

LCFC NM-F351

KE452/KE612

E14 Gen5/E16 GEN1 Rev1.0

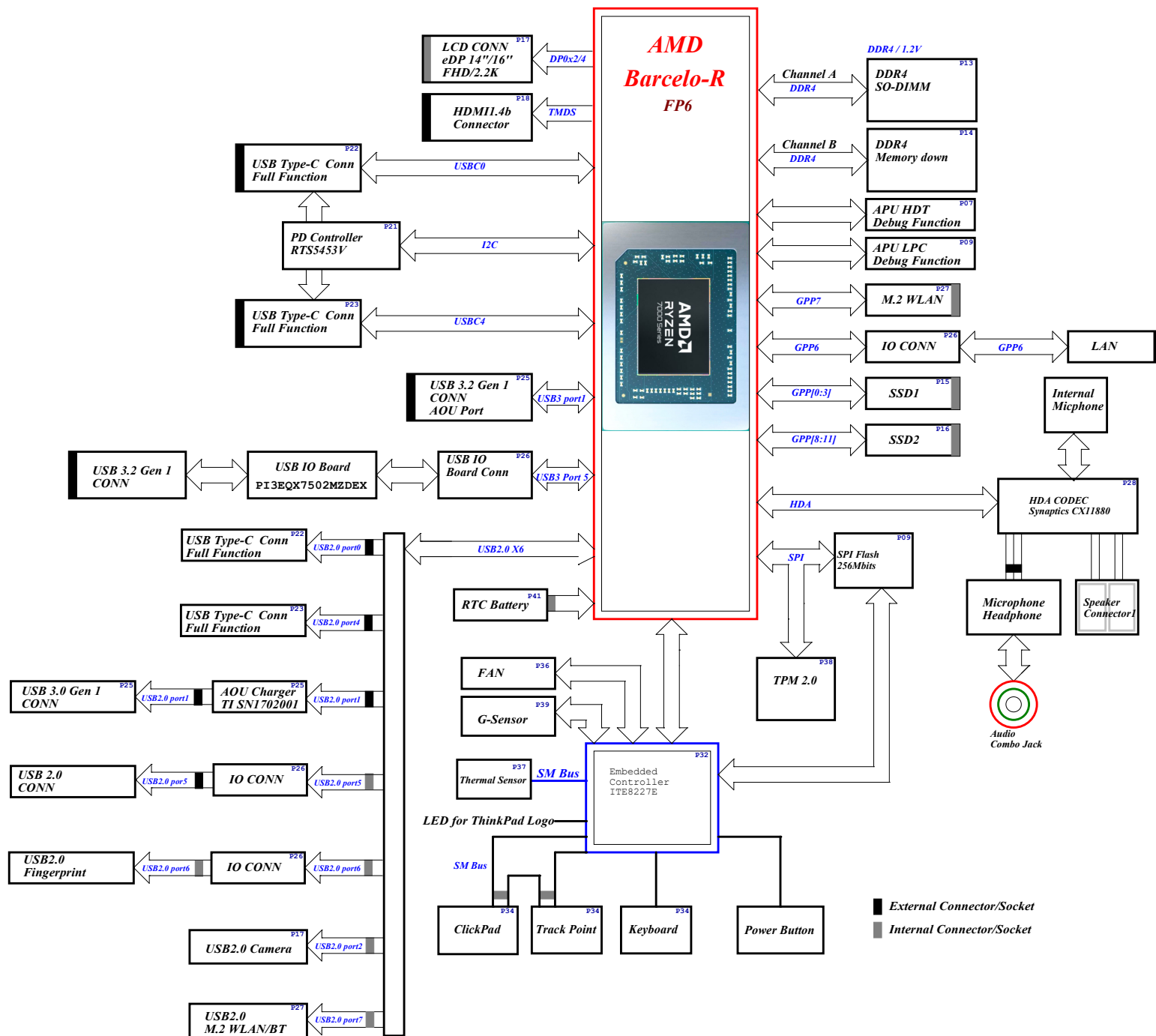
Schematic

AMD Barcelo FP6 Processor with DDR4

Rev 1.0

2023-03-09

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2023/03/09	Deciphered Date	2023/03/09	COVER PAGE	
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<small>Date:</small> Wednesday, March 08, 2023				<small>Sheet 1 of 55</small>	



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	USBC1 Type-C
1	USB3.0 port1
2	Camera
3	X
4	USBC2 Type-C
5	USB3.0 port2
6	FingerPrint
7	BT

USB3 Port

Port	Device
0	USBC Type-C1
1	USB3.0 port1
4	USBC Type-C2
5	USB3.0 port2

PCIe Port

Port	Device
GPP0~3	SSD1
GPP4	X
GPP5	X
GPP6	LAN
GPP7	WLAN
GPP8~11	SSD2
GFX0~7	X

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

Power Plane	B9+	+3VALW	+1.2V	+5VS
State		+5VALW	+2.5V	+3VS
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
G3 AC & Battery don't exist	X	X	X	X

SMBUS Control Table

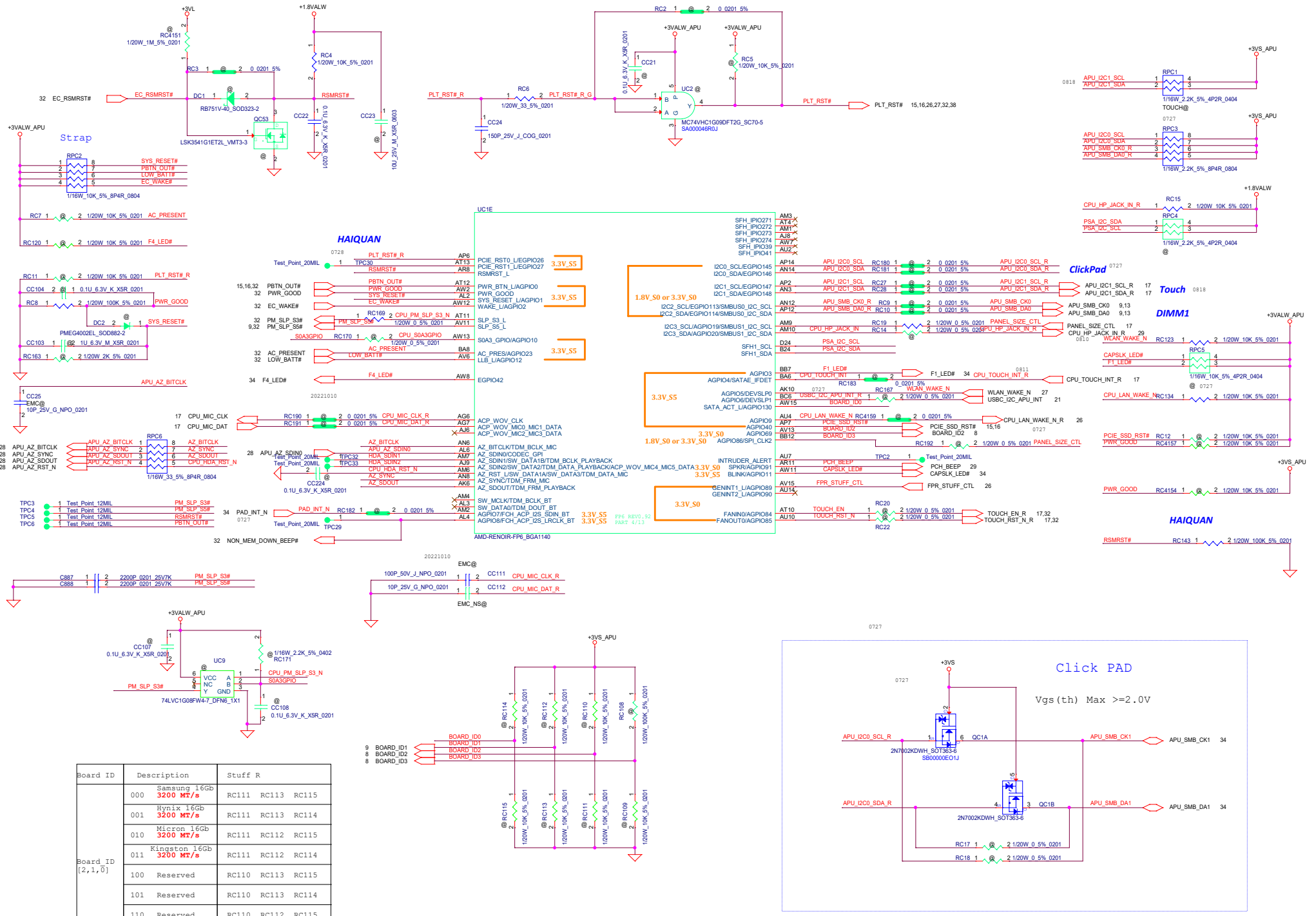
EC	Schematic	SOURCE	PMIC	BATT	Charge	PD	APU	USB3.1 Redriver	G-Sensor	Thermal Sensor	Expend	CP Module
SMCLK0 SMDAT0	EC_SMB_CK0 EC_SMB_DA0	EC +3VL	V +3VL	X	X	X	V +3VS	X	X	X	X	X
SMCLK1 SMDAT1	EC_SMB_CK1 EC_SMB_DA1	EC +3VL	X	V +3VL	V +3VL	X	X	X	X	X	X	X
SMCLK2 SMDAT2	EC_SMB_CK2 EC_SMB_DA2	EC +3VL	X	X	X	V +3VL	X	X	X	X	X	X
SMCLK3 SMDAT3	EC_SMB_CK3 EC_SMB_DA3	EC +3VS	X	X	X	X	X	X	X	X	X	X
SMCLK4 SMDAT4	EC_SMB_CK4 EC_SMB_DA4	EC +3VS	X	X	X	X	X	X	V +3VS	V +3VS	X	X
SMCLK5 SMDAT5	APU_SMB0CLK APU_SMB0DATA	APU +3VL	X	X	X	X	X	X	X	X	V +3VL	X
	APU_SMB1CLK APU_SMB1DATA	APU +3VALW	X	X	X	X	X	X	X	X	X	V +3VS

