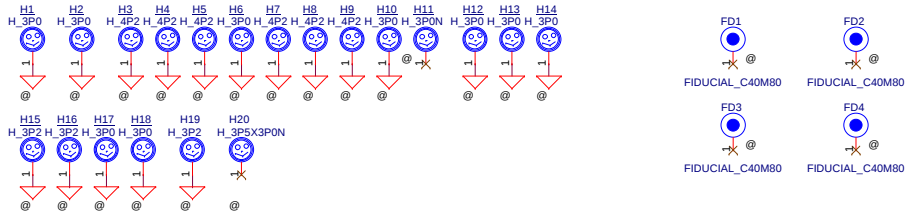


BI SW

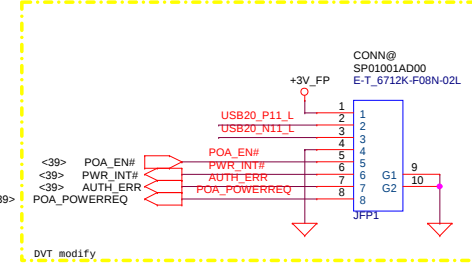
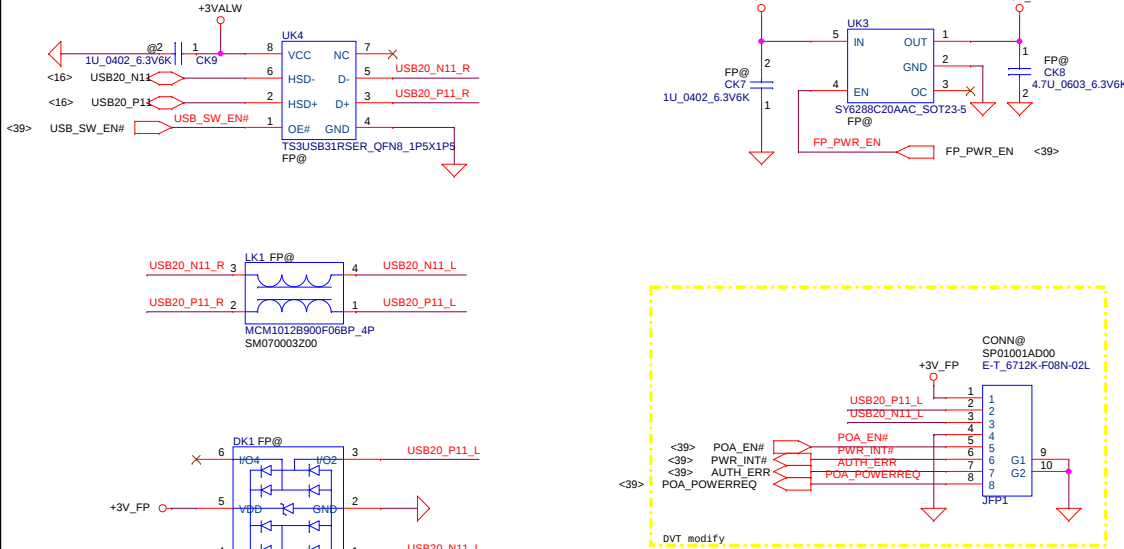


Release : Bat tery Of
Push : Bat tery ON

Screw Hole

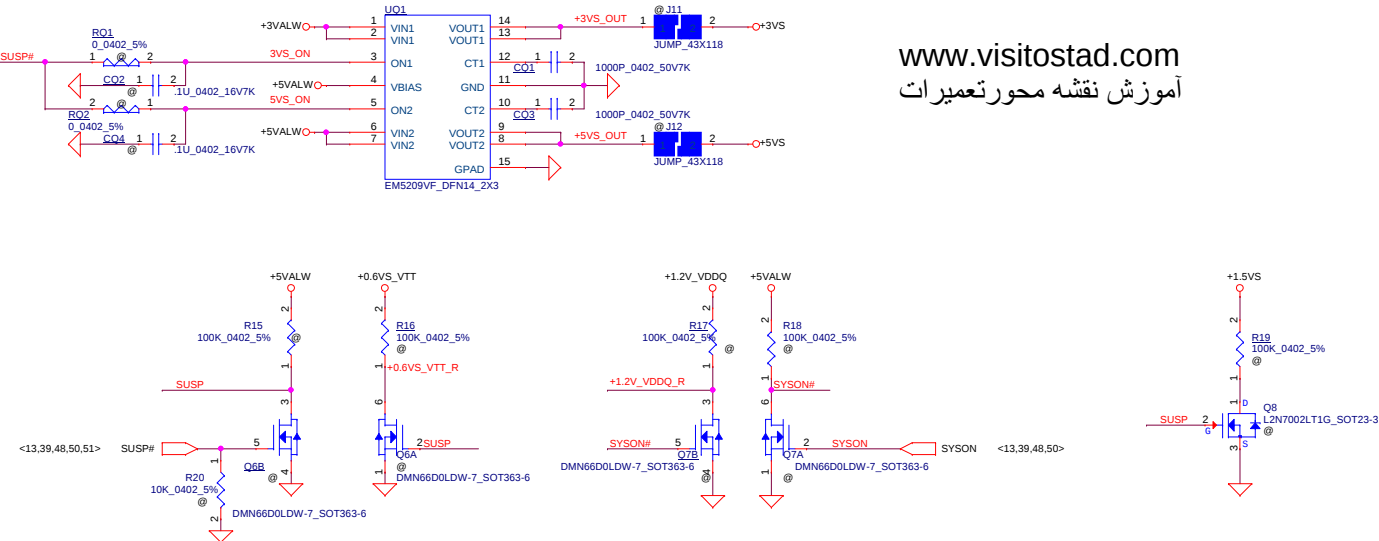


Finger Print POA



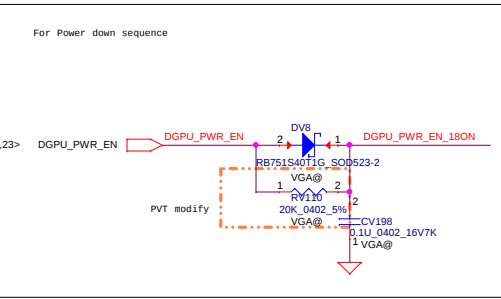
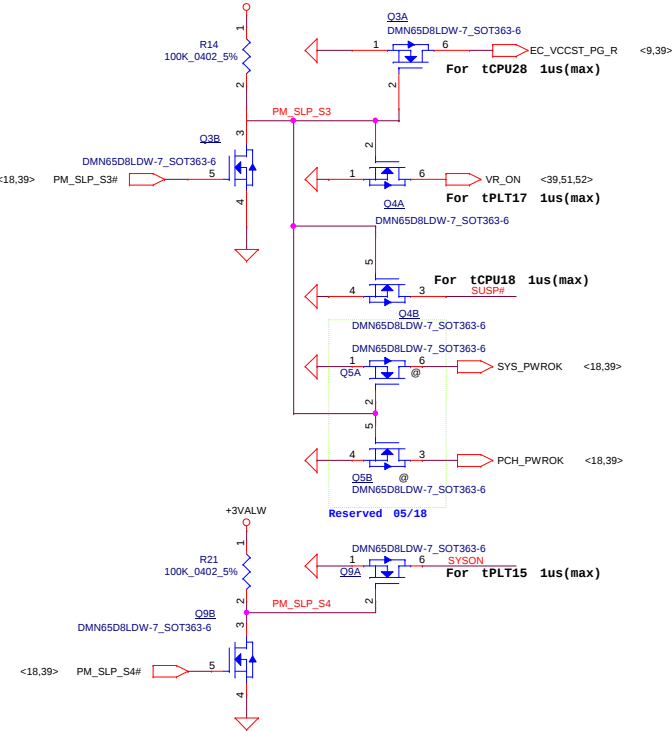
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DC & VGA Interface

