

# LCFC Confidential

E455

NM-A231 Schematics

AMD Kaveri 2.0 Processor with DDR3L + Bolton FCH

GPU AMD JET XT

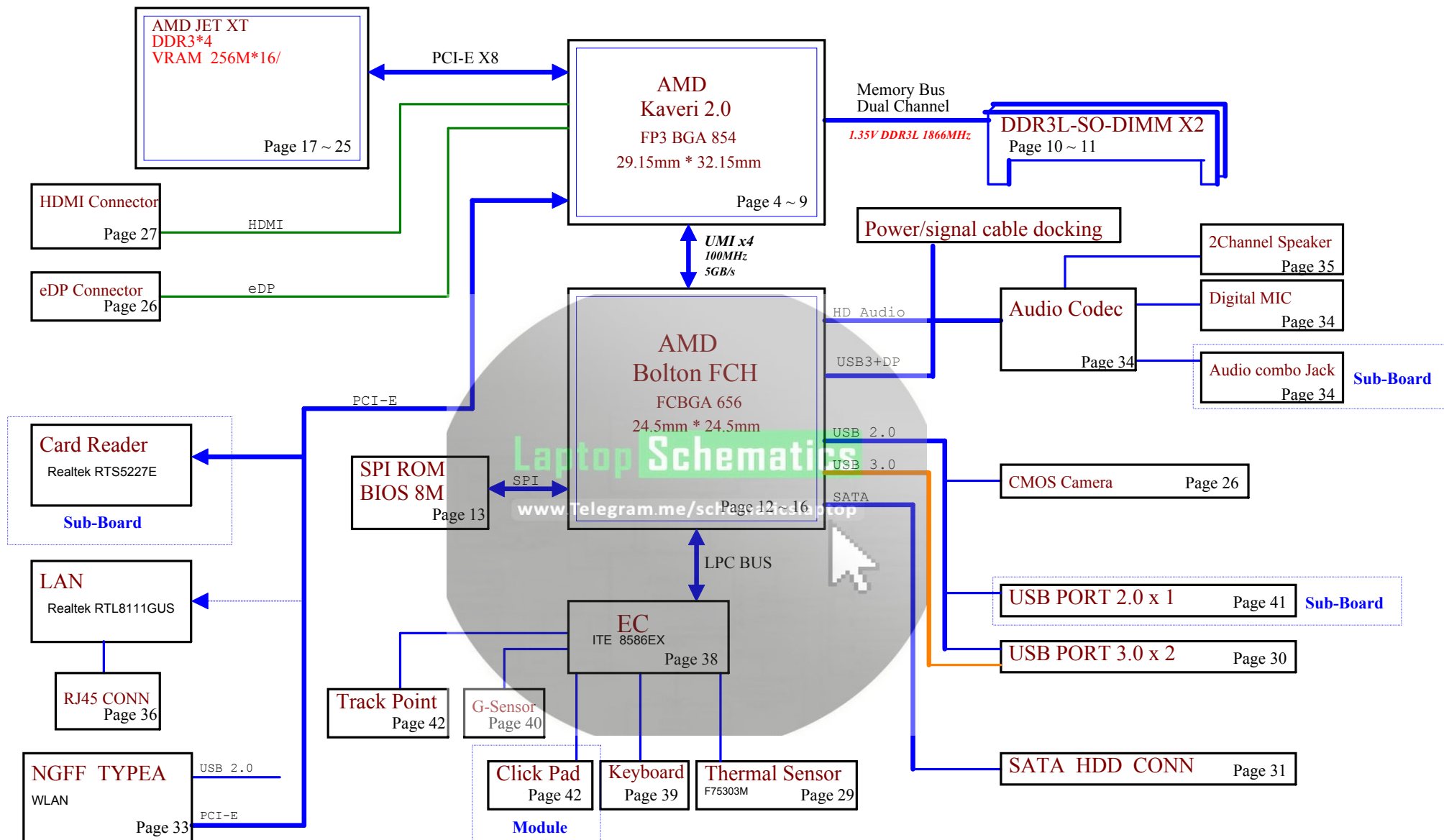
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2014-7-7

REV:1.0

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Security Classification		LC Future Center Secret Data		Title		
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Voltage Rails ( O --> Means ON , X --> Means OFF )

Power Plane	State	B+	+3VALW	+5VALW	+1.35V	+5VS +3VS +0.675VS +0.95VS_VDDP +0.95VS_VDDR +1.8VS_VDDA +1.1VS +VDD_CORE +VDDNB_CORE +VGA_CORE +3VS_VGA +1.8VS_VGA +1.5VS_VGA +0.95VS_VGA
S0		O	O	O	O	
S3		O	O	O	X	
S5 S4/AC Only		O	O	X	X	
S5 S4 Battery only		O	X	X	X	
S5 S4 AC & Battery don't exist		X	X	X	X	

STATE	SIGNAL	SLP_S1#	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON		HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1 (Power On Suspend)		LOW	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)		LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)		LOW	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)		LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF

USB Port Table

USB 2.0	USB 3.0	Port	Port	3 External USB Port
			0	USB 2.0 Port
			1	
			2	
			3	
			4	
			5	Camera
			6	WLAN/BT
			7	FPR
			8	
			9	
			10	USB 3.0 Port
			11	
			12	USB 3.0 Port
			13	Docking port

BOM Structure Table

BTO Item	BOM Structure
Un-mount	@
Connector	ME@
GPU	DIS@
UMA	UMA@
VRAM Option	X76@
RF Part Option	RF@
EMI Part Option	EMI@
ESD Part Option	ESD@
JET GPU	JET@
TOPAZ GPU	TOPAZ@
Quad Core APU	QC@
14 MB	14@

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PCIe PORT LIST

Port	Device
0	LAN
1	Card Reader
2	WLAN
3	
4	
5	
6	
7	

EC SM Bus1 address

Device	Address
Smart Battery	0001 011X b

EC SM Bus3 address

Device	Address
Thermal Sensor	

FCH SM Bus address

Device	Address
DDR DIMM1	
DDR DIMM2	

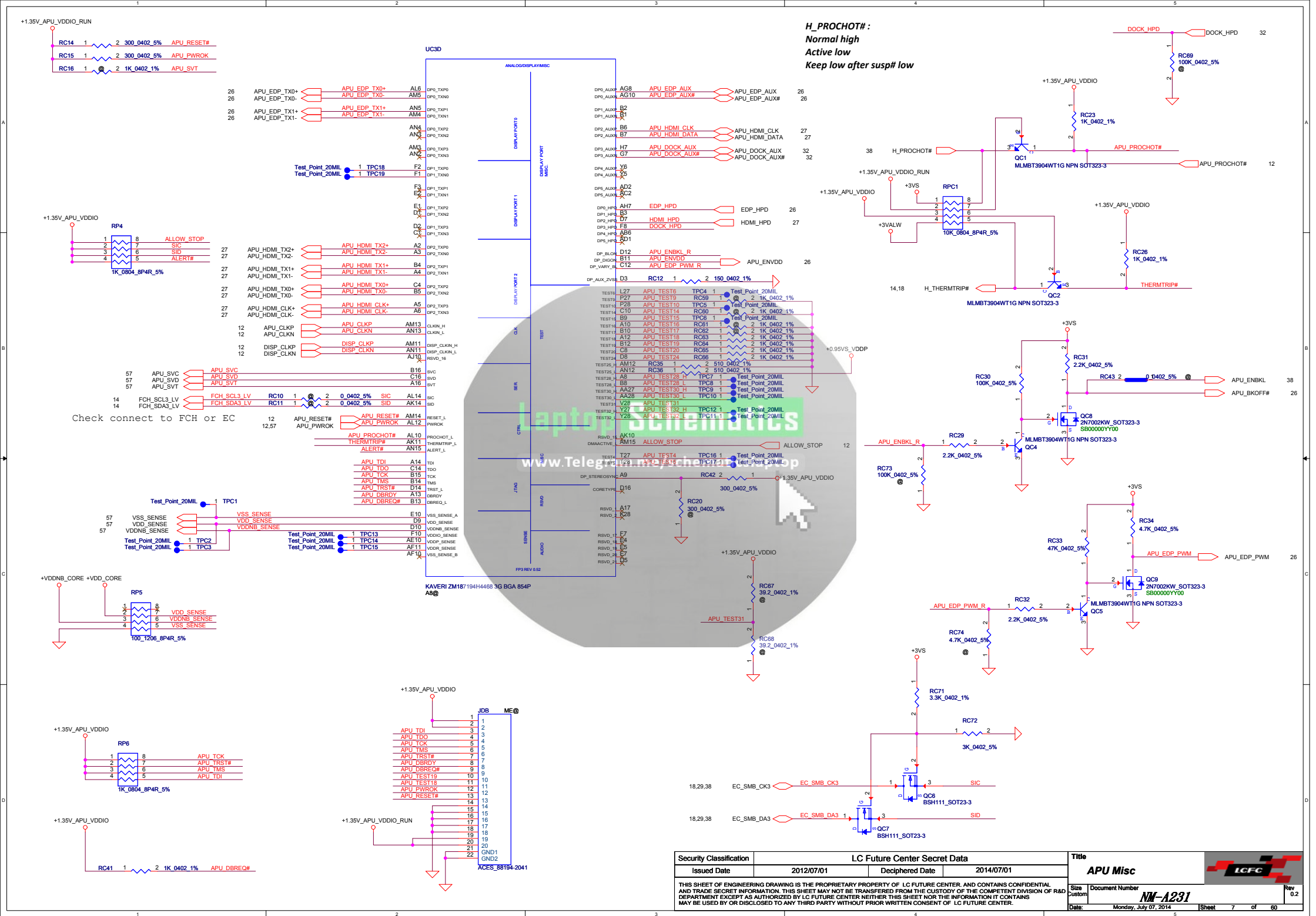




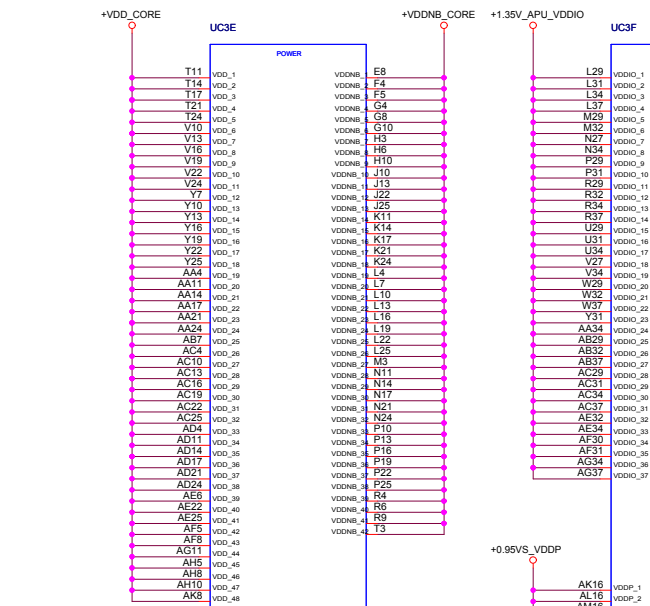


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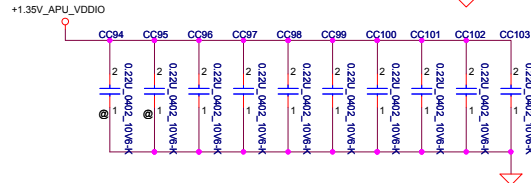
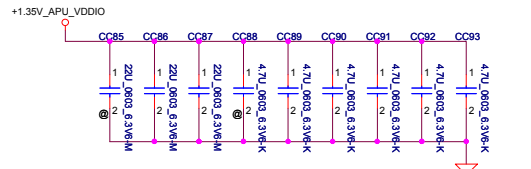




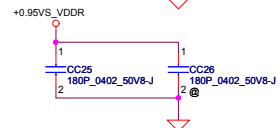
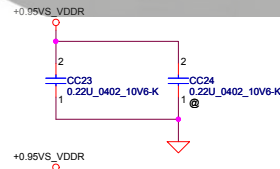
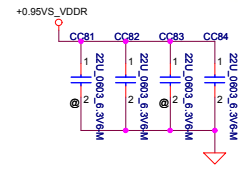
KAVERI ZM187194H4468 3G BGA 854P  
A8@



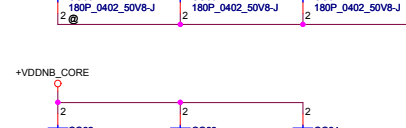
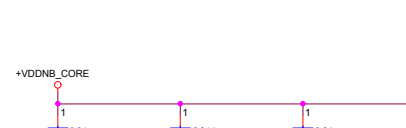
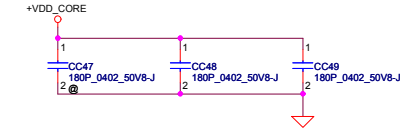
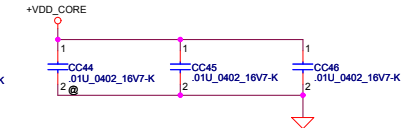
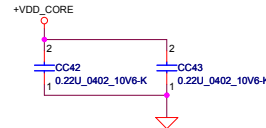
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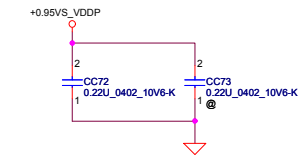
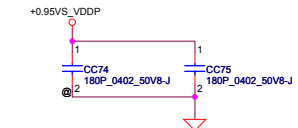
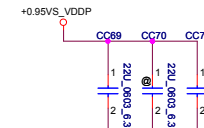
VDDR  
22u 6.3V \*4  
0.22u 10V \*2  
180p 10V \*2



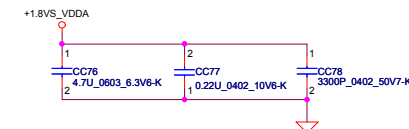
VDD\_CORE  
22u 6.3V \*11 @\*2 Design Guide  
0.22u 10V \*2  
0.01u 10V \*3  
180p \*3




VDDP  
22u 6.3V \*3  
0.22u 10V \*2  
180p 10V \*2

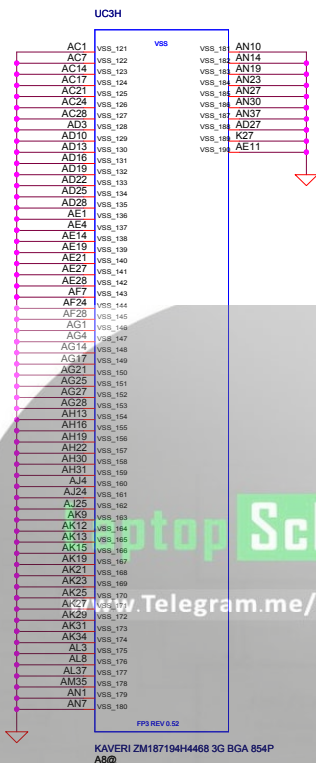
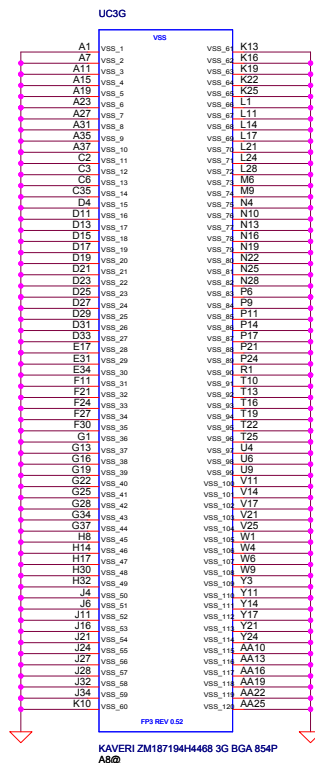