PD Controller I2C

	SOURCE	APU
I2C_M_SCL I2C_M_SDA	PD +LDO_3V3	V +1.8VALW

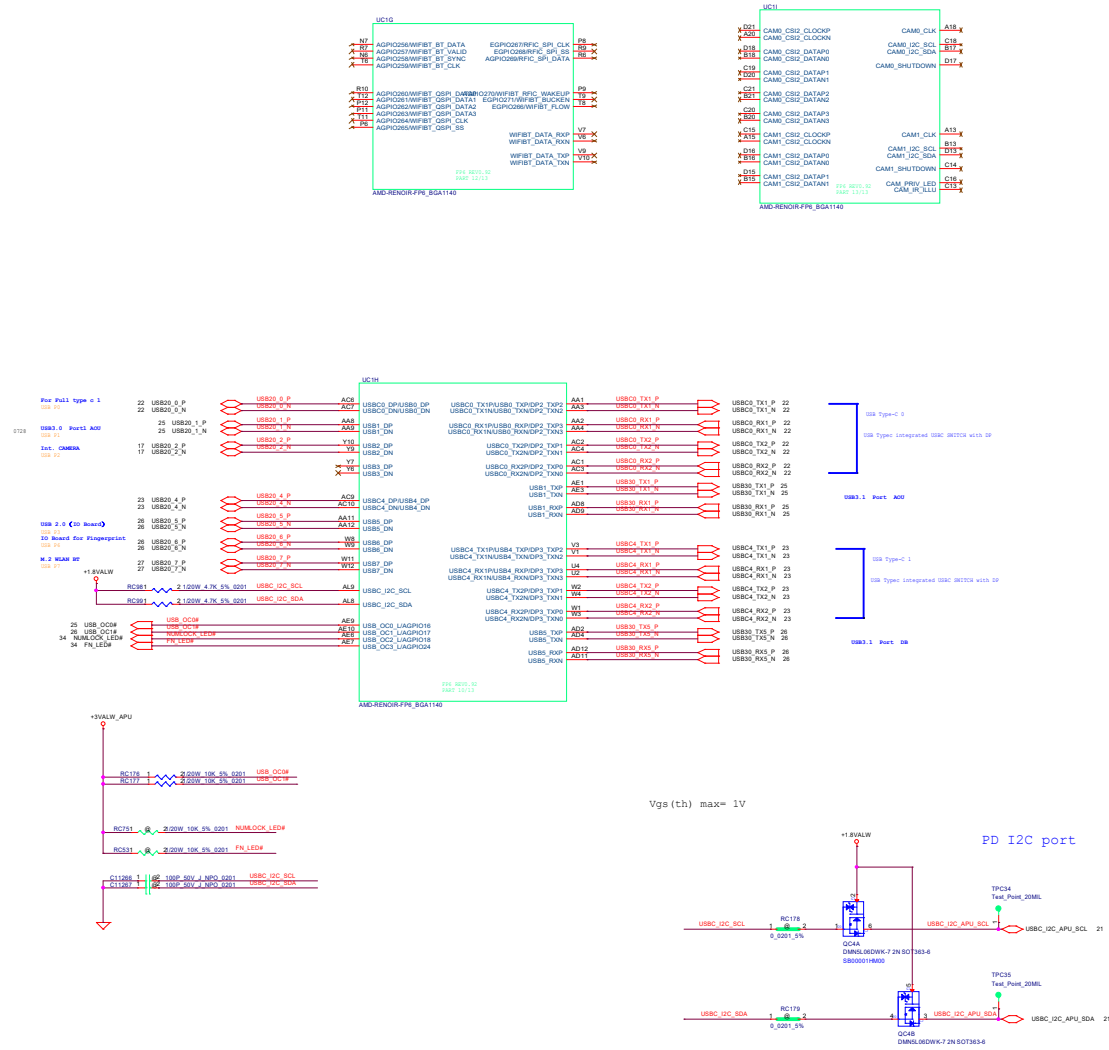
BOM Structure Table

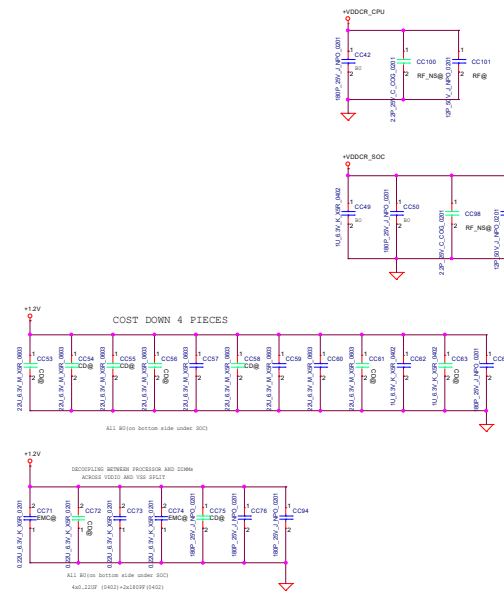
[illegible]



Board ID	Description	Stuff R
Board ID [2,1,0]	000 Samsung 16Gb 3200 MT/s	RC111 RC113 RC115
	001 Hynix 16Gb 3200 MT/s	RC111 RC113 RC114
	010 Micron 16Gb 3200 MT/s	RC111 RC112 RC115
	011 Kingston 16Gb 3200 MT/s	RC111 RC112 RC114
	100 Reserved	RC110 RC113 RC115
	101 Reserved	RC110 RC113 RC114
Board ID3	110 Reserved	RC110 RC112 RC115
	111 Reserved	RC110 RC112 RC114
	0 Reserved	RC109
	1 Reserved	RC108

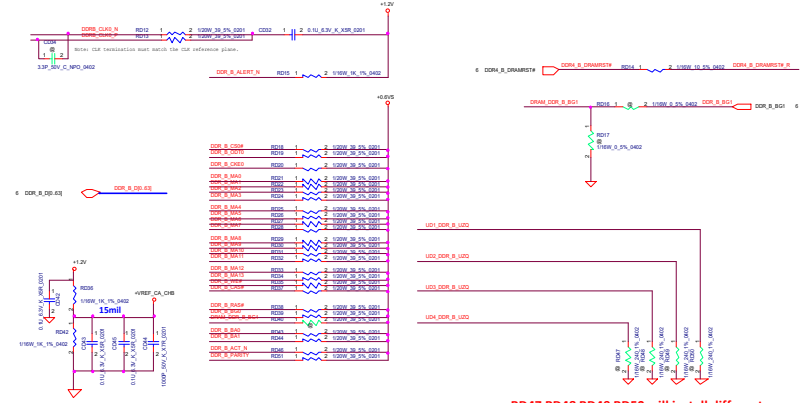
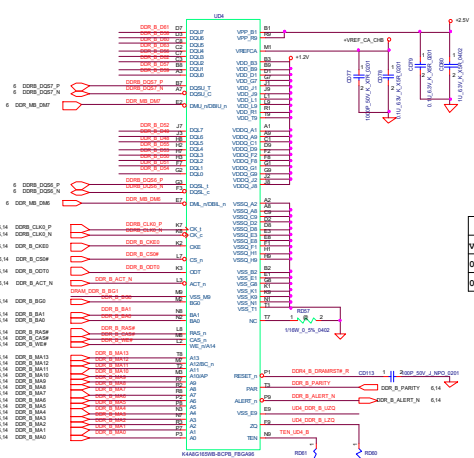
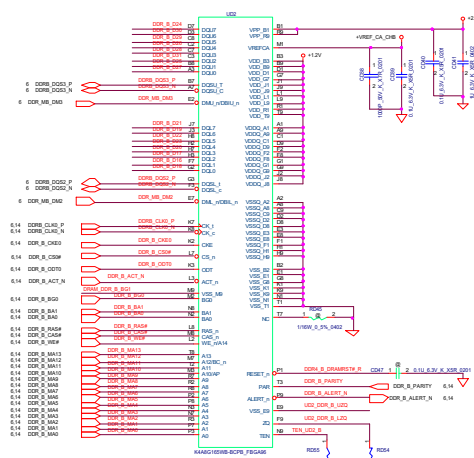
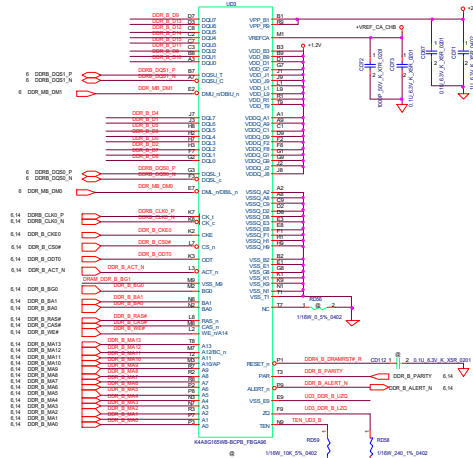
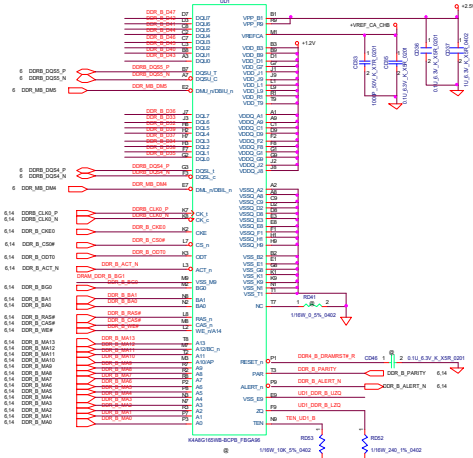
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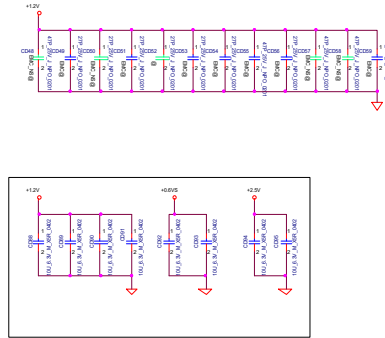


8Gb SDP
16Gb DDP

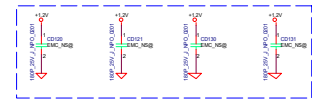
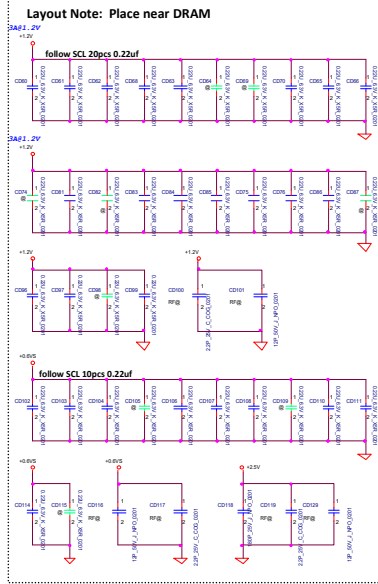
8Gb SGP
16Gb DDP



RD47 RD48 RD49 RD50 will install different value base on SDP or DDP control by Virtual symbol



Capacitor	Configuration	VDDIO_MEN_S3-VSS	VDDIO_MEN_S3-VTT	VTT-VSS	VREF_CA-VDDIO_MEN_S3
Value	Size/ Material				
0.1uF	0402 X5R	SRx16	-	-	4
0.22uF	0402 X5R	SRx16	18	5	5



