


LCFC Confidential

PICASSO EX95 Rev1.0 Schematic

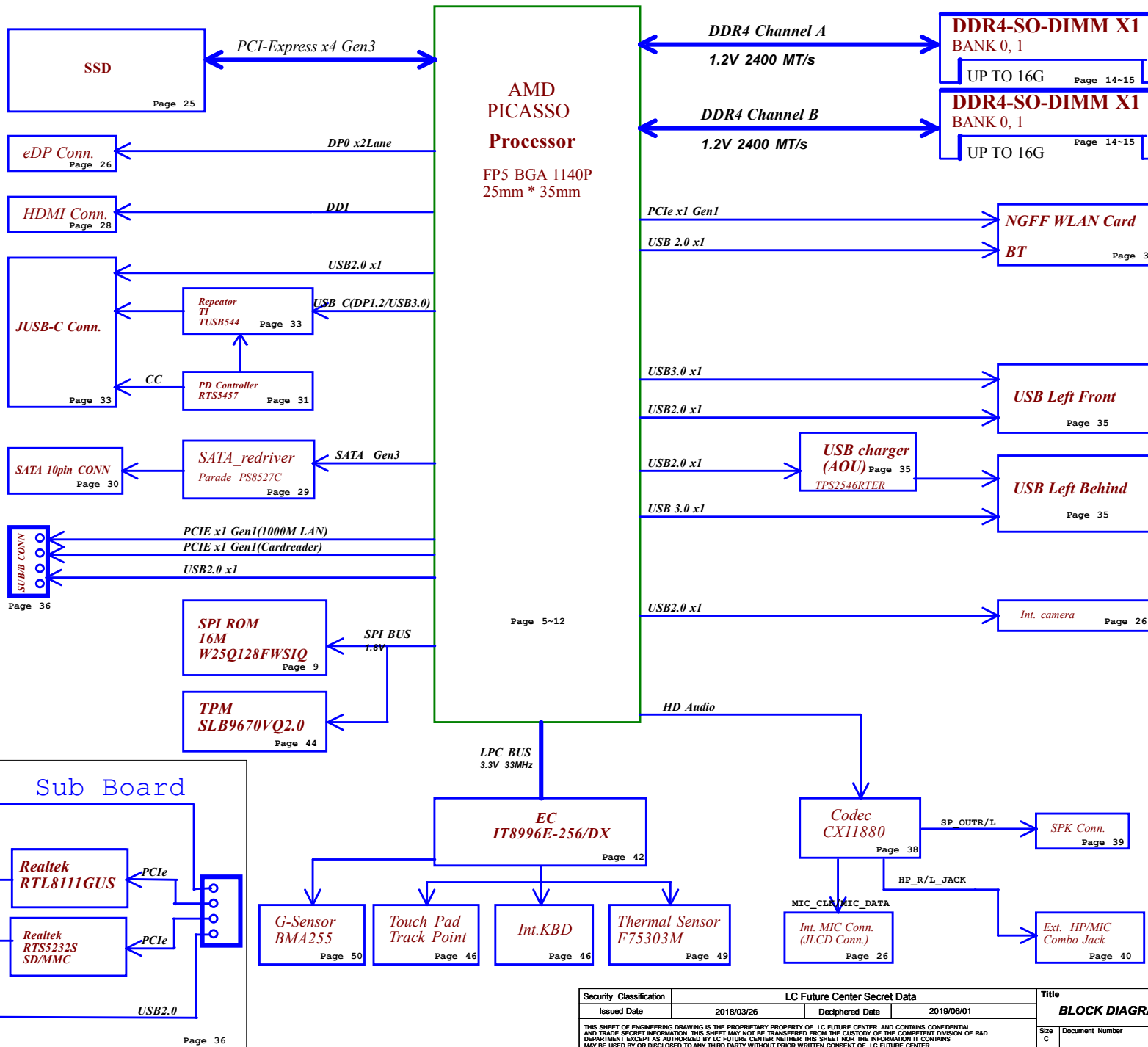
AMD Picasso FP5 Processor with DDR4

2019-01-08 Rev1.0

Security Classification	LC Future Center Secret Data			Title	
Issued Date	2018/08/24	Deciphered Date	2019/06/01	COVER PAGE	
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AMD Raven Ridge FP5



Voltage Rails (O --> Means ON , X --> Means OFF)

Power Plane \ State	B9+	+3VALW +5VALW +1.8VALW +0.9VALW_VDDP	+1.2V +2.5V	+5VS +3VS +1.8VS +0.9VS_VDDP +0.6VS +VDDCR_SOC +VDDC_VDD +VGA_CORE
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_S3#	SUSP#	SLP_S5#	SYSON	EC_ON
S0	HIGH		HIGH	ON	
S3 (Suspend to RAM)	LOW		HIGH	ON	
S4 (Suspend to Disk)	LOW		LOW	ON	
S5 (Soft OFF)	LOW		LOW	ON	

USB2 Port

Port	Device
0	USBC
1	USB3 port1
2	USB3 port2
3	USB2 IOB
4	USB2 (BT)
5	Int. Camera

USB3 Port

Port	Device
0	USB Type-C
1	USB3 port1
2	USB3 port2
3	X
4	X

PCIE Port

Port	Device
GPP0	LAN
GPP1	CardReader
GPP2	X
GPP3	X
GPP4	WLAN
GPP5	X
GFX0	M.2 SSD
GFX1	M.2 SSD
GFX2	M.2 SSD
GFX3	M.2 SSD
GFX4~7	X

SATA Port

Port	Device
GPP6	SATA HDD
GPP7	X

SMBUS Control Table

EC	Schematic	SOURCE	DGPU	BATT	Charge	PMIC	PD	APU	G-Sensor	Thermal Sensor	SODIMM	CP Module
SMCLK1 SMDAT1	EC_SMB_CK1 EC_SMB_DA1	EC +3VL	X	V +3VL	V +3VL	X	X	X	X	X	X	X
SMCLK0 SMDAT0	EC_SMB_CK2 EC_SMB_DA2	EC +3VL	X	X	X	X	V +3VL	X	X	X	X	X
SMCLK3 SMDAT3	EC_SMB_CK3 EC_SMB_DA3	EC +3VS	X	X	X	X	X	V +3VS	V +3VS	V +3VS	X	X
SMCLK2 SMDAT2	EC_SMB_CK4 EC_SMB_DA4	EC +3VL	X	X	X	V +3VL	X	X	X	X	X	X
	APU_SMB0CLK APU_SMB0DATA	APU +3VS	X	X	X	X	X	X	X	X	V +3VS	X
	APU_SMB1CLK APU_SMB1DATA	APU +3VALW	X	X	X	X	X	X	X	X	X	V +3VS

PD Controller I2C

	SOURCE	APU	Type C Redriver
REPETER_SCL REPETER_SDA	PD +LDO_3V3	V +1.8VALW	V +LDO_3V3



APPLY PCB PN

BOM Structure Table

BOM Structure	NOTE
HDT@	For HDT AMD debug port
LPC@	For LPC AMD debug port
TPM@	Trusted Platform Module (TPM)
UMA@	UMA SKU ID
CD@	COST DOWN
EMC_NS@	EMC Reserves
ME@	ME Connector
RF@	For RF function
EMC@	For EMI function
RF_NS@	reserves RF component

M.2 SSD

LAN

CardReader

WLAN

HDD

M.2 SSD

LAN

CardReader

WLAN

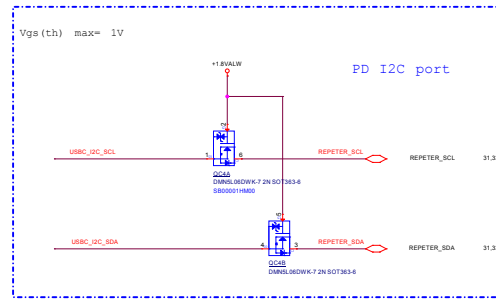
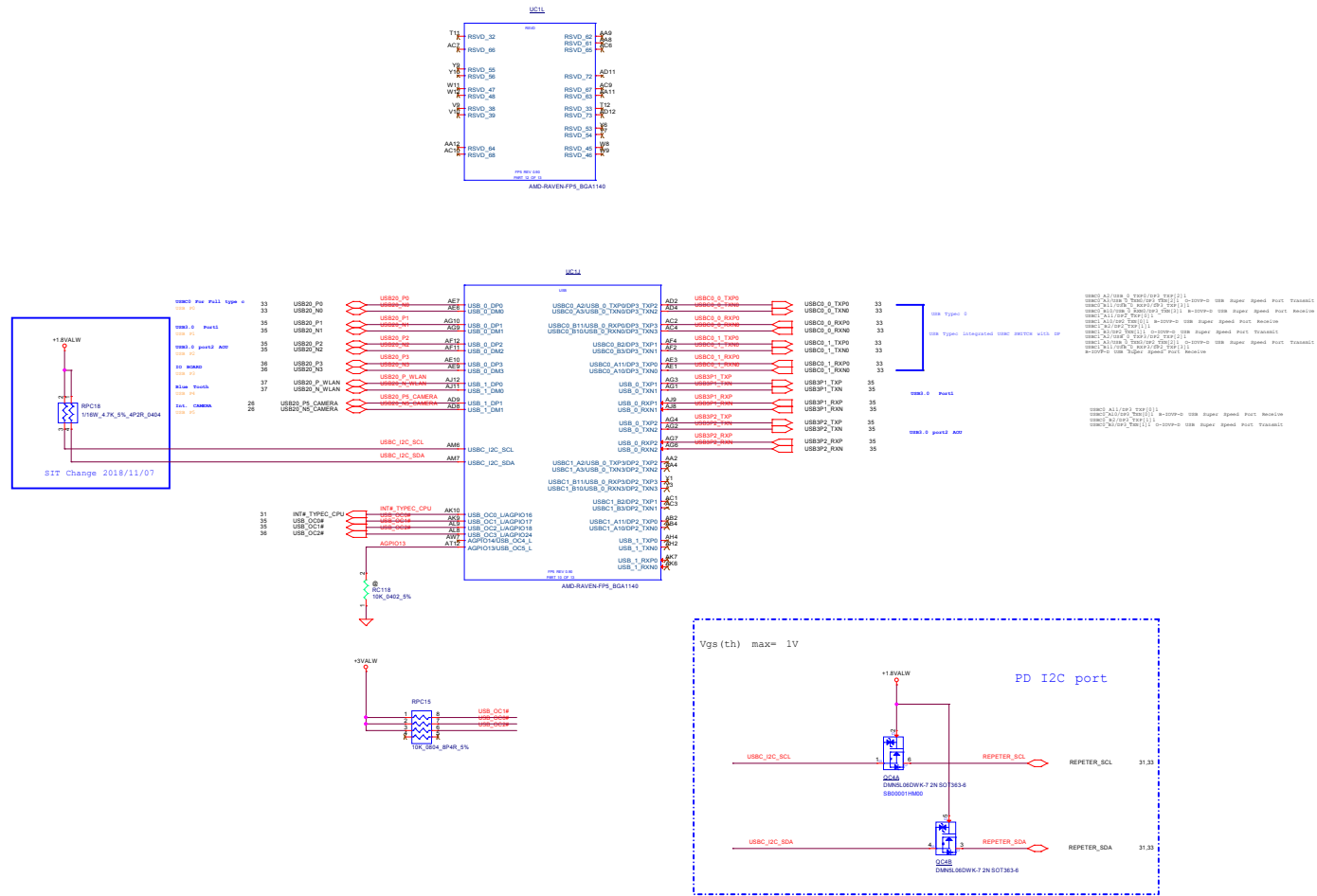
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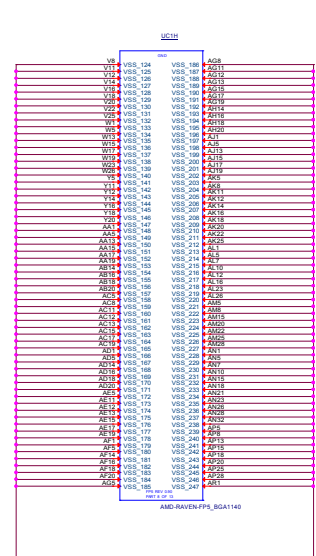
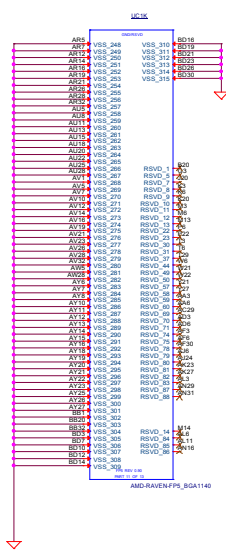
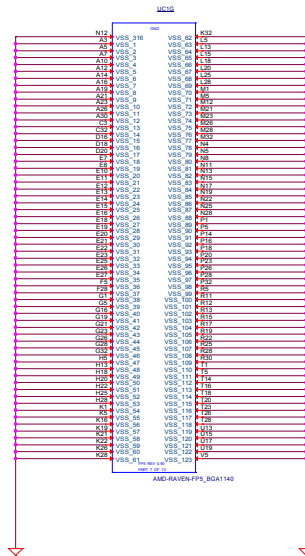
UC1B