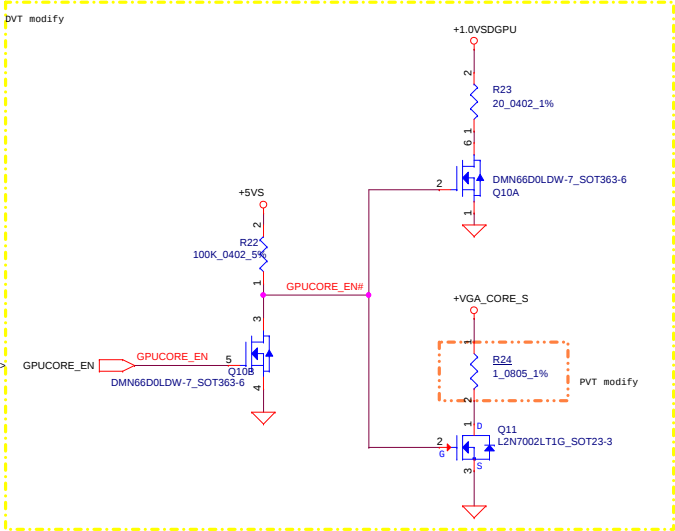
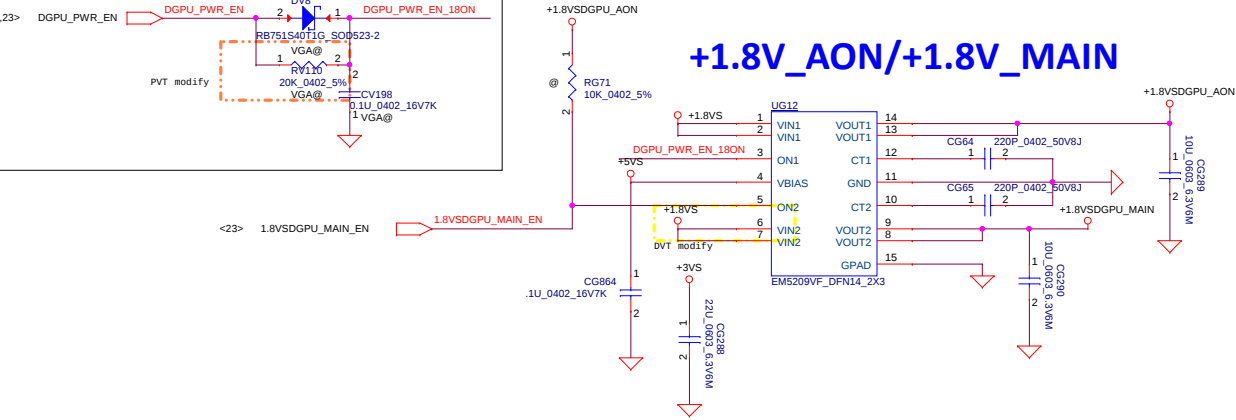


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For Power Of f Sequence



+1.8V_AON/+1.8V_MAIN

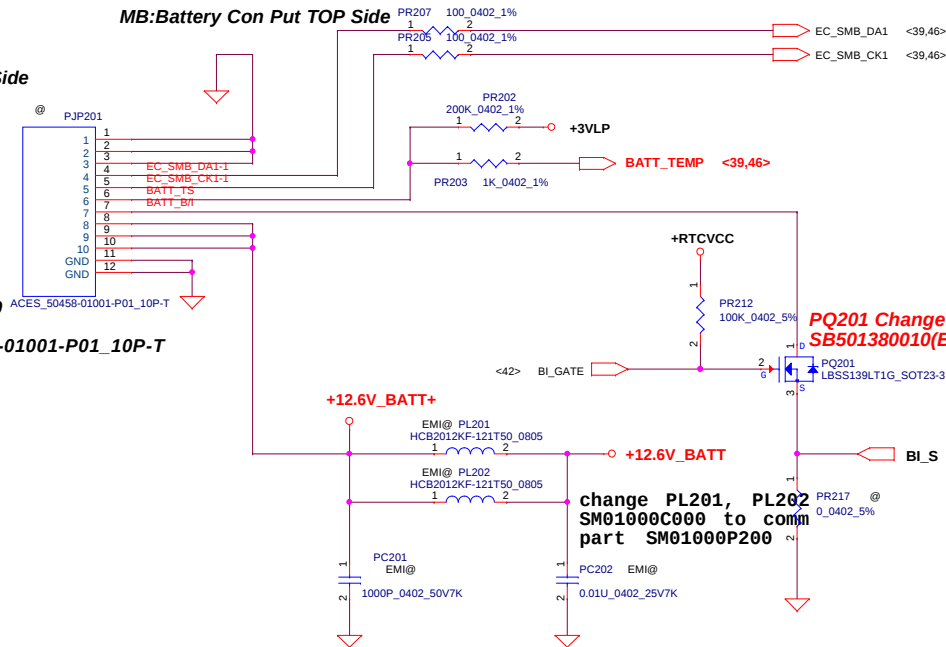


MB: Battery Con Put TOP Side

Battery Bot Side

PIN1 GND
PIN2 GND
PIN3 GND
PIN4 SMD
PIN5 SMC
PIN6 TEMP
PIN7 BI
PIN8 Batt+
PIN9 Batt+
PIN10 Batt+
SP021412220

ACES_50458-01001-P01_10P-T



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<39,42,47>

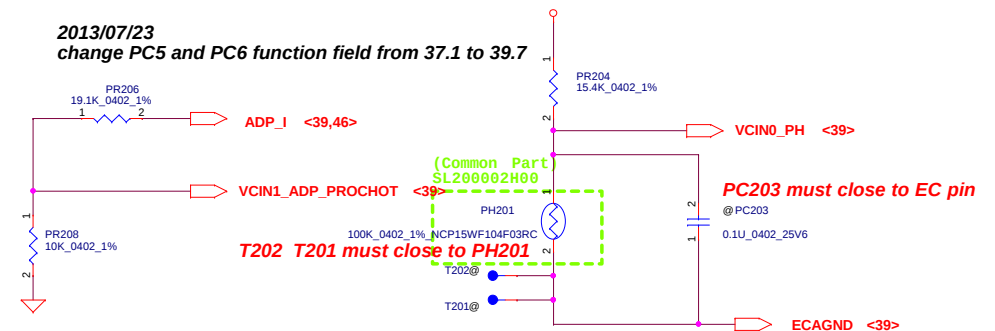
<45, 47>

2014/09/25 update

For KB9022 sense 20mΩ	Active	Recovery
135W PR206 19.1K ohm SD034191280	175W, 0.61V	135W, 0.47V

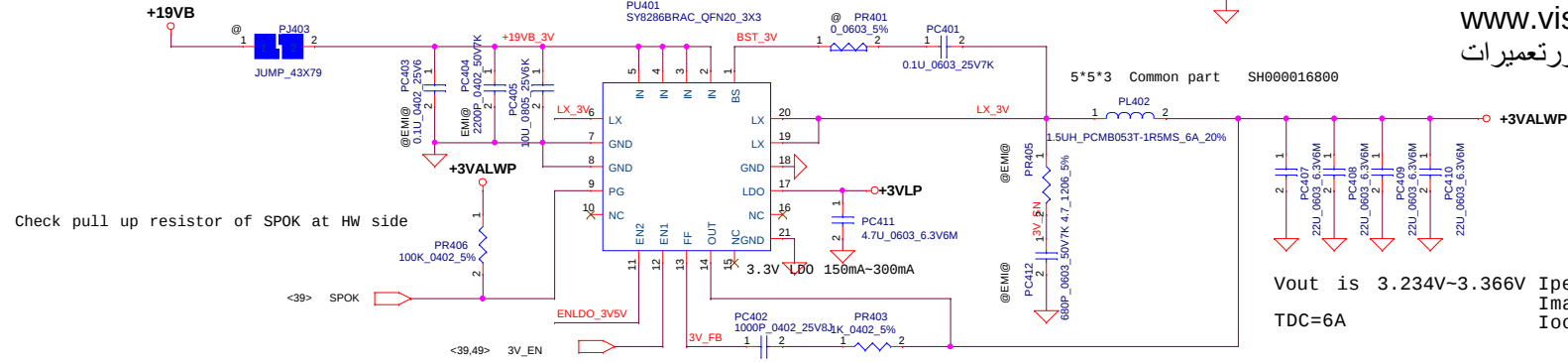
PH1 under CPU botten side :
CPU thermal protection at 95 +3 degree C
Recovery at 56 +3 degree C