LCDVDD Circuit

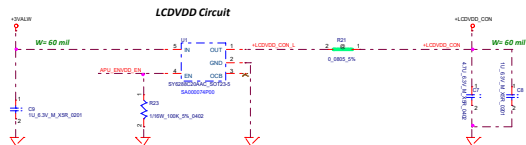
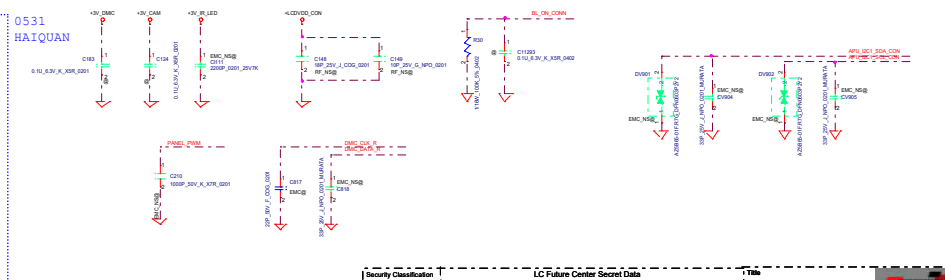
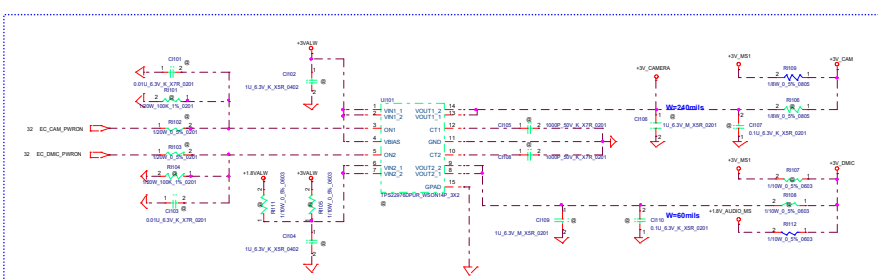
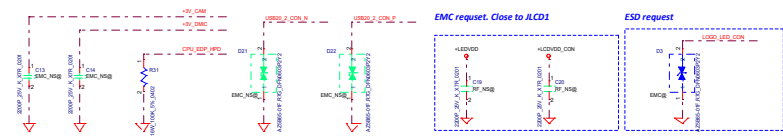
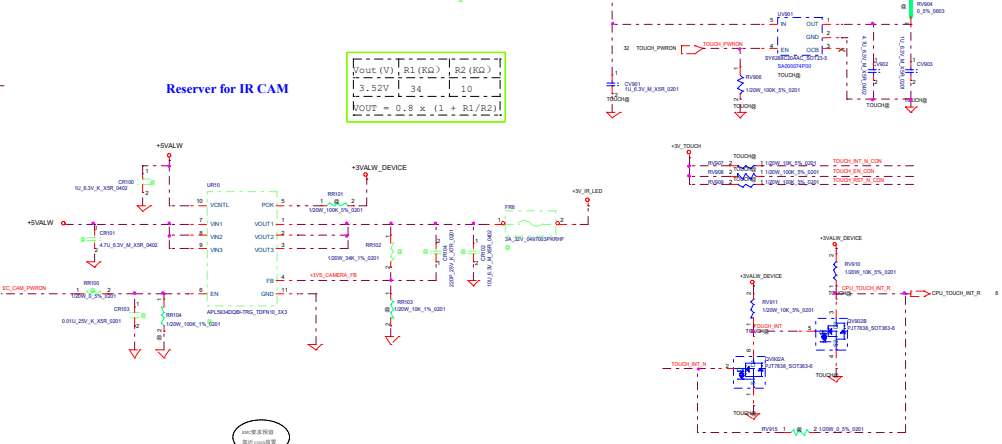
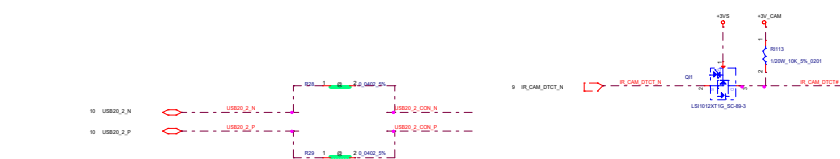
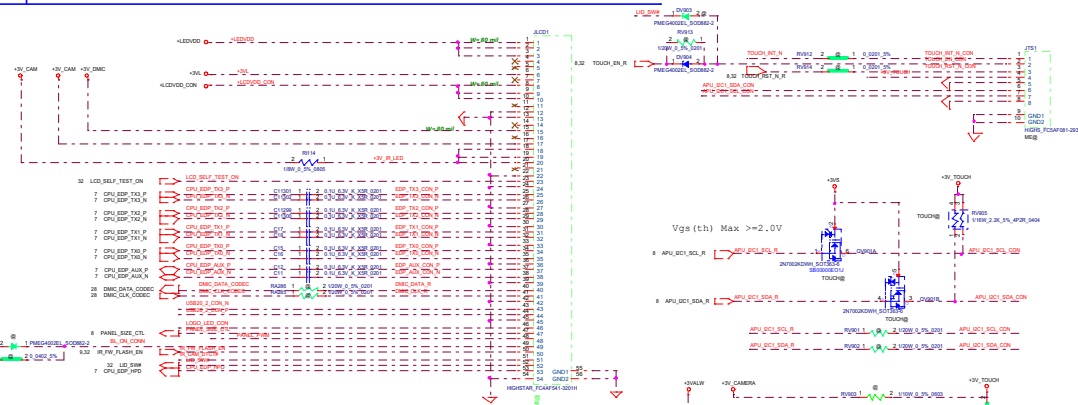
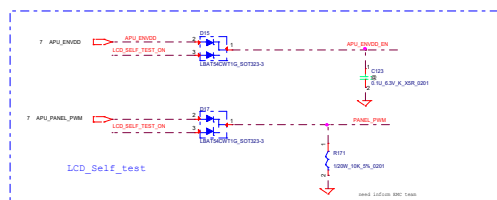
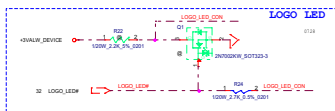
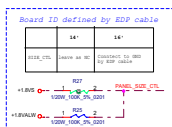
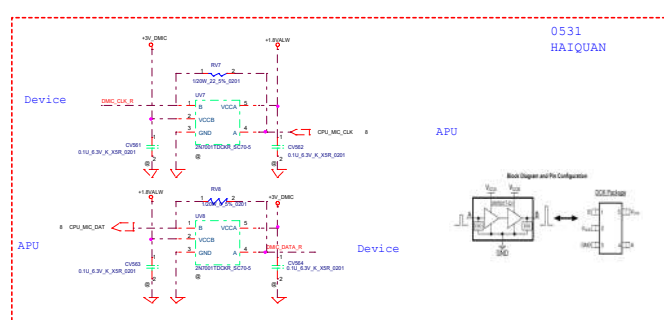
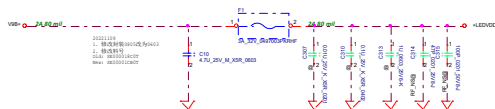
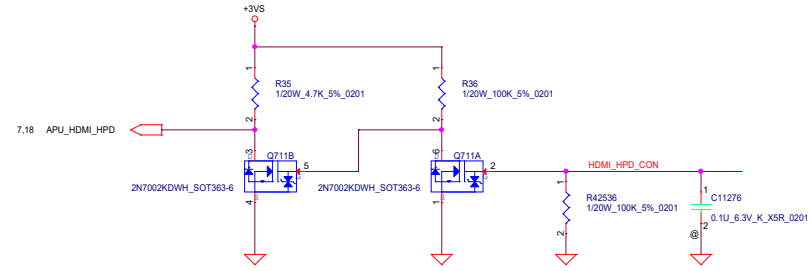
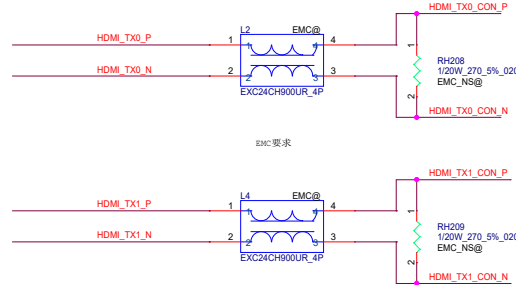
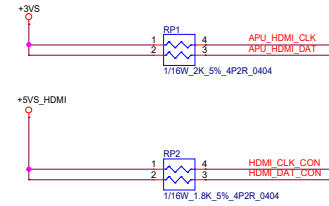
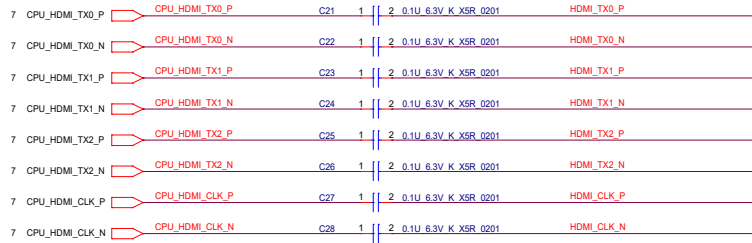
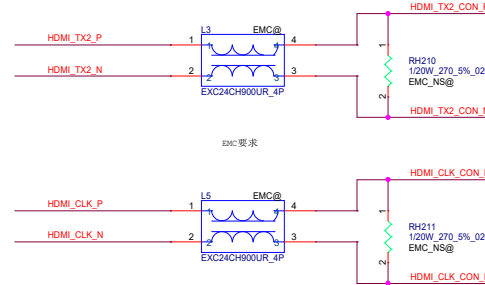


TABLE OF POWER SWITCH (U1)		
Vendor	LCFC P/N	Description
SILERGY	SA000074P00	S IC SY6288C20AAC SOT23 5P POWER SWITCH
GMT	SA00007S700	S IC G5247T11U SOT-23 5P POWER SWITCH

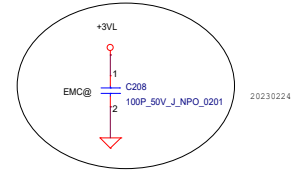




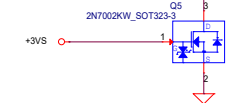
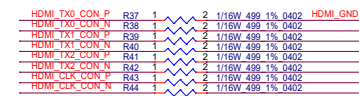
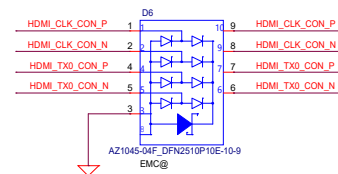
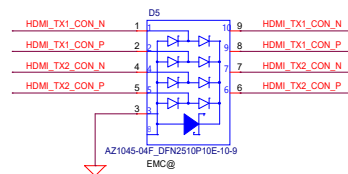
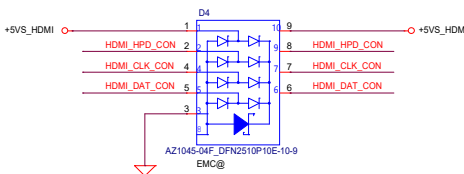
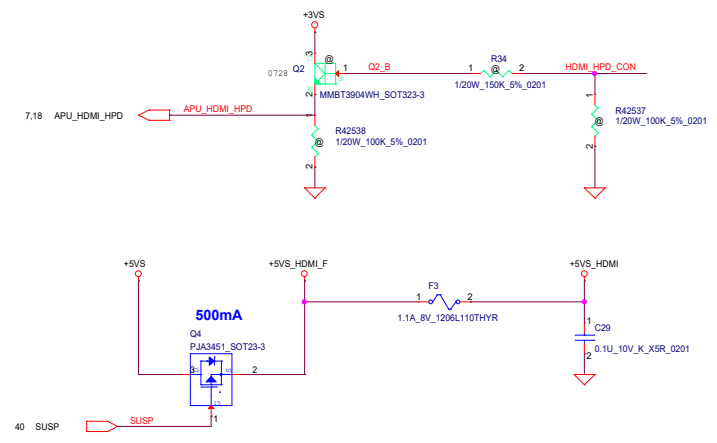
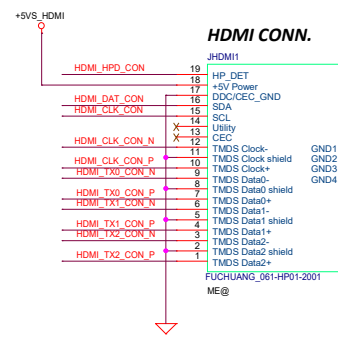
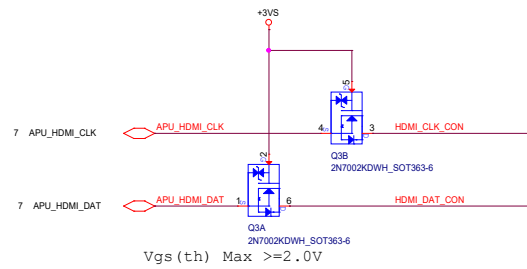
EMC要求