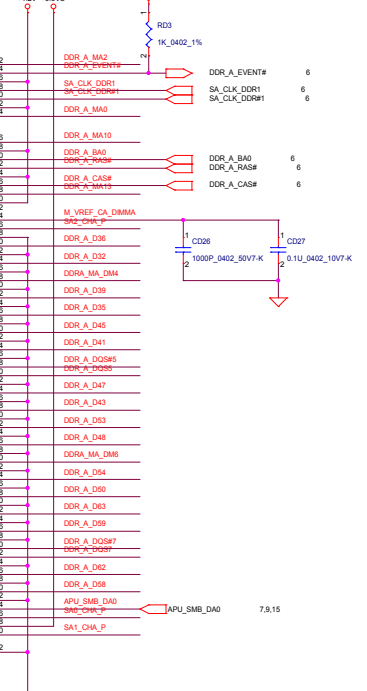
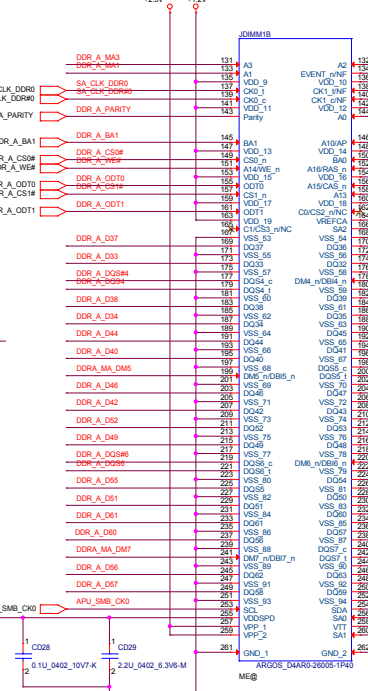
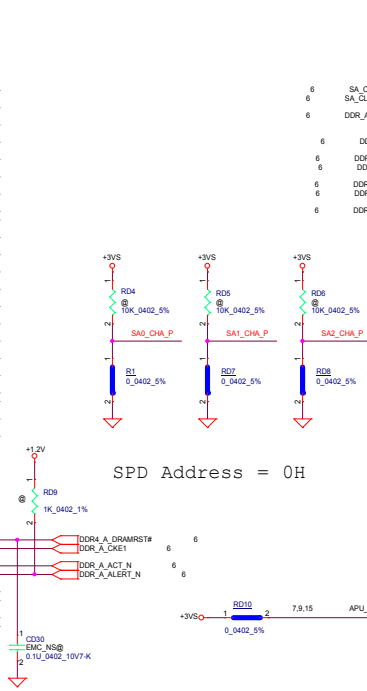
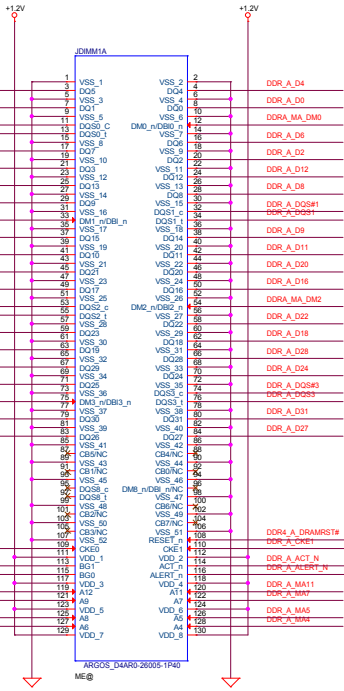
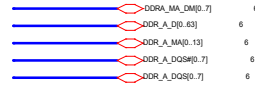
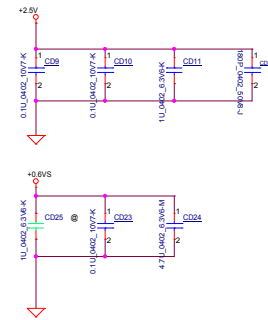
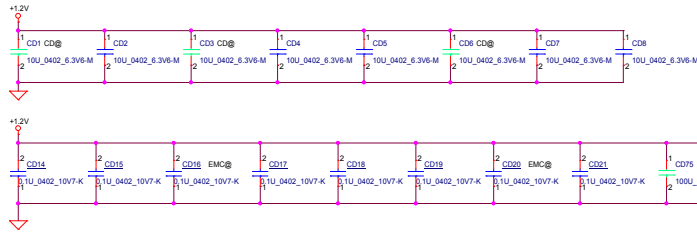
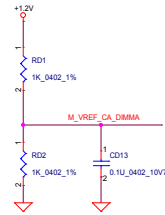
PCIe

FPS REV 0.00
PART 2 OF 13

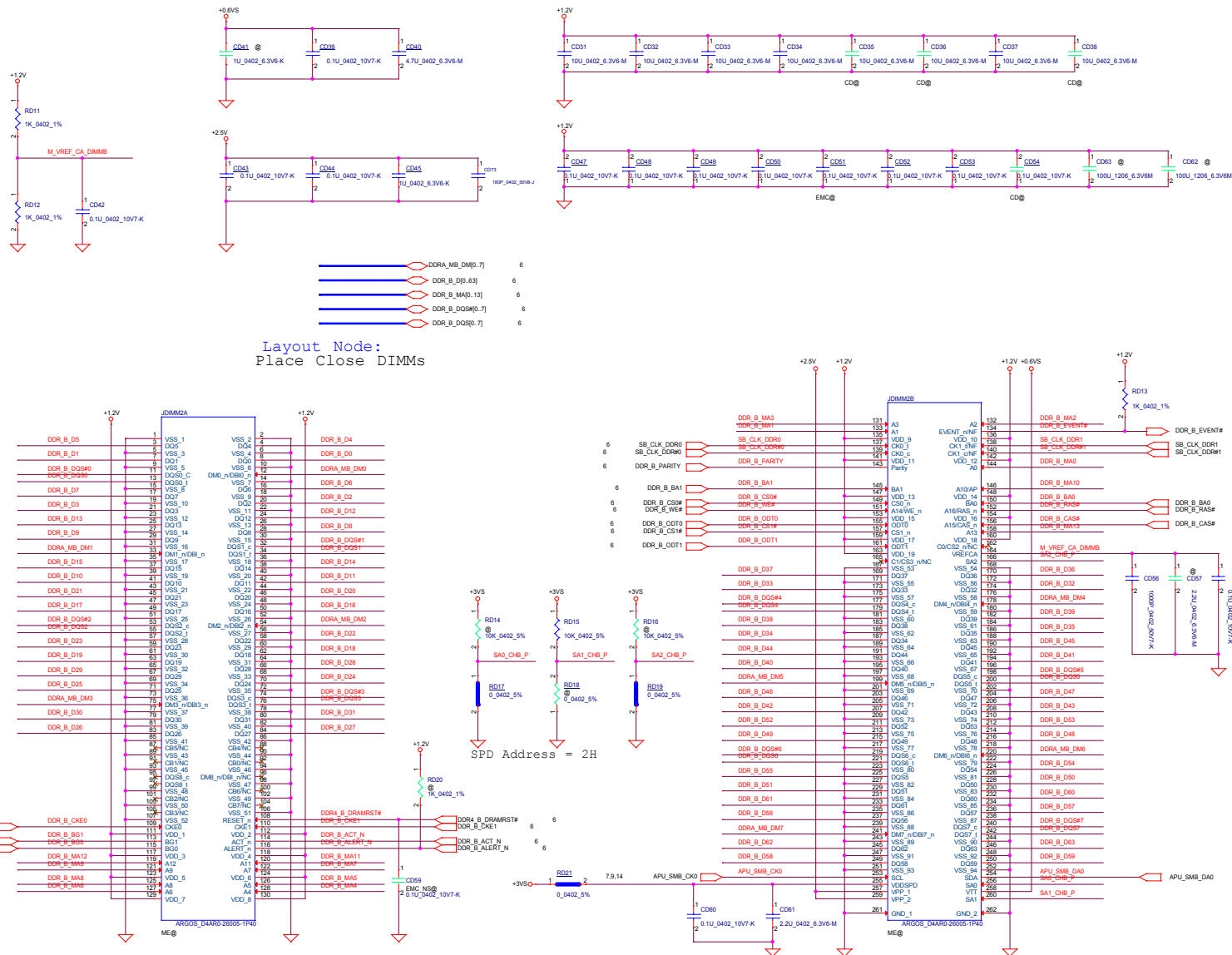
AMD-RAVEN-FPS_BGA1140







SPD Address = 0H




5	4	3	2	1																								
D																												
C																												
B																												
A																												
<table><tr><td colspan="2">Security Classification</td><td colspan="2">LC Future Center Secret Data</td><td>Title</td></tr><tr><td>Issued Date</td><td>2018/03/26</td><td>Deciphered Date</td><td>2019/06/01</td><td>VGA Notes List</td></tr><tr><td colspan="4">THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.</td><td><table><tr><td>Size</td><td>Document Number</td><td>Rev</td></tr><tr><td>Custom</td><td>JINN/DOOKU 2.0</td><td>0.1</td></tr><tr><td>Date:</td><td>Wednesday, January 09, 2019</td><td>Sheet 18 of 65</td></tr></table></td></tr></table>					Security Classification		LC Future Center Secret Data		Title	Issued Date	2018/03/26	Deciphered Date	2019/06/01	VGA Notes List	THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				<table><tr><td>Size</td><td>Document Number</td><td>Rev</td></tr><tr><td>Custom</td><td>JINN/DOOKU 2.0</td><td>0.1</td></tr><tr><td>Date:</td><td>Wednesday, January 09, 2019</td><td>Sheet 18 of 65</td></tr></table>	Size	Document Number	Rev	Custom	JINN/DOOKU 2.0	0.1	Date:	Wednesday, January 09, 2019	Sheet 18 of 65
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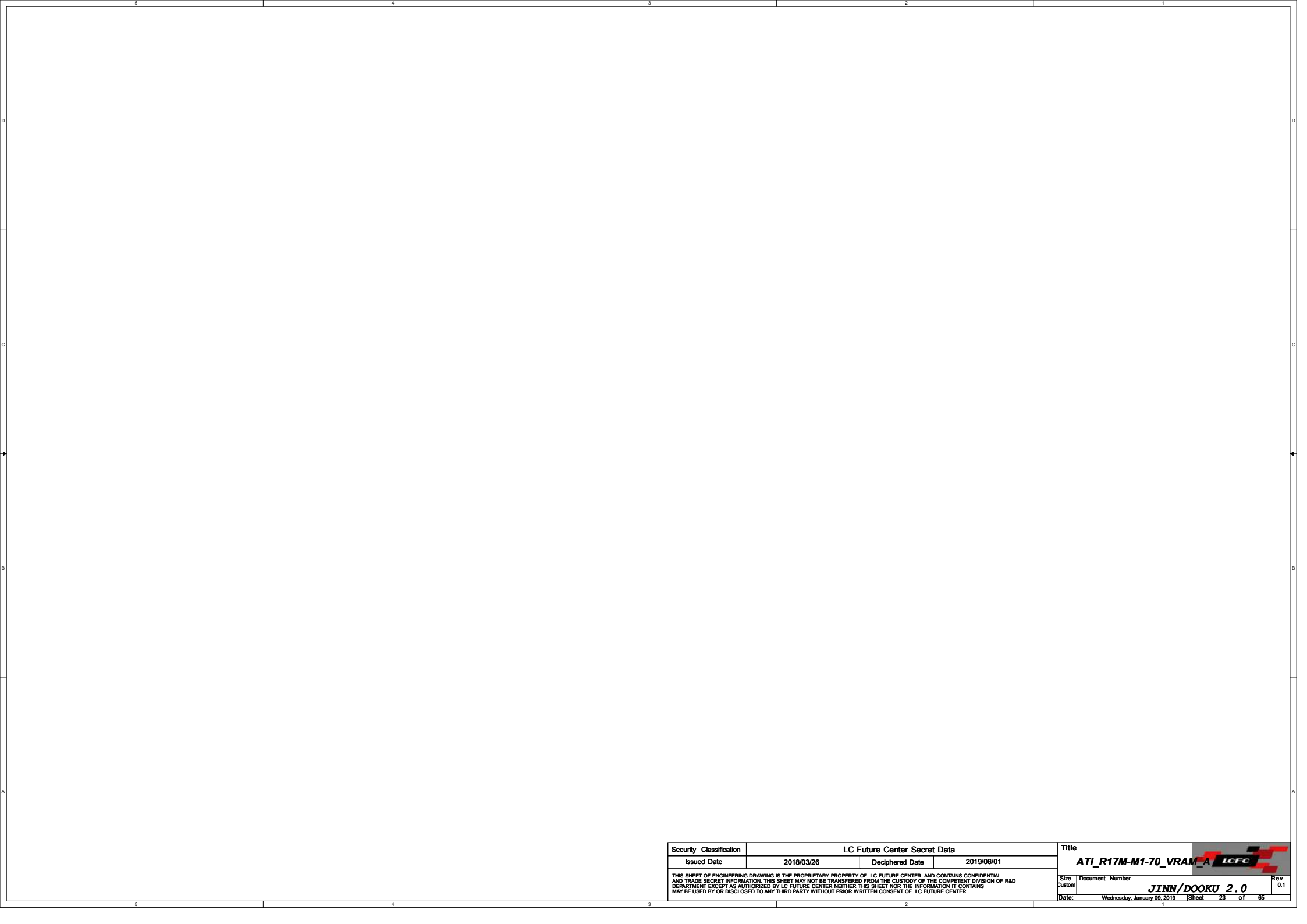
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LCDVDD Circuit