2013/07/23
change PC5 and PC6 function field from 37.1 to 39.7



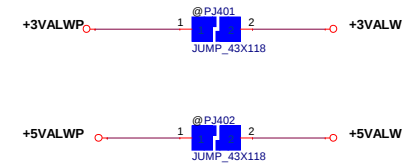
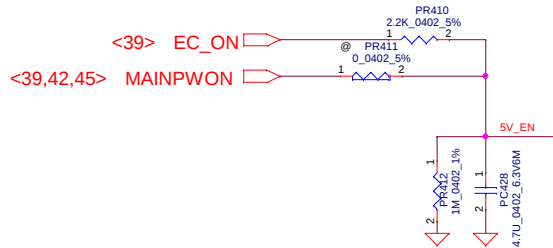
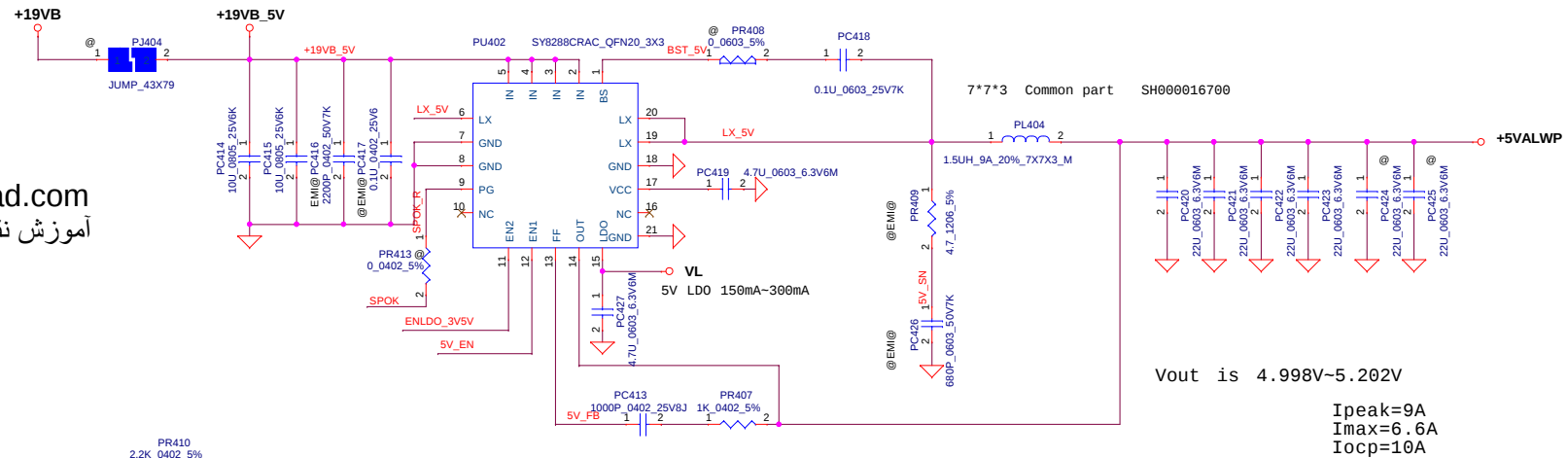


EN1 and EN2 don't floating



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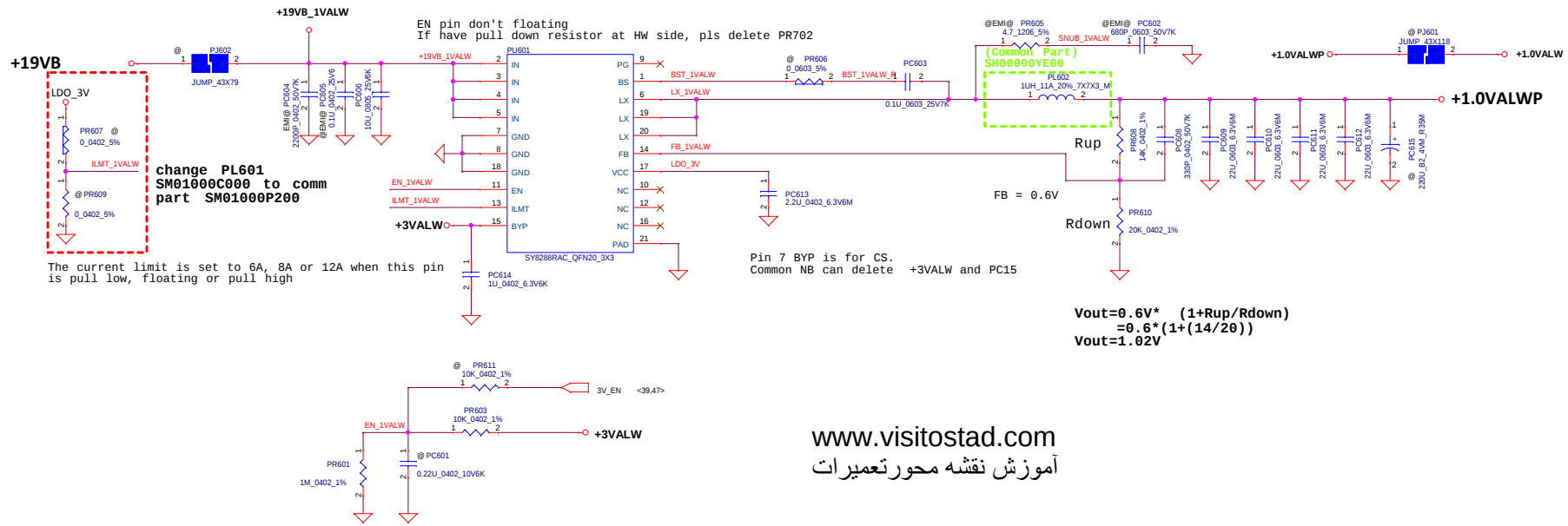
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Module model information

SYX196D_V3.mdd



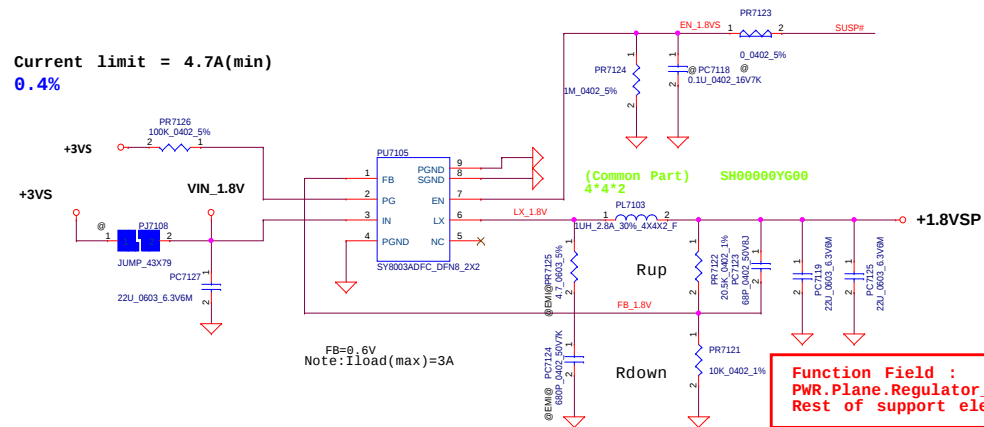
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Function Field :
 VCCEDPIO : IC-35.21 , others - 35.22
 VCCEDRAM : IC-35.25 , others - 35.26

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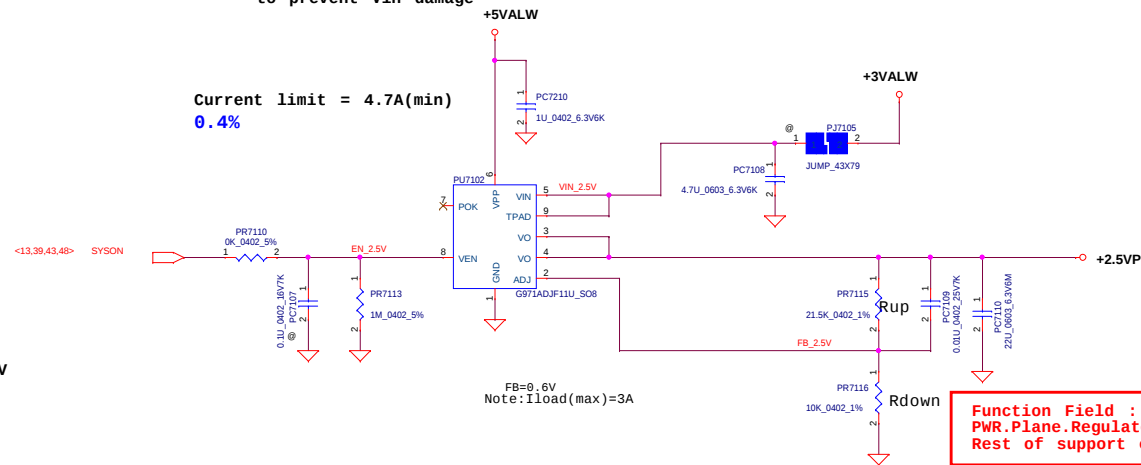
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Current limit = 4.7A(min)
0.4%