EMC要求



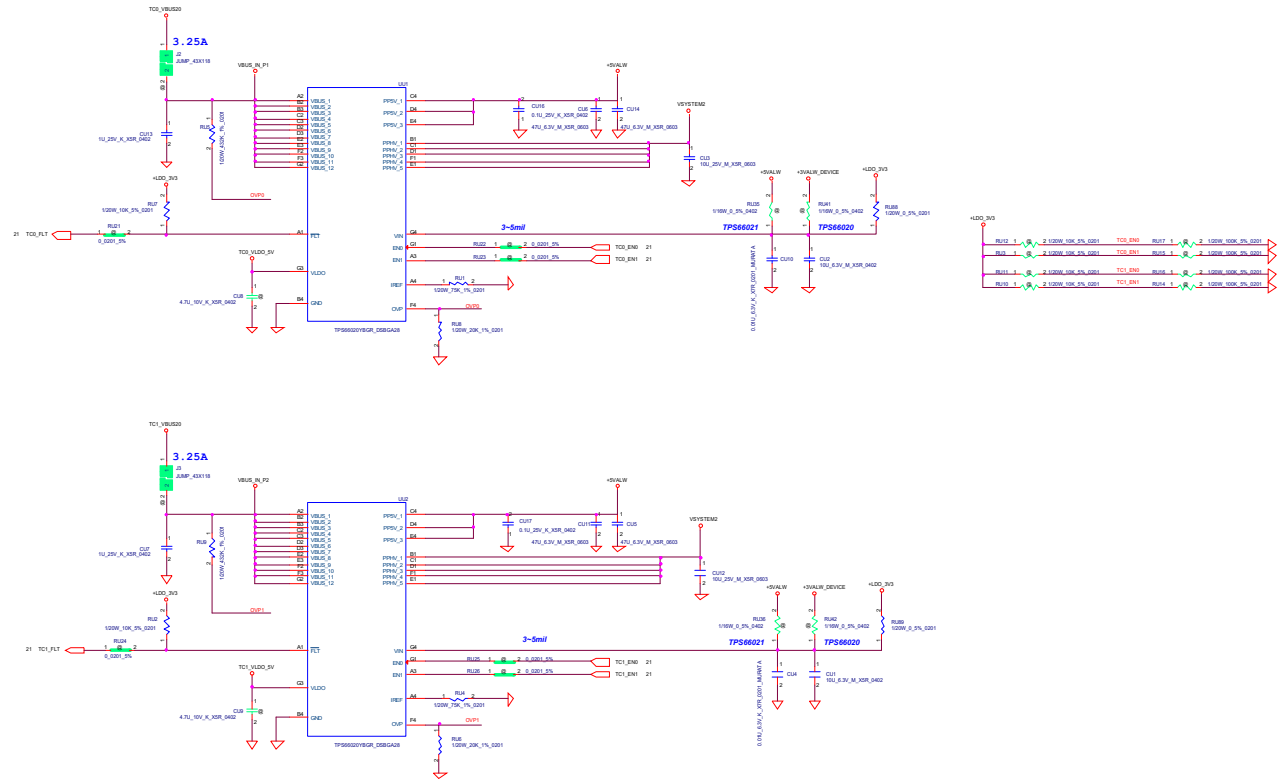
+3VL有一段和HDMI高速信号平行走线，耦合到了890MHz的信号



Security Classification				LC Future Center Secret Data				Title		Rev	
Issued Date				Deciphered Date				HDMI CONN		E14 E16 GEN5 AMI	
2023/03/09				2023/03/09				Size		1.0	
C				Document Number				Date:		Wednesday, March 08, 2023	
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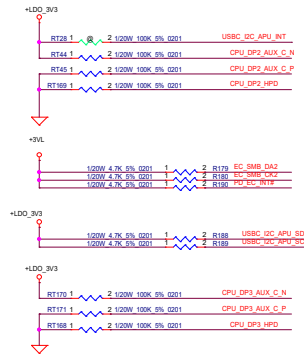
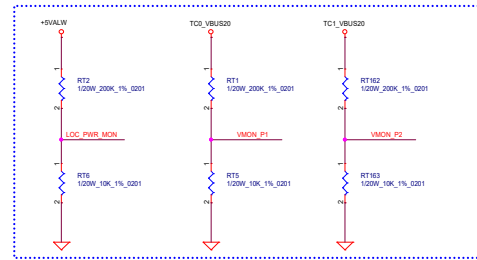
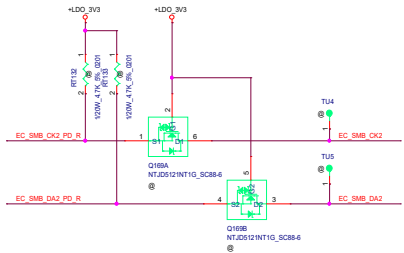
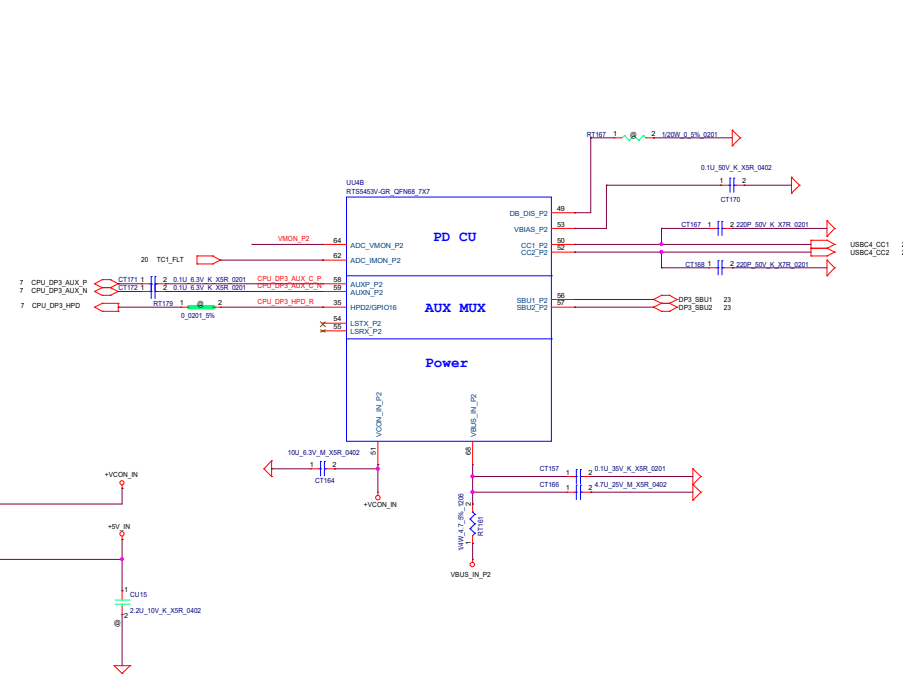
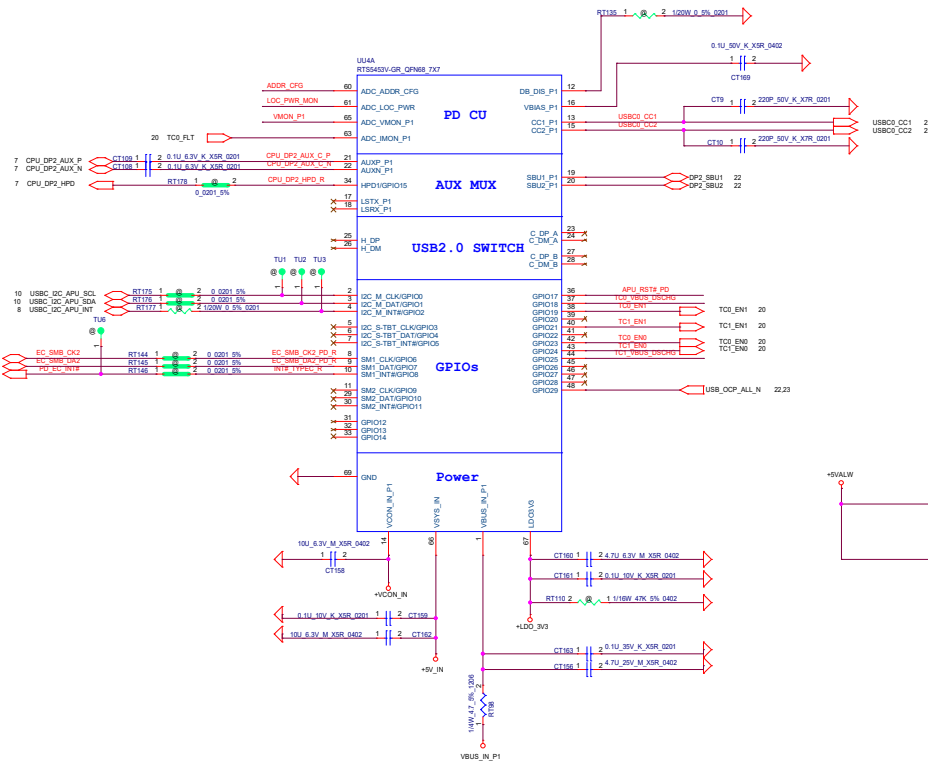
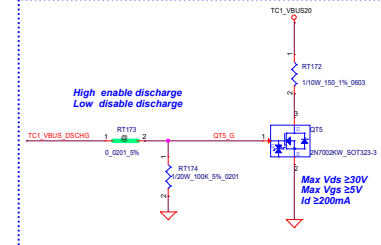
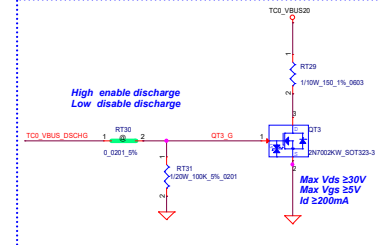
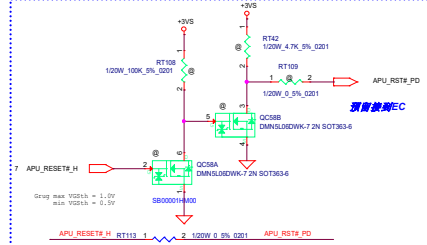
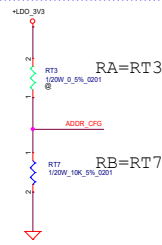


Security Classification		LCFC Highly Confidential Information		Title		<div>LCFC</div>
Issued Date	2023/03/09	Deciphered Date	2023/03/09	HDMI2.0 RETIMER		
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				1		1.0
Date: Wednesday, March 08, 2023				Sheet	19	of 55

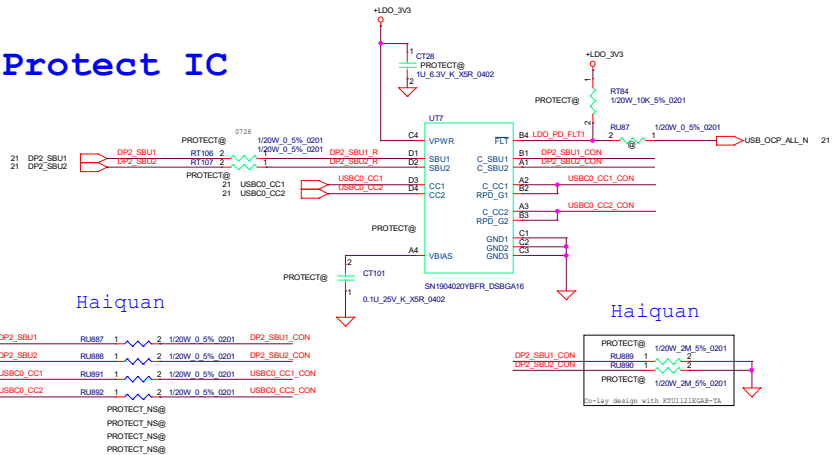


Slave Addr	Ra 5%	Rb 5%	
addr0:0xCC	NC	10K	<0.2V
addr1:0xCE	75K	10K	>=0.2V&&<0.6V
addr2:0xD0	33K	10K	>=0.6V&&<1.0V
addr3:0xD2	10K	10K	>=1.0V

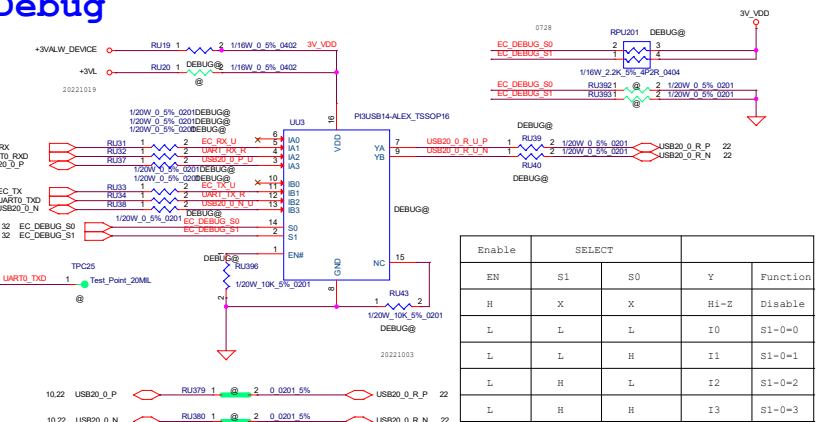
It's used for SMBUS slave addr0/1/2/3 setting during power on initialization



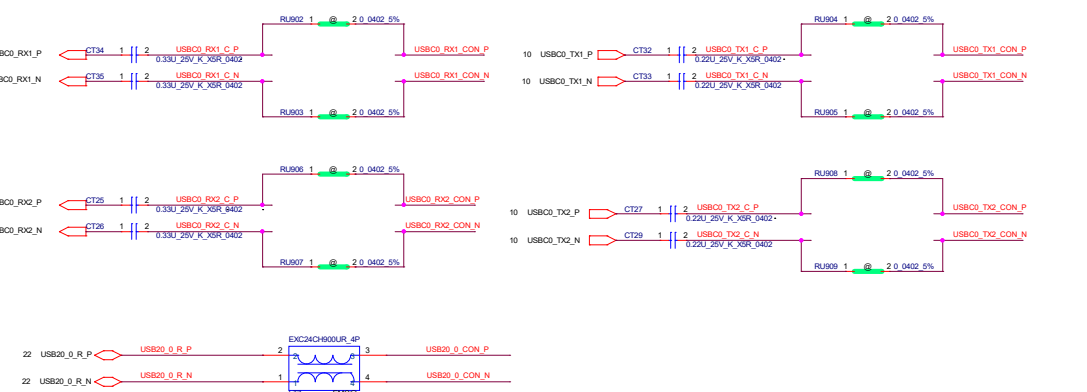
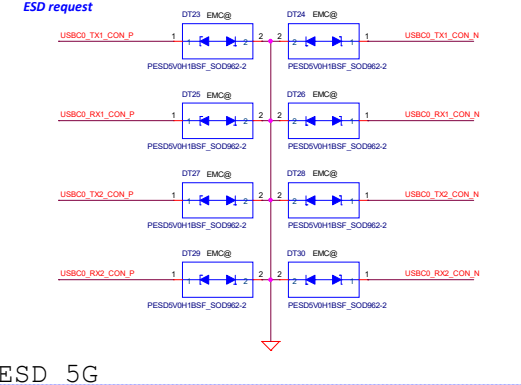
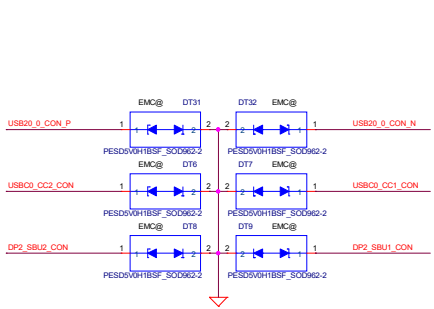
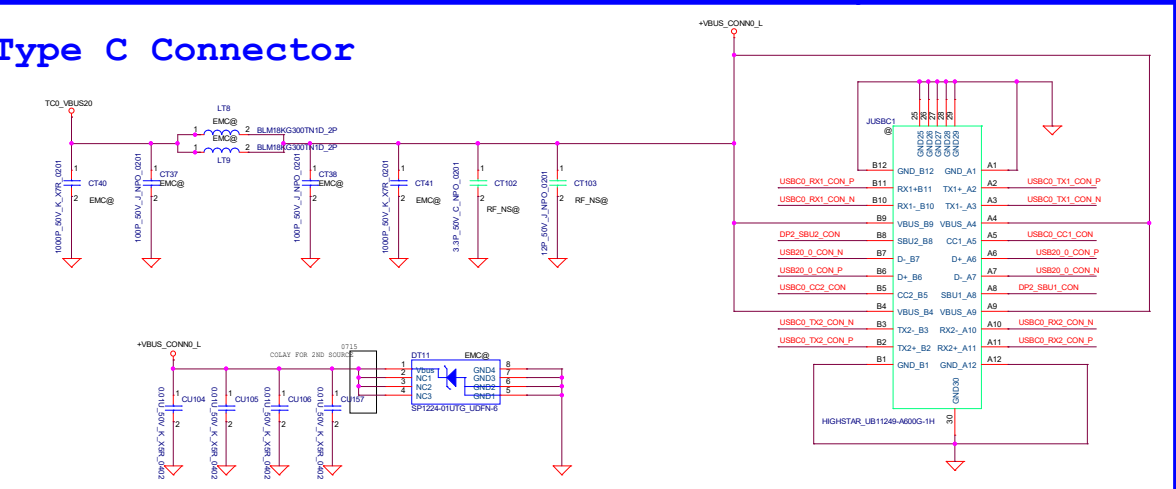
Protect IC