VDDA  
4.7u 6.3V \*1  
0.22u 10V \*1  
3.3n 10V \*1

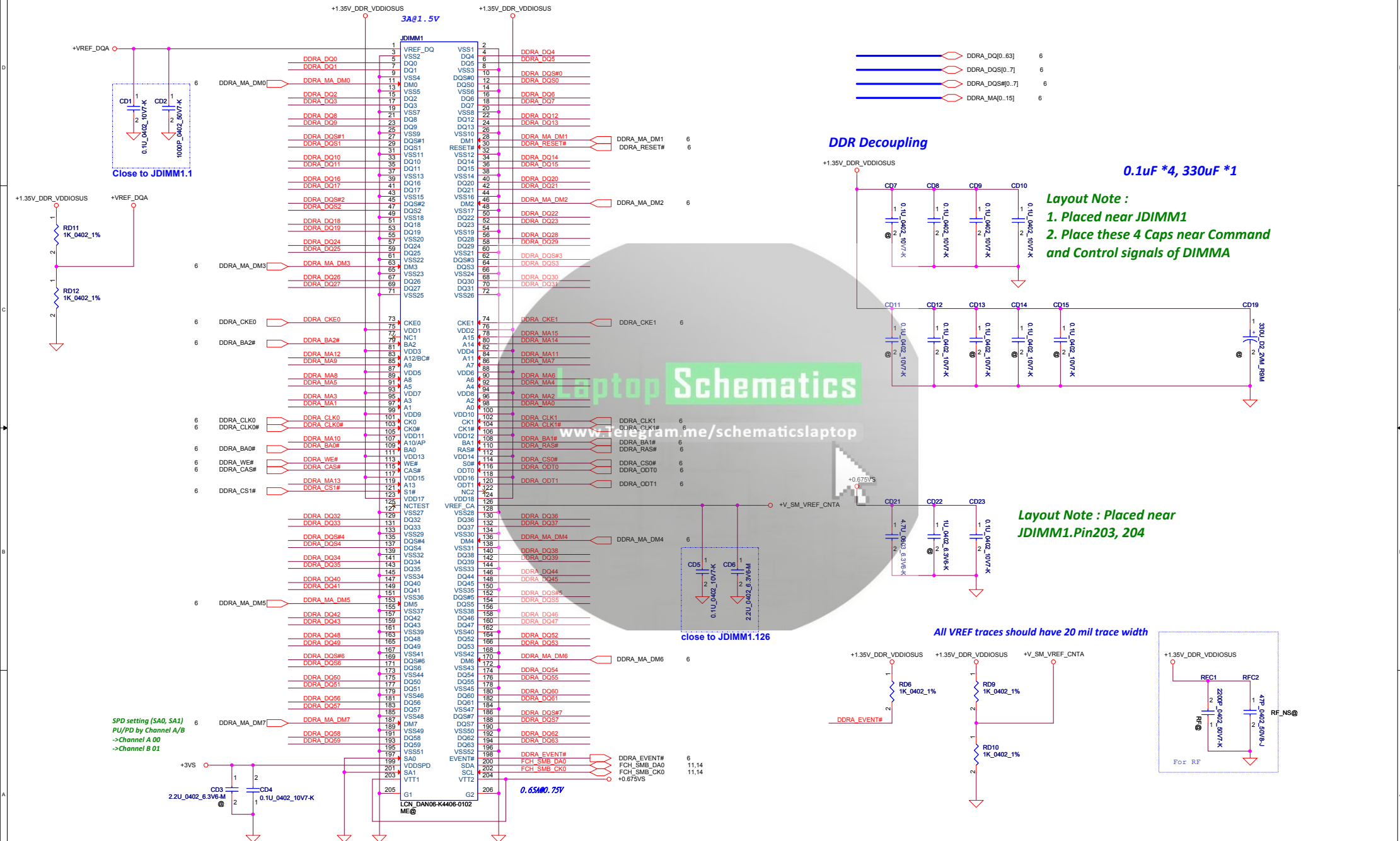


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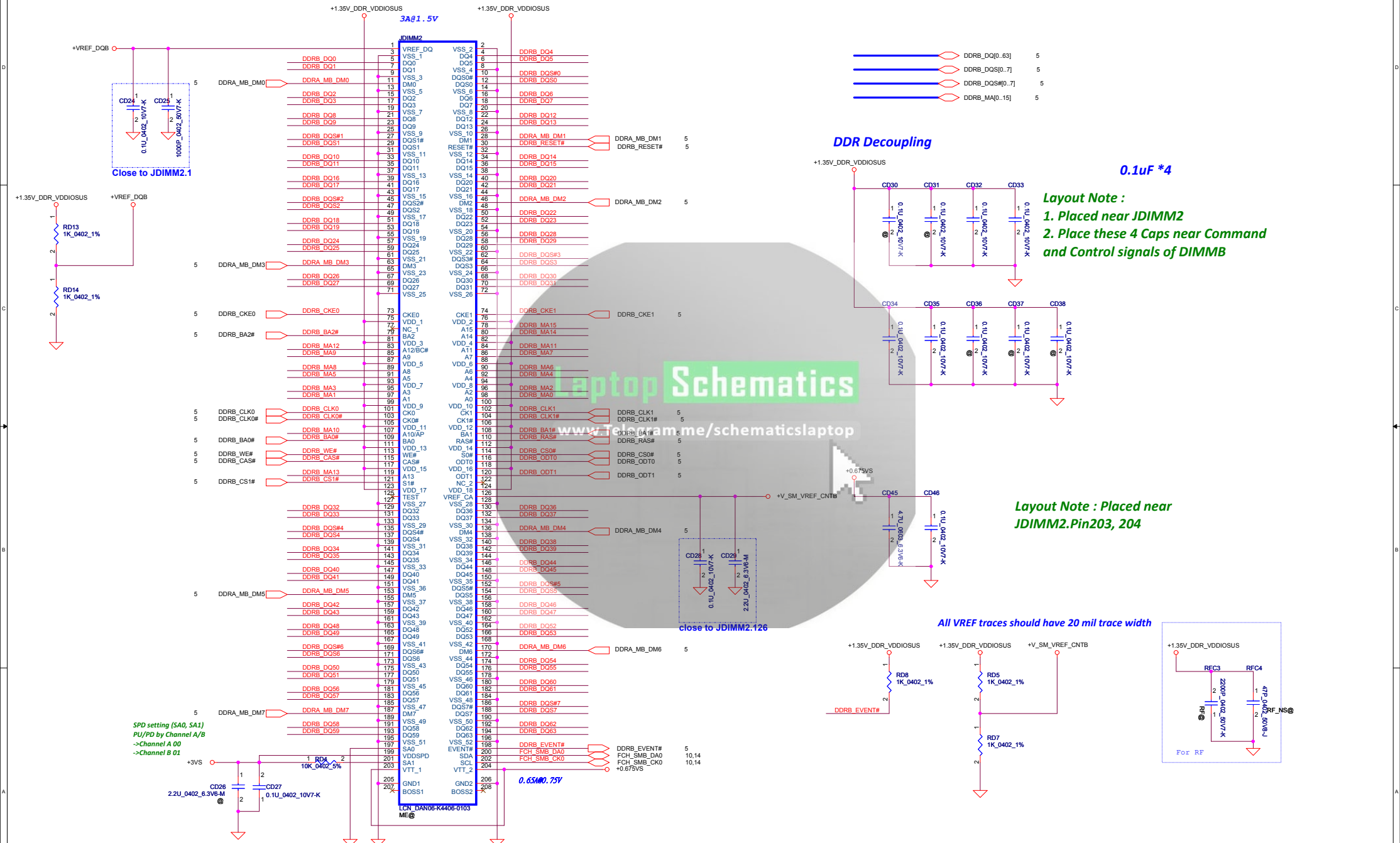


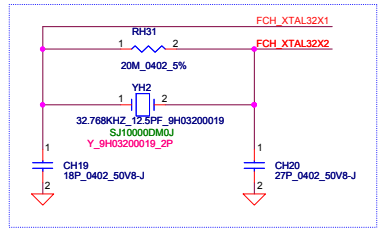
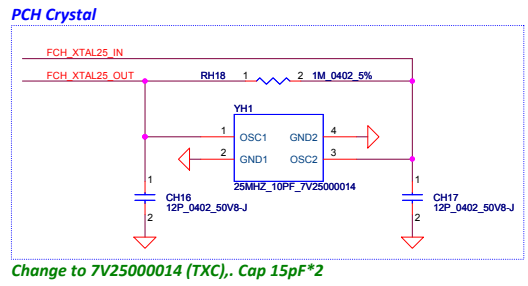
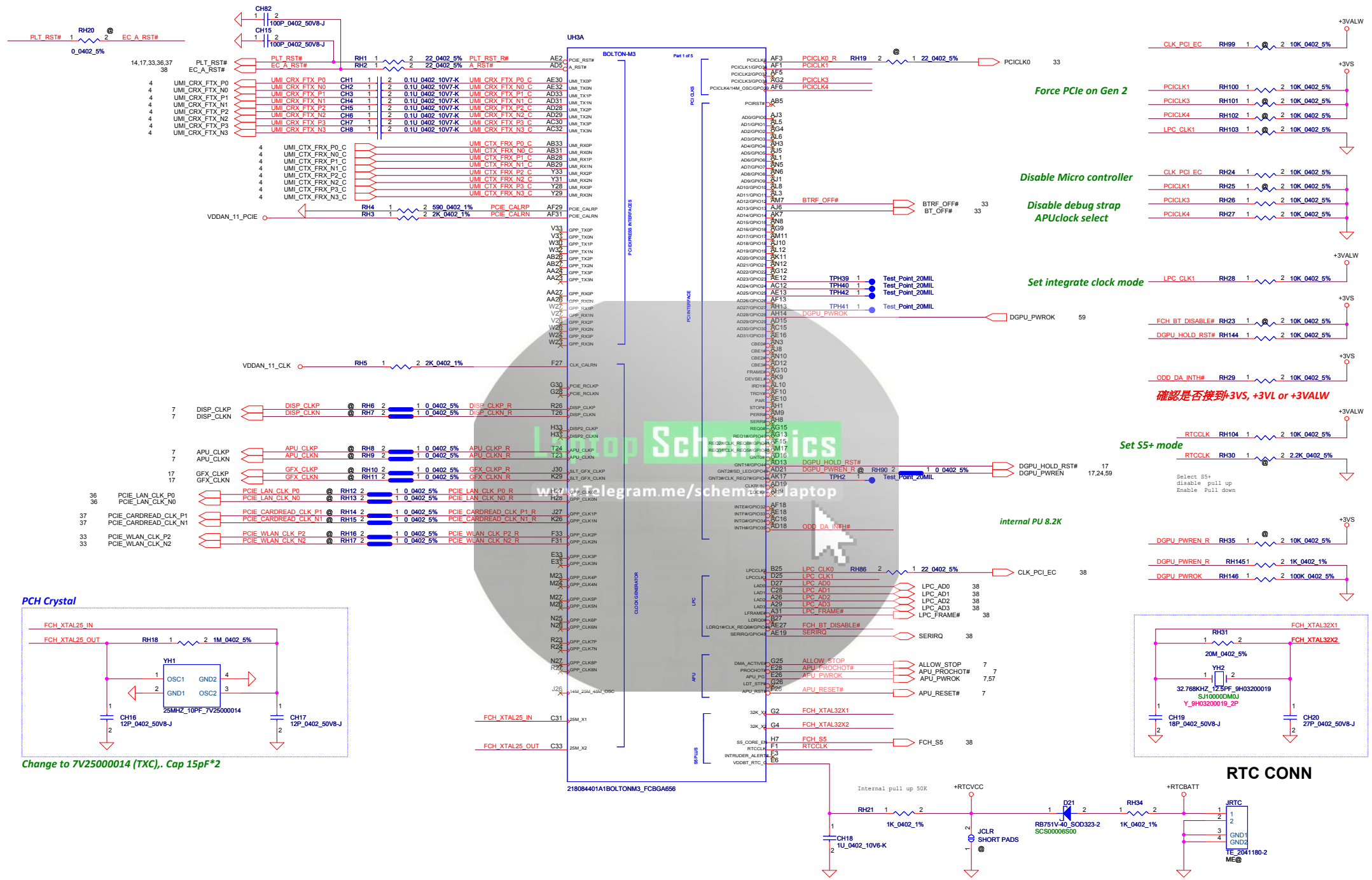



# DDR3L SO-DIMM A

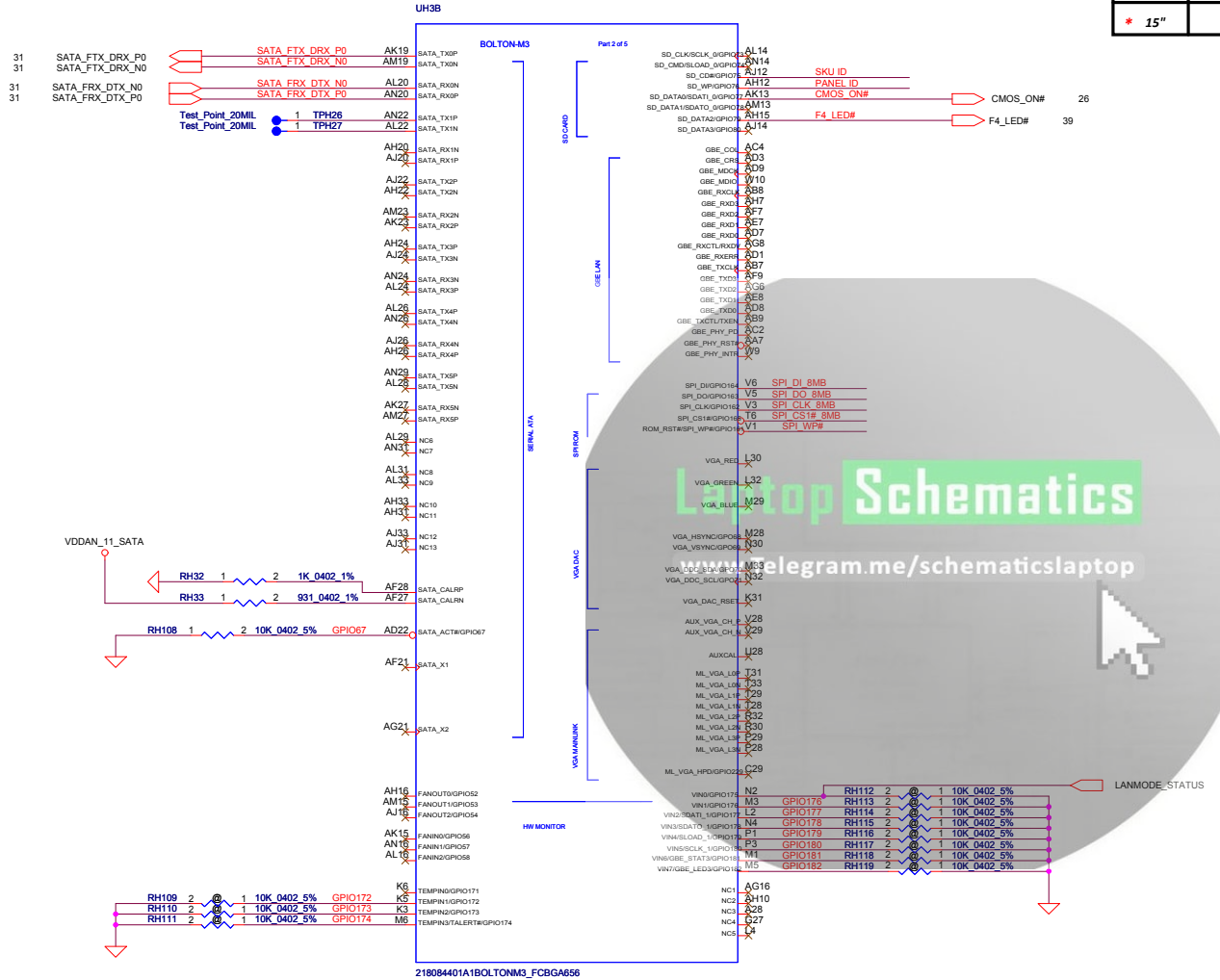


# DDR3L SO-DIMM B



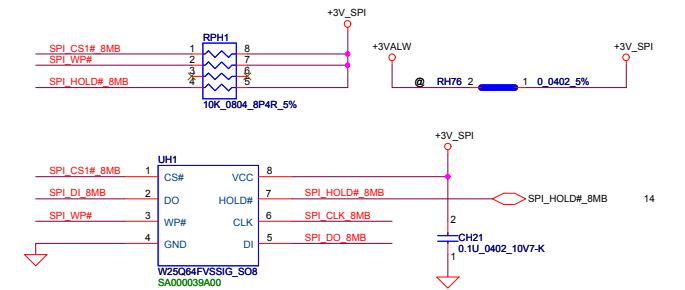
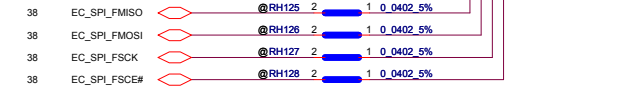
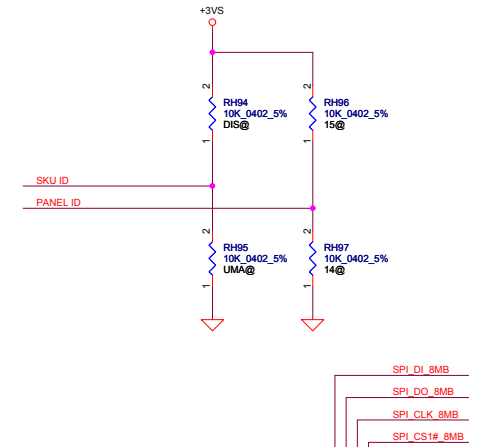


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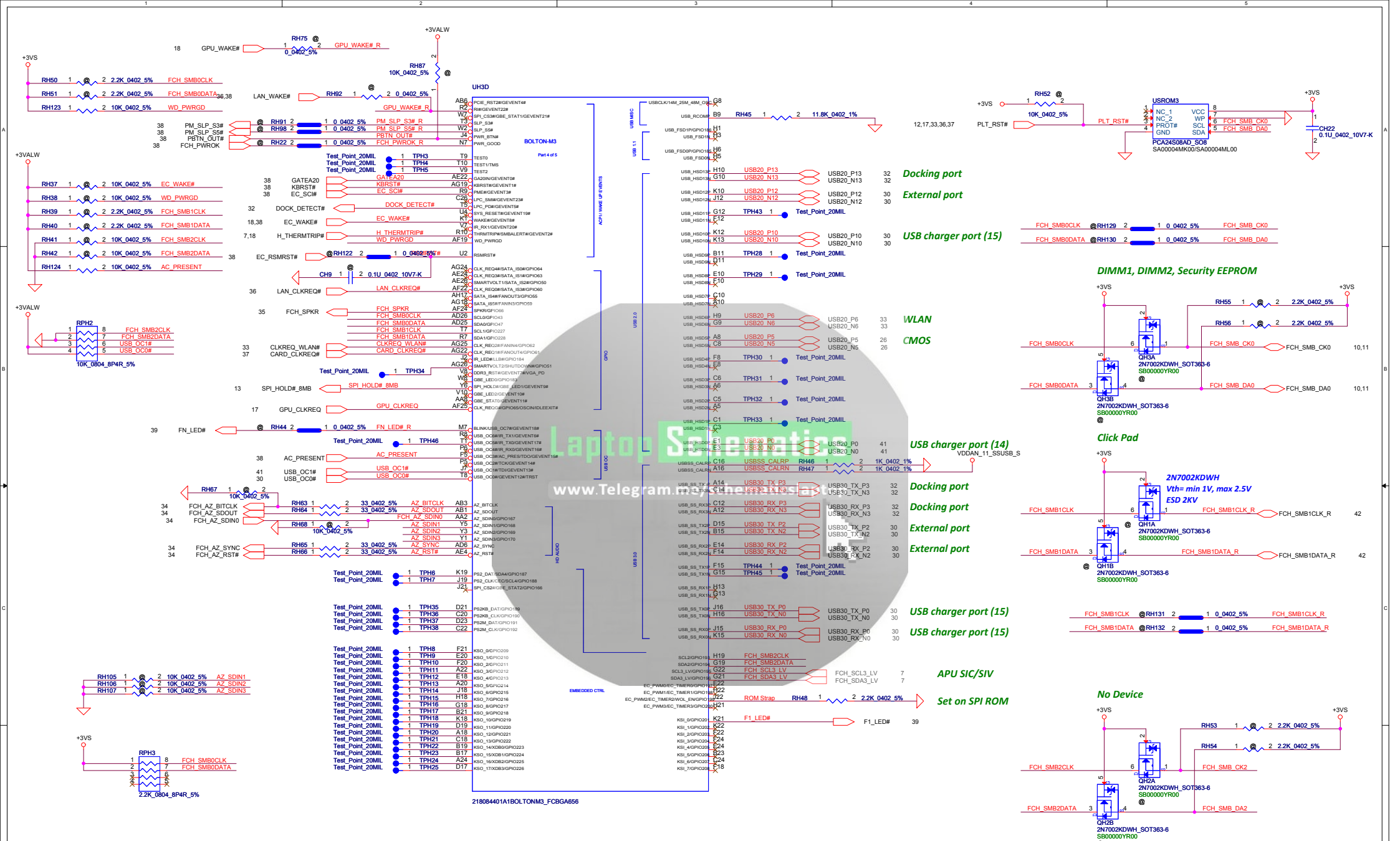