Note:
When design Vin=5V, please stuff snubber
to prevent Vin damage

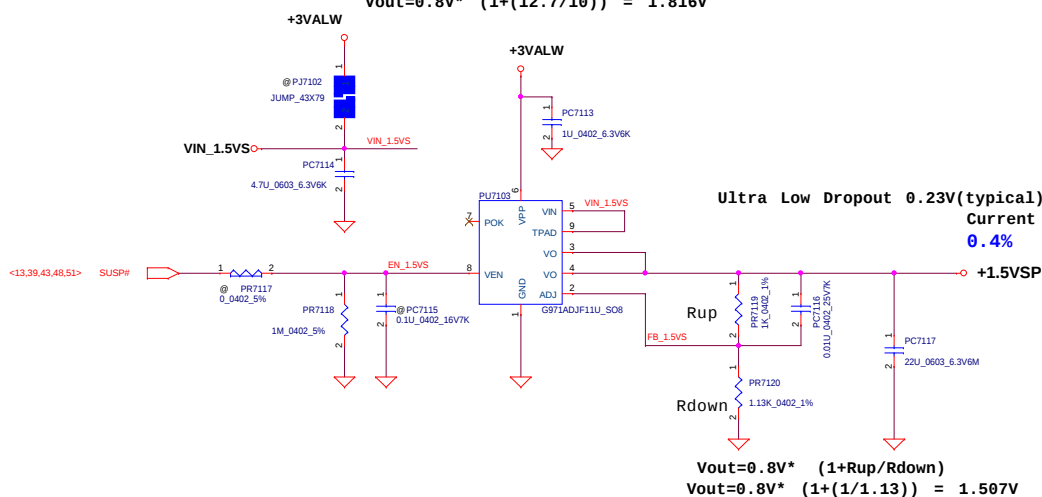
Current limit = 4.7A(min)
0.4%



$$V_{out}=0.8V * (1+(21.5/10)) = 2.52V \quad 0.8\%$$

$$V_{out}=0.8V * (1+(12.7/10)) = 1.816V$$

Ultra Low Dropout 0.23V(typical) at 3A Output Current
Current limit = 4.7A(min)
0.4%



$$V_{out}=0.8V * (1+(1/1.13)) = 1.507V$$

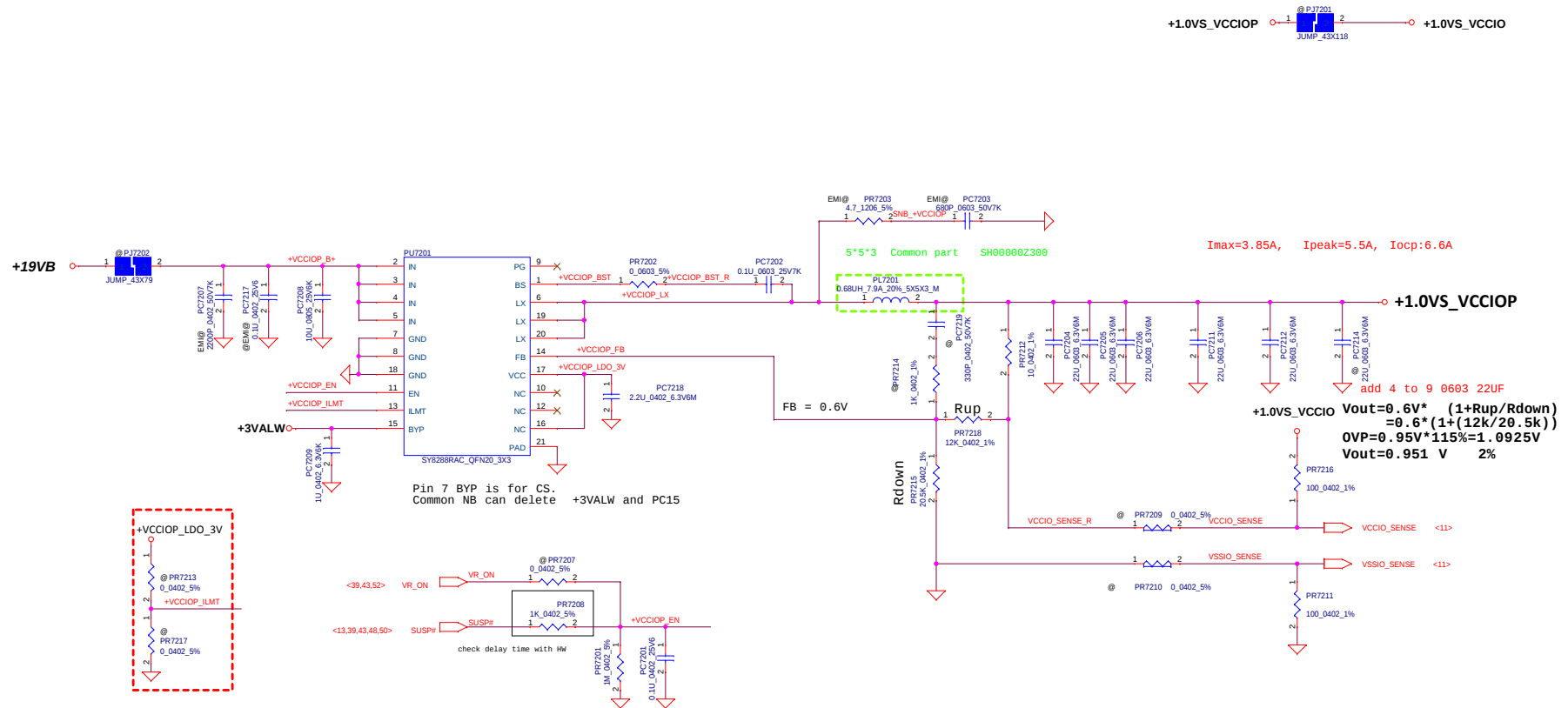
+1.5VSP:
I_{max}=0.5A I_{peak}=0.75A

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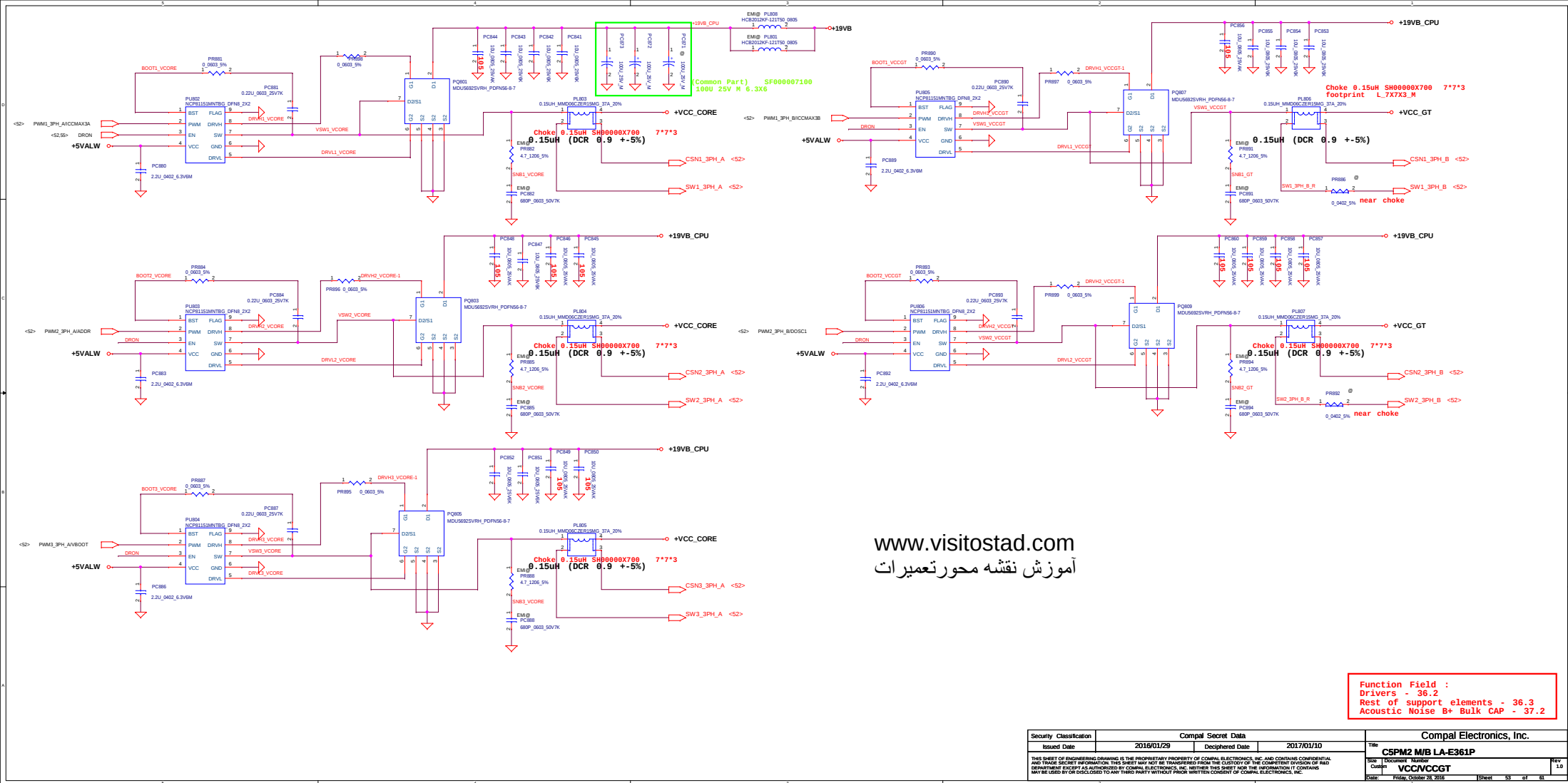
Note: Iload(max)=5.5A