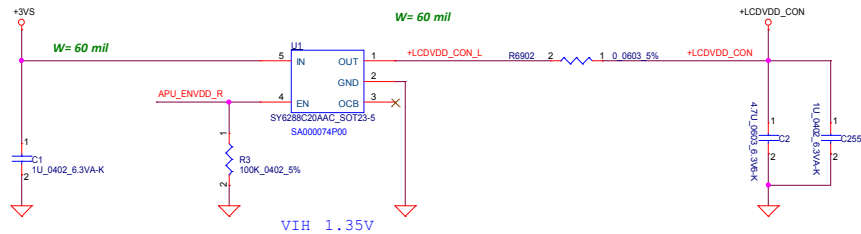
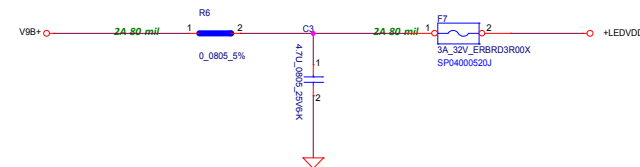
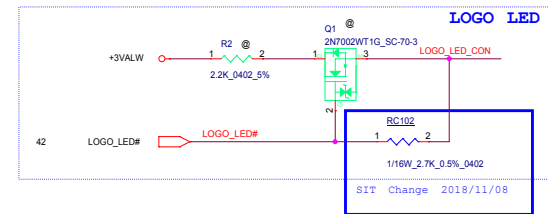


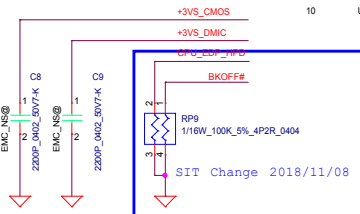
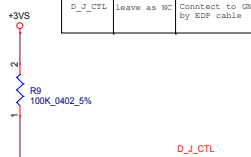
TABLE of POWER SWITCH (U1)

Vendor	LCFC P/N	Description
SILERGY	SA000074P00	S IC SY6288C20AAC SOT23 5P POWER SWITCH
GMT	SA000075700	S IC G5247T11U SOT-23 5P POWER SWITCH



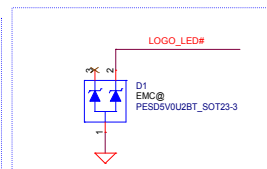
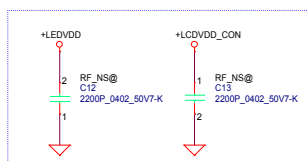
Board ID defined by EDP cable

Board ID	Doorku	JINN
D_J_CTL	leave as NC	Connect to GND by EDP cable

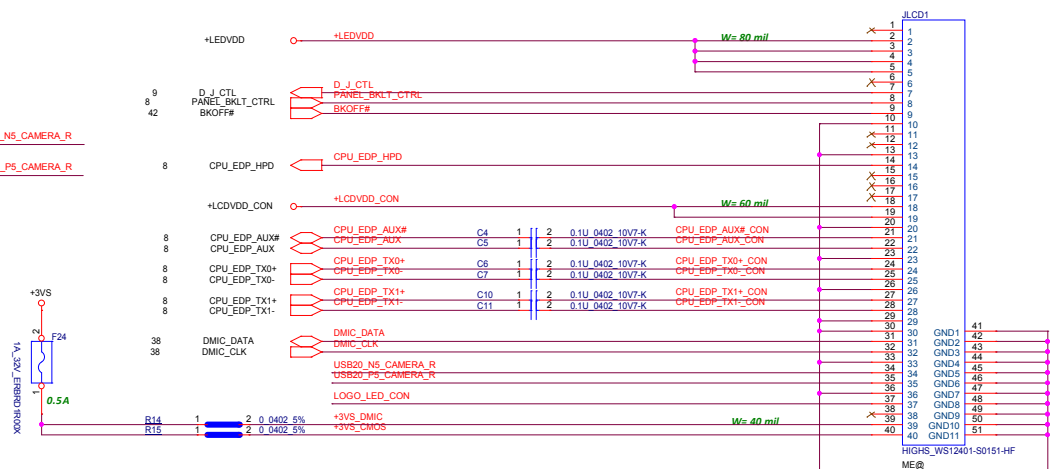


EMC request. Close to JLCD

ESD request

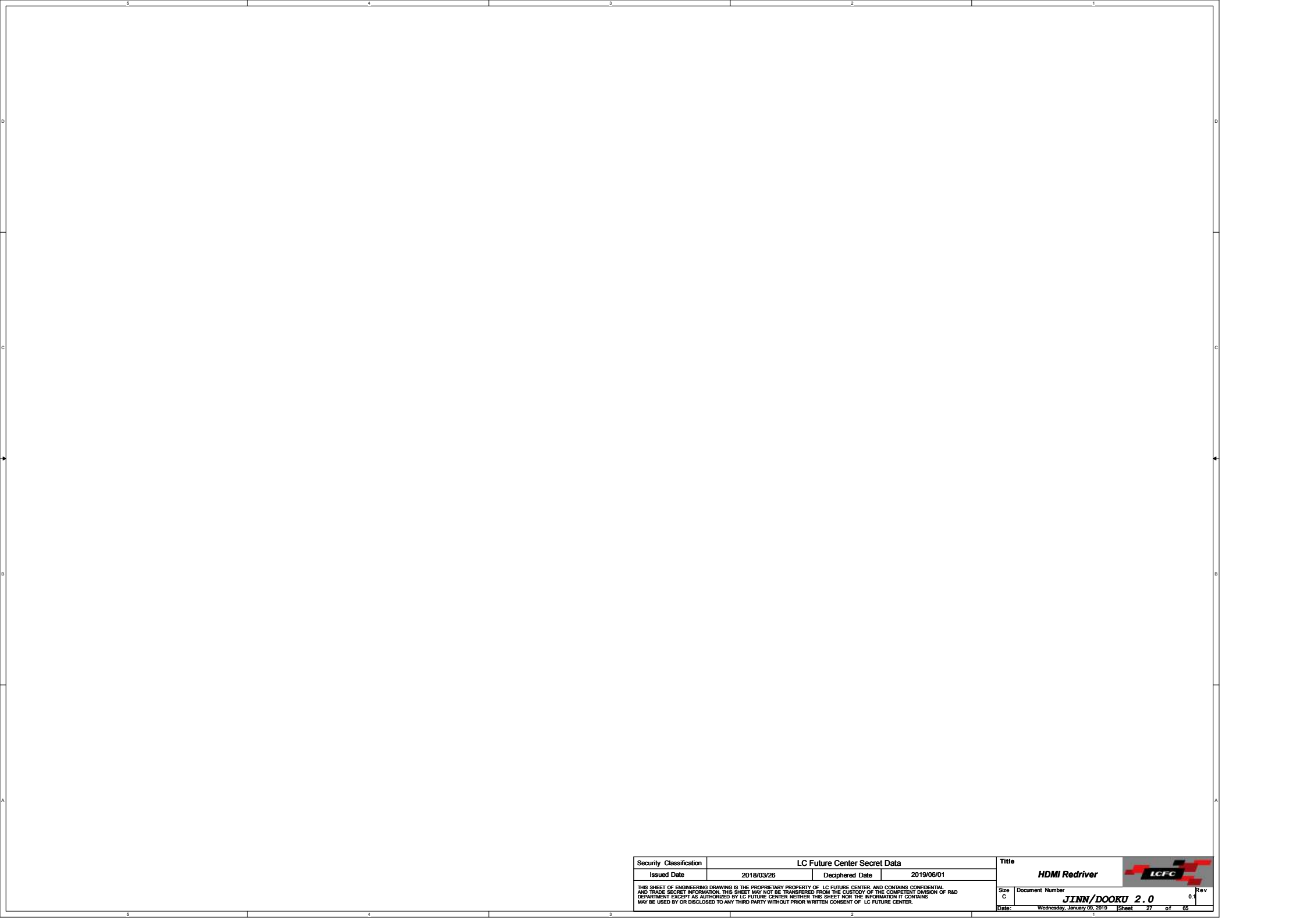


eDP/CMOS/LOGO-LED CONN.



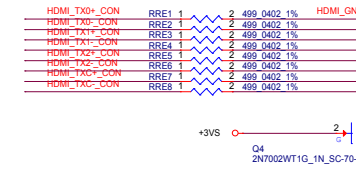
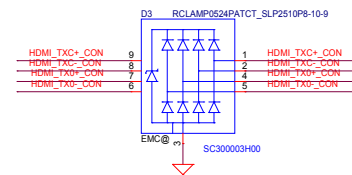
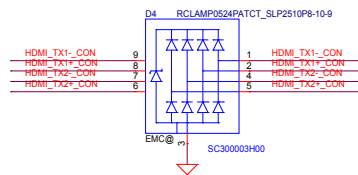
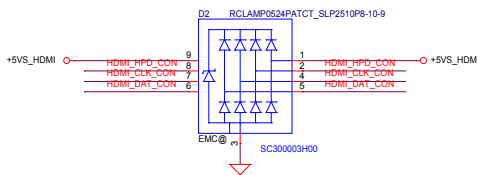
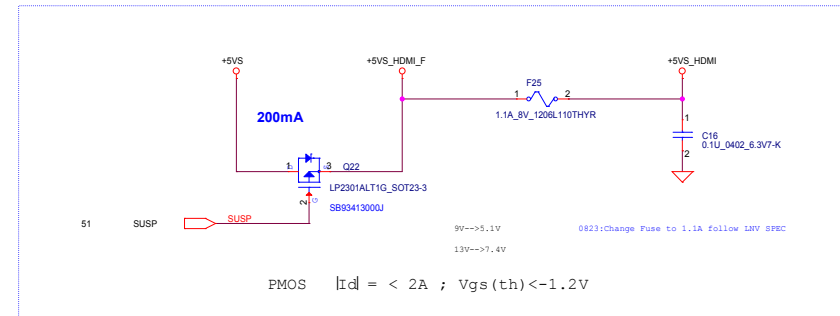
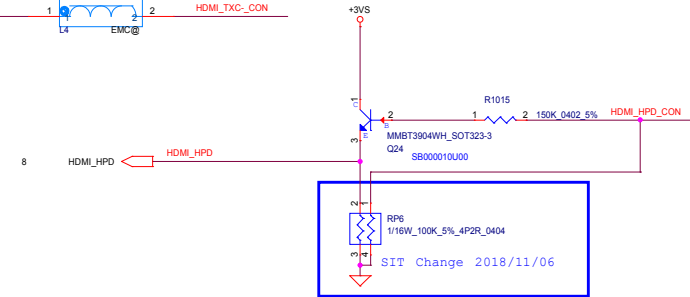
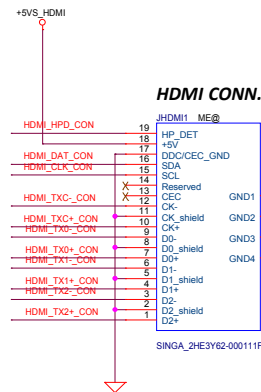
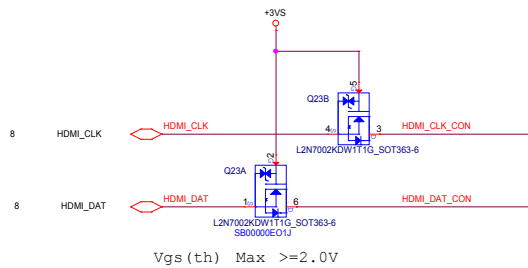
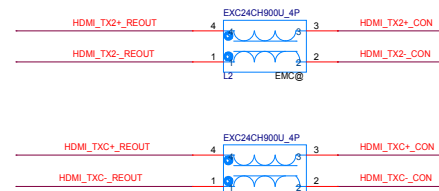
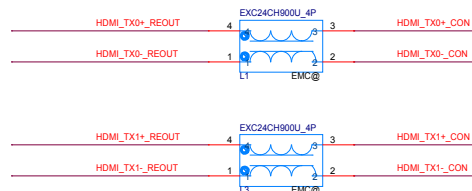
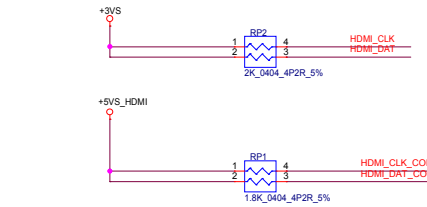
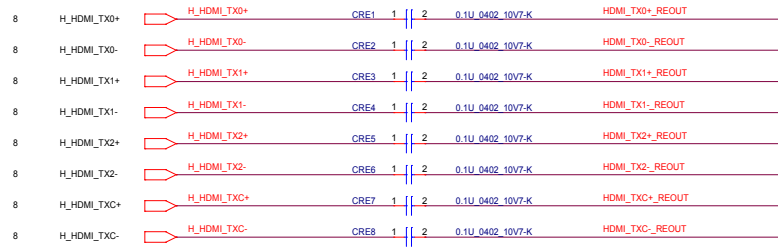
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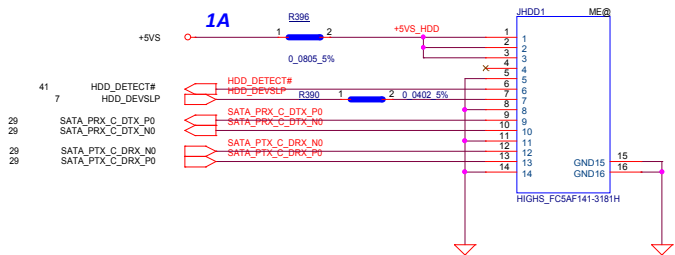
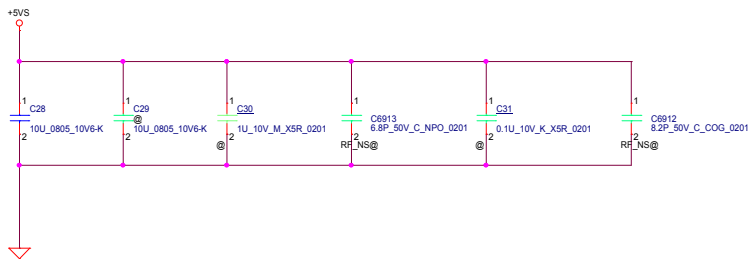