Table

Function	SKU_ID	PANEL_ID
* UMA	0	
* DIS	1	
* 14"		0
* 15"		1



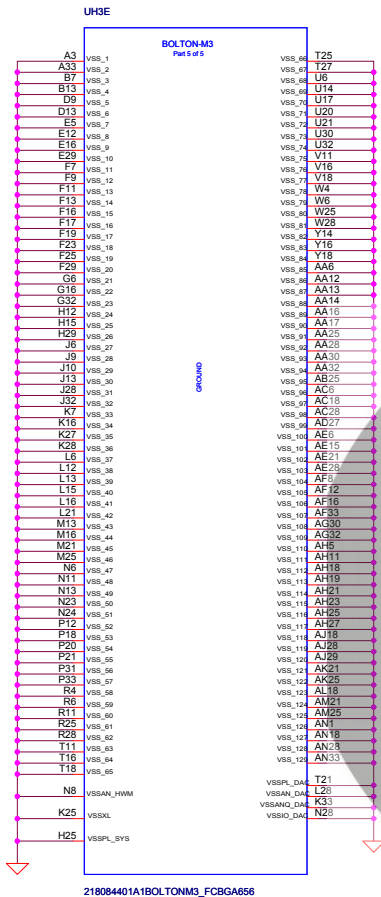




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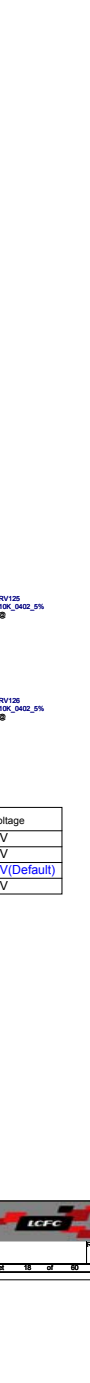
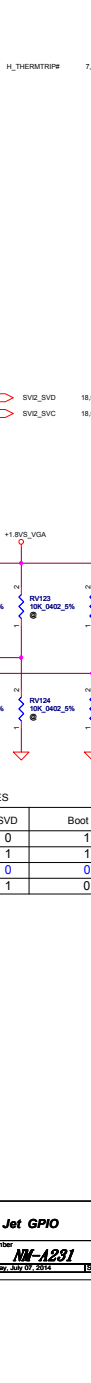
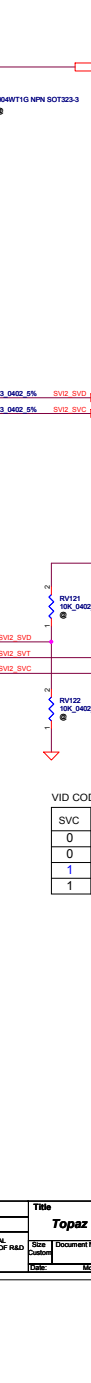
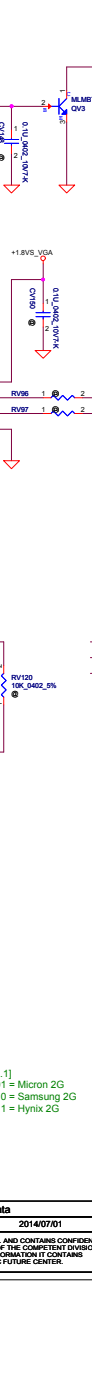
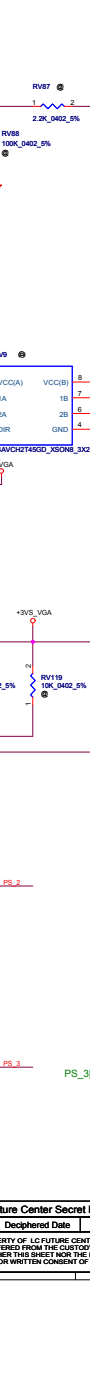
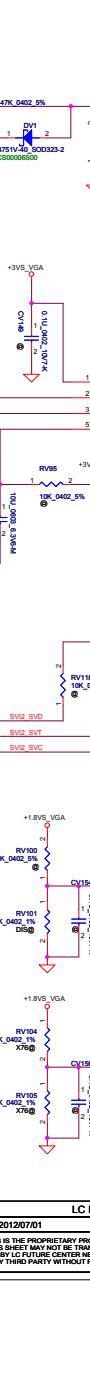
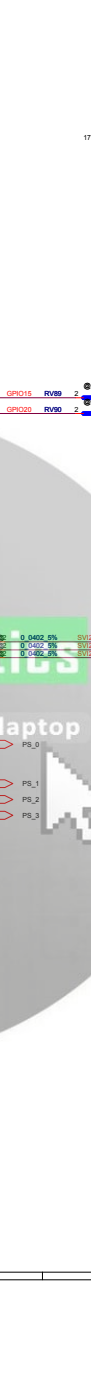
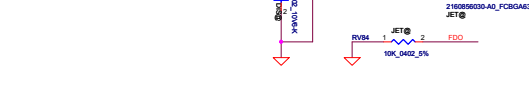
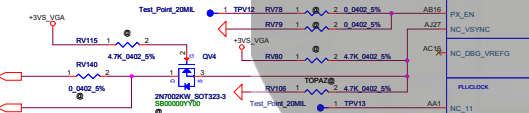
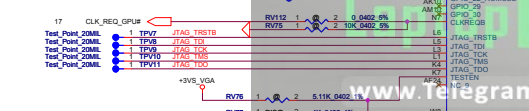
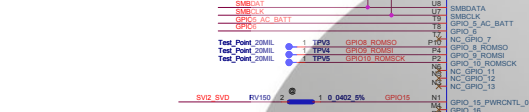
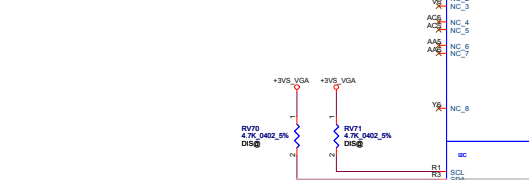
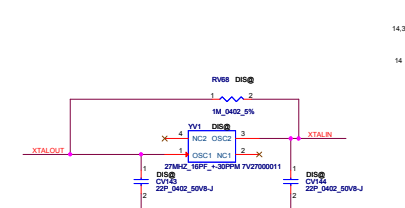
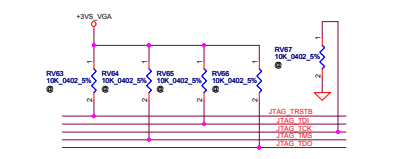
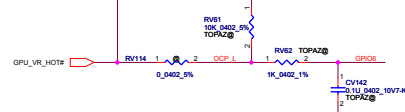
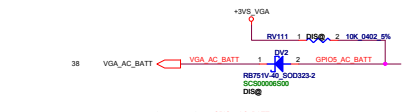
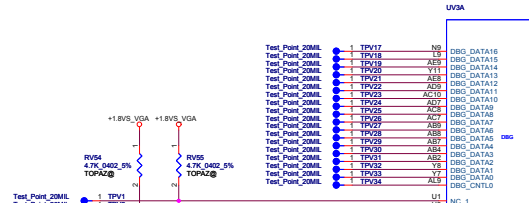
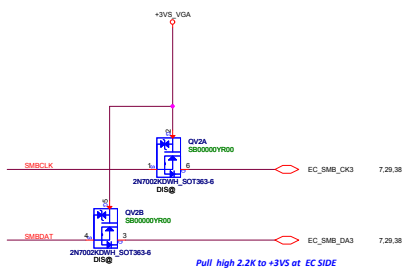




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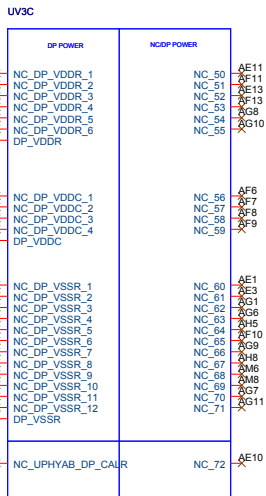
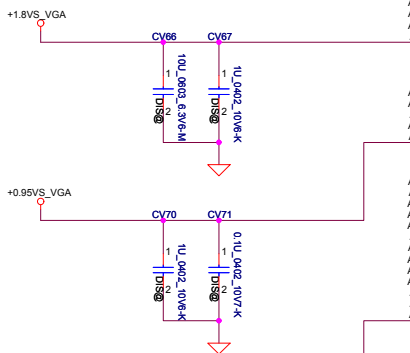


VID CODES

SVC	SVD	Boot Voltage
0	0	1.1V
0	1	1.0V
1	0	0.9V(Default)
1	1	0.8V

PS\_3[3..1]  
 101 = Micron 2G  
 110 = Samsung 2G  
 111 = Hynix 2G

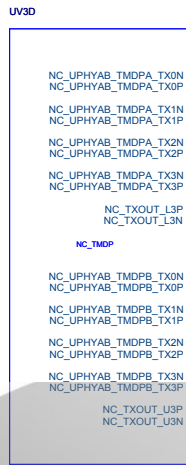




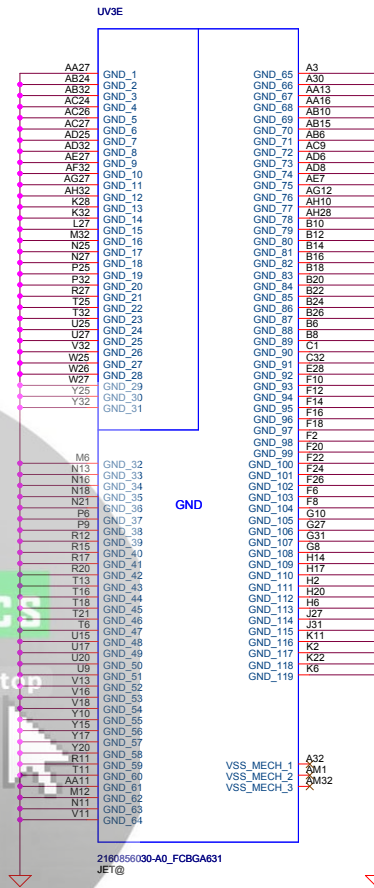
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JET@

ASIC Ball	Topaz	Jet
U10,T10 AB13,W9 AB11,AB12 AC11,AC13 AC14,Y9,W10	VDDC	NC
AC20	FB_VDDC	NC
AD20	FB_VSS	NC
W1	FB_VDDCI	NC
W3	FB_VSS	NC
AJ11	GPIO_SVC	NC_SVI2
AK12	GPIO_SVD	NC_SVI2
AL11	GPIO_SVT	NC_SVI2
N6	GPIO_11	NC_GPIO11
N5	GPIO_12	NC_GPIO12
N3	GPIO_13	NC_GPIO13
AJ27	WAKEB	NC_VSYNC
T8	PCC/GPIO_6	GPIO_6
AA3	PLL_ANALOG_OUT	NC
AA1	PLL_ANALOG_IN	NC

ASIC Ball	Topaz	Jet
U1	BP_0	NC
U3	BP_1	NC
AM26	DIECRACKMON	NC
Y11	NC	DBG_DATA13
AE9	NC	DBG_DATA14
L9	NC	DBG_DATA15
N9	NC	DBG_DATA16
AE8	NC	DBG_DATA12
AL9	NC	DBG_CNTRL0
H13,H16,H19,J10 J23,J24,J9,K10 K23,K24,K9,L11 L12,L13,L20,L21 L22	VMEMIO	VDDR1
AA17,AA18 AB17,AB18	VDD_GPIO33	VDDR3
AA20,AA21 AB20,AB21	VDD_GPIO18	VDD_CT