IOCP=7A~8A(typ)



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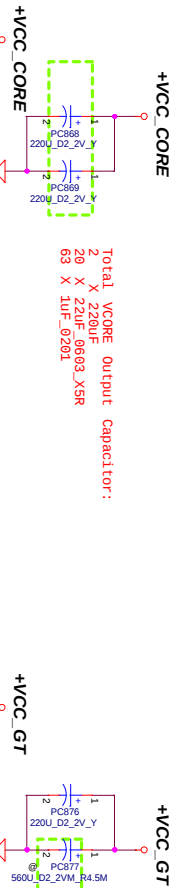
Title			
CPU_JC			
Size	Document Number	Revision	
D	C5PM2 MB LA-E361P	1.0	
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Function Field :
Drivers - 36.2
Rest of support elements - 36.3
Acoustic Noise B+ Bulk CAP - 37.2

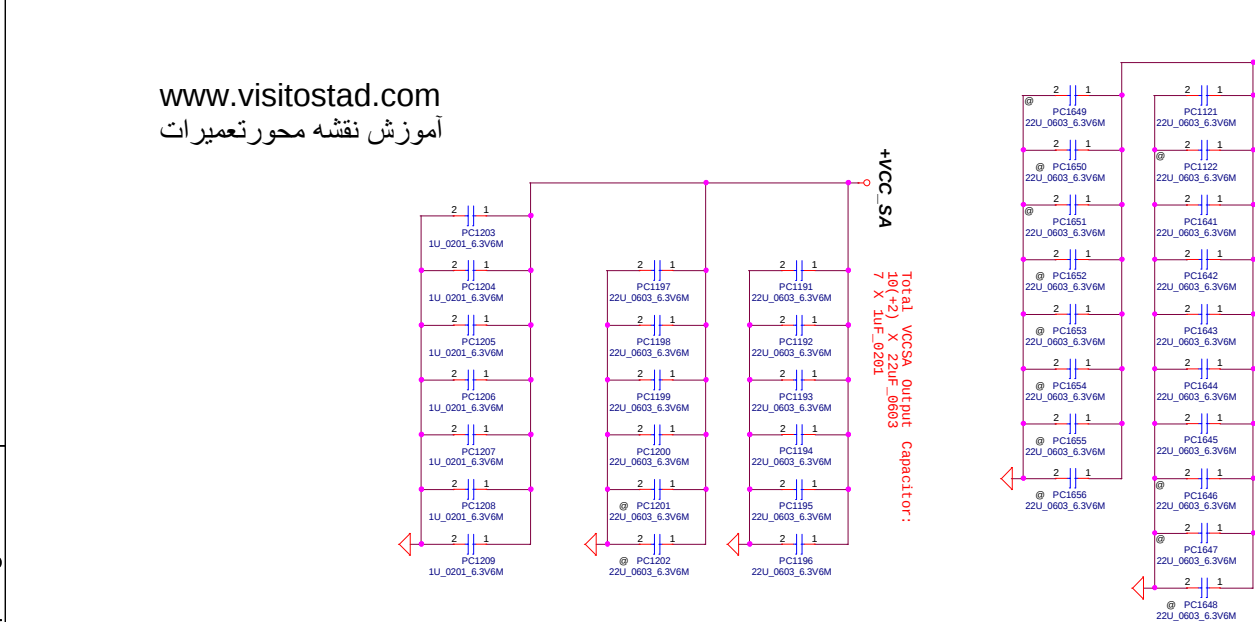
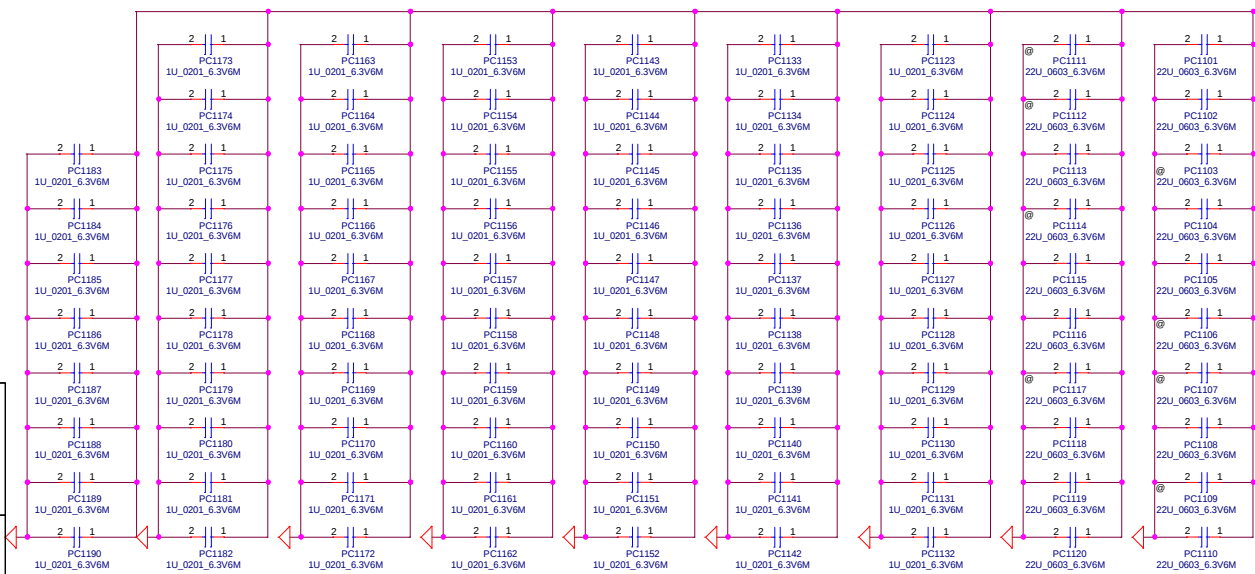
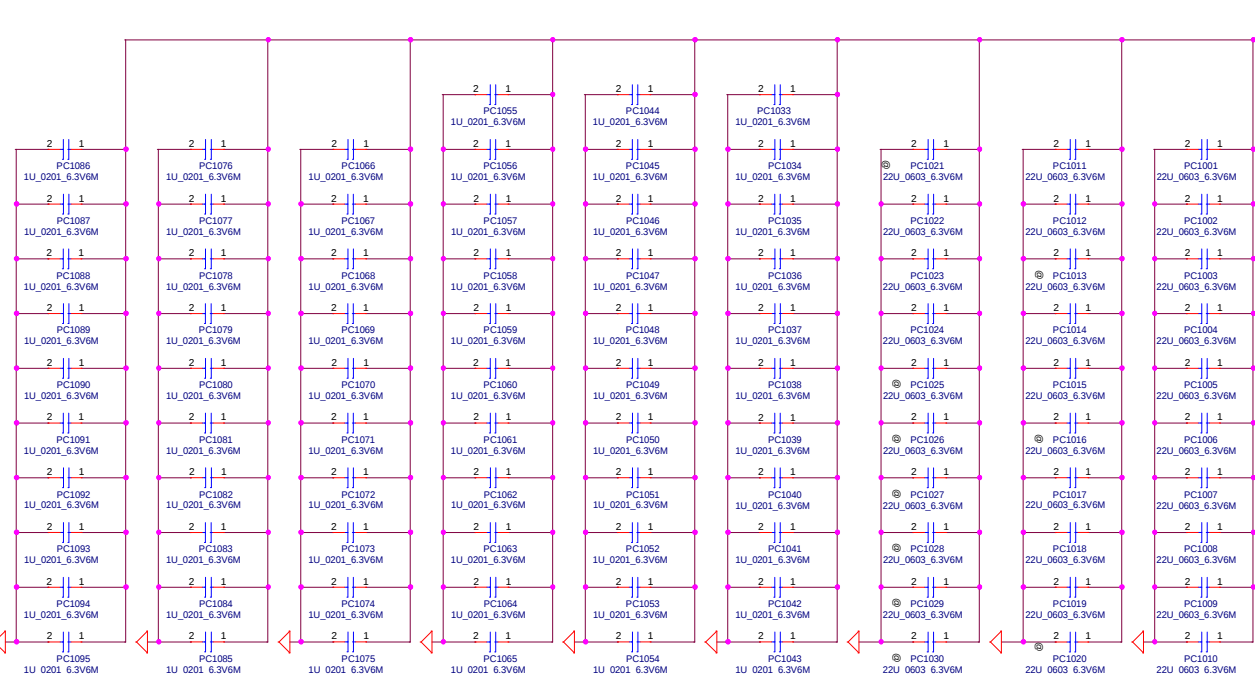
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Total VCCGT Output Capacitor:
1 X 220UF 63V X5R
18 X 22UF-0603 X5R
68 X 10UF-0201
Common part
560UF 02_2V_VM_R4.5M