Debug

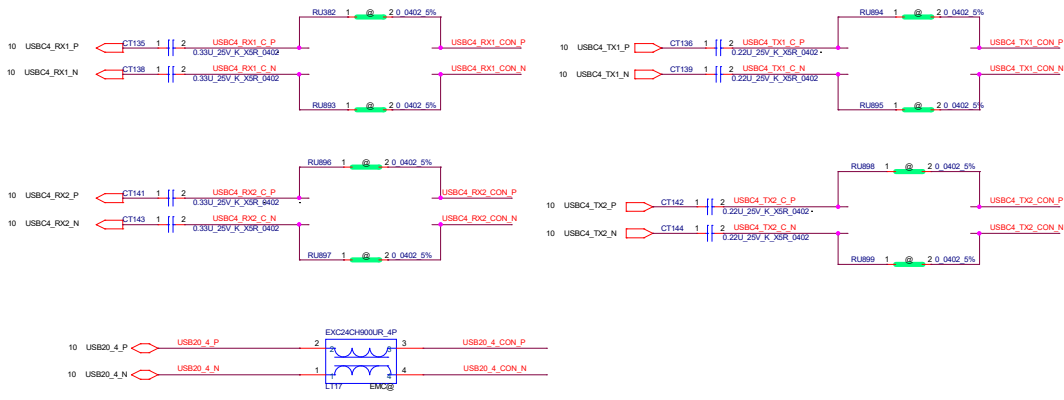
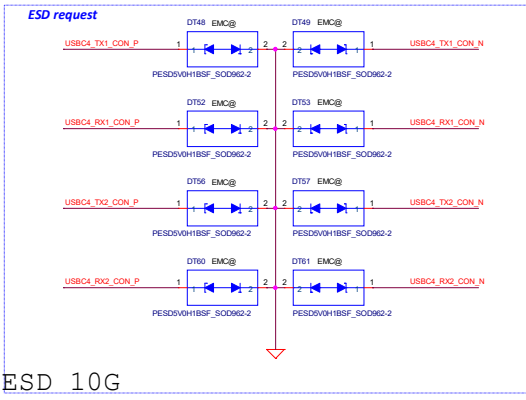
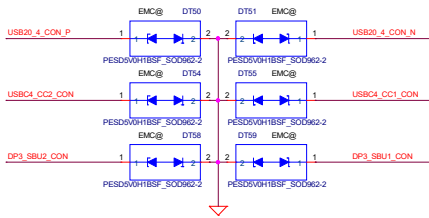
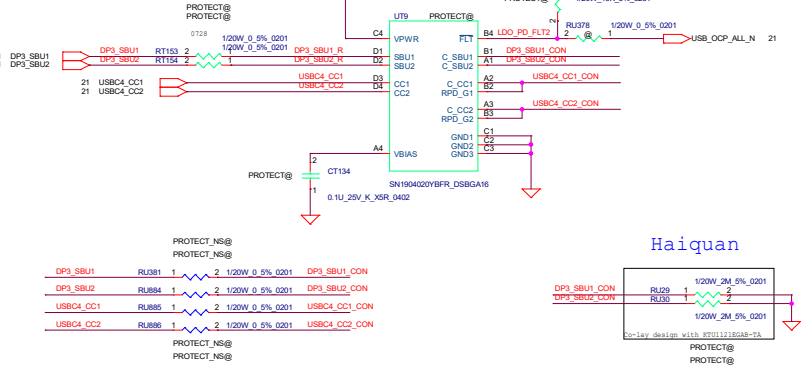


Type C Connector

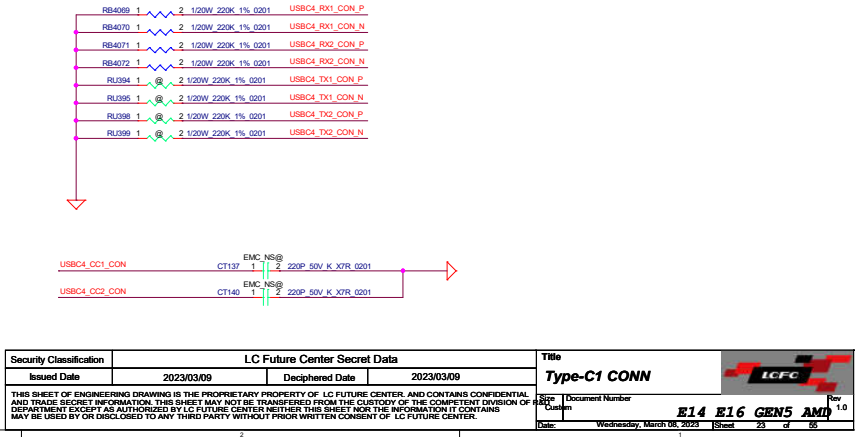
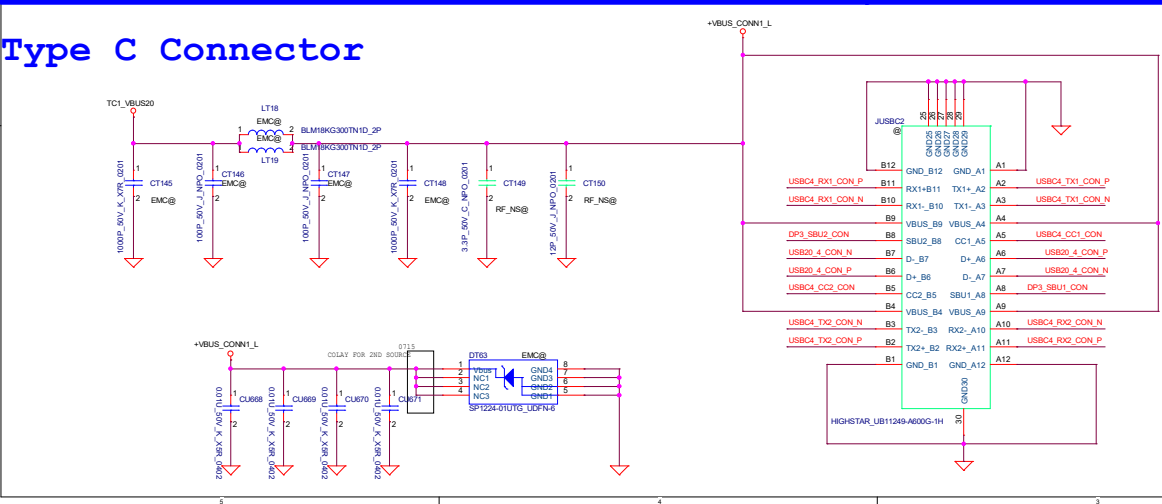


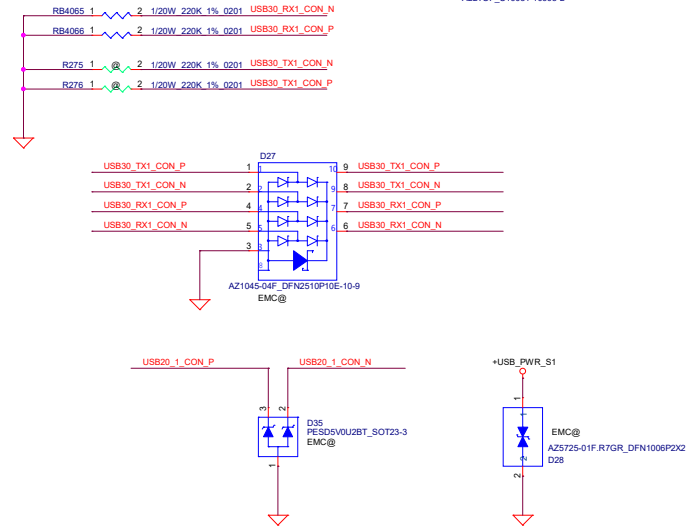
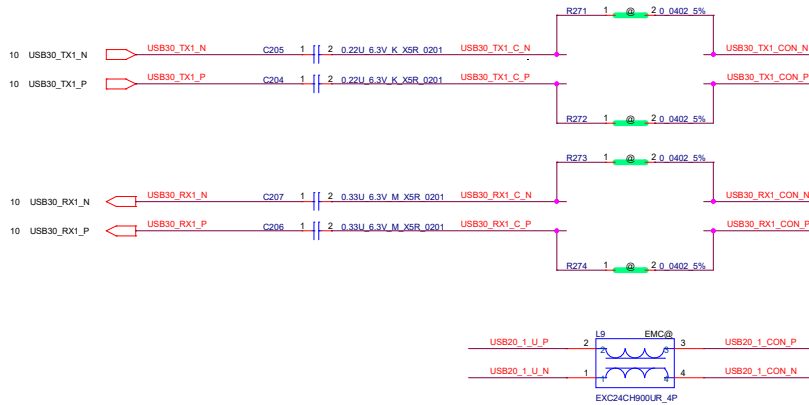
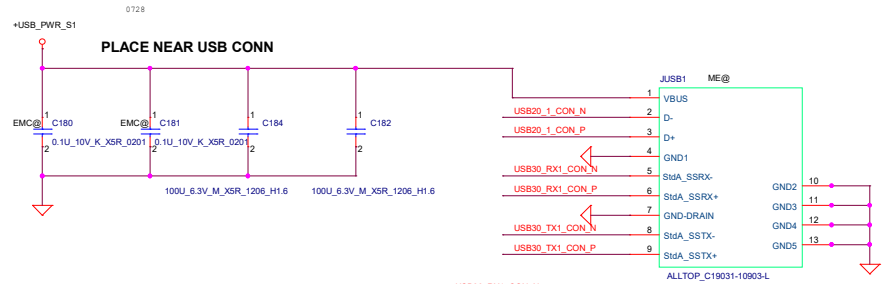
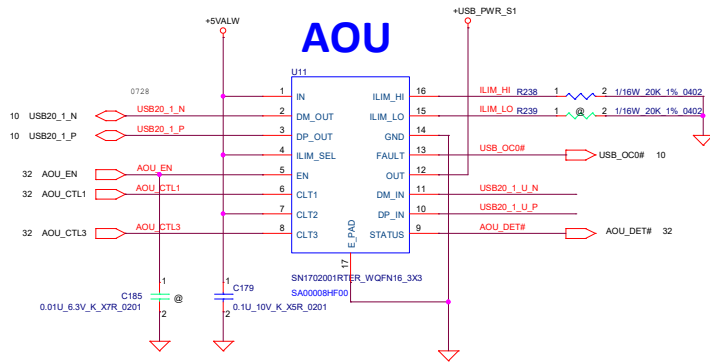
Protect IC