2160856030-A0\_FCBGA631  
JET@

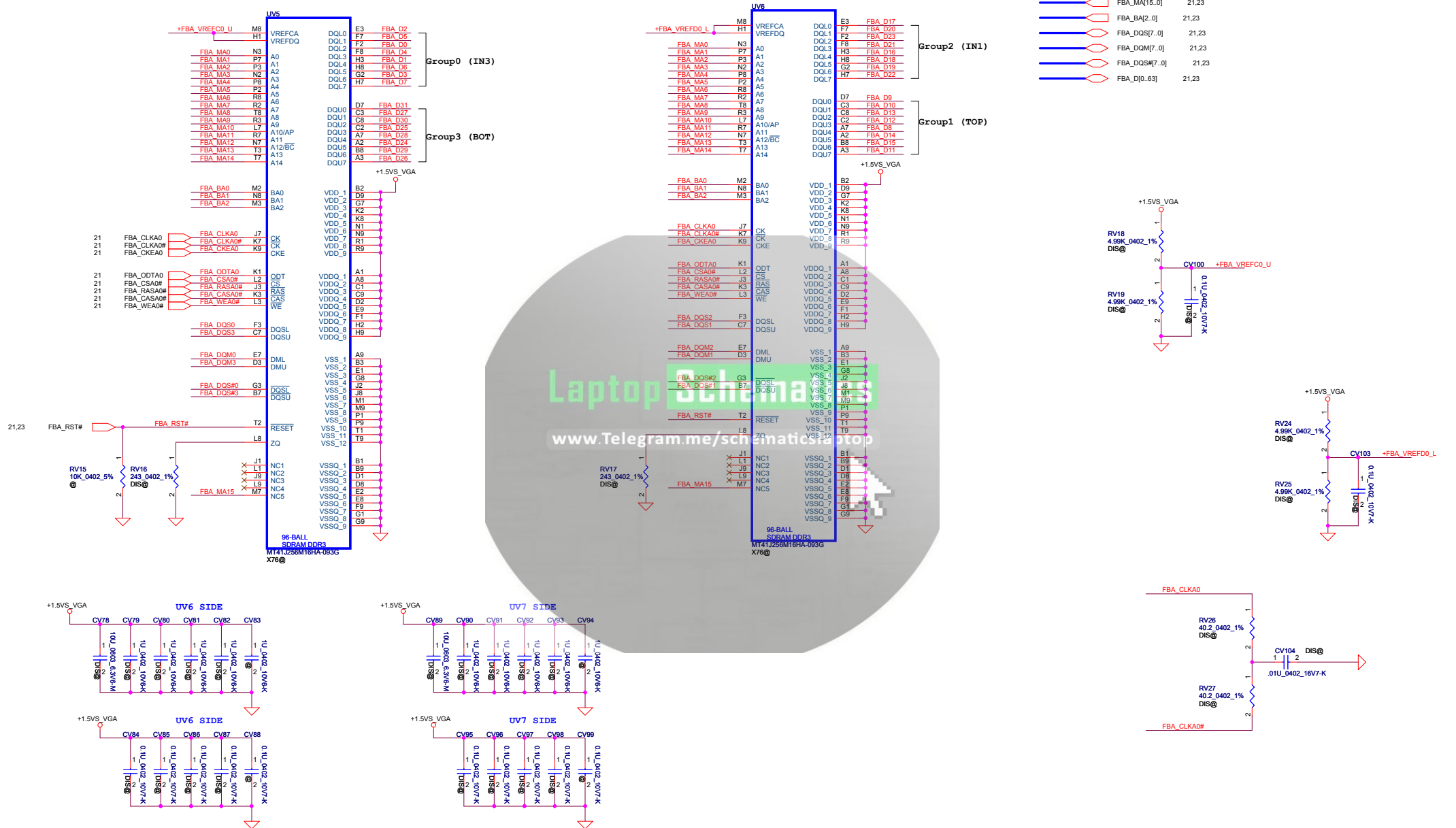



GND

2160856030-A0\_FCBGA631  
JET@



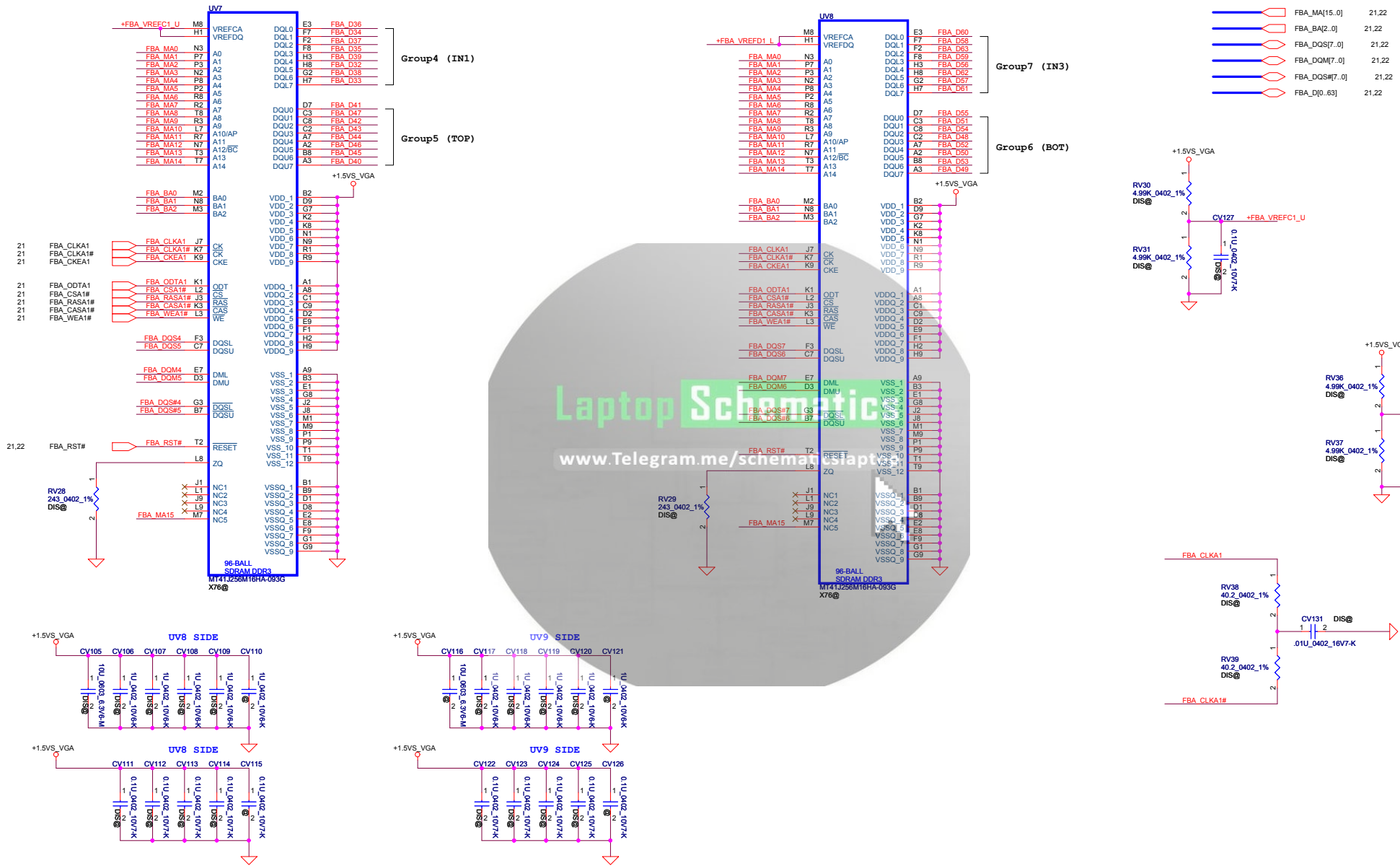
### Memory Partition A - Lower 32 bits



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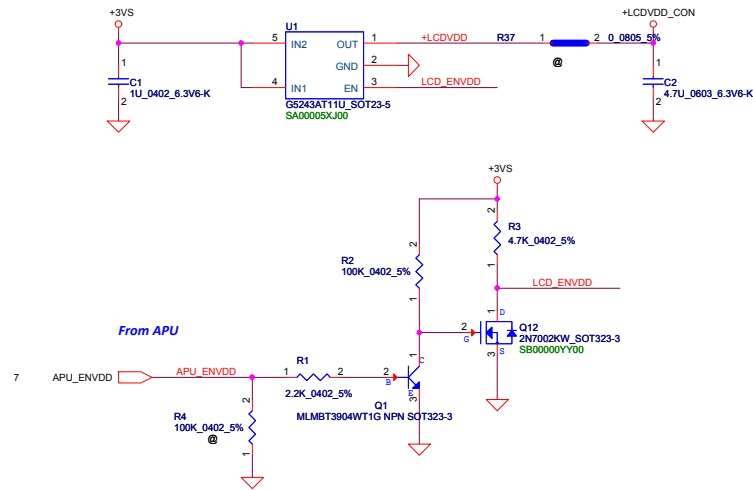
# Memory Partition A - Upper 32 bits



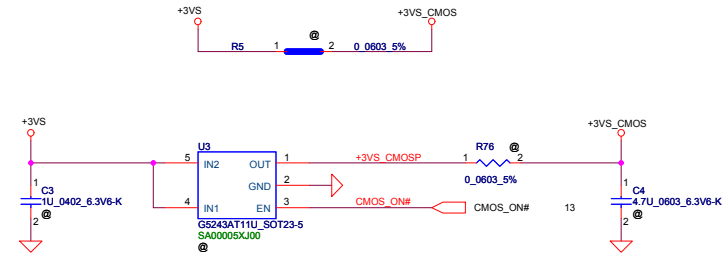




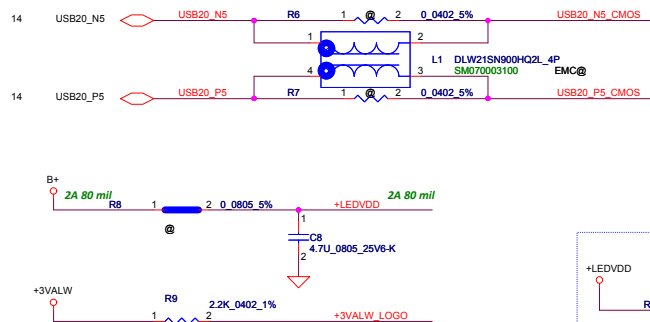
### ***LCDVDD Circuit***



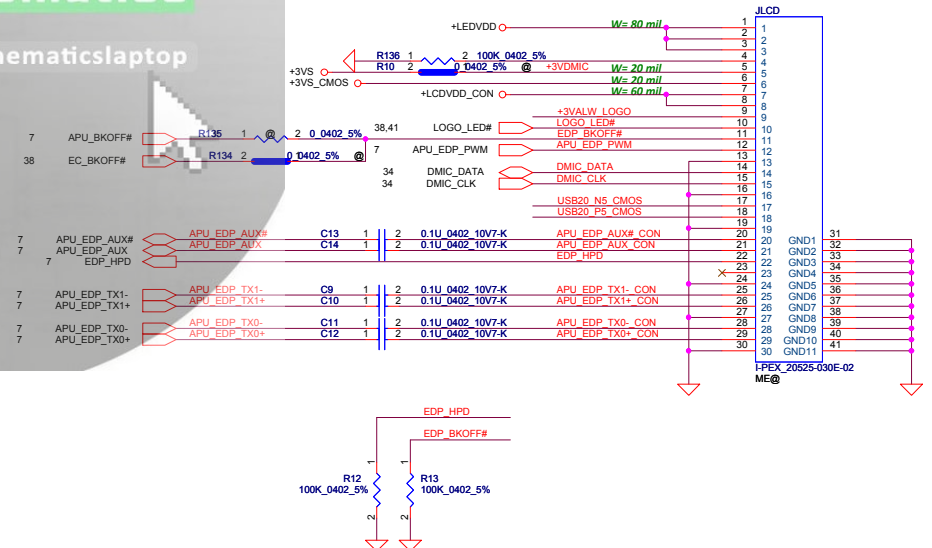
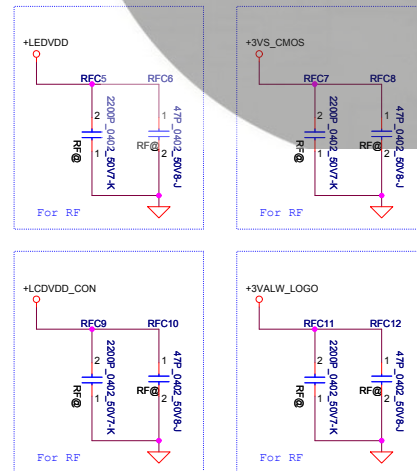
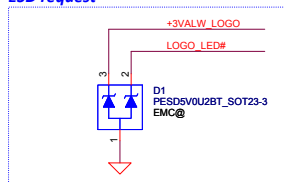
### CMOS Camera




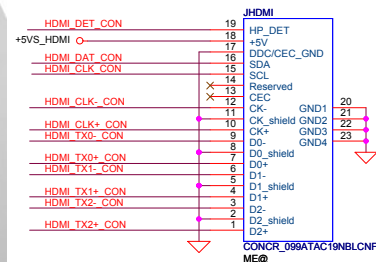
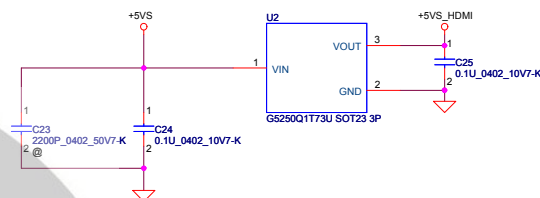
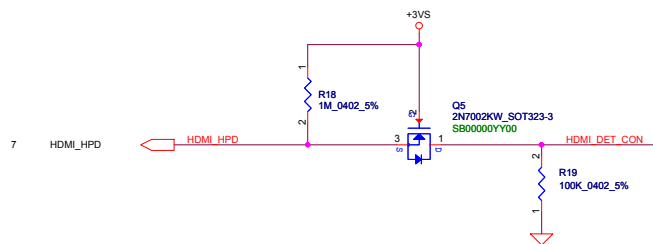
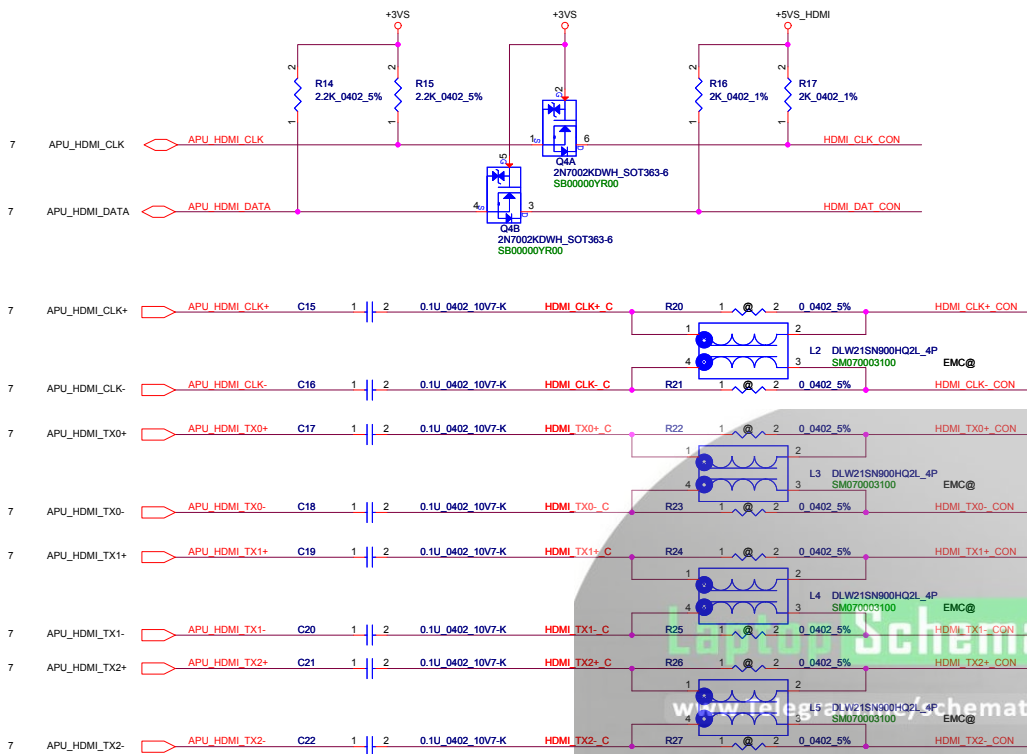
## CMOS USB Port5



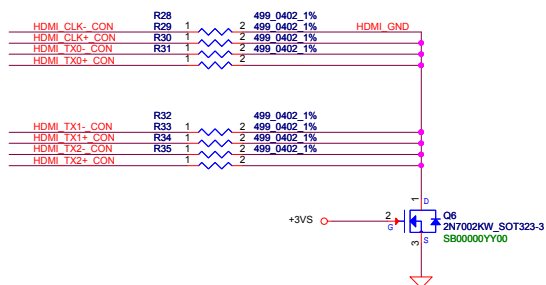
### ESD request



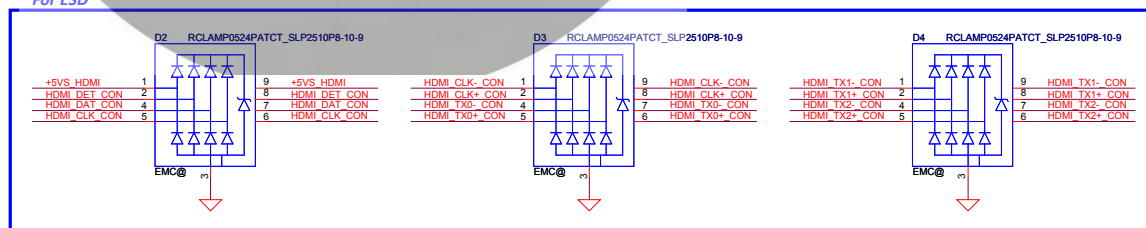
Security Classification		LC Future Center Secret Data		Title		
Issued Date	2012/12/05	Deciphered Date	2014/12/05	LCD/CMOS CONN		
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				Date:	Monday, July 07, 2014	Sheet 26 of 60 Rev 0.2




HDMI Connector

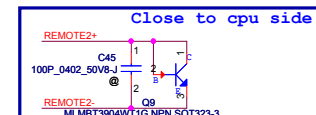
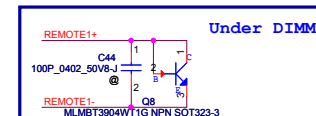
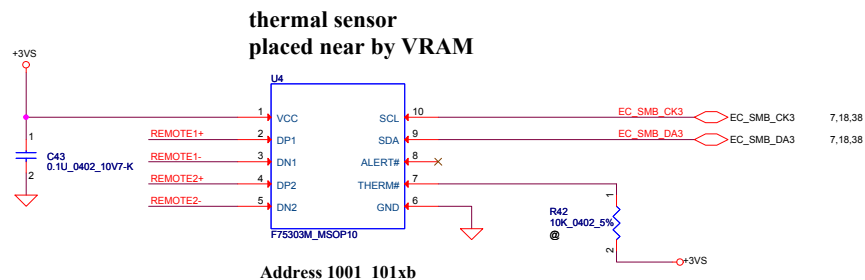
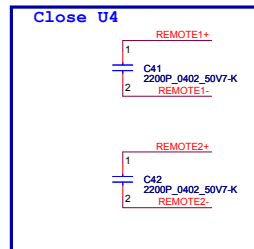


For ESD





Security Classification		LC Future Center Secret Data		Title					
Issued Date		2012/07/01		Deciphered Date				2014/07/01	
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				Size		Document Number		Rev	
				Custom		NM-A231		0.2	
				Date:		Monday, July 07, 2014		Sheet 28 of 60	

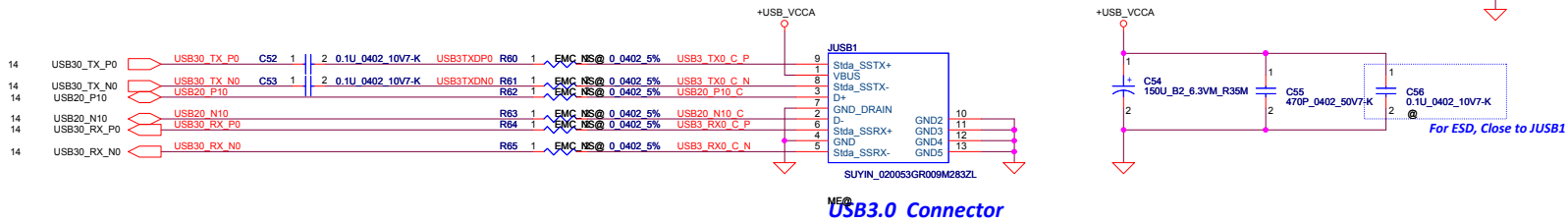
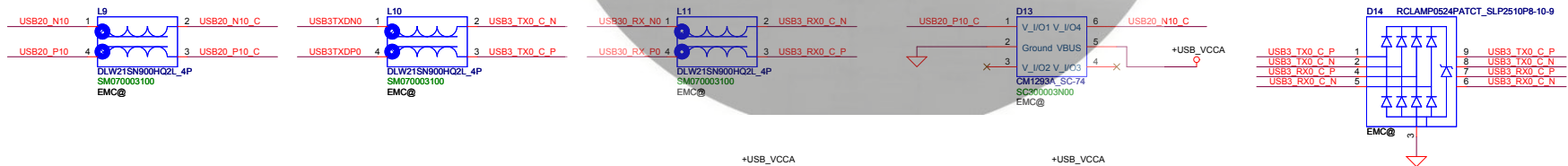
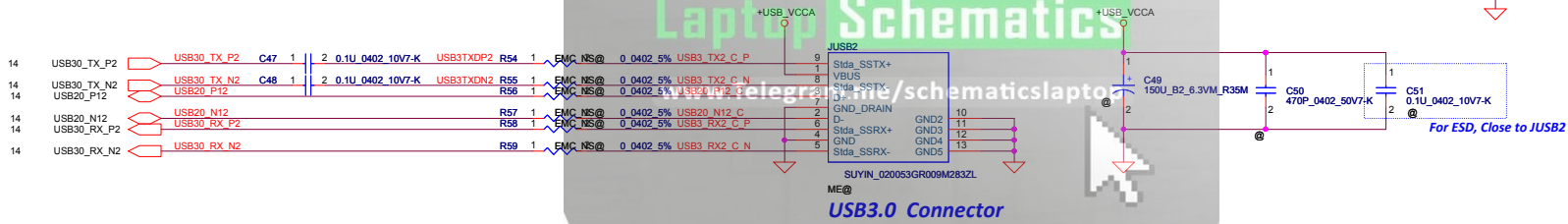
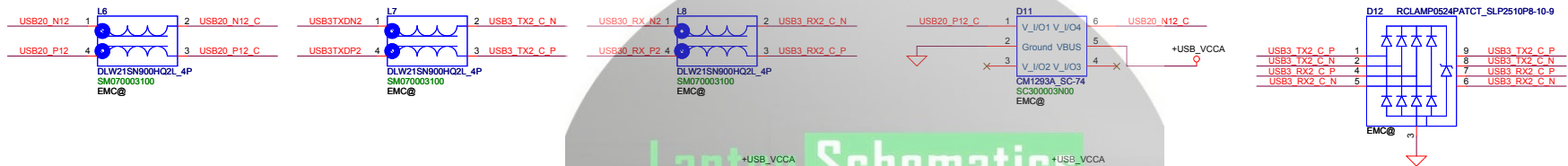
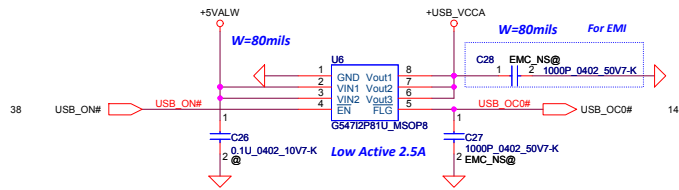