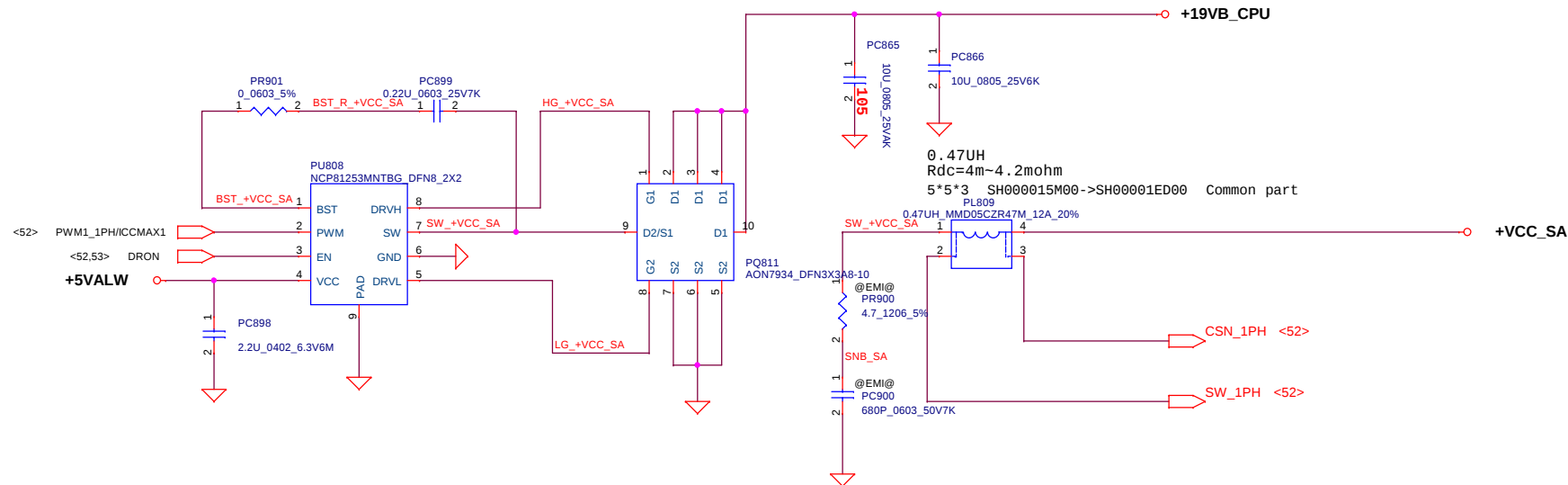
Total VCCSA Output Capacitor:
10(+2) X 22UF-0603
7 X 10UF-0201



Total VCCSA Output Capacitor:
10(+2) X 22UF-0603
7 X 10UF-0201

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Rev		Sheet		54 of 61	

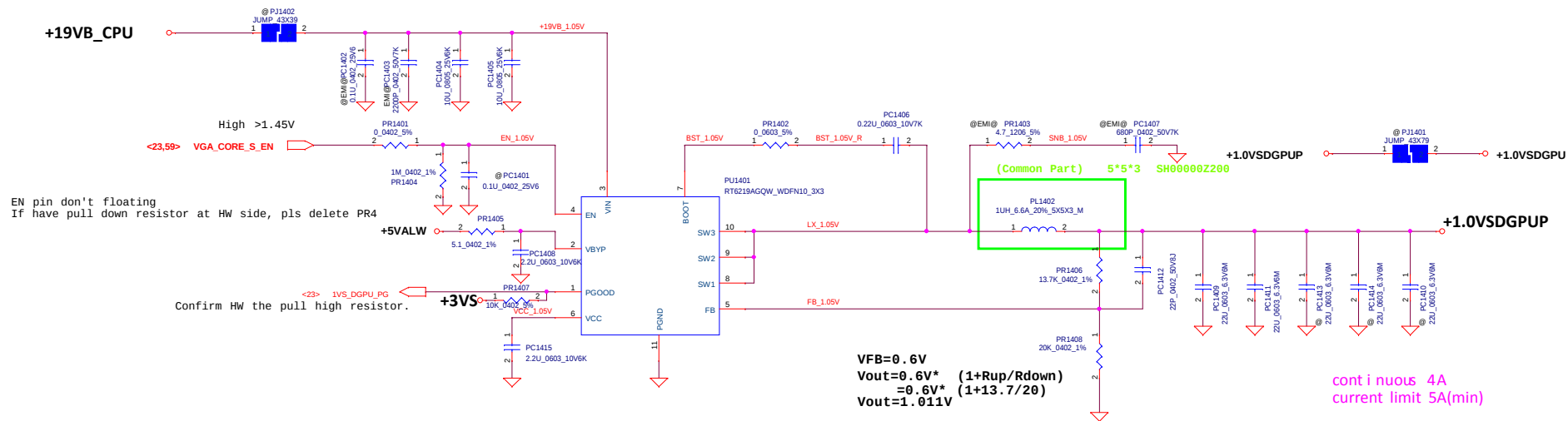


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Function Field :
Drivers - 36.2
Rest of support elements - 36.3

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Custom		VCCSA		1.0	
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Function Field :
PWR.Plane.Regulator_1.05VDBGPU - 43.7
Rest of support elements - 43.8



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NCP81278_NVVDD_V1A.mdd for IC portion.
NCP81278_NVVDD_V1B.mdd for SW portion.