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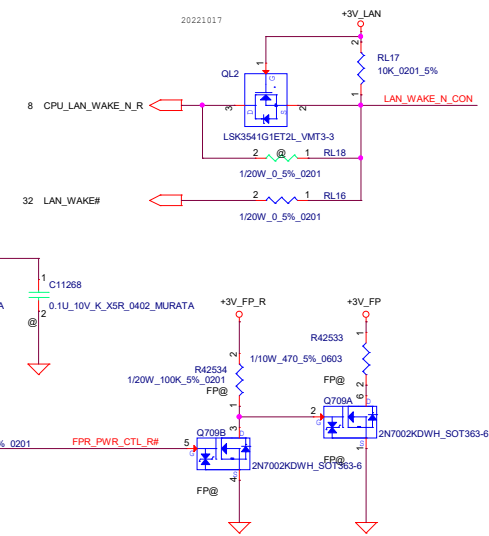
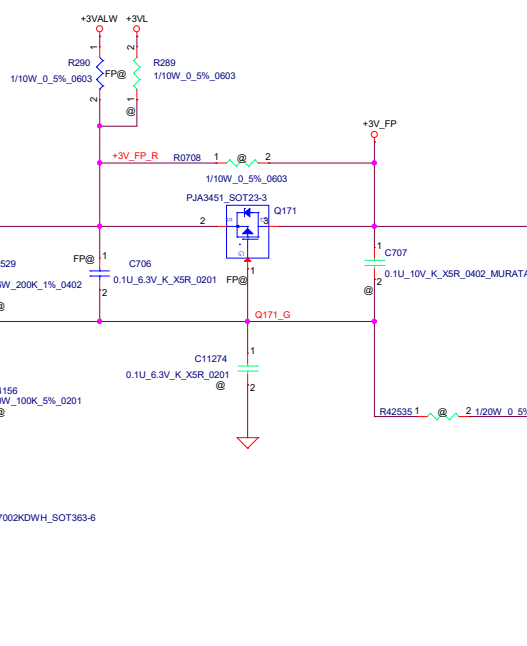
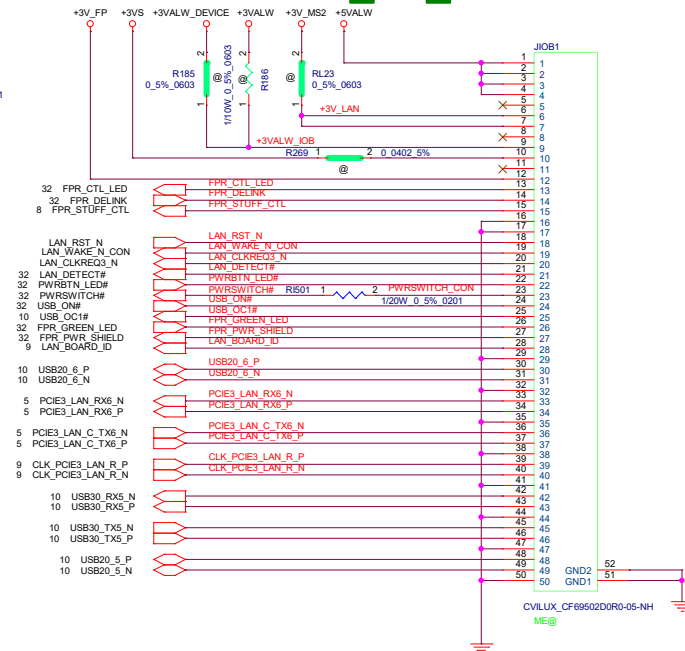
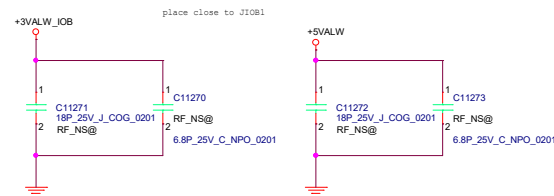
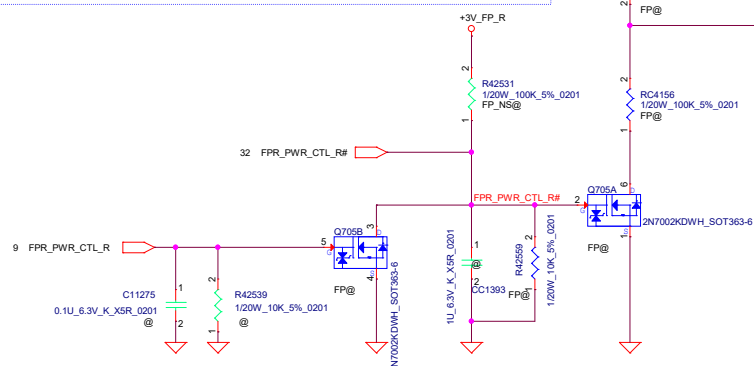
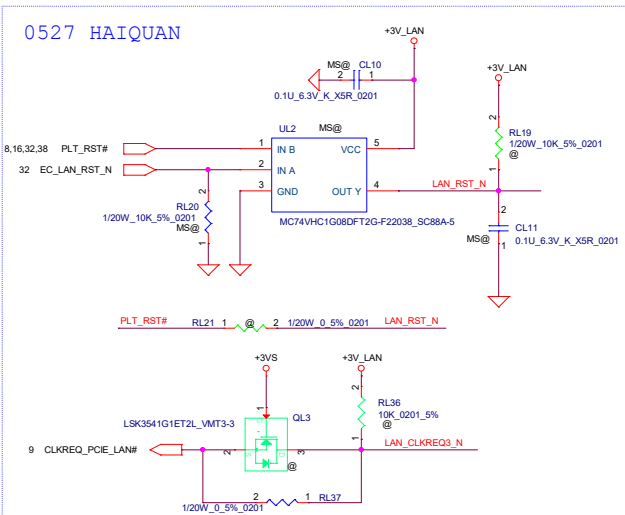
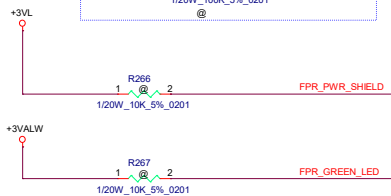
Type C Connector





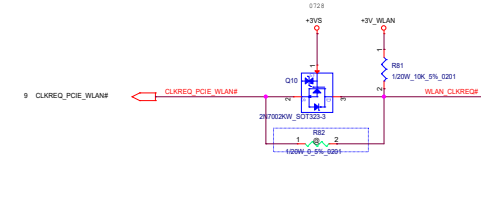
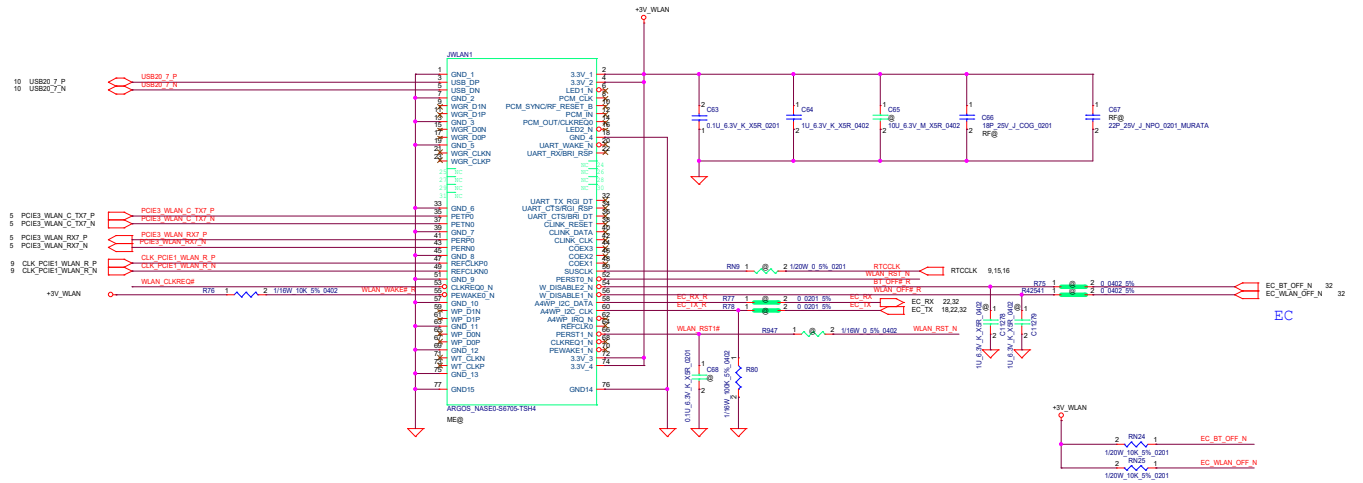
0728

0728

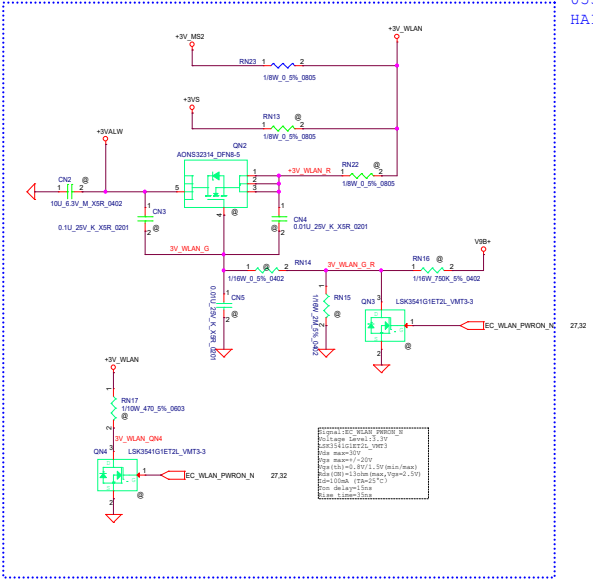
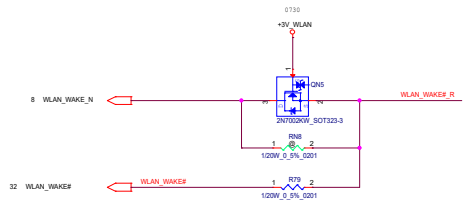


USB 2.0

KEY-E NGFF CARD FOR WLAN



0531
HAIQUAN



+3VALW TO +AUDIO_DVDD_IO MS



+3VALW TO VCC5B_CODEC MS

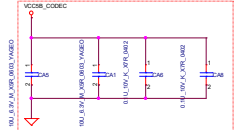


+1.8VALW TO +AUDIO_VDD18

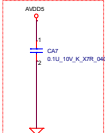


Package height was 1.1~1.4mm, please pay attention to the height permitted with layout.

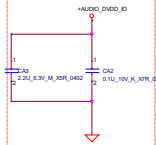
Close to Pin13,16



Close to Pin29



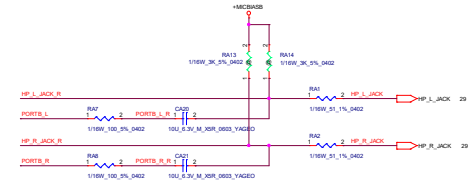
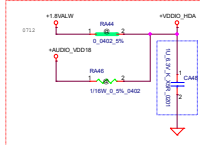
Please Close to Pin9



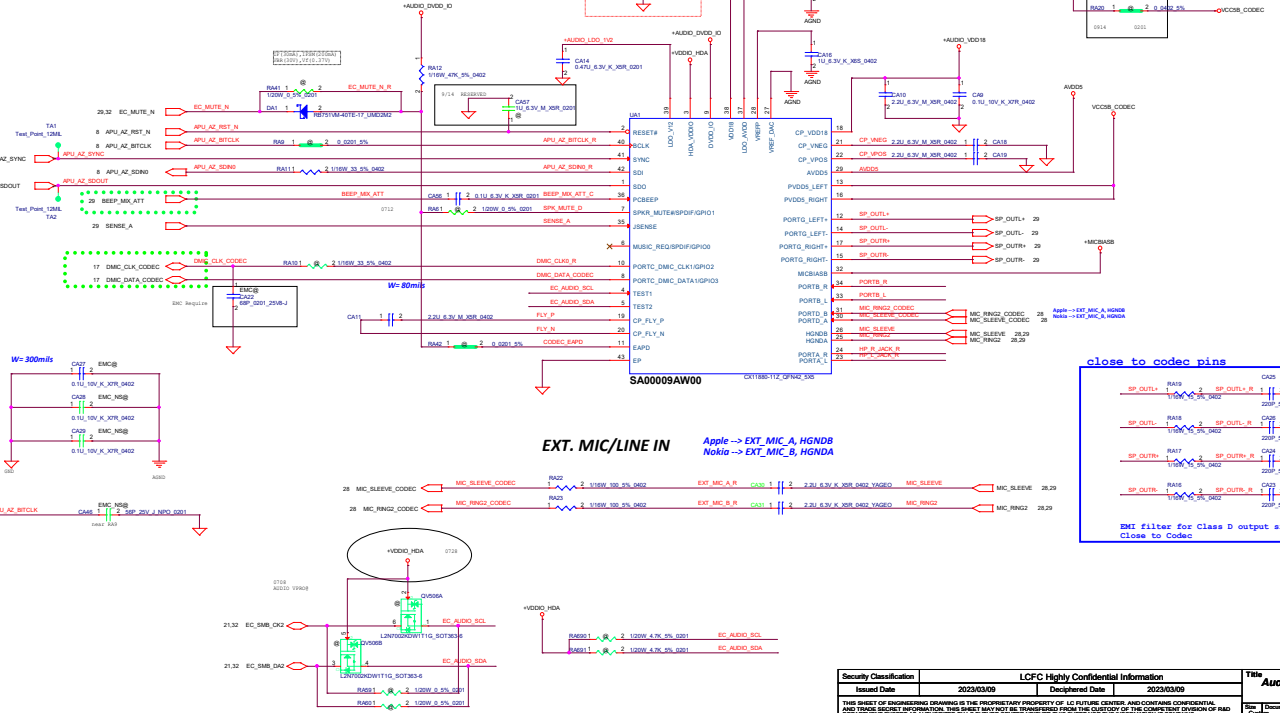
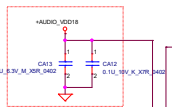
Close to Pin7