internal pull up 1.2K to 1.5V  
R for initial thermal  
shutdown temp

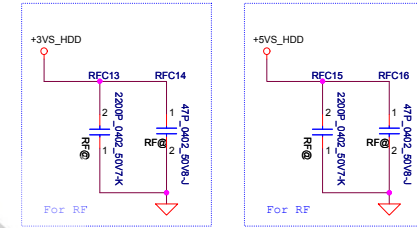
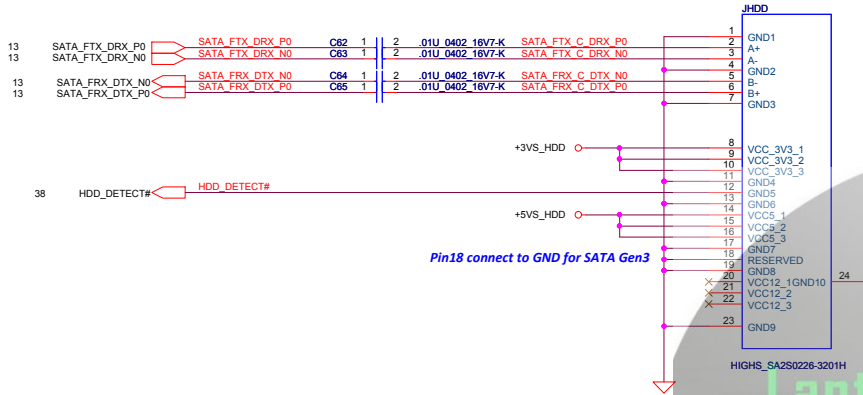
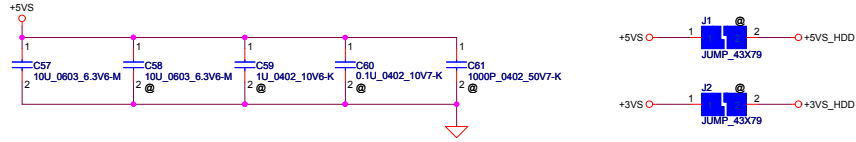
REMOTE2+/-:  
Trace width/space:10/10 mil  
Trace length:<8"





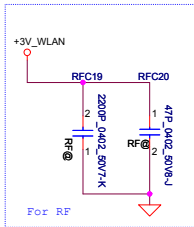


# SATA HDD



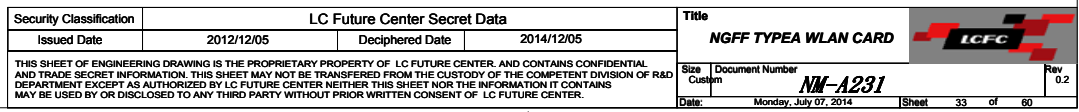
Laptop Schematics  
www.Telegram.me/schematics1aptop

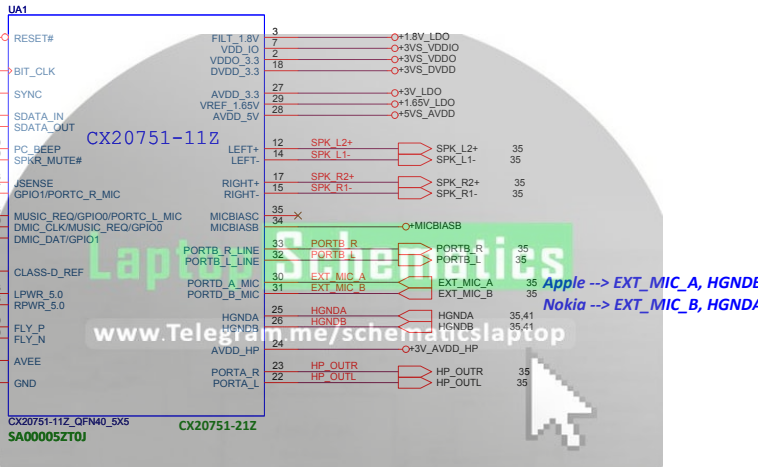
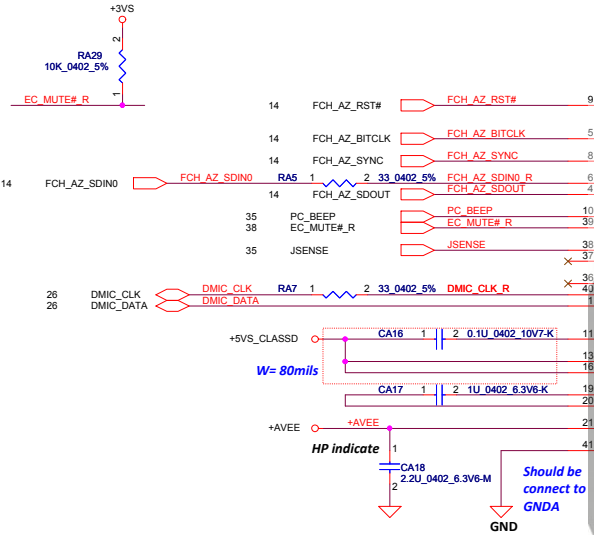
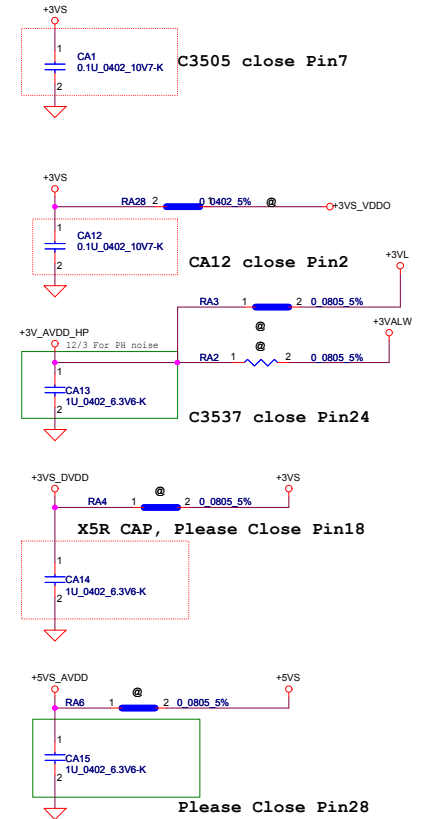
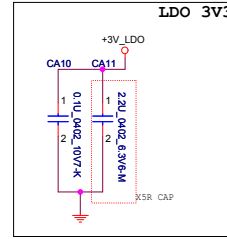
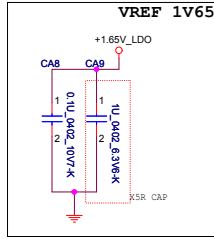
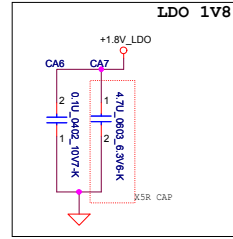
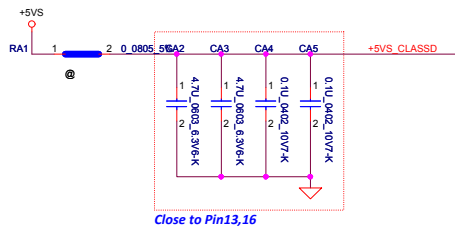




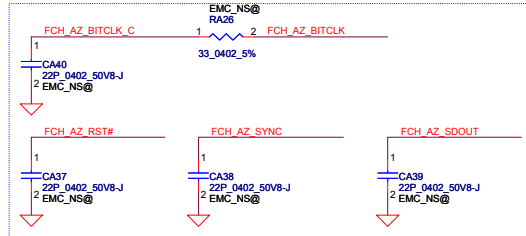
- 62 12C CLR  
 63 I2C\_ALERT  
 64 RESERVED0  
 65 PERST1  
 66 CLKREQ0  
 67 PEWAKE1  
 68 3.3VAUX4  
 69 3.3VAUX5  
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## A

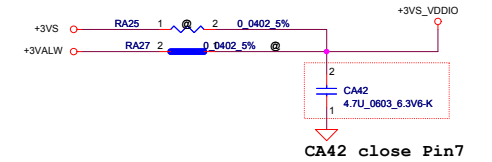
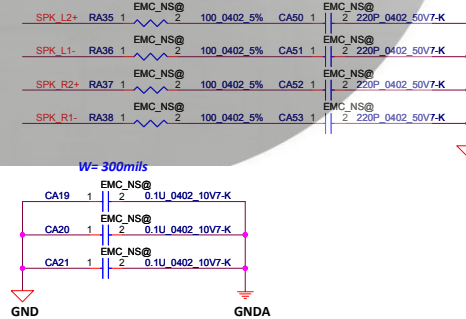
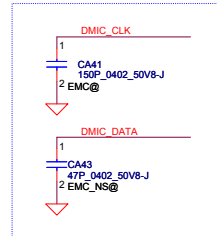




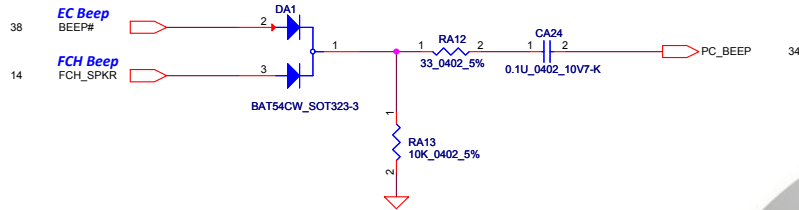
EMI, close to UA1



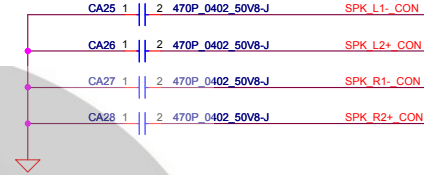
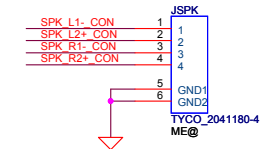
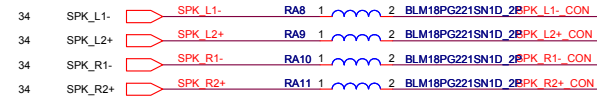
RF, close to RA7



## PC BEEP

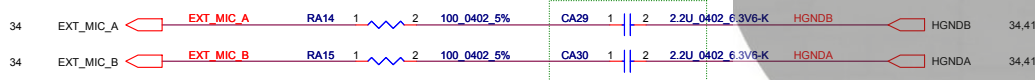


## Speaker



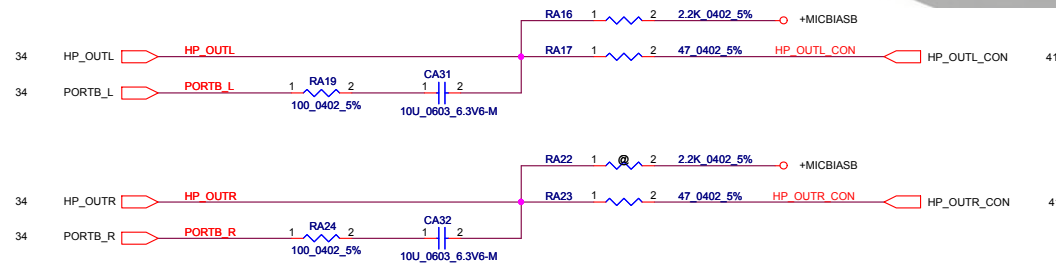
## EXT. MIC/LINE IN

Apple --> EXT\_MIC\_A, HGND B  
Nokia --> EXT\_MIC\_B, HGND A



Changed CA29 & CA30 from 1uF to 2.2uF/X5R to meet Port-D(headset-Mic) THD+N <= -65 dB

## HeadPhone/LINE OUT



CA31, CA32 change to 4.7u for Quality requirement

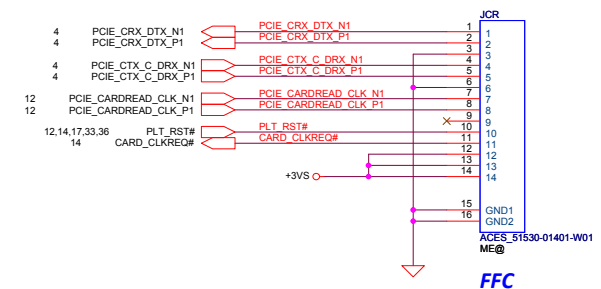
Security Classification	LC Future Center Secret Data			Title	HDA-HP/EXT MIC/SPK CONN	
Issued Date	2012/12/05	Deciphered Date	2014/12/05	Size	Document Number	Rev
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				Date:	Monday, July 07, 2014	Sheet 35 of 60




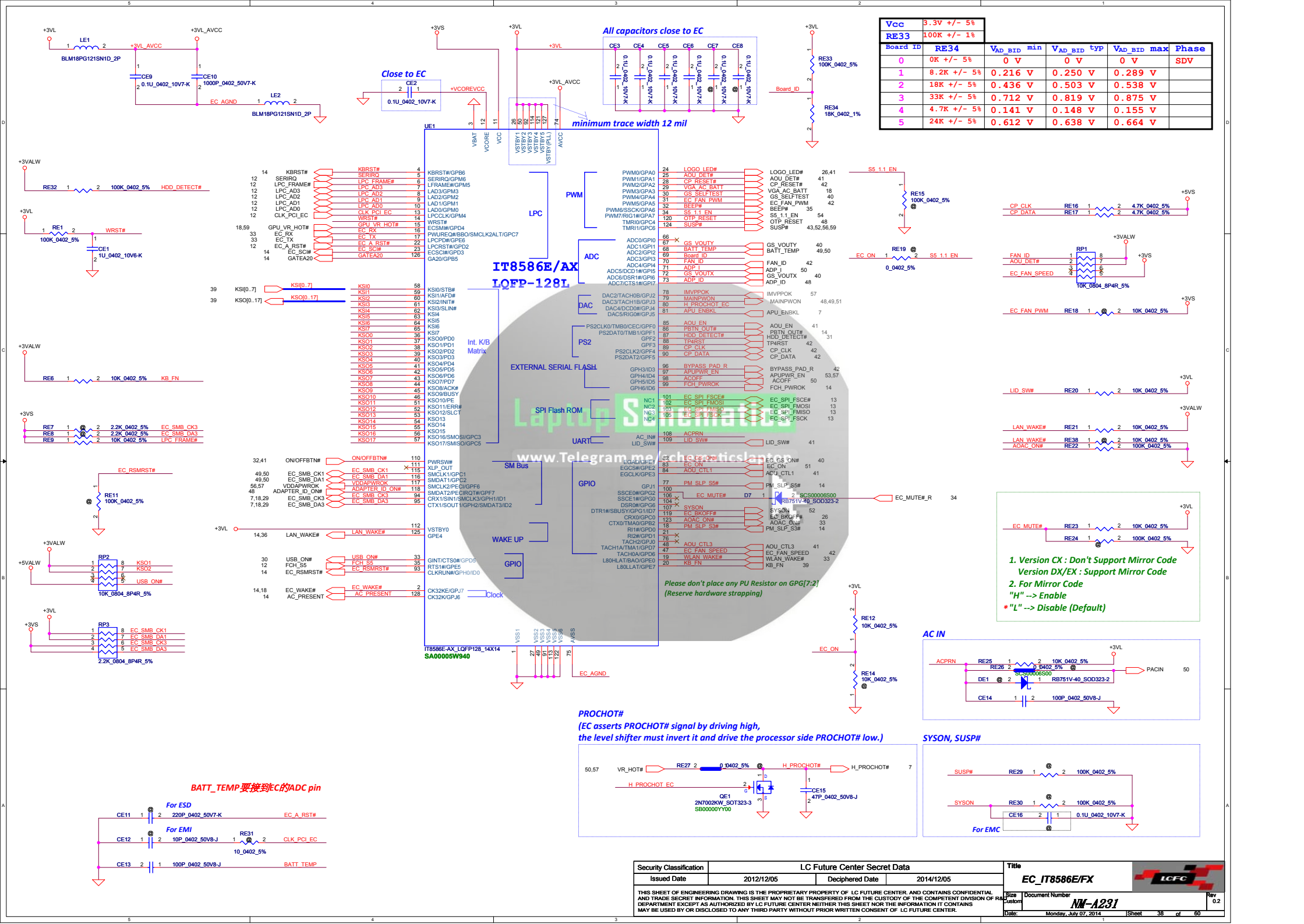




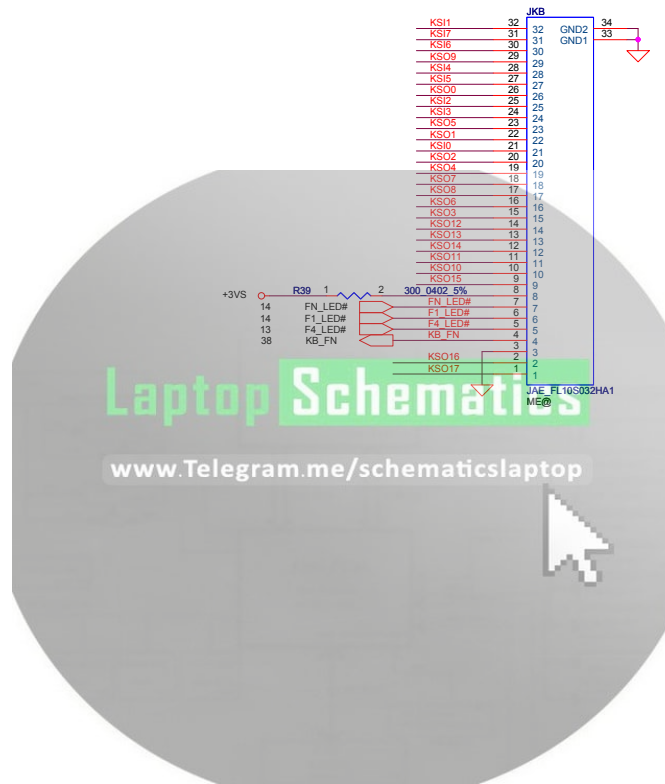
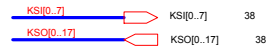
Only for Edge 14"