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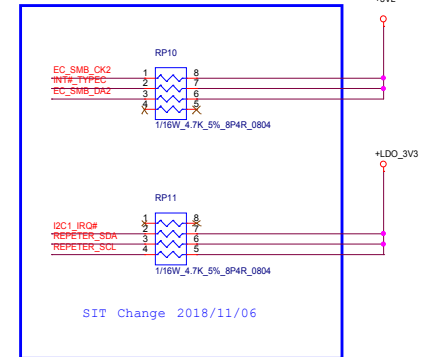
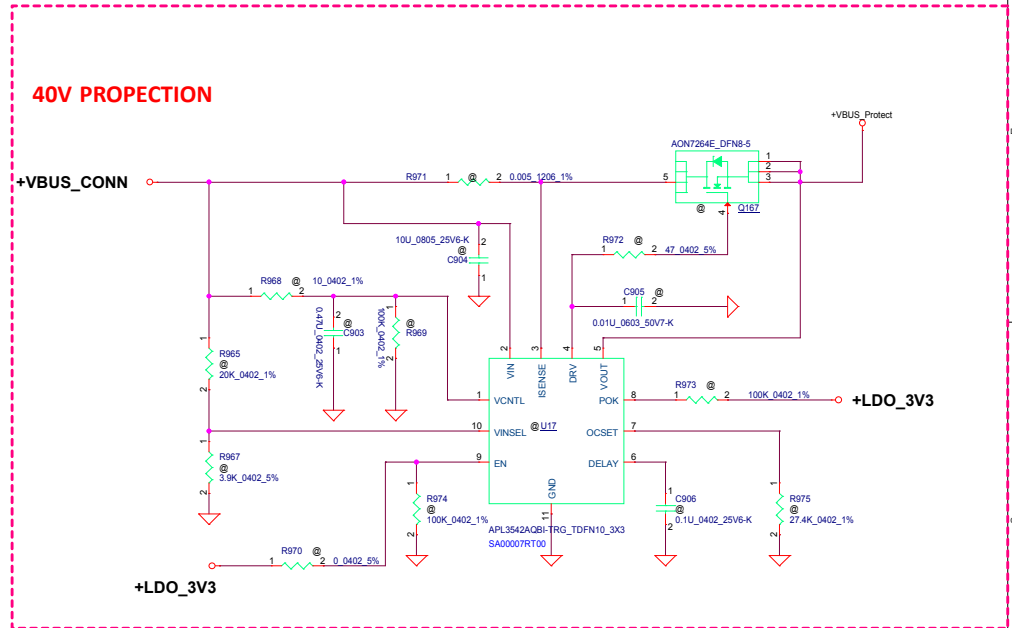
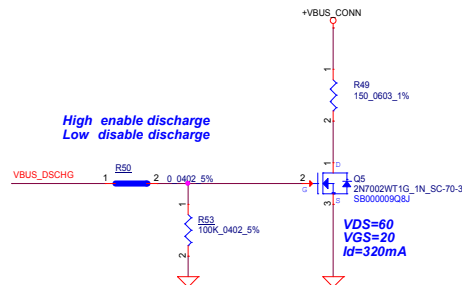
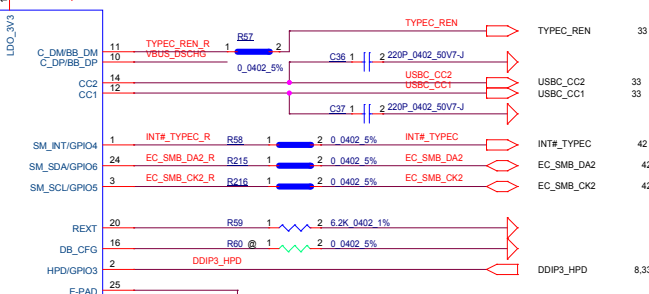
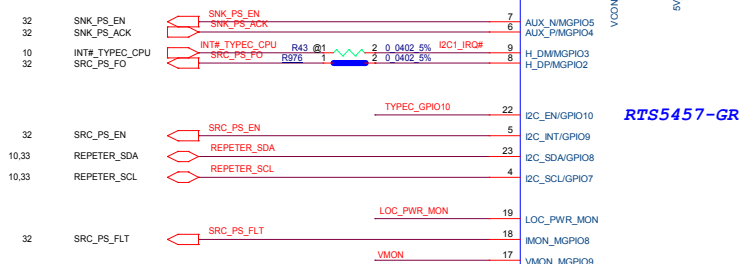
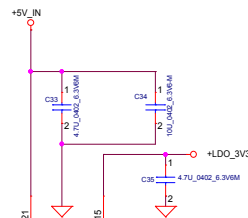
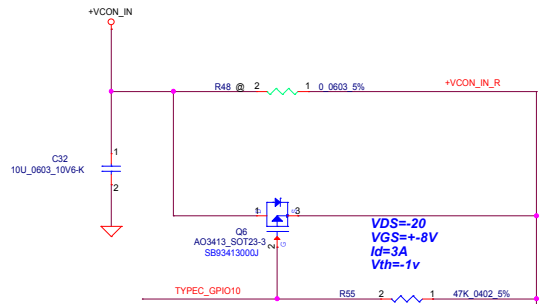
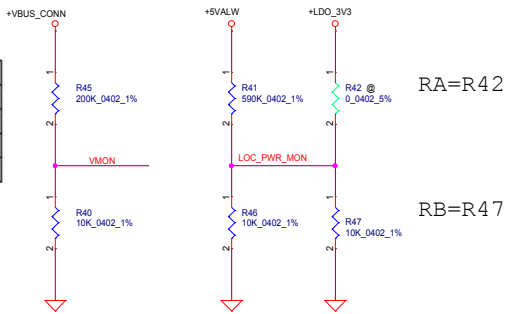




SATA HDD CONN.



Slave Addr	Ra 1%	Rb 1%
addr0	NC	10K
addr1	54.9K	12.1K
addr2	27.4K	15.8K
addr3	18.2K	22.1K



Security Classification	LC Future Center Secret Data		Title	PD Controller	
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On Board (LEFT-Front)

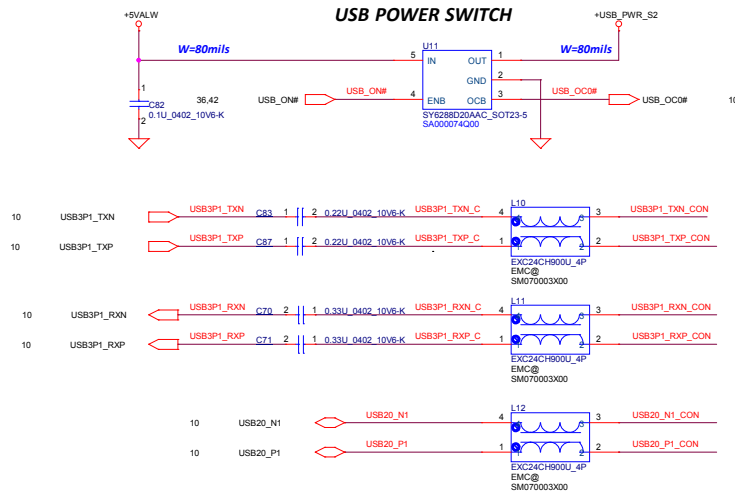
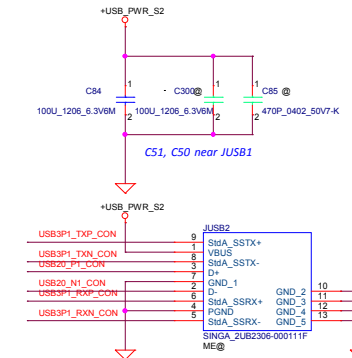
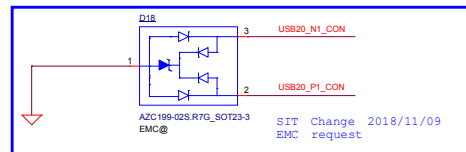
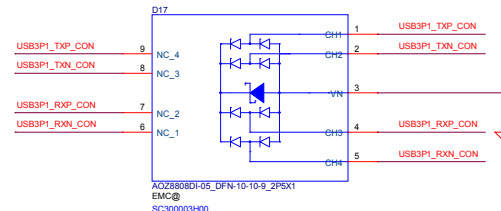
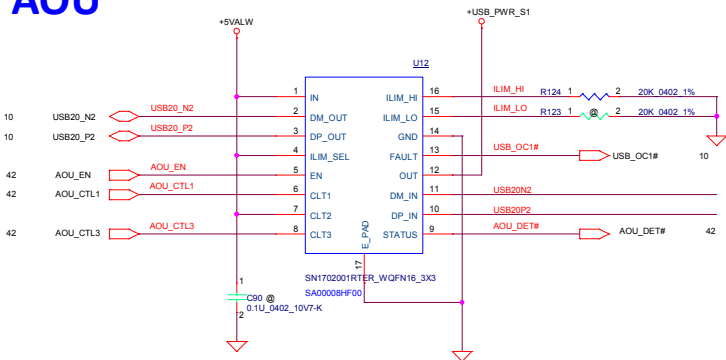


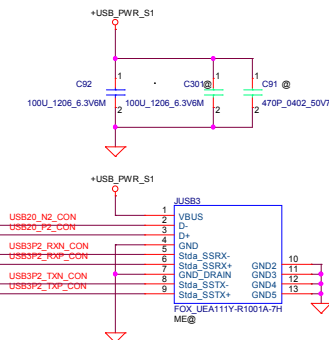
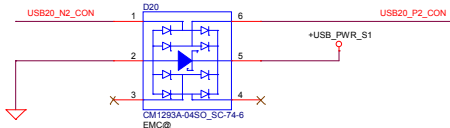
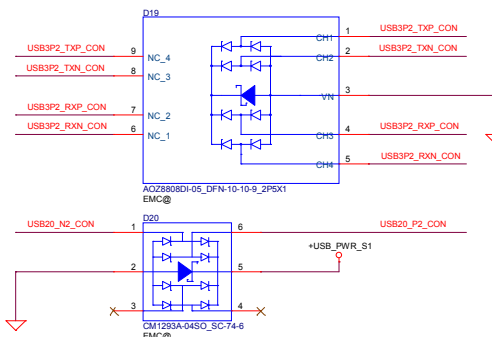
TABLE of POWER SWITCH (U11)		
Vendor	LCFC P/N	Description
SILERGY	SA000074Q00	S IC SY6288D20AAC SOT23 5P POWER SWITCH
GMT	SA000079400	S IC G517F2T11U SOT-23 5P POWER SWITCH



AOU

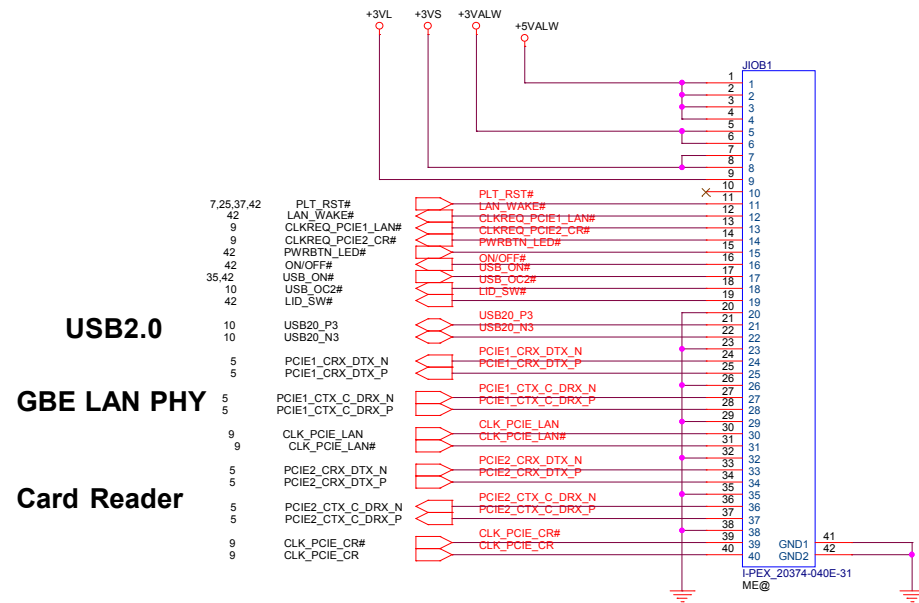


On Board (LEFT-Back)