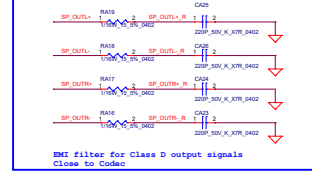
Close to Pin3



Close to Pin38




close to codec pins




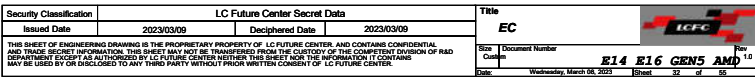
EXT. MIC/LINE IN Apple -> EXT_MIC_A, HGNDB Nokia -> EXT_MIC_B, HGNDA

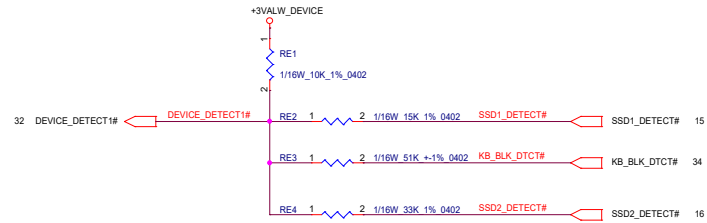


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				Custom	E14 E16 GEN5 AMD	1.0	
				Date:	Wednesday, March 08, 2023	Sheet	30 of 55



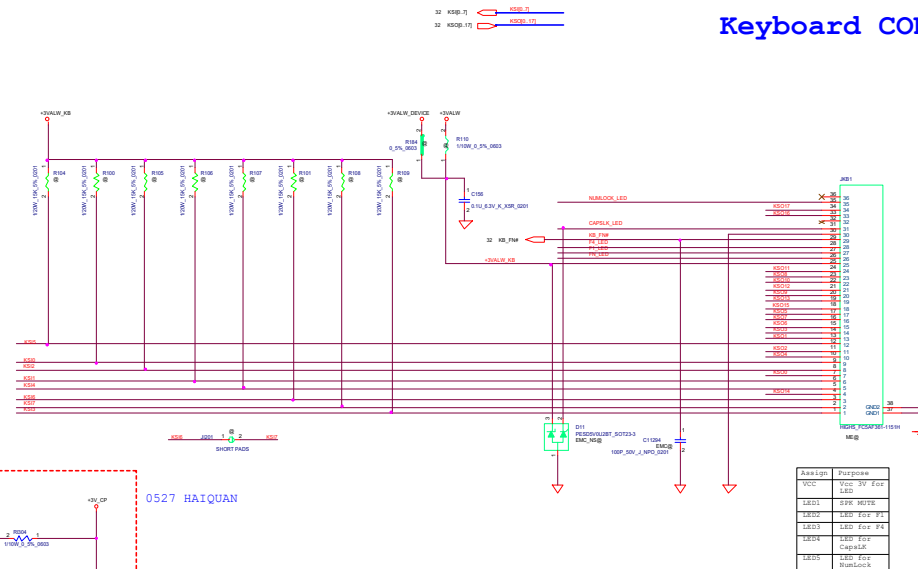
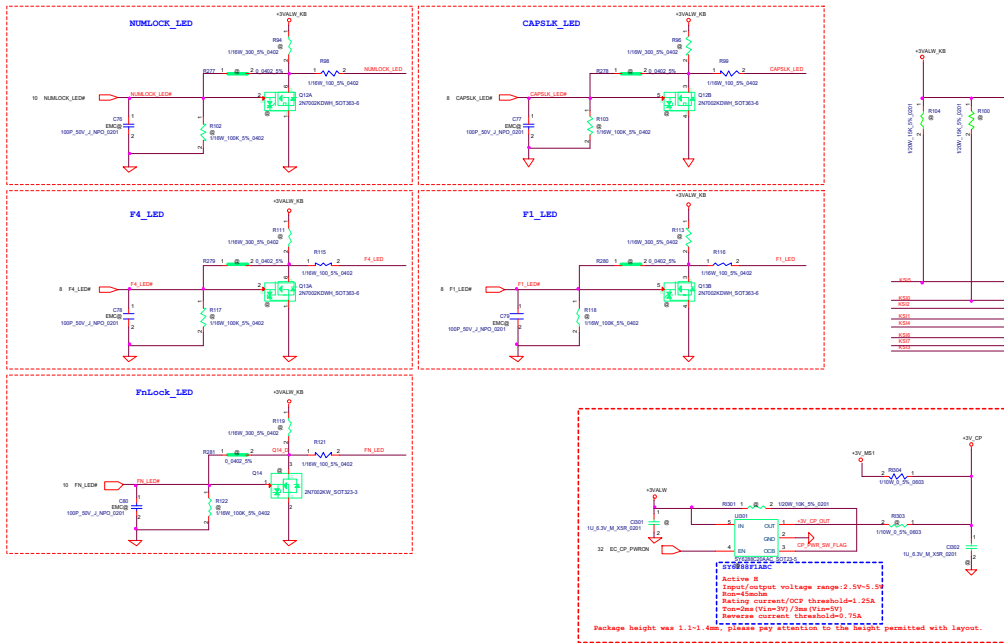
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Issued Date		2023/03/09	Deciphered Date		2023/03/09	
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Date:				Wednesday, March 08, 2023		Sheet 31 of 55





Vcc	3.3V					
RE1	10K +/- 5%					
DEVICE_DETECT1#	1.98V	1.675V	1.772V	2.759V	2.533V	3.3V
SSD1_DETECT#	V	V	V	X	X	X
KB_BLK_DTCT#	X	V	X	X	V	X
SSD2_DETECT#	X	X	V	V	X	X

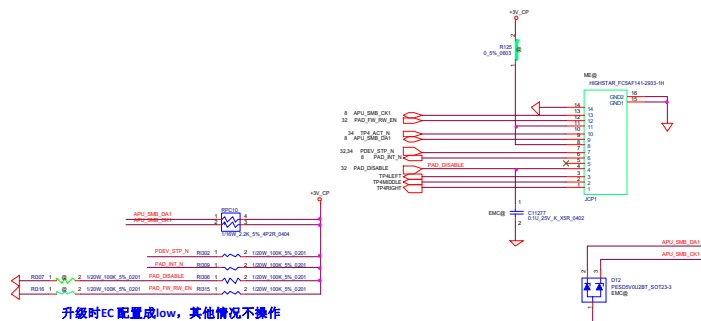
Keyboard CONN



Pin#	Assign
1	LED1
2	LED2
3	LED3
4	LED4
5	LED5
6	LED6
7	LED7
8	LED8
9	LED9
10	LED10
11	LED11
12	LED12
13	LED13
14	LED14
15	LED15
16	LED16
17	LED17
18	LED18
19	LED19
20	LED20
21	LED21
22	LED22
23	LED23
24	LED24
25	LED25
26	LED26
27	LED27
28	LED28
29	LED29
30	LED30
31	LED31
32	LED32
33	LED33
34	LED34
35	LED35
36	LED36

Click Pad

PIN	Signal
14	GND
13	I2C_CLK
12	-PAD_FW_RW_EN
11	VDDIO
10	-TP4_ACT
9	I2C_DATA
8	VDD
7	-PDEV_STP
6	-I2C_INT
5	NFC_ACTIVE
4	PAD_DISABLE
3	TP4LEFT
2	TP4MIDDLE
1	TP4RIGHT

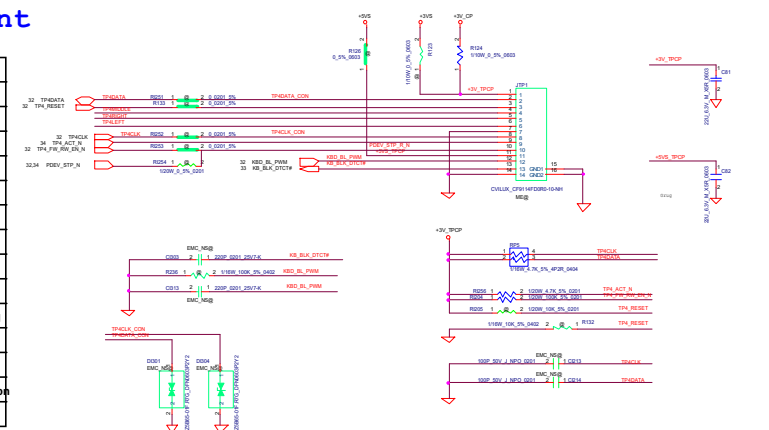


PIN	Signal
1	GND
2	I2C_CLK
3	IPD_GND
4	NC
5	-TP4_ACT
6	I2C_DAT
7	VDD
8	-PDEV_STP
9	-I2C_INT
10	NFC_Active
11	PAD_DISABLE
12	TP4LEFT
13	TP4MIDDLE
14	TP4RIGHT

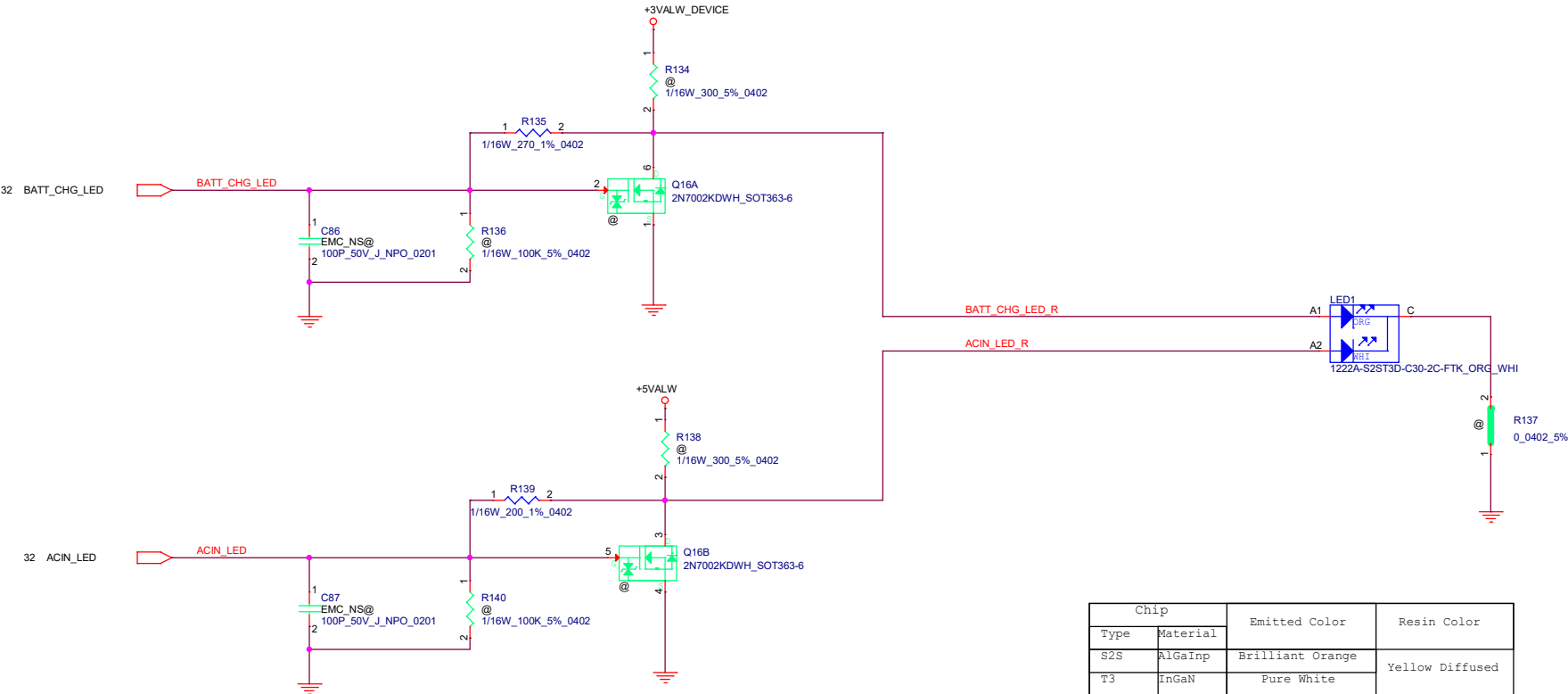
PIN	Signal
1	GND
2	I2C_CLK
3	-PAD_FW_RW_EN
4	VDDIO
5	-TP4_ACT
6	I2C_DAT
7	VDD
8	-PDEV_STP
9	-I2C_INT
10	NFC_Active
11	PAD_DISABLE
12	TP4LEFT
13	TP4MIDDLE
14	TP4RIGHT