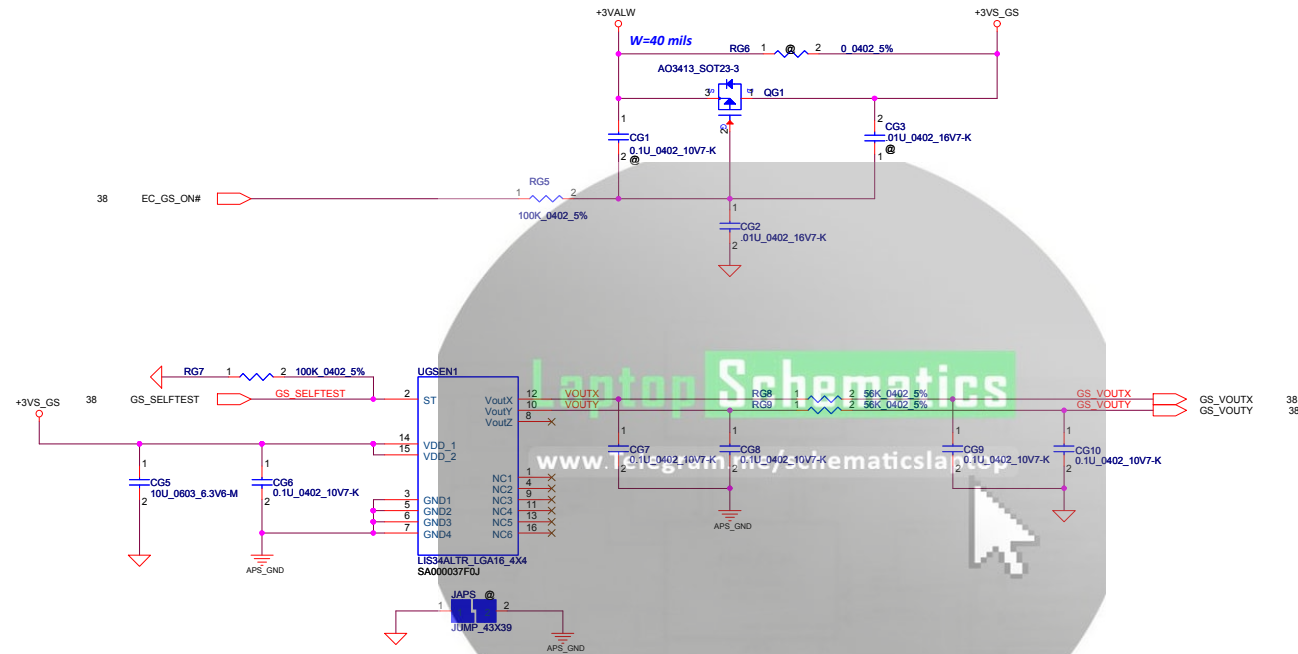
Security Classification		LC Future Center Secret Data		Title			
Issued Date		2012/07/01		Deciphered Date			
				Card Reader			
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Size		Document Number					
Custom		NM-A231					
Date:		Monday, July 07, 2014				Rev 0.2	
Sheet		37 of 60					

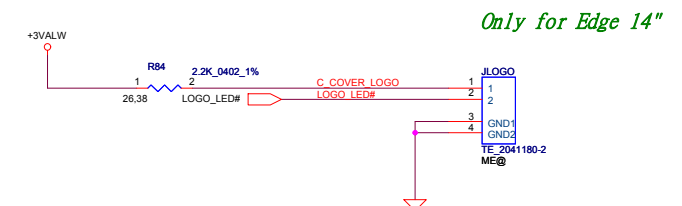
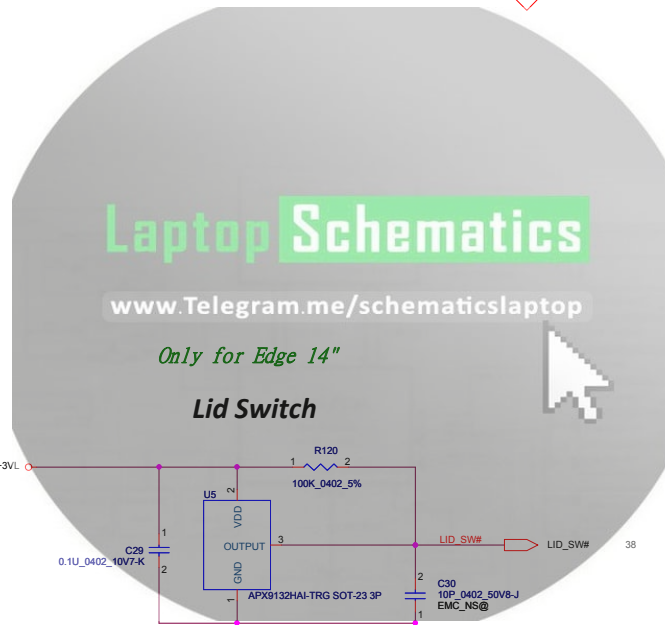


## KeyBoard CONN.(14")

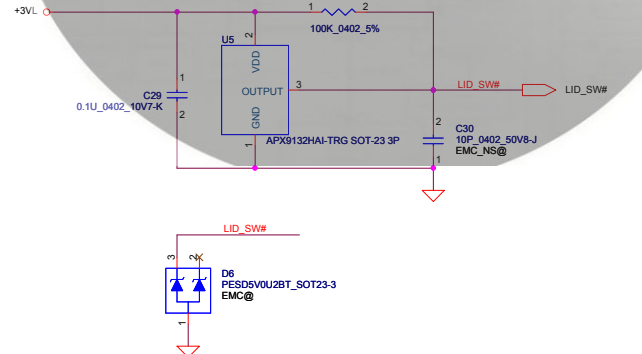



# APS G-Sensor



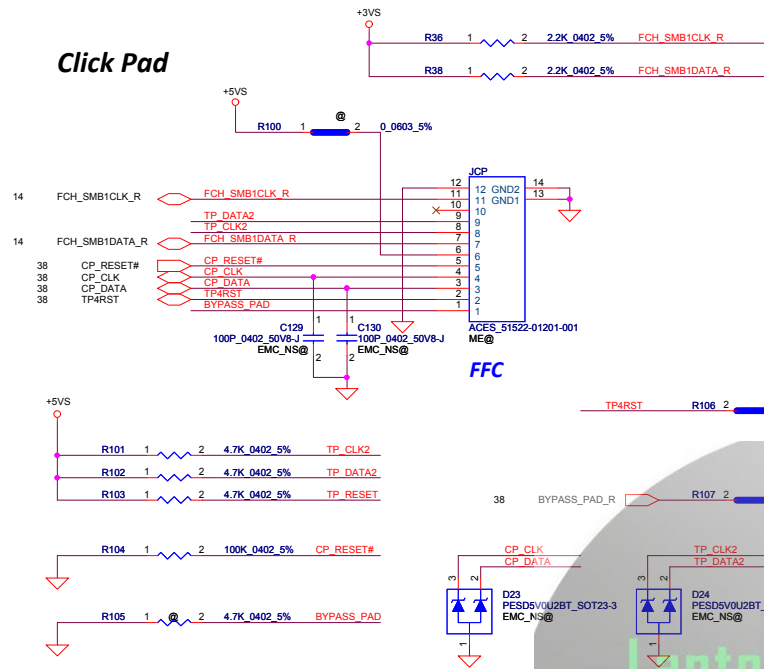


**ON/OFF switch**

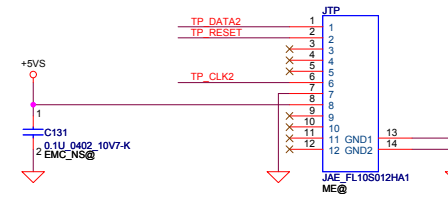


Security Classification		LC Future Center Secret Data		Title		
Issued Date		Deciphered Date		Sub-board/Power Button		
2012/12/05		2014/12/05				
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Document Number <b>NM-A231</b>						Rev 0.2
Date: Monday, July 07, 2014						Sheet 41 of 60

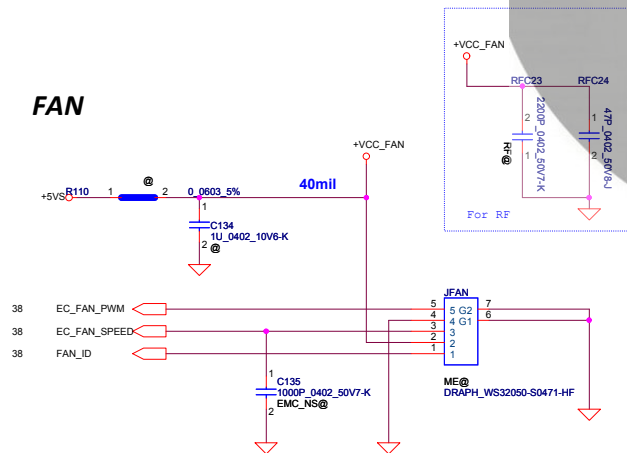
## Click Pad



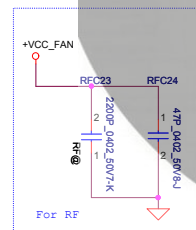
## Track point



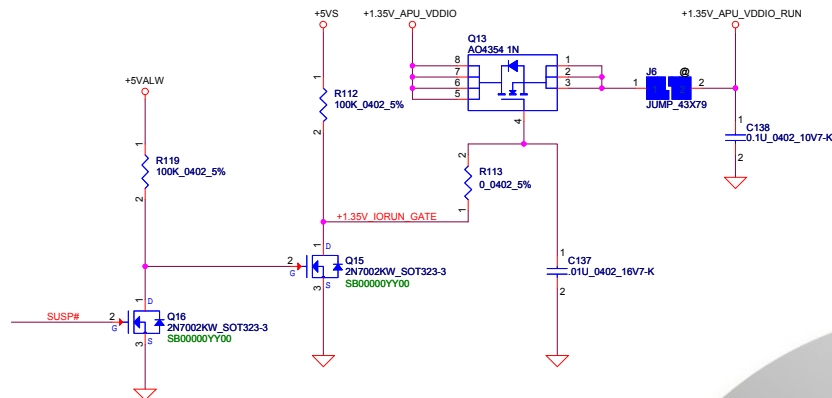
## FAN



## FingerPrint

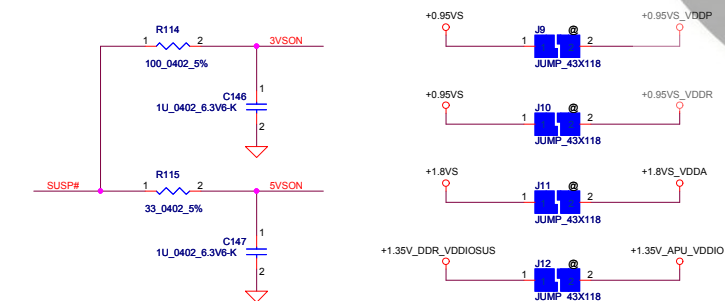
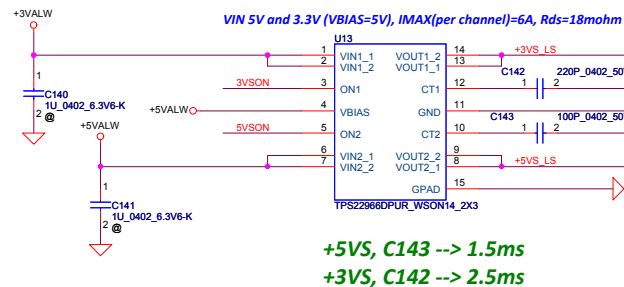