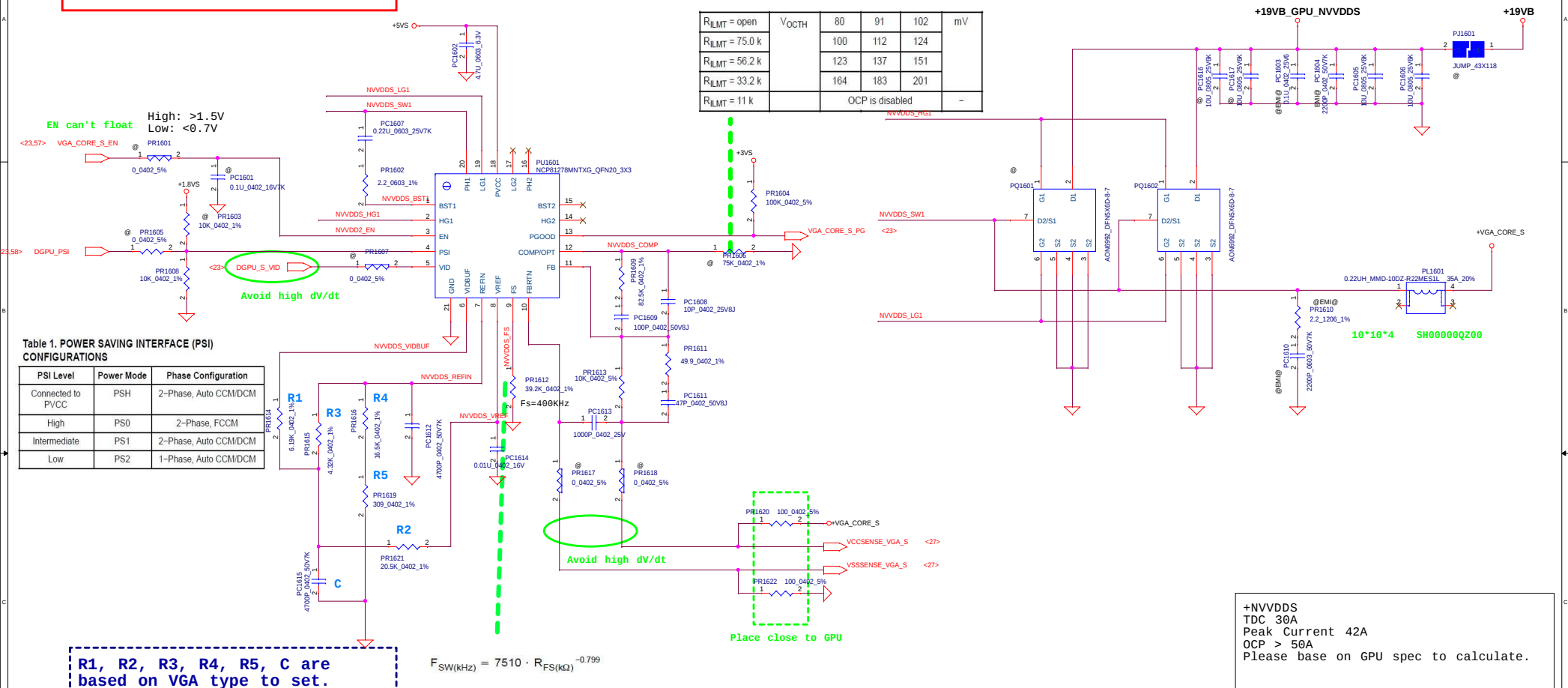
$$F_{SW(kHz)} = 7510 \cdot R_{FS(k\Omega)}^{-0.799}$$

```
+NVVDD1
TDC 63A
Peak Current 90A
OCP >108A
Please base on GPU spec to calculate.
```

$R_{ILMT} = \text{open}$	V_{OCTH}	80	91	102	mV
$R_{ILMT} = 75.0 \text{ k}$		100	112	124	
$R_{ILMT} = 56.2 \text{ k}$		123	137	151	
$R_{ILMT} = 33.2 \text{ k}$		164	183	201	
$R_{ILMT} = 11 \text{ k}$		OCP is disabled			-

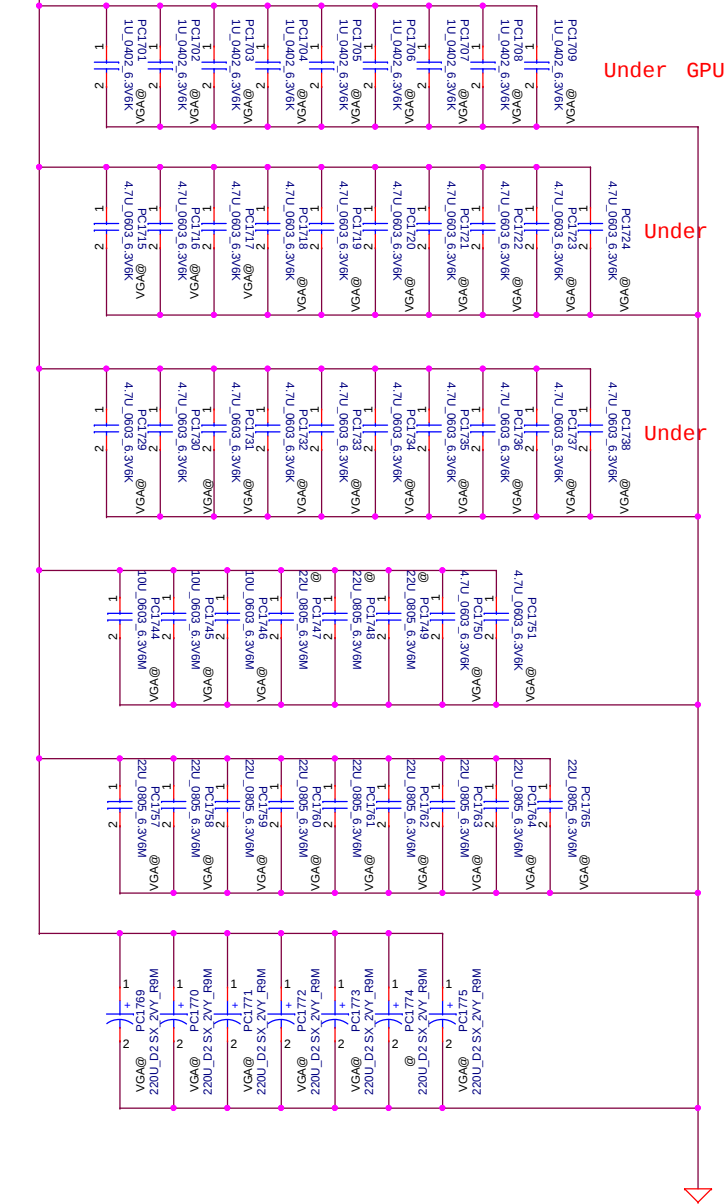
NCP81278_NVVDDS_V1A.mdd for IC portion.
NCP81278_NVVDDS_V1B.mdd for SW portion.

R _{ILMT} = open	V _{OCTH}	80	91	102	mV
R _{ILMT} = 75.0 k		100	112	124	
R _{ILMT} = 56.2 k		123	137	151	
R _{ILMT} = 33.2 k		164	183	201	
R _{ILMT} = 11 k		OCP is disabled			–



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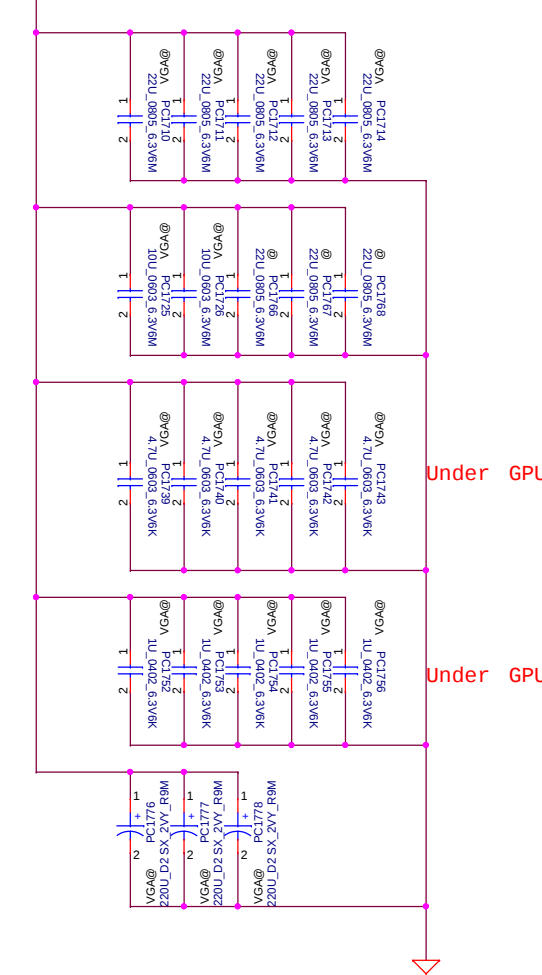
+VGA_CORE



+VGA_CORE
470uF X 2
330uFX2
4.7uF_0603 X 22
22uF_0603 X 7
10uF_0603X 3
1uF_0402 X 9

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+VGA_CORE_S



+VGA_CORE_S
470uF X 2
22uF_0603_X5R X 3
10uF_0603 X 2
4.7uF_0603 X 5
1uF_0402 X 5

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				VGA DECOUPLING	
				Size	Document Number
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Version change list (P.I.R. List)