Track Point

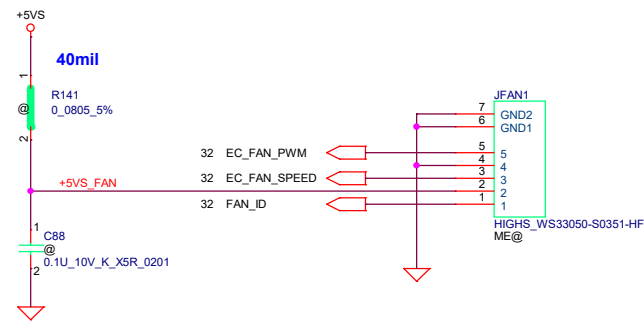
PIN	Signal
1	VCC(3.3V)
2	IPD DATA
3	IPD RST
4	MIDDLE
5	RIGHT
6	LEFT
7	IPD GND
8	IPD CLK
9	-TP4_ACT
10	-TP4_FW_RW_EN
11	LED VCC5 (5V)
12	LED PWM
13	Backlight detection
14	LED GND



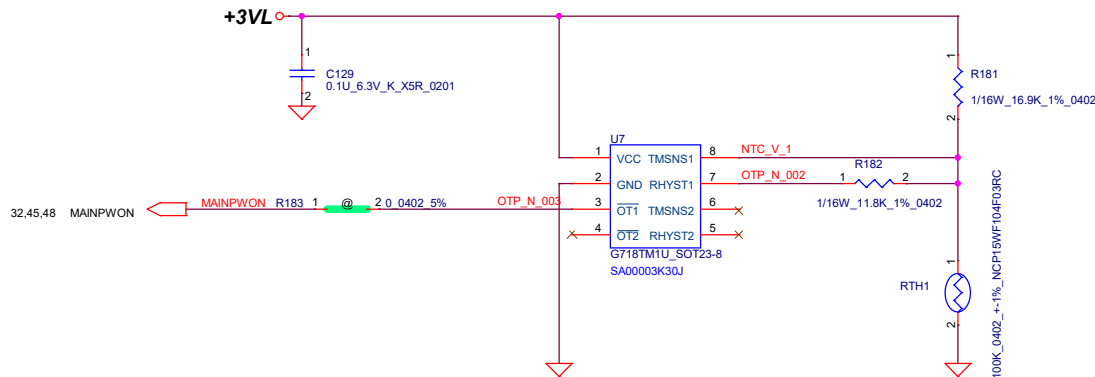
POWER ADAPTER Bi-COLOR (ORANGE/WHITE)



FAN CONN.



HW Protect



over temperature threshold:
RSET=3*RTMH
100+/-30C
Hysteresis temperature threshold.
RHYST=(RSET*RTML) / (3*RTML-RSET)
80+/-30C

Thermal Sensor

1 Near

2 Remote

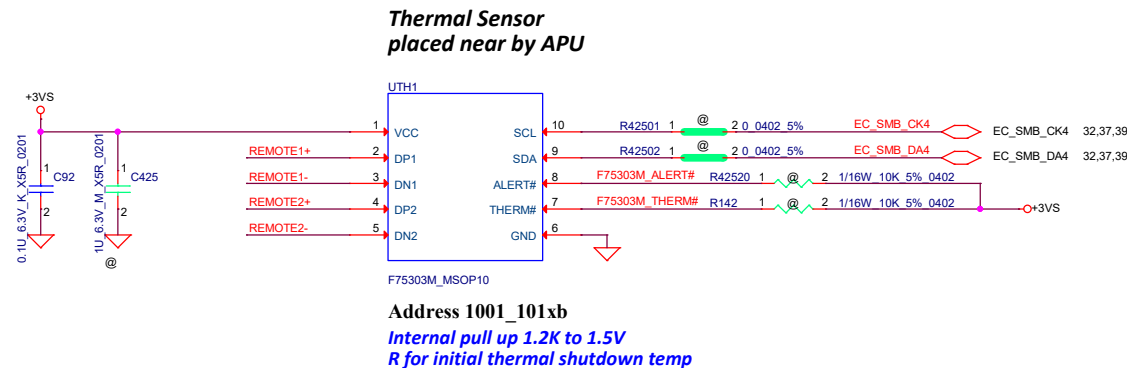
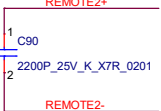


TABLE of Thermal Sensor (UTH1)		
Vendor	LCFC P/N	Description
FINTEK	SA000046C0J	S IC F75303M MSOP 10P SENSOR

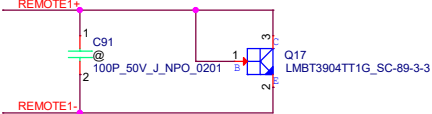
Near UTH1



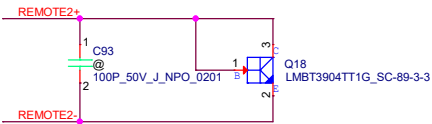
Near UTH1



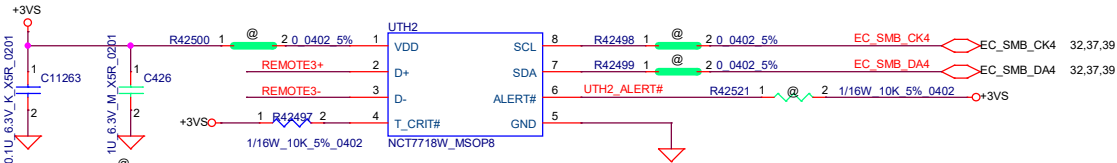
Near Charger



Near Fin

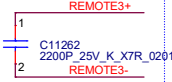


REMOTE+/- R, REMOTE1+/-, REMOTE2+/-:
Trace width/space:10/10 mil
Trace length:<8"

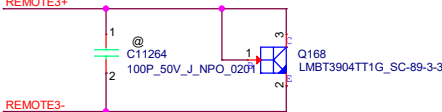


NCT7718W I2
C/ SMBusTM address is 1001100xb (x is R/W bit).

Close to UTH2

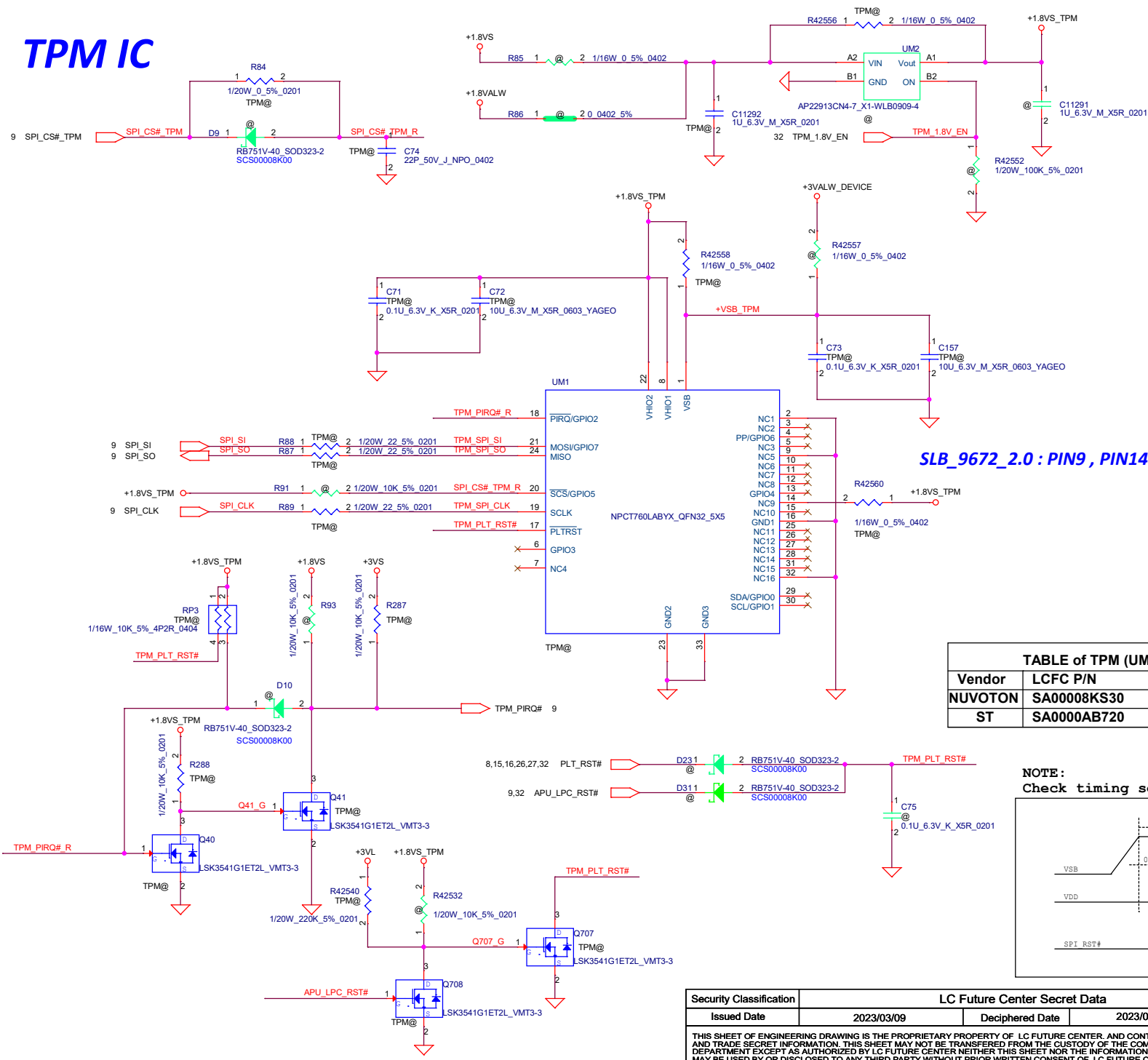


Near



REMOTE+/- R, REMOTE1+/-, REMOTE2+/-:
Trace width/space:10/10 mil
Trace length:<8"

TPM IC

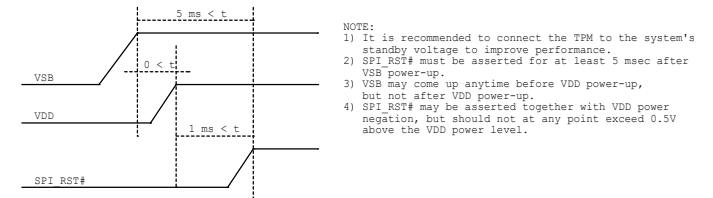



Pin	Infenion SLB_9672_2.0	NUVOTON NFCT760LAAYX	ST ST33HPTH2X32AHE0
1	VDD	VS	NIC
2	GND	NC	GND
3	GPIO_00	NC	NIC
4	GPIO_01	PP/GPIO6	NIC
5	NCI	NC	NIC
6	NC	GPIO3	GPIO_LP
7	GPIO_02	NC	GPIO_PP
8	NIC/VDD	VHIO	NIC
9	GND	NC	NIC
10	NCI	NC	NIC
11	NCI	NC	NIC
12	NCI	NC	NIC
13	NCI	GPIO4	NIC
14	VDD	NC	NIC
15	NCI	NC	NIC
16	NCI/GND	GND	NIC
17	SPI_RST#	PLTRST#	SPI_RST#
18	SPI_IRQ#	PIRQ#/GPIO2	SPI_IRQ#
19	SPI_CLK	SCLK	SPI_CLK
20	SPI_CS#	CS#/CPI05	SPI_CS#
21	MOSI	MOSI/GPIO7	MOSI
22	VDD	VHIO	VPS
23	GND	GND	NIC
24	MISO	MISO	MISO
25	NCI	NC	NIC
26	NCI	NC	NIC
27	NCI	NC	NIC
28	NCI	NC	NIC
29	NC	SDA/GPIO0	NIC
30	NC	SCL/GPIO1	NIC
31	NC	NC	NIC
32	GND	NC	NIC