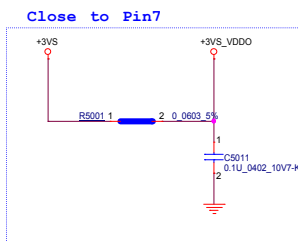
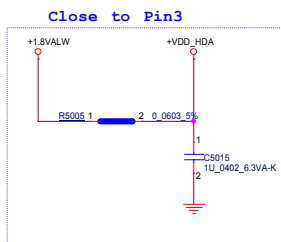
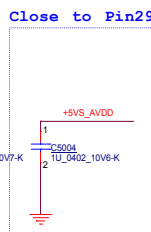
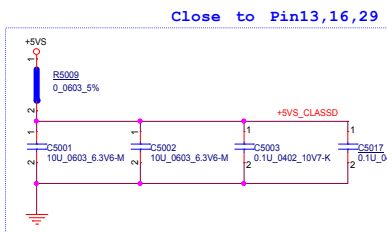


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Issued Date	2018/03/26	Deciphered Date	2019/06/01	USB3 P1/2 CONN.	
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				Custom	JINN/DOOKU 2.0
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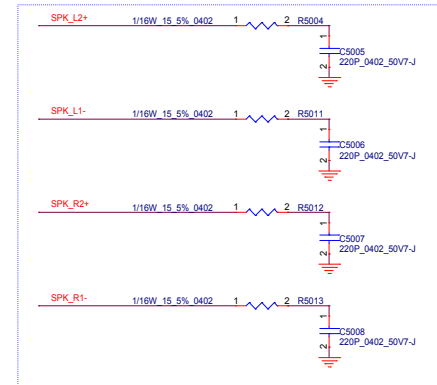
IO_40_Pin conn



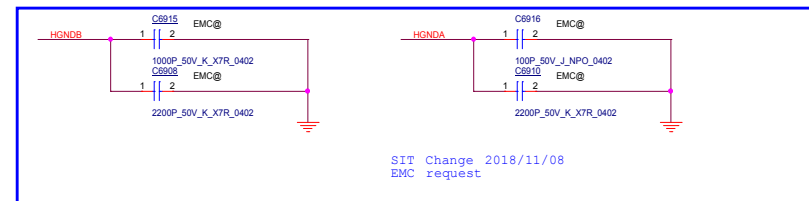
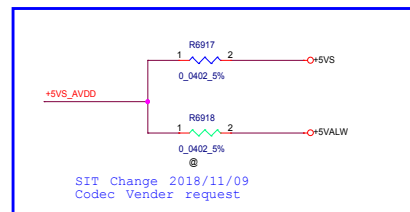
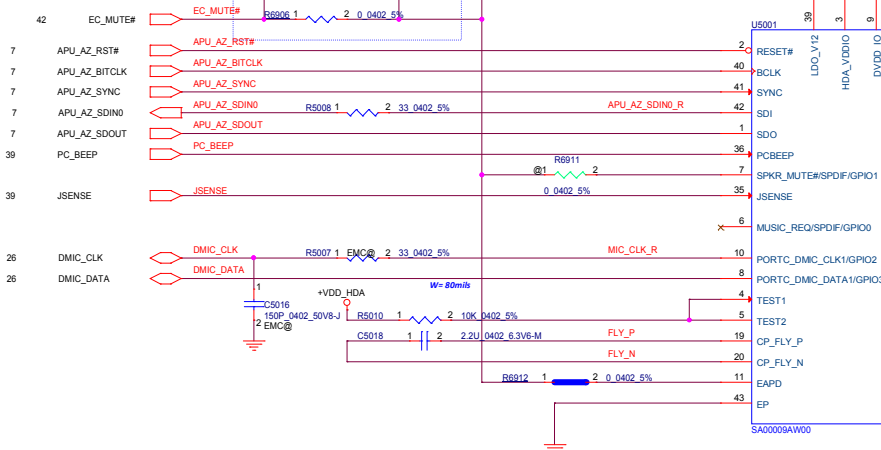
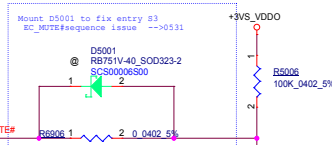
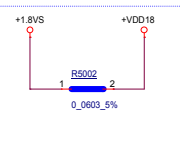
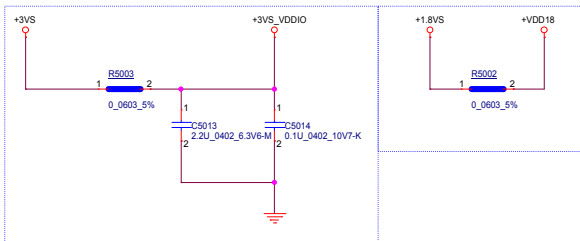
+5VS 28,30,39,46,48,51
+3VL 31,36,42,52,55,57
+3VALW 7,8,9,10,12,26,33,36,37,41,42,44,46,47,51,57,58,64



EMI filter for Class D output signals
Close to Codex

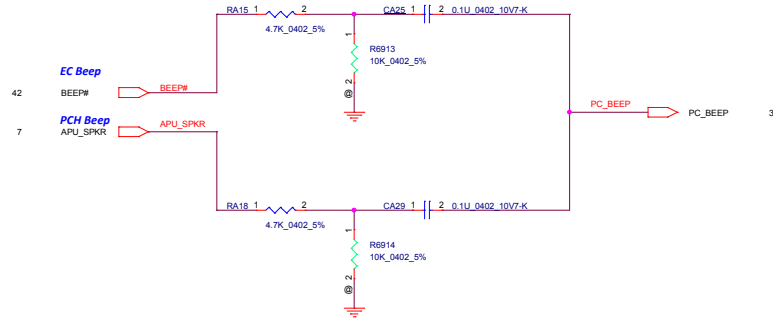


Please Close to Pin9

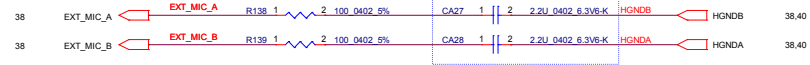


Security Classification	LC Future Center Secret Data		Title	CODEC-CX11880	
Issued Date	2018/03/26	Deciphered Date	2019/06/01	Size	Document Number
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				Date:	Tuesday, January 15, 2019
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PC BEEP

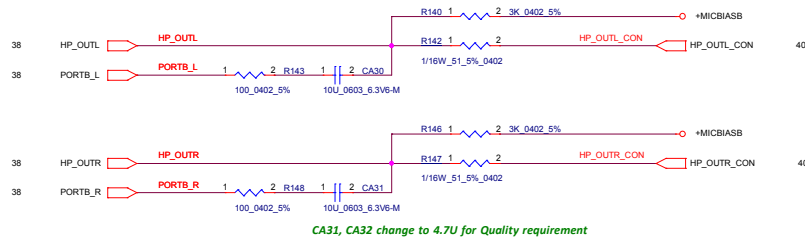


EXT. MIC/LINE IN Apple --> EXT_MIC_A, HGND B
Nokia --> EXT_MIC_B, HGND A

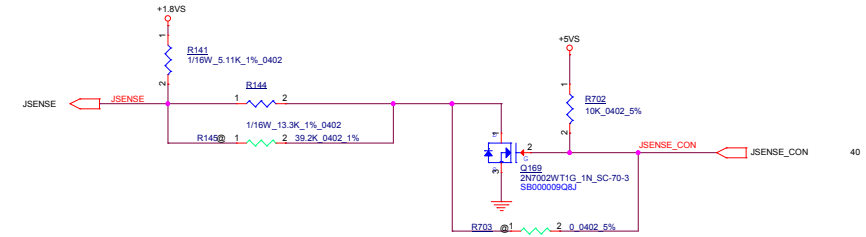


Changed CA29 & CA30 from 1uF to 2.2uF/X5R to meet Port-D(headset-Mic) THD+N <= -65 dB

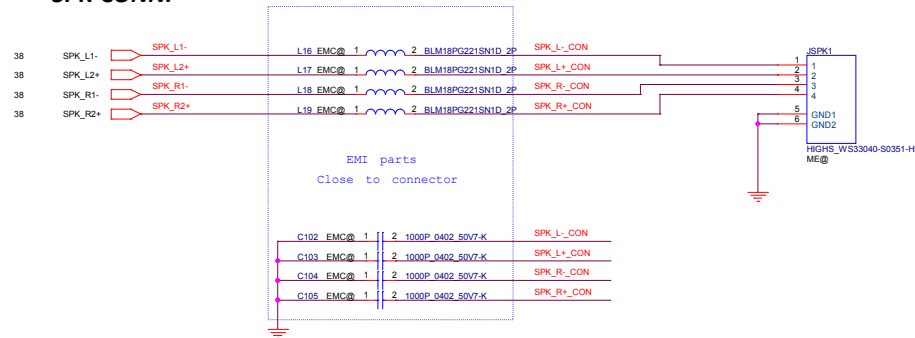
HeadPhone/LINE OUT



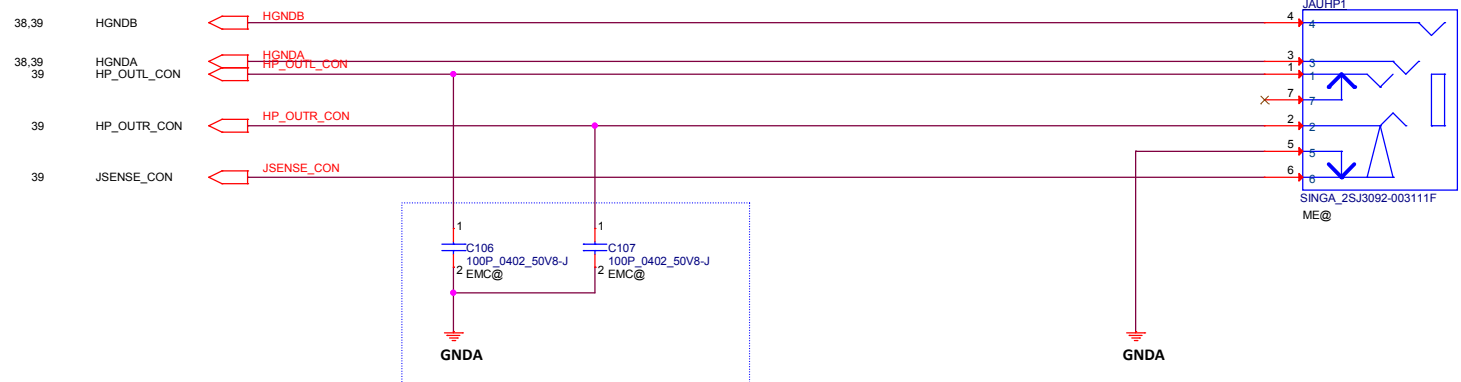
CA31, CA32 change to 4.7uF for Quality requirement



SPK CONN.

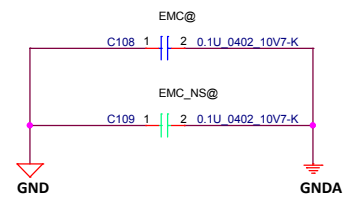
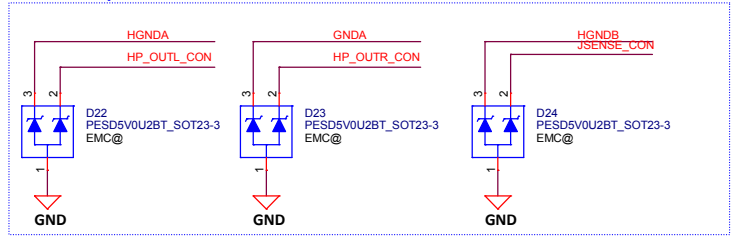



Security Classification				LC Future Center Secret Data		Title	
Issued Date				2018/03/26	Deciphered Date	2019/08/01	AUDIO CONNECTOR
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				C		JINN/DOOKU 2.0	0.1
				Date:		Wednesday, January 08, 2019	Sheet 39 of 66