### ***+VDDIO to +VDDIO\_RUN***

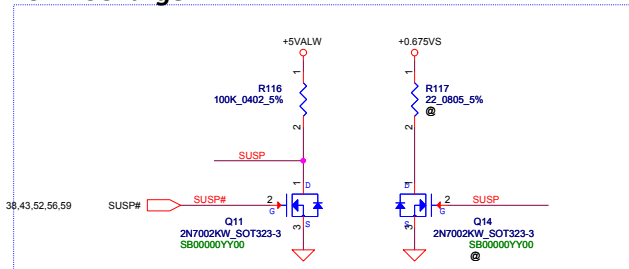


**+5VALW To +5VS**

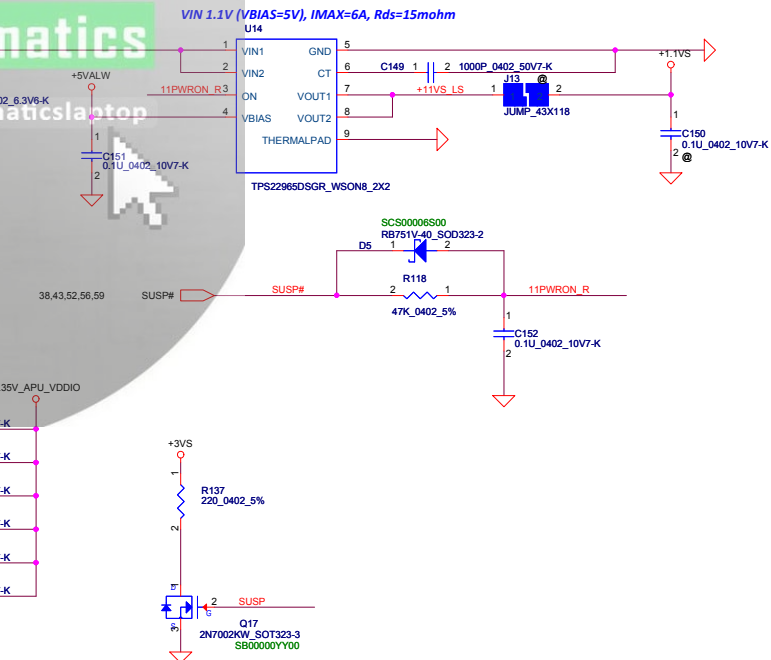
**+3VALW To +3VS**




**For DisCharge**

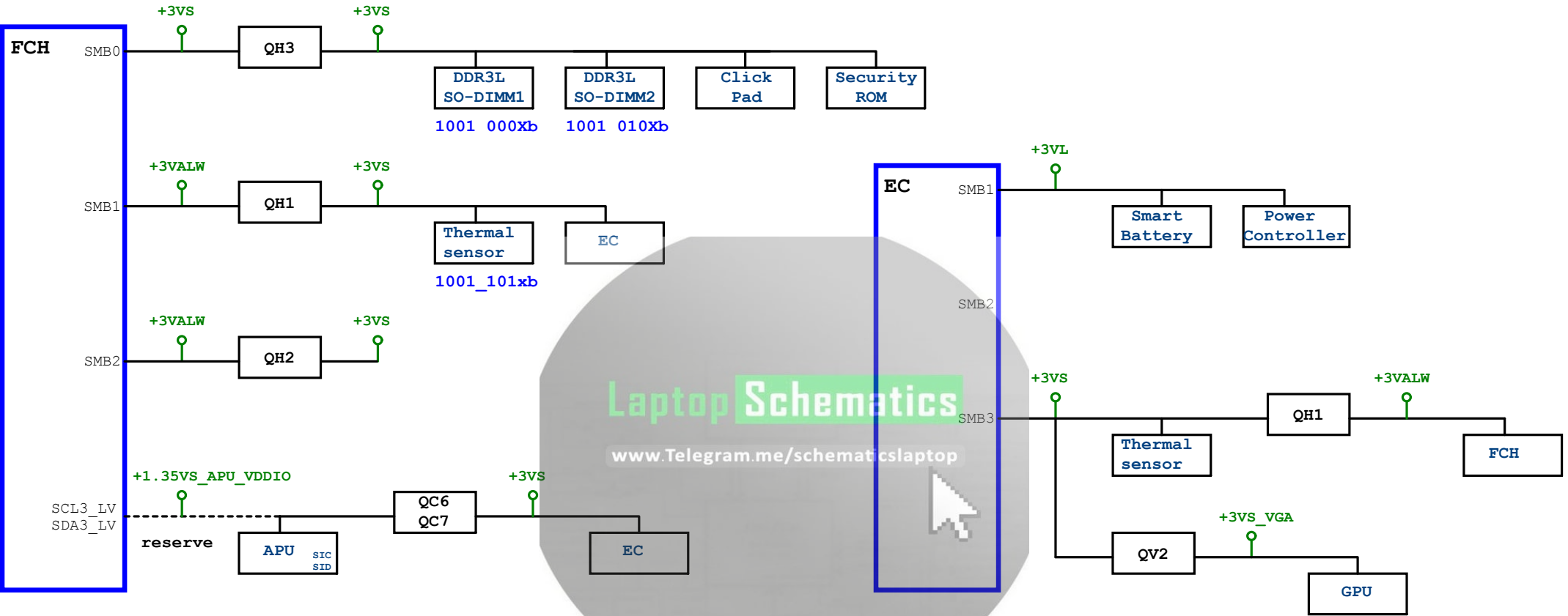


**+1.1VALW to +1.1VS**

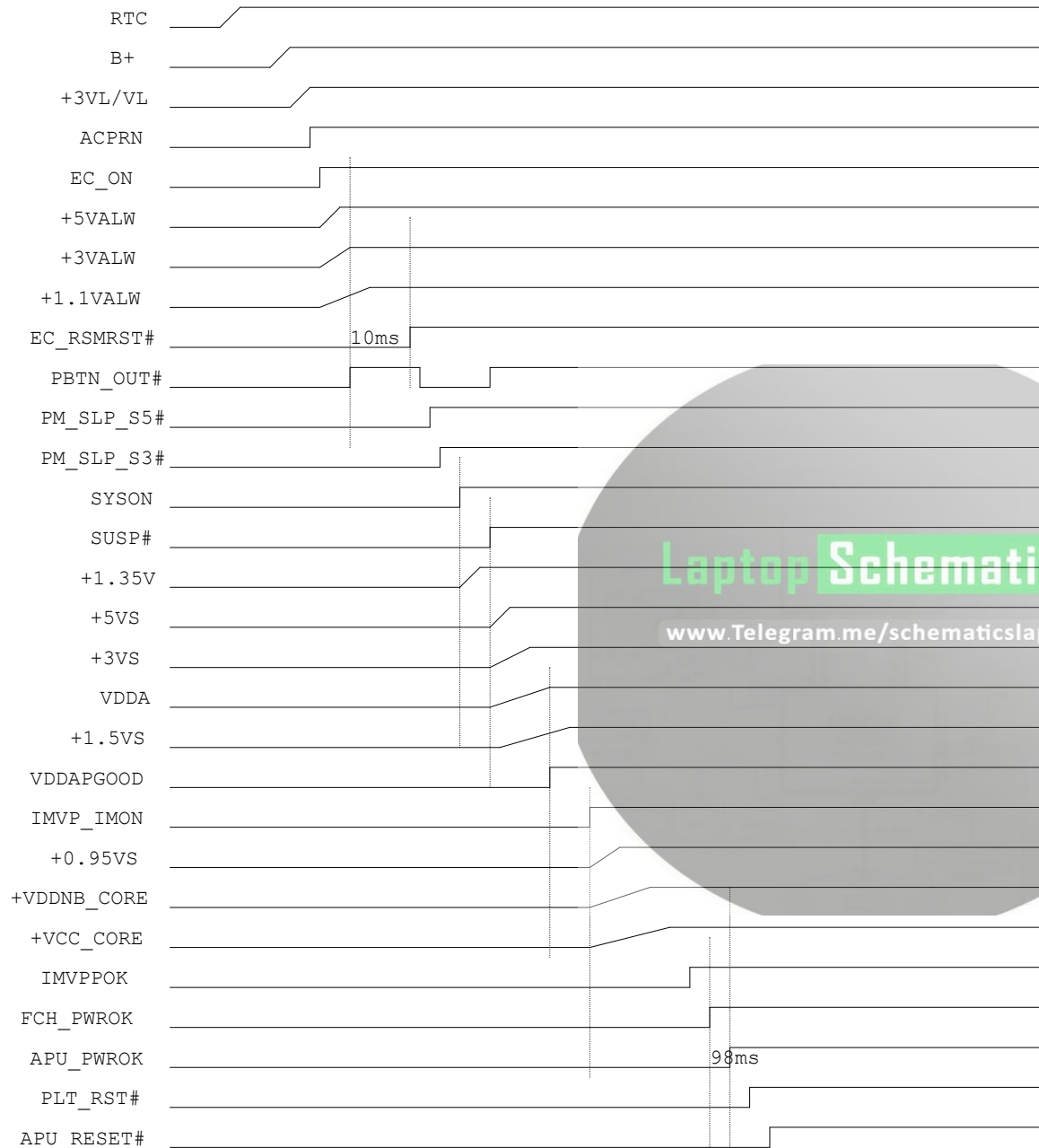


Security Classification	LC Future Center Secret Data			Title	
Issued Date	2012/07/01	Deciphered Date	2014/07/01	3VS/5VS/1.1VS/VDDIO_RUN	
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				Date: Monday, July 07, 2014	Rev 02 Sheet 43 of 60

SMBus block diagram

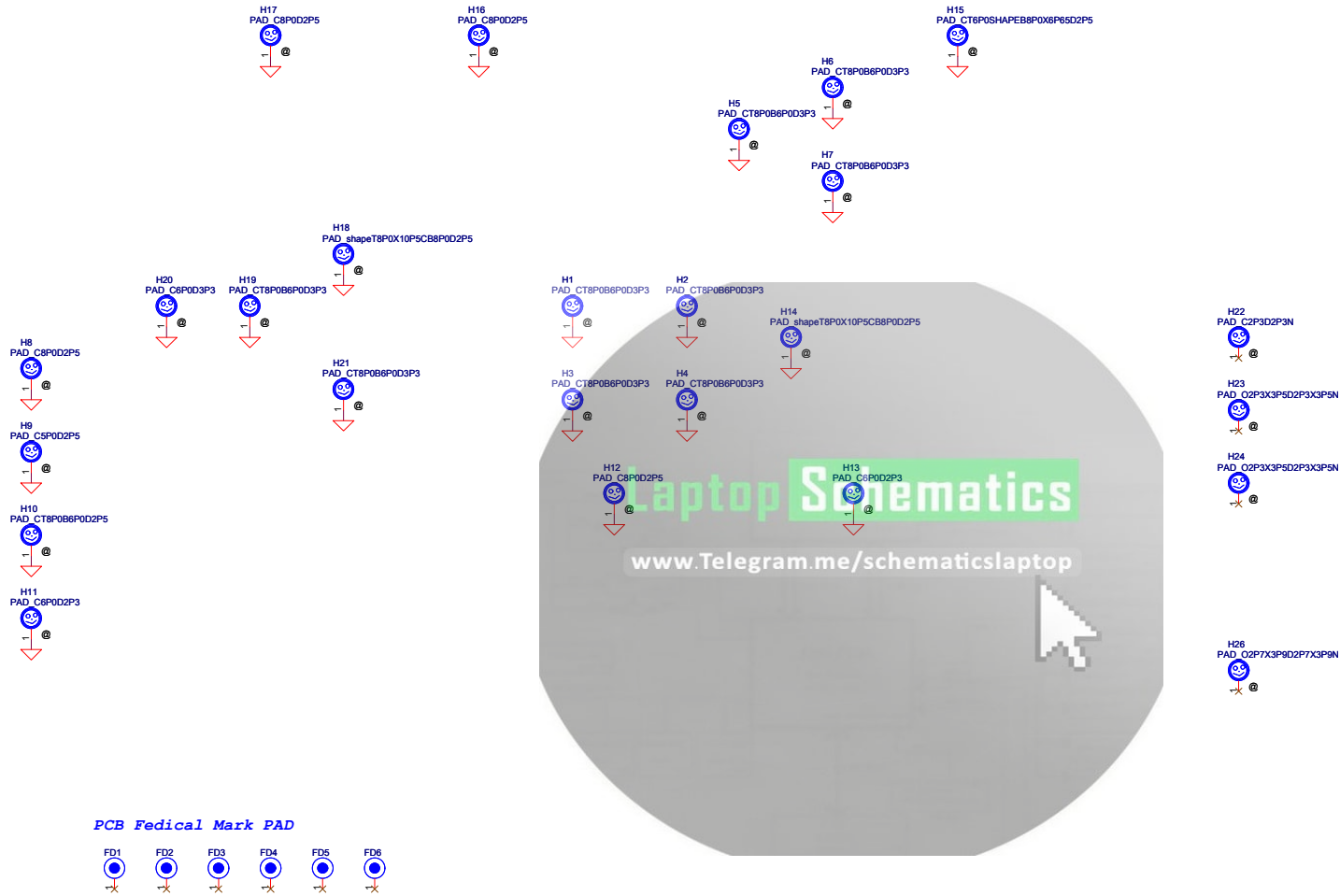






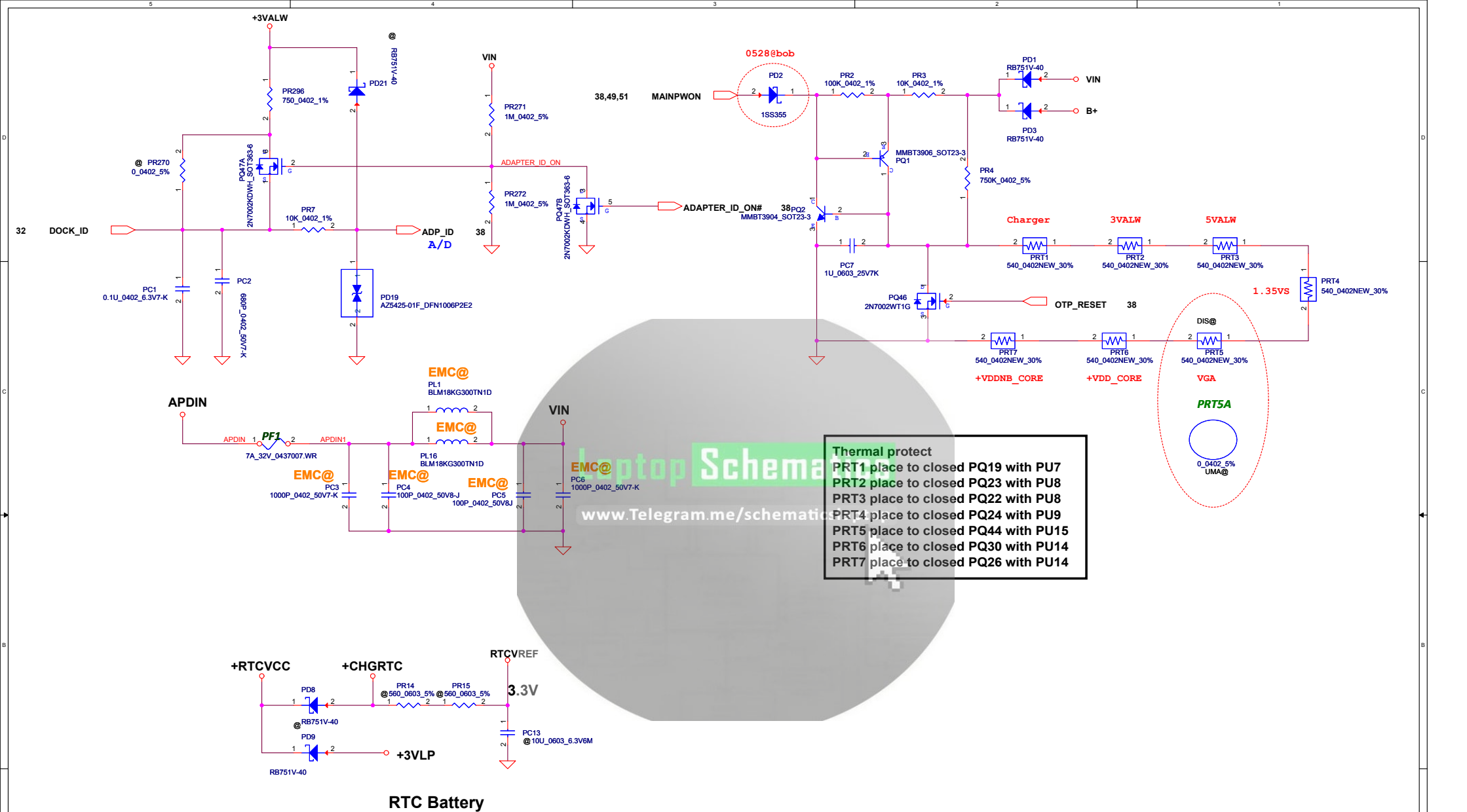
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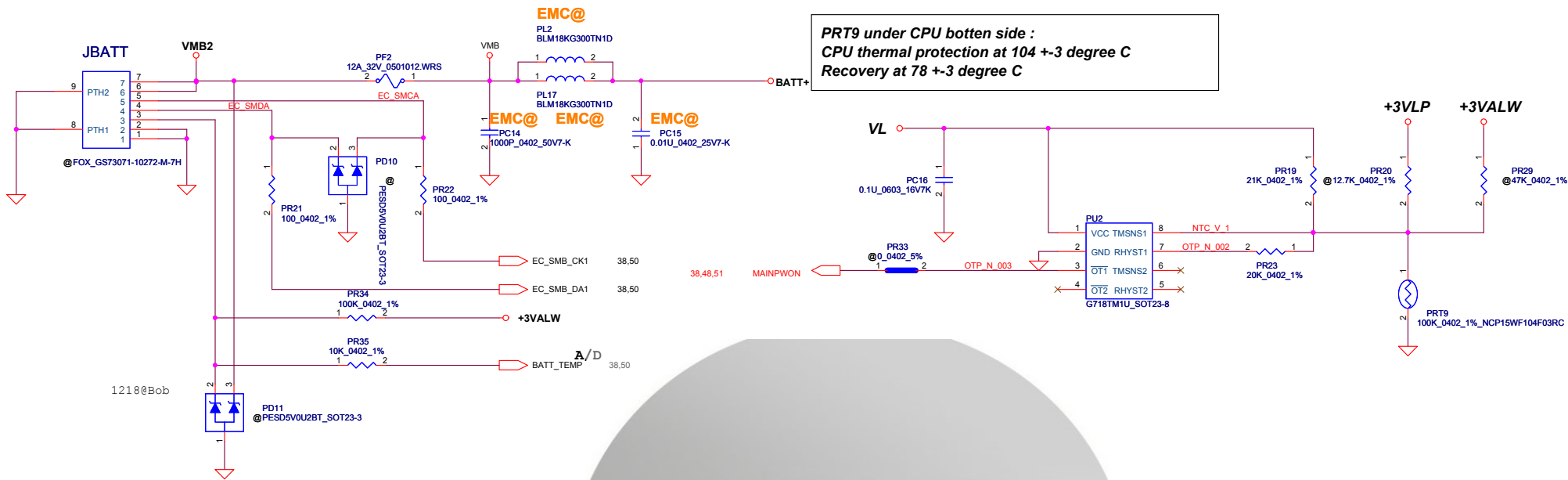
# Only for Edge 14" SCREW LOCATION



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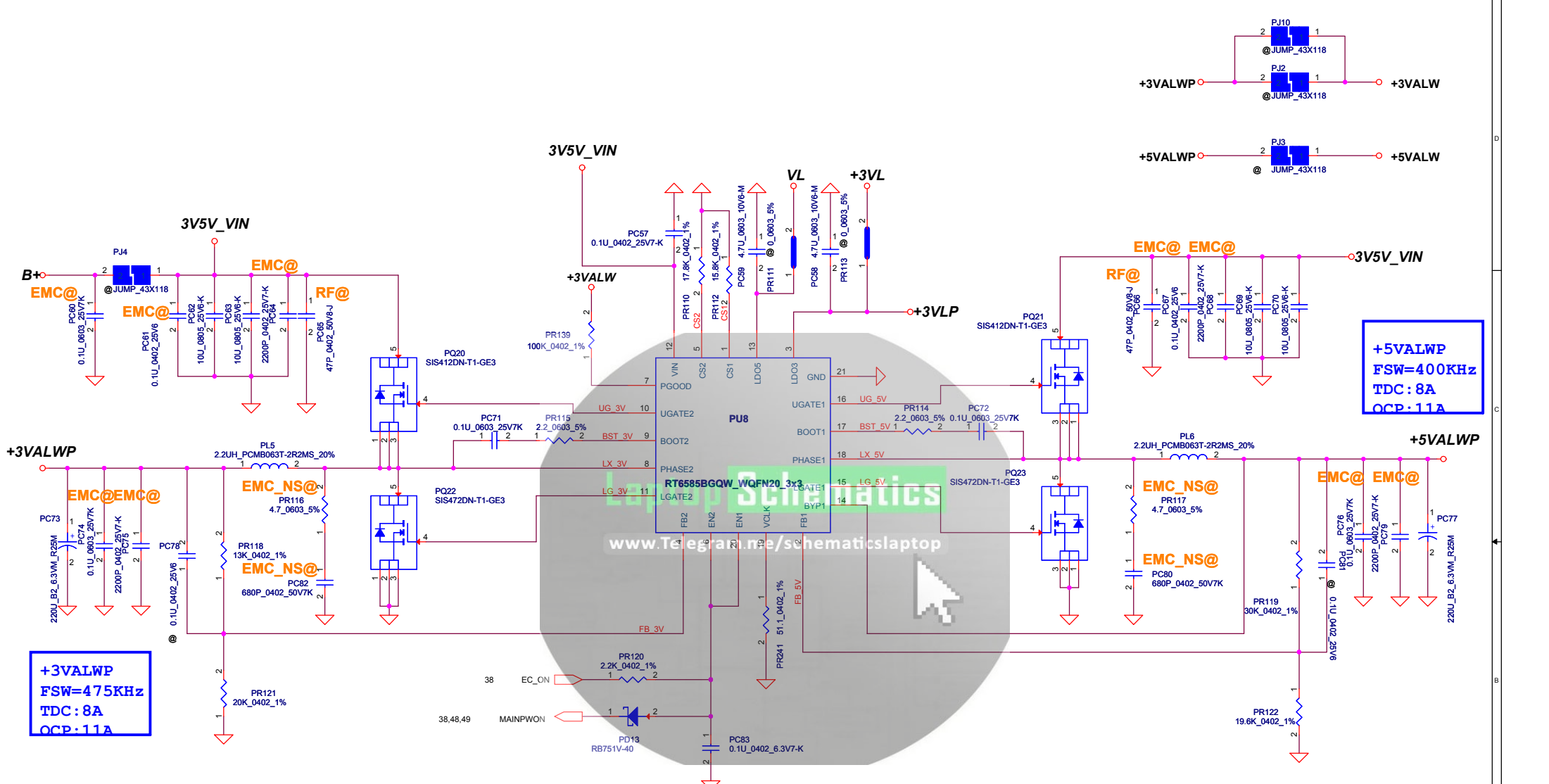