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for PWR

Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
01	www.visitostad.com آموزش نقشه محورتعمیرات				change: PC7108 SE00000M000 -> SE107475K80 S CER CAP 47U 6.3V K X5R 0603 PC7109 SE071680J80 -> SE075103K80 S CER CAP 01U 25V K X7R 0402 PC7202 SE000006880 -> SE042104K80 S CER CAP 1U 25V K X7R 0603 PC7207 SE000006880 -> SE074222K80 S CER CAP 220P 50V K X7R 0402 PC7208 SE00000X200 -> SE00000QK00 S CER CAP 10U 25V K X5R 0805 H1.25 PR7115 SD034124280 -> SD0340280 S RES 1/16W 32.4K +-1% 0402 PR7118 SD028470280 -> SD028100480 S RES 1/16W 47K +-5% 0402 PR7201 SD034100480 -> SD028100480 S RES 1/16W 1M +-5% 0402 PR7202 SD00000J180 -> SD013000080 S RES 1/10W 0 +-5% 0603 PR7208 SD028000080 -> SD028100180 S RES 1/16W 1K +-5% 0402 PL7102 SA00007C000 -> SA00001H080 S IC 6971ADJ.FTU1 50 8P PU7201 SA000085000 -> SA000081400 S IC SY8288RAC QFN 20P PWM Del: PC7111 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 PL7102 SH00000V600 S COIL 1UH +-30% 2.8A 4X4X2 FERRITE PR7109 SD028000080 S RES 1/16W 0 +-5% 0402 PR7112 SD028100380 S RES 1/16W 100K +-5% 0402 PR7204 SD028000080 S RES 1/16W 0 +-5% 0402 PR7205 SD034200280 S RES 1/16W 20K +-1% 0402 PR7206 SD034200280 S RES 1/16W 20K +-1% 0402 Add: PC7201 SE000006880 S CER CAP 01U 25V K X5R 0402 PC7203 SE025681K80 S CER CAP 680P 50V K X7R 0603 PC7210 SE00000K080 S CER CAP 1U 6.3V K X5R 0402 PC7211 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 PC7212 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 PC7218 SE000006880 S CER CAP 22U 6.3V M X5R 0402 PR7211 SD034100080 S RES 1/16W 100 +-1% 0402 PR7212 SD034100480 S RES 1/16W 10 +-1% 0402 PR7215 SD034205280 S RES 1/16W 20.5K +-1% 0402 PR7216 SD03410080 S RES 1/16W 100 +-1% 0402 PR7218 SD034120280 S RES 1/16W 1K +-1% 0402	0727	EVT
	change common part.		0.1	P47 P58	change: PL1501 SH00001E400 -> SH00000QZ00 S COIL 22UH +-20% MMD-10DZ-R22MESIL 35A PL1502 SH00001E400 -> SH00000QZ00 S COIL 22UH +-20% MMD-10DZ-R22MESIL 35A PL1601 SH00001E400 -> SH00000QZ00 S COIL 22UH +-20% MMD-10DZ-R22MESIL 35A PL404 SH000016800 -> SH000016700 S COIL 15UH +-20% 9A 7X7X3 MOLDING PR844 SD034750280 -> SD034787280 S RES 1/16W 78.7K +-1% 0402 PR845 SD034750280 -> SD034787280 S RES 1/16W 78.7K +-1% 0402 PR852 SD03426280 -> SD03432280 S RES 1/10W 23.2K +-1% 0402 PR867 SD034348280 -> SD034374280 S RES 1/16W 37.4K +-1% 0402 PR868 SD000003980 -> SD03439280 S RES 1/16W 25.9K +-1% 0402 PR871 SD034137280 -> SD00000A780 S RES 1/16W 12.4K +-1% 0402 PR875 SD034100180 -> SD034150180 S RES 1/16W 1.5K +-1% 0402 PC807 SE074102480 -> SE000003W00 S CER CAP 820P 50V K X7R 0402 PC809 SE074103K80 -> SE074104K80 S CER CAP 0.1U 50V K X7R 0402 PC820 SE074103K80 -> SE074104K80 S CER CAP 0.1U 50V K X7R 0402 PC868 S6A20331E10 -> S6A20221D40 S POLY C 330U 2V Y D2 LESR9M EEF5X H1.9 PC876 S6A20331E10 -> S6A20221D40 S POLY C 220U 2V Y D2 SX LESR9M H1.9 PL809 SH000015W00 -> SH000015E00 S COIL 47UH 20% MMD-CRZ2-R47MEVIL 12.2A PQ801 PQ803 PQ805 PQ807 PQ809 SB000017L00 -> SB000017400 S TR MDU56925VRH 2N DUAL PDFN56-8 Del: PC1010 PC1016 PC1020 PC1021 PC1025 PC1027 PC1028 PC1029 PC1030 PC1031 PC1032 PC1033 PC1034 PC1035 PC1036 PC1037 PC1039 PC1040 PC1041 PC1042 PC1043 PC1044 PC1045 PC1046 PC1047 PC1049 PC1051 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 Add: PC869 S6A20221D40 S POLY C 220U 2V Y D2 SX LESR9M H1.9	0727	EVT
	CPU Transient Test improve.		0.1	P52 P54	change: PC1301 SF000004J00 S6A20221D40 S POLY C 220U 2V Y D2 SX LESR9M H1.9 PR1306 SD034470380 SD034200380 S RES 1/16W 200K +-1% 0402 Del: PC1410 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 PC1413 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 PC1414 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 Add: PC1311 S6A20221D40 S POLY C 220U 2V Y D2 SX LESR9M H1.9	0727	EVT
	VRAM 1.05VSDGPU Transient Test improve.		0.1	P56 P57	change: PC1301 SF000004J00 S6A20221D40 S POLY C 220U 2V Y D2 SX LESR9M H1.9 PR1306 SD034470380 SD034200380 S RES 1/16W 200K +-1% 0402 Del: PC1410 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 PC1413 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 PC1414 SE00000M000 S CER CAP 22U 6.3V M X5R 0603 Add: PC1311 S6A20221D40 S POLY C 220U 2V Y D2 SX LESR9M H1.9	0727	EVT
	VGA Transient Test improve & SPEC CURRENT down.		0.1	P59 P60	Del: PC1601 SB000017L00 S TR AON6992 2N BFNEX65b PR1603 SD034100280 S RES 1/16W 10K +-1% 0402 PR1606 SD034750280 S RES 1/16W 75K +-1% 0402 PC1508 SF000007100 S ELE CAP 100U 25V M 6.3V6 PC1616 SE00000QK00 S CER CAP 10U 25V K X5R 0805 H0.85 PC1617 SE00000QK00 S CER CAP 10U 25V K X5R 0805 H0.85 Add: PC1769 PC1771 PC1773 PC1775 PC1776 PC1778 S6A20221D40 S POLY C 220U 2V Y D2 SX LESR9M H1.9 PR1608 SD034100280 S RES 1/16W 10K +-1% 0402	0727	EVT
	EMI request		0.1		Add: PC1323 PC518 PC882 PC885 PC888 PC891 PC894 SE025681K80 S CER CAP 680P 50V K X7R 0603 PL302 PL303 PL501 PL501 PL601 PL601 SM01000P200 S SUPPRE TAI-TECH HCB2012KF-121T50 0805 PR319 PR504 PR7203 PR882 PR885 PR888 PR891 PR894 SD001457080 S RES 1/4W 4.7 +-5% 1205		
	CPU NVVDD NVVDDS input Cap 85度>105度 Oohm-->R-SHORT Add thermal PH2 PH3 EMI request		0.2		PU301 SA000080M00_BQ247805 -> SA0000A6800_BQ24781 PC809 PC820 SE074104K80 0.1uF_0402_50V -> SE076104K80_0.1uF_0402_16V change: PC201 BS5138.T16 SB00000QK00 -> LB55139.T16 SB000016B00 PR204 18.7K 0402 SD034187280 -> 15.4K 0402 SD034154280 PR218 10K 0402 SD034100280 -> 14K 0402 SD034140280 PR219 21.5K_0402 SD034215280 -> 26.7K SD034267280	09/14	DVT
	Remove thermal PH2 Setting PH1 95度PH3 85度		0.2		Del: PH202_100K_0402_NTC_SL200002H00 PR214_21.5K_0402_SD034215280 PR216_10K_0402_SD034100280 change: PC201 BS5138.T16 SB00000QK00 -> LB55139.T16 SB000016B00 PR204 18.7K 0402 SD034187280 -> 15.4K 0402 SD034154280 PR218 10K 0402 SD034100280 -> 14K 0402 SD034140280 PR219 21.5K_0402 SD034215280 -> 26.7K SD034267280	09/23	DVT

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				Date:	Friday, October 28, 2016
				Sheet	61 of 61