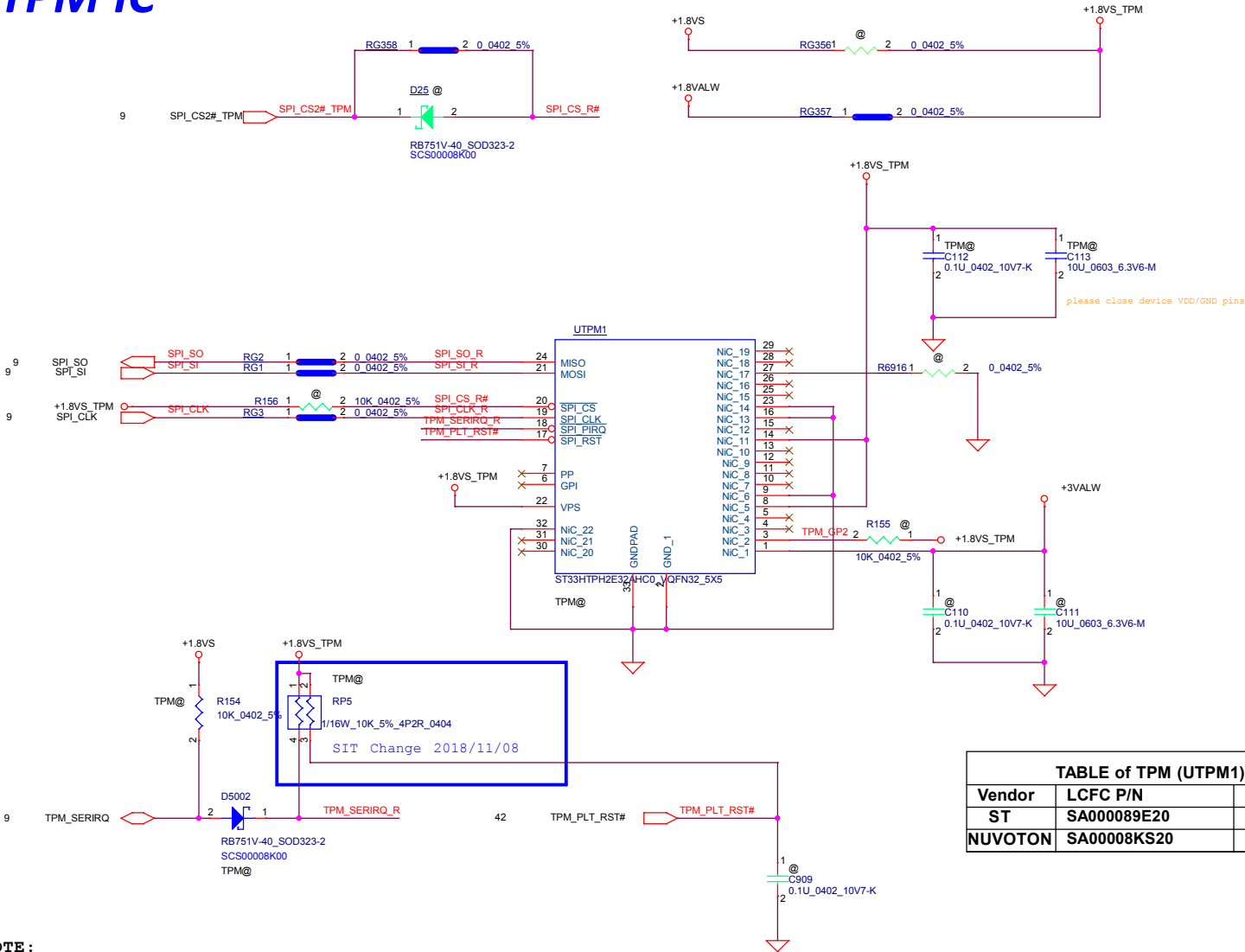
Vendor suggestion. Reserve for EMI.
Close to JAUHP.

ESD request



Security Classification	LC Future Center Secret Data			Title	AUDIO JACK SENSE		
Issued Date	2018/03/26	Deciphered Date	2019/06/01	Size			
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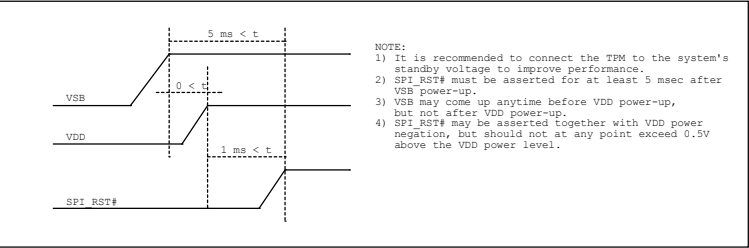
TPM IC



Pin No	TCG PTP Spec (v38)	Infineon SLB9670VQ1.2 FW 6.10	ST Micro ST33H7PM2E32AAB9	Nuvoton NPCT650LB0YX
1	VDD	VDD	NC	VS
2	GND	GND	NC	NC
3	GPIO	NC	NC	GPIO2
4	GPIO	NC	PP	PP
5	NC	NC	NC	TEST
6	VNC/GPIO	GPIO	NC	GPIO3
7	GPIO/VDD	PP	GPIO	NC
8	VDD	VDD	NC	VDD
9	GND	GND	NC	GND
10	VNC	NC	NC	NC
11	NC	NC	NC	NC
12	NC	NC	NC	Reserved
13	VNC/GPIO	NC	NC	GPIO4
14	VDD	NC	NC	VDD
15	NC	NC	NC	DNC
16	GND	NC	NC	GND
17	SPI_RST#	RST#	SPI_RST#	SPI_RST#
18	SPI_PIRQ#	PIRQ#	SPI_PIRQ#	SPI_PIRQ#
19	SPI_CLK	SCLK	SPI_CLK	SCLK
20	SPI_CS#	CS#	SPI_CS#	SCS#
21	MOSI	MOSI	MOSI	MOSI
22	VDD	VDD	VPS	VDD
23	GND	GND	NC	GND
24	MISO	MISO	MISO	MISO
25	NC	NC	NC	NC
26	NC	NC	NC	NC
27	NC	NC	NC	(SERIRQ)
28	NC	NC	NC	DNC
29	VNC/GPIO	NC	NC	GPIO0
30	VNC/GPIO	NC	NC	GPIO1
31	VNC	NC	NC	NC
32	GND	GND	NC	GND

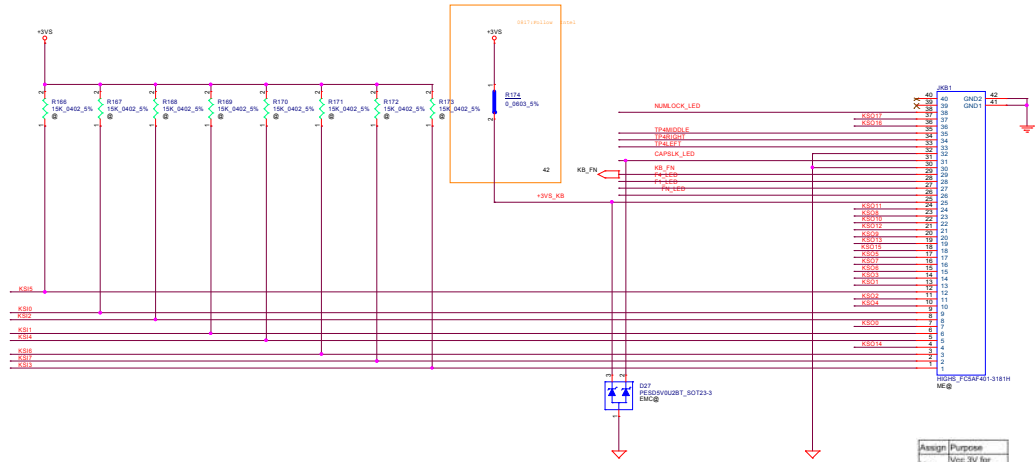
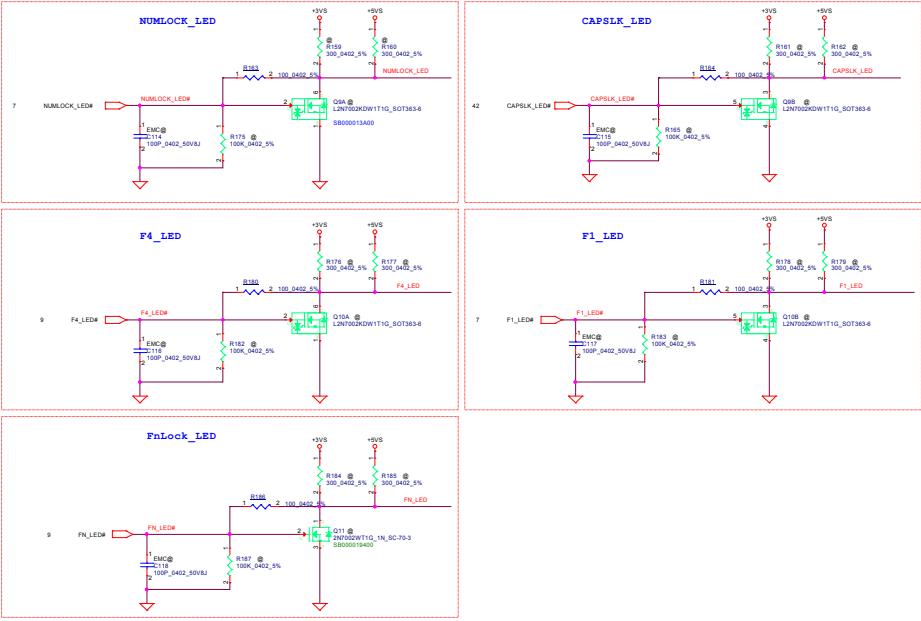
TABLE of TPM (UTPM1)		
Vendor	LCFC P/N	Description
ST	SA000089E20	S IC ST33H7PM2E32AAB9 VQFN 32P TPM 2.0
NUVOTON	SA00008KS20	S IC NPCT750LABYX QFN 32P TPM 2.0 QS/MP

NOTE:
Check timing sequence in SDV phase.



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Date: Wednesday, January 09, 2019				Sheet 44 of 65

Keyboard CONN

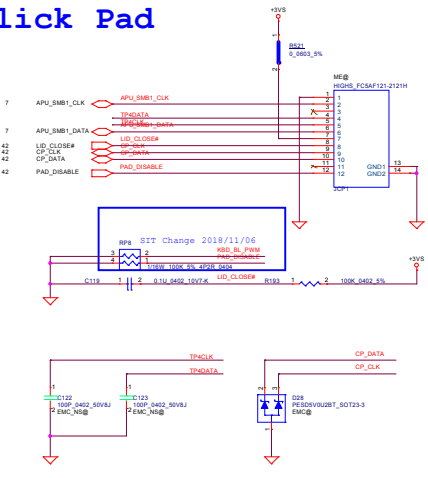
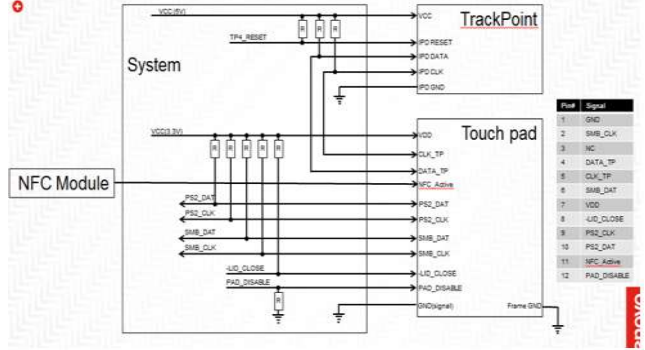


Pin #	Assign
1	SENSE3
2	SENSE7
3	SENSE6
4	DRV14
5	SENSE4
6	SENSE1
7	DRV0
8	SENSE2
9	SENSE0
10	DRV4
11	DRV2
12	SENSE5
13	DRV1
14	DRV3
15	DRV6
16	DRV7
17	DRV5
18	DRV15
19	DRV13
20	DRV9
21	DRV12
22	DRV10
23	DRV8
24	DRV11
25	Vcc
26	LED1
27	LED2
28	LED3
29	HOTKEY
30	GND
31	LED4
32	MC
33	M1
34	M2
35	M3
36	DRV16
37	DRV17
38	LED5
39	NC
40	NC

Assign	Purpose
Vcc	Vcc 3V for LED
LED1	LED for F1
LED2	LED for F4
LED3	LED for CapsLock
LED4	LED for NumLock
LED5	NumLock

Assign	Purpose
MC	Common pin for TrackPoint
M1	Left button
M2	Right button
M3	Center button