**PRT9 under CPU botten side :**  
**CPU thermal protection at 104 +-3 degree C**  
**Recovery at 78 +-3 degree C**







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Custom	NM-A231	0.2	
Date:	Monday, July 07, 2014	Sheet	51 of 65

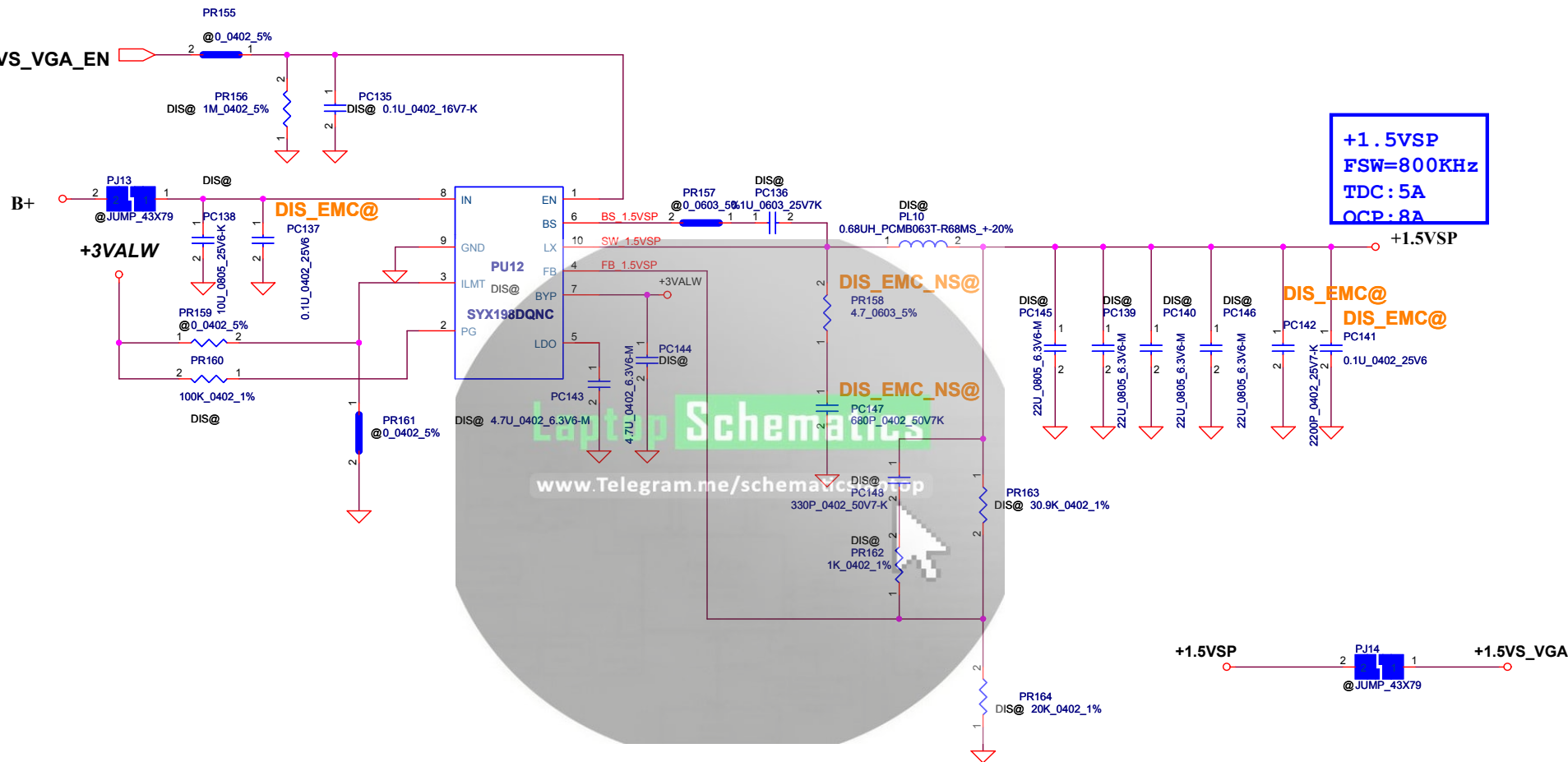







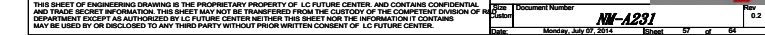
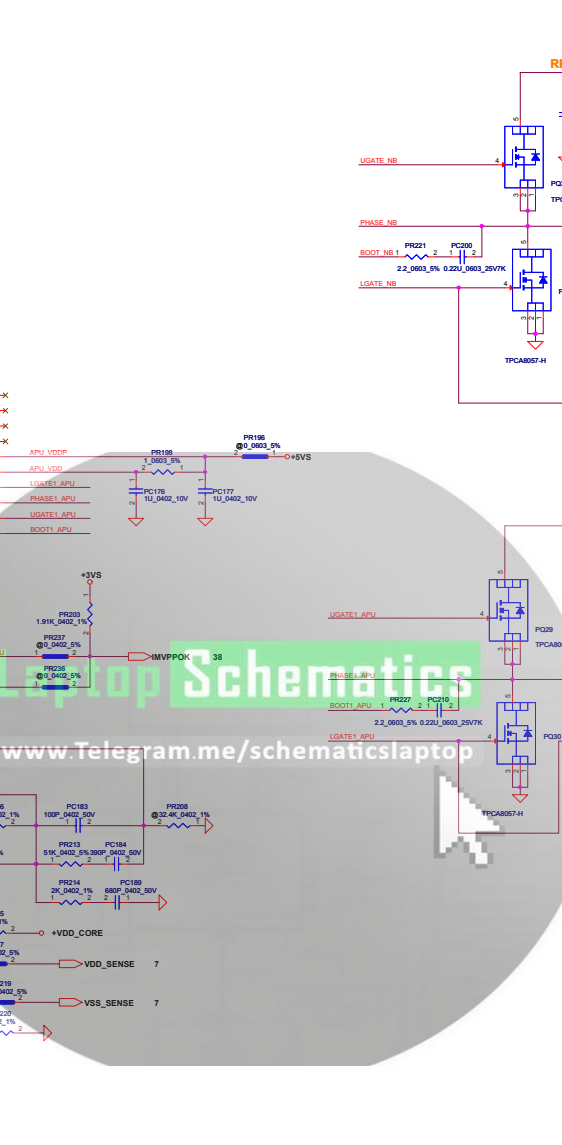


24 1.5VS\_VGA\_EN

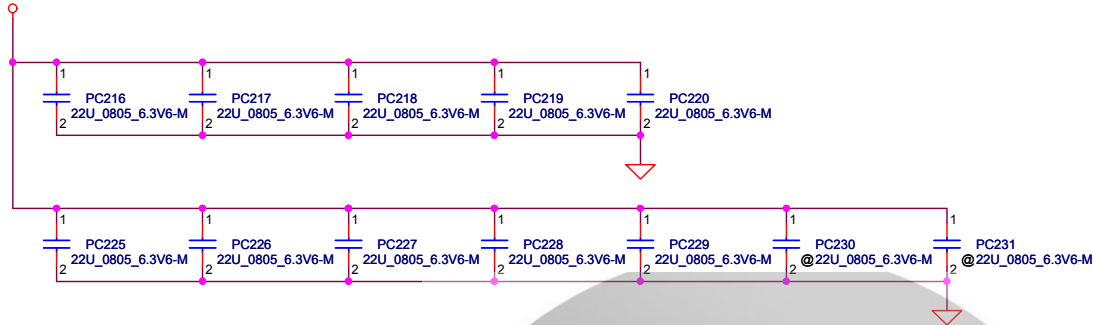


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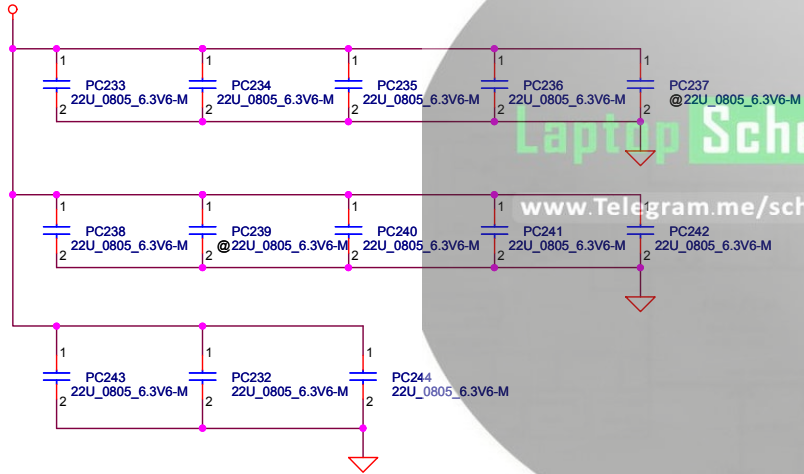




# +VDDNB\_CORE



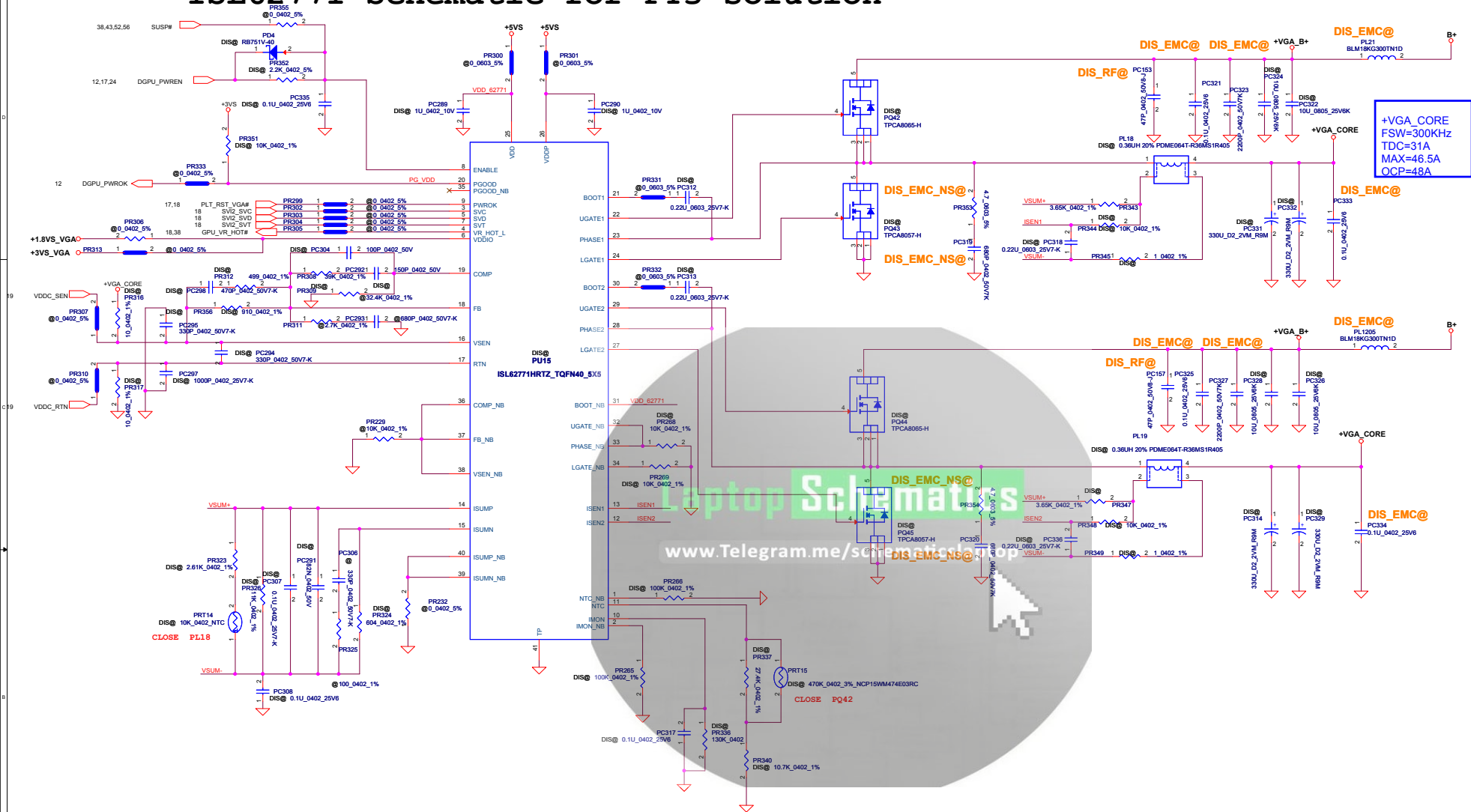
# +VDD\_CORE


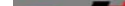



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## ISL62771 Schematic for FT3 solution



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				Rev. 0	

Item	Reason for change	PG#	Modify List	Date	Phase
1	GPU power sequence tuning	24 12	1.RV132 from 20K ohm change to 3.3K ohm 2.CV165 from 1000PF change to 820PF 3.RV129 from 51K ohm change to 180K ohm 4.RV133 from 47K ohm change to 240K ohm 5.Add DV5 6.RH145 pull down to 1K ohm 7.change RH35 to @ 8.reserver GPU core discharge circiut(RV144, RV143,QV13)	2013.12.26	FVT
2	del double component	38	1.Del RE2, RE3	2013.12.26	FVT
3	EMI request	36	1.CL27 change to 2000V	2013.12.26	FVT
4	Common design	14	1.add RH92 to separate	2013.12.26	FVT
5	System power sequence	43	1.add +3VS discharge circuit Q17,R137 2.change D5 to mount form @	2013.12.26	FVT
6	Common design	43	1.RA2 change to @ , Add RA3 connect to 3VL	2013.12.26	FVT
7	ECSL request	40 24	1.SB000007H1J change to AOS AO3413 SB93413000J(QG1, QV5) 2.SB000002R0J change to LRC LMBT3904WT1G SB000002ZJ00 (Q1,Q8,Q9,QC1,QC2,QV3,,QC4,QC5) 3.SE000000KMT change to SE000000X30T(C1,C3,C99,C140,C141,C146,C147,C148,CA9,CA13,CA14,CA15,CA17,CD22,CV163)	2013.12.26	FVT
8	modify SMBus issue	7	1.QC7, QC6 gate G connect to 1.35V run del RC71,RC72	2013.12.26	FVT
9	Cost down component count	38	1.RE30, RE29, RE11 change to @	2013.12.30	FVT
10	Cost down component count	14	1.RH87 change to @	2013.12.30	FVT
11	Cost down	15	1.RH62 change to mount, LH2 change to @	2013.12.30	FVT
12	Cost down component count	18	1.RV75 change to @	2013.12.30	FVT
13	Cost down component count	18	1.RV82, RV83 change to @	2013.12.30	FVT
14	Cost down component count	18	1.RV150, RV151 change to JET@ from @ 2.RV125, RV122 change to @ form DIS@ 3.CV149,CV150,RV96, RV97,RV95,CV152,CV151,UV9 change to @ form JET@	2013.12.30	FVT
15	Cost down component count	26 7	1.R4, RC73,RC74 change to @	2013.12.30	FVT
16	SMBus issue	7	1.add RC21	2013.12.30	FVT
17	ECSL request	7	1.SA00005QN0Jchange to ANPEC APX3132H SA00005Z200	2013.12.30	FVT
18	Cost down component count	7	1.RC17,18,13, 19 del add RP4	2013.12.30	FVT
19	Cost down component count	7	1.RC47,48,49 del add RP5	2013.12.30	FVT
20	Cost down component count	7	1.RC37,38,39,40 del add RP6	2013.12.30	FVT
21	EC_MUTE# leakage issue	38	1.add D6	2013.1.3	FVT

Title		<Title>
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Item	Reason for change	PG#	Modify List	Date	Phase
23	for EC mirro function	38	add D6,RA29 and RE12 change to mount	2013.01.06	FVT
24	BIOS request	14	change GPIO ipin to G-event 5	2013.01.06	FVT
25	PEG signal EA request	7/17	change PEG capacitor to 0.22u, change to 0.1 u	2013.01.06	FVT
26	reduce component count	7/17	DEL RC45,R66, RH70,RH71,RH72,RH73,RH77,RV136,RW4,RW5,RW7,RW8,RW9,RW10	2013.01.06	FVT
27	FAN Pin define reserve	42		2014.02.24	SIV
28	remove GPU CTF function	18	DEL QV3,CV148,RV87,DV1,RV86,RV88,RV74	2014.02.24	SIV
29	remove Fingerprint	42	DEL R111,D25,C136, JFPB	2014.02.24	SIV
30	DFB issue for L9 issue	30	change C54 form @ to mount	2014.02.24	SIV
31	reduce component count		del 0402 R10 R106 R107 R134 RA28 RC43 RE26 RH6 RH7 RH8 RH9 RH10 RH11 RH12 RH13 RH14 RH15 RH16 RH17 RH44 RH22 RH57 RH58 RH76 RH91 RH98 RH90 RH122 RH125 RH126 RH127 RH128 RH129 RH130 RL22 RV150 RV151 0603 R5 R100 R110 RH78 RH79 RH80 RH81 RL4  0805 R8 R37 RA1 RA3 RA4 RA6 RH62 RH61 RH142 RH143	2014.02.24	SIV
32	CP SMB issue	14/42	Add R36,R38 for SMB pull up	2014.02.24	SIV
33	component reduce	4	CC1~8,CC106~CC113 change to DISC	2014.05.14	SVT
34	Audio test request	35	CA 31, CA 32 change to 10u form 4.7u	2014.05.28	SVT
35	Power sequence modify	43	C142 change to 220p form 2200p C143 change to 100p form 1000p	2014.05.28	SVT
36	LAN LED function change	36	LANLED_LINK# connect to pin 10 LANLED_ACT# connect to pin 12	2014.05.28	SVT