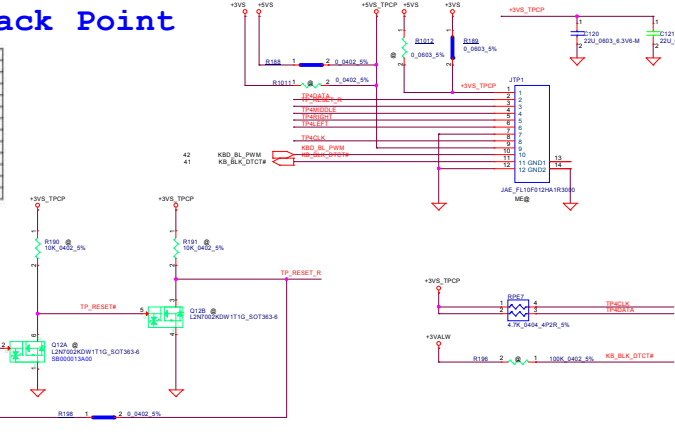
Click Pad



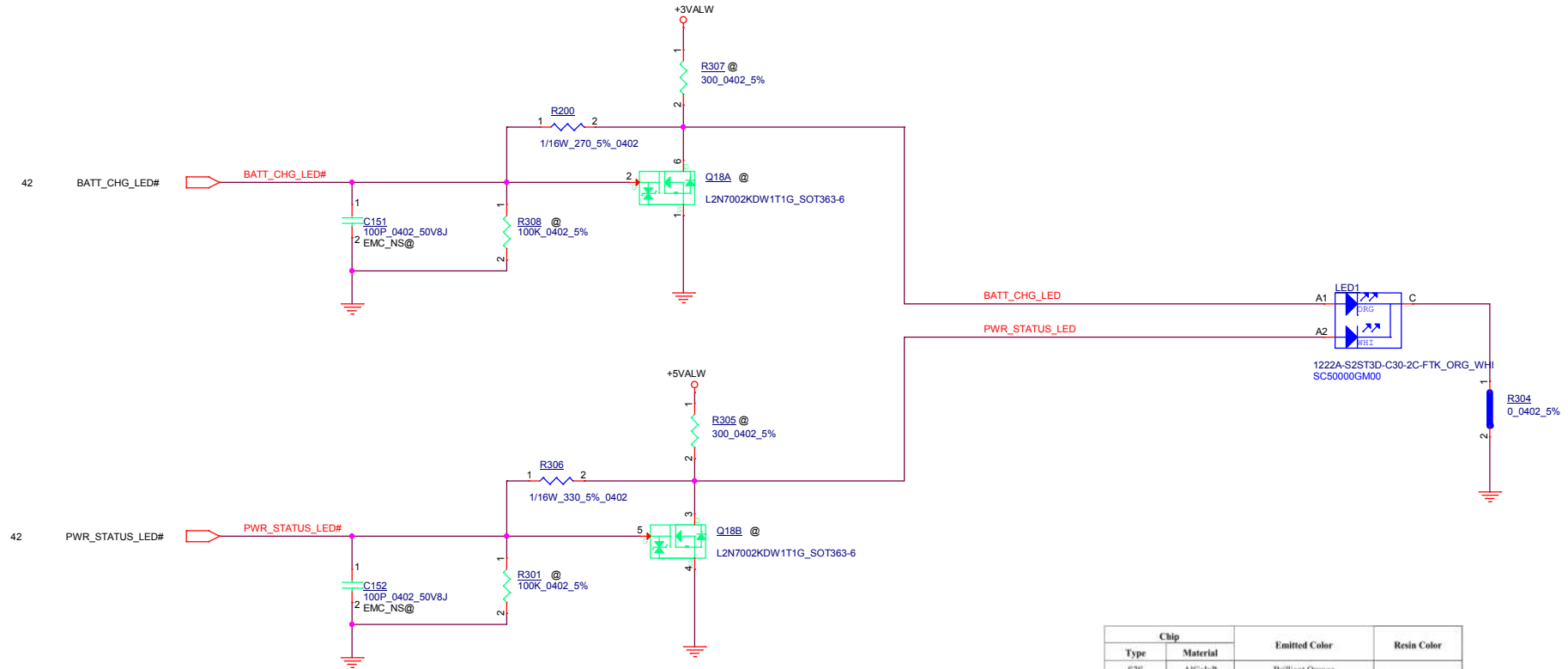
Track Point

Pin #	Assign
1	VCCS (SV)
2	IPO DATA
3	IPO RST
4	MIDDLE
5	RIGHT
6	LEFT
7	TPCLK
8	IPO GND
9	LED VCCS (SV)
10	LED PWM
11	Backlight detection
12	LED GND


Note: #11 shall be connected to #12 LED GND.



POWER ADAPTER Bi-COLOR (ORANGE/WHITE)



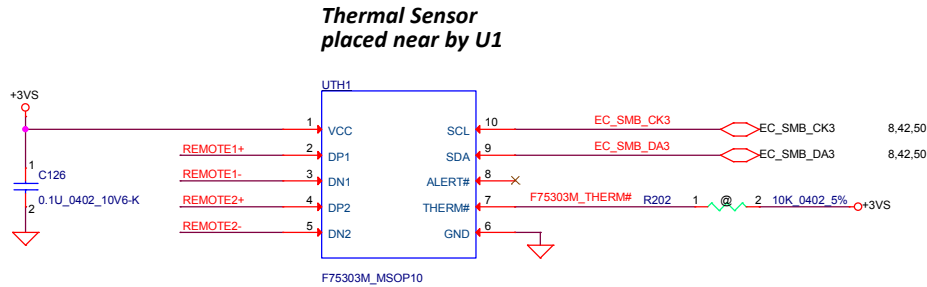
Chip		Emitted Color	Resin Color
Type	Material		
S2S	AlGaInP	Brilliant Orange	Yellow Diffused
T3	InGaN	Pure White	

Security Classification		LC Future Center Secret Data		Title		
Issued Date	2018/03/26	Deciphered Date	2019/06/01	POWER LED		
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Thermal Sensor

1 Near

2 Remote

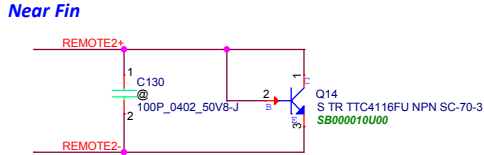
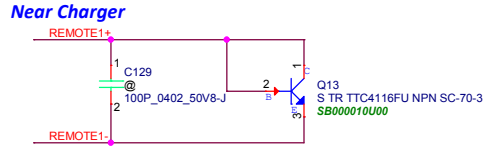
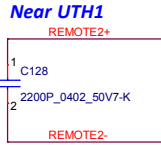
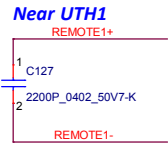


Address 1001_101xb

Internal pull up 1.2K to 1.5V

R for init i d t her nd shu do wnt e mp

TABLE of Thermal Sensor (UTH1)		
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FINTEK	SA000046C0J	S IC F75303M MSOP 10P SENSOR

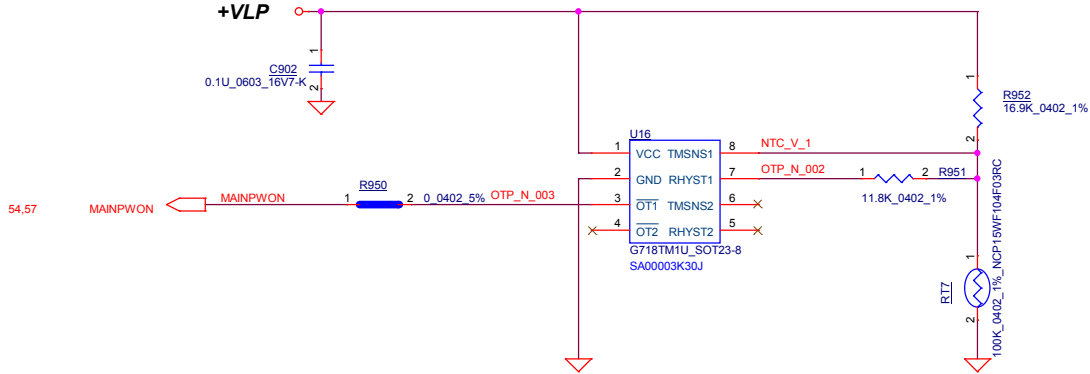


REMOTE+/- R, REMOTE1+/-, REMOTE2+/-:

Trace width/space:10/10 mil

Trace length:<8"

HW Protect



over temperature threshold:

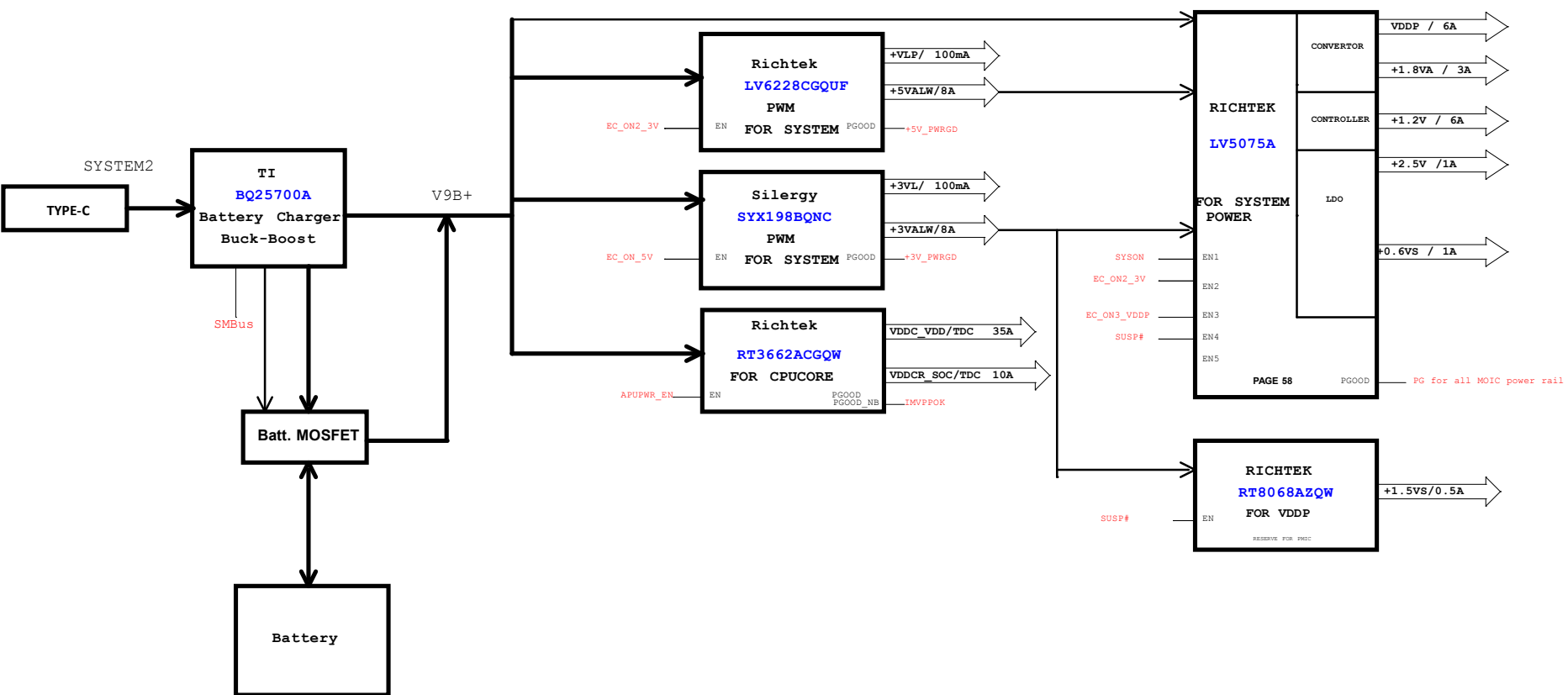
RSET=3*RTMH

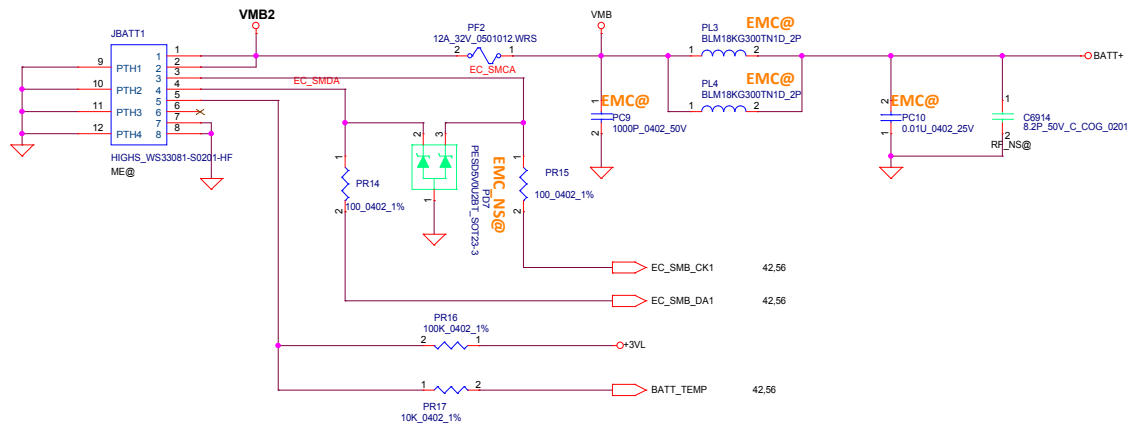
100+/-30C

Hysteresis temperature threshold.

RHYST=(RSET*RTML)/(3*RTML-RSET)

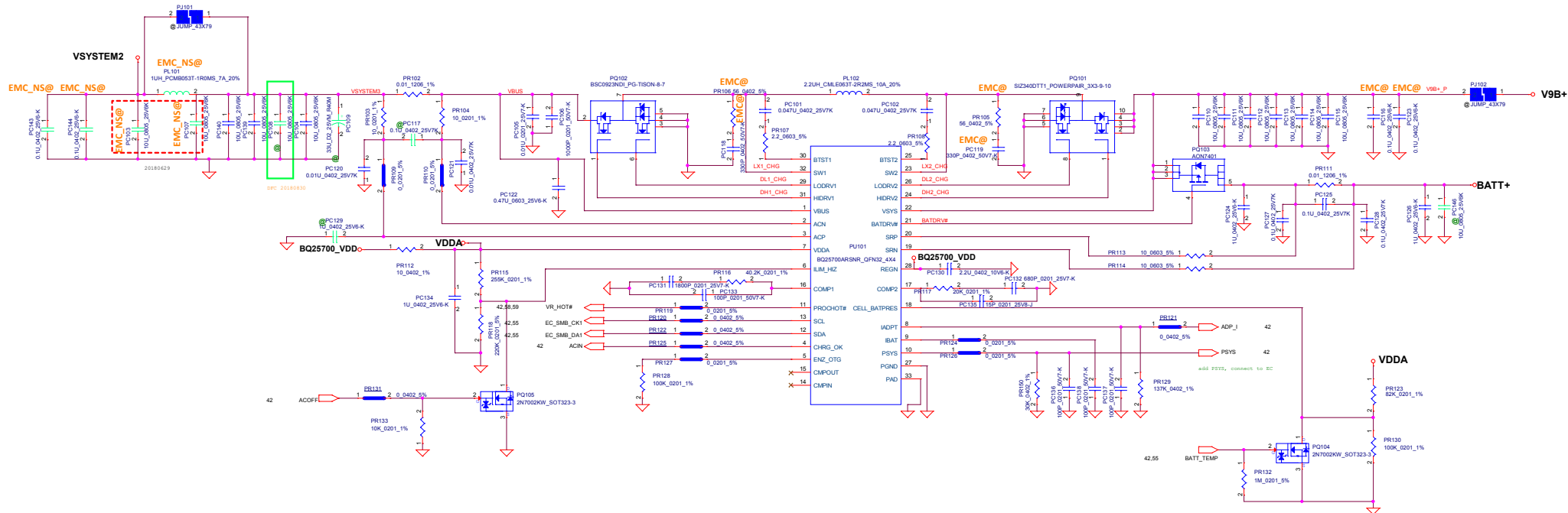
80+/-30C



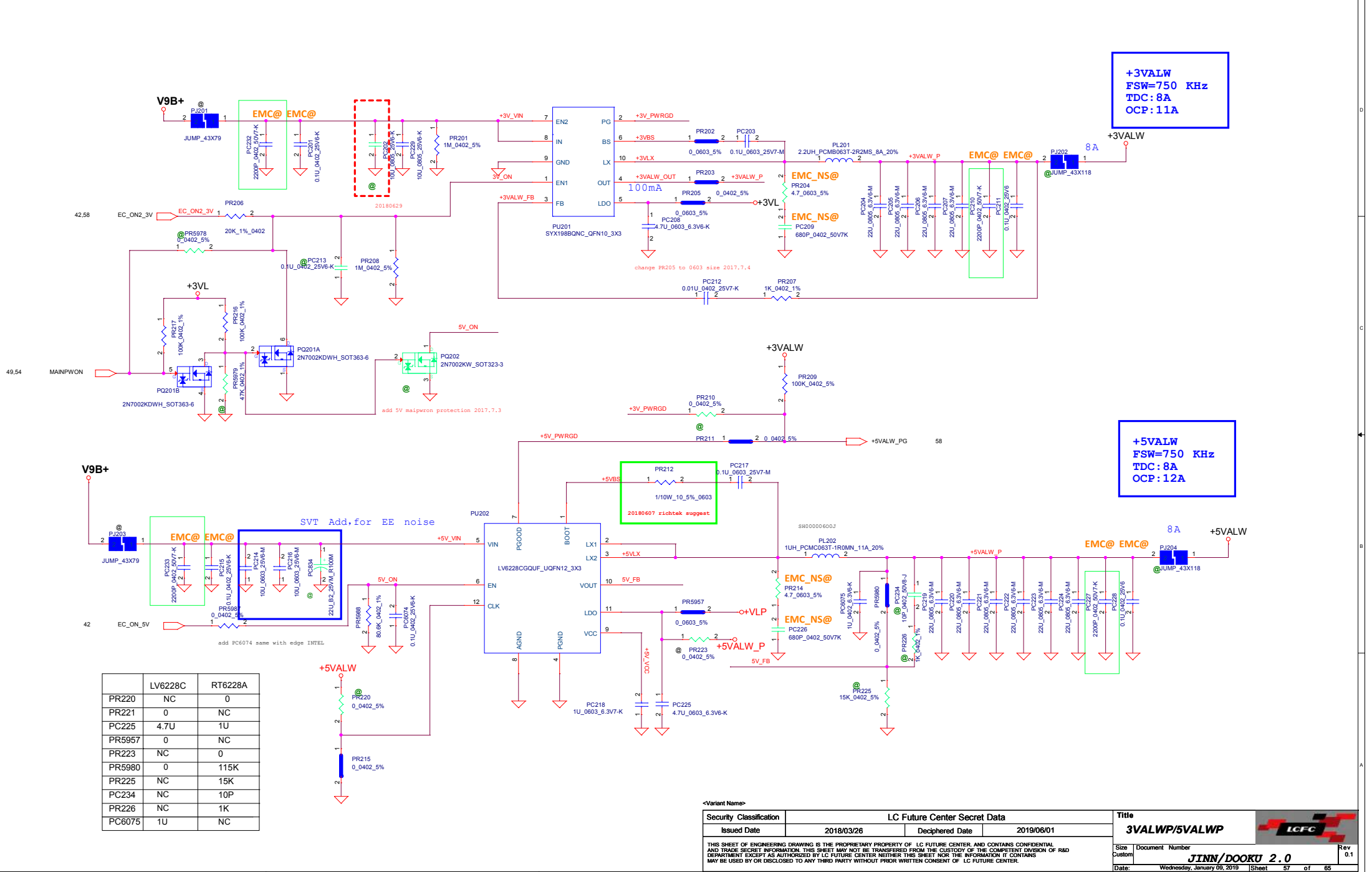


<Variant Name>

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+3VALW
FSW=750 KHz
TDC: 8A
OCP: 11A

+5VALW
FSW=750 KHz
TDC: 8A
OCP: 12A

	LV6228C	RT6228A
PR220	NC	0
PR221	0	NC
PC225	4.7U	1U
PR5957	0	NC
PR223	NC	0
PR5980	0	115K
PR225	NC	15K
PC234	NC	10P
PR226	NC	1K
PC6075	1U	NC

<Variant Name>

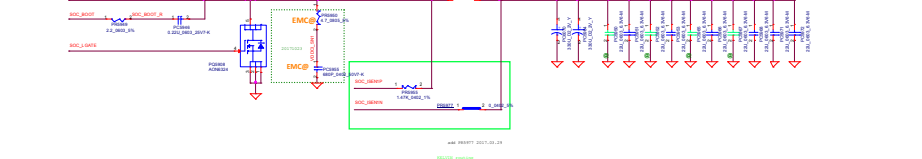
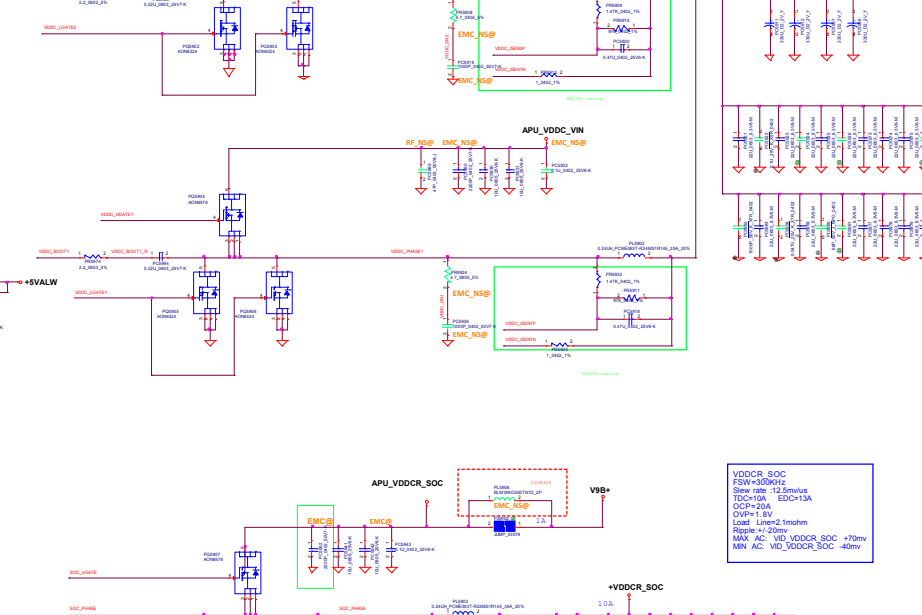
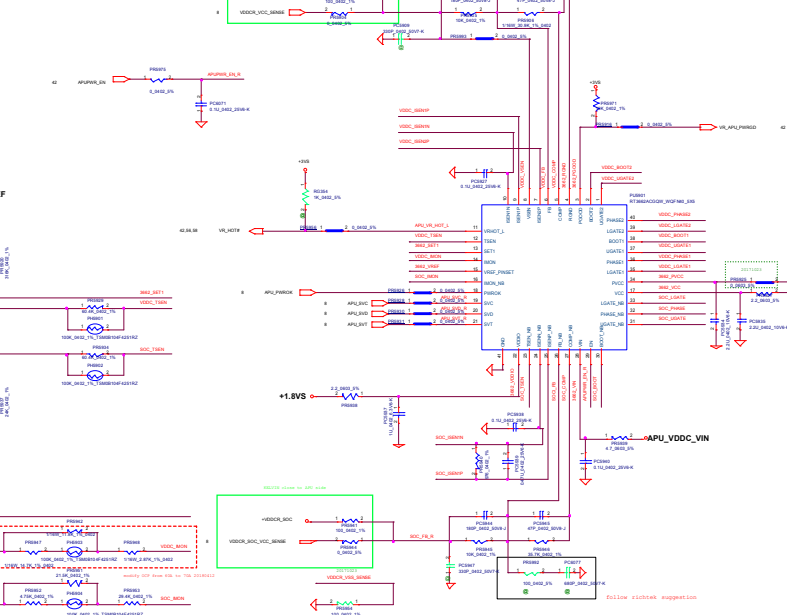
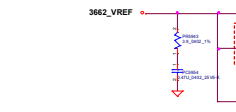
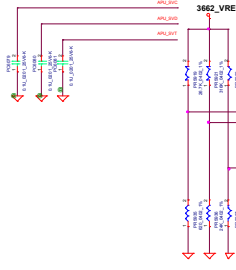
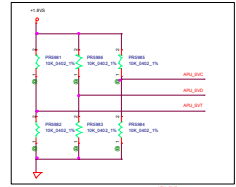
Security Classification	LC Future Center Secret Data	
Issued Date	2018/03/26	Deciphered Date
		2019/06/01

Title	
3VALWP/5VALWP	
Size	Document Number
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Rev 0.1


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




VDDCR_VDD
FSW=500kHz
Slew rate 12.5mV/us
TDC=50A EDC=45A
OVP=1.8V
Load Line=0.7mohm
Regule=+0.05mV
MAX AC: VDD_VDDC +95mV
MIN AC: VDD_VDDC -80mV

VDDCR_SOC
FSW=300kHz
Slew rate 12.5mV/us
TDC=10A EDC=13A
OVP=1.8V
Load Line=2.1mohm
Regule=+0.05mV
MAX AC: VDD_VDDCR_SOC +70mV
MIN AC: VDD_VDDCR_SOC -60mV

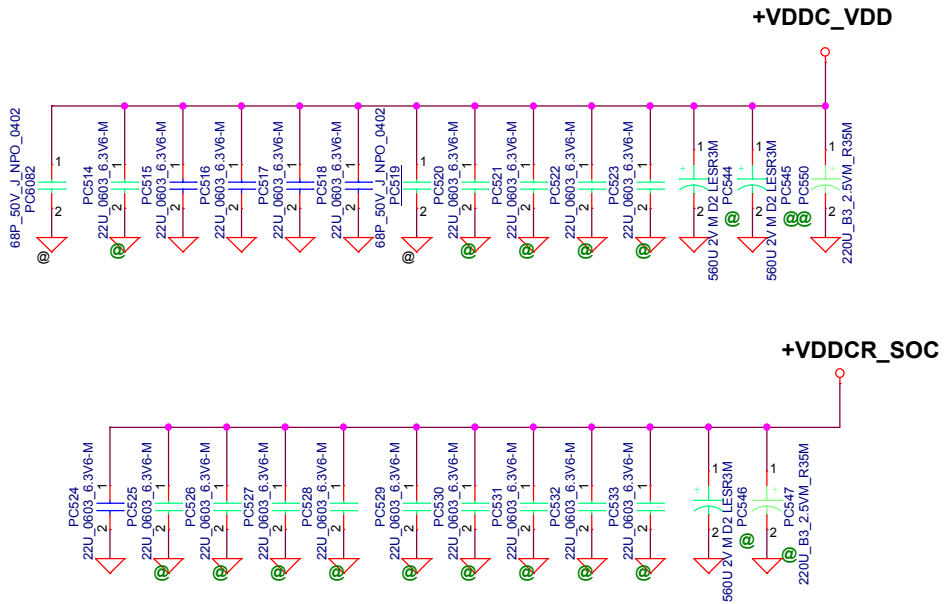
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Security Classification	LC Future Center Secret Data			Title			
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<div><Variant Name></div> <table><tr><td>Security Classification</td><td colspan="3">LC Future Center Secret Data</td><td>Title</td></tr><tr><td>Issued Date</td><td>2018/03/26</td><td>Deciphered Date</td><td>2019/06/01</td><td>BLANK</td></tr><tr><td colspan="4">THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.</td><td><div><div>Size</div><div>Custom</div></div><div>Document Number</div><div><i>JINN/DOOKU 2.0</i></div><div>Rev</div><div>0.1</div></td></tr><tr><td colspan="4"></td><td><div>Date: Wednesday, January 08, 2019</div><div>Sheet 63 of 65</div></td></tr></table>					Security Classification	LC Future Center Secret Data			Title	Issued Date	2018/03/26	Deciphered Date	2019/06/01	BLANK	THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				<div><div>Size</div><div>Custom</div></div> <div>Document Number</div> <div><i>JINN/DOOKU 2.0</i></div> <div>Rev</div> <div>0.1</div>					<div>Date: Wednesday, January 08, 2019</div> <div>Sheet 63 of 65</div>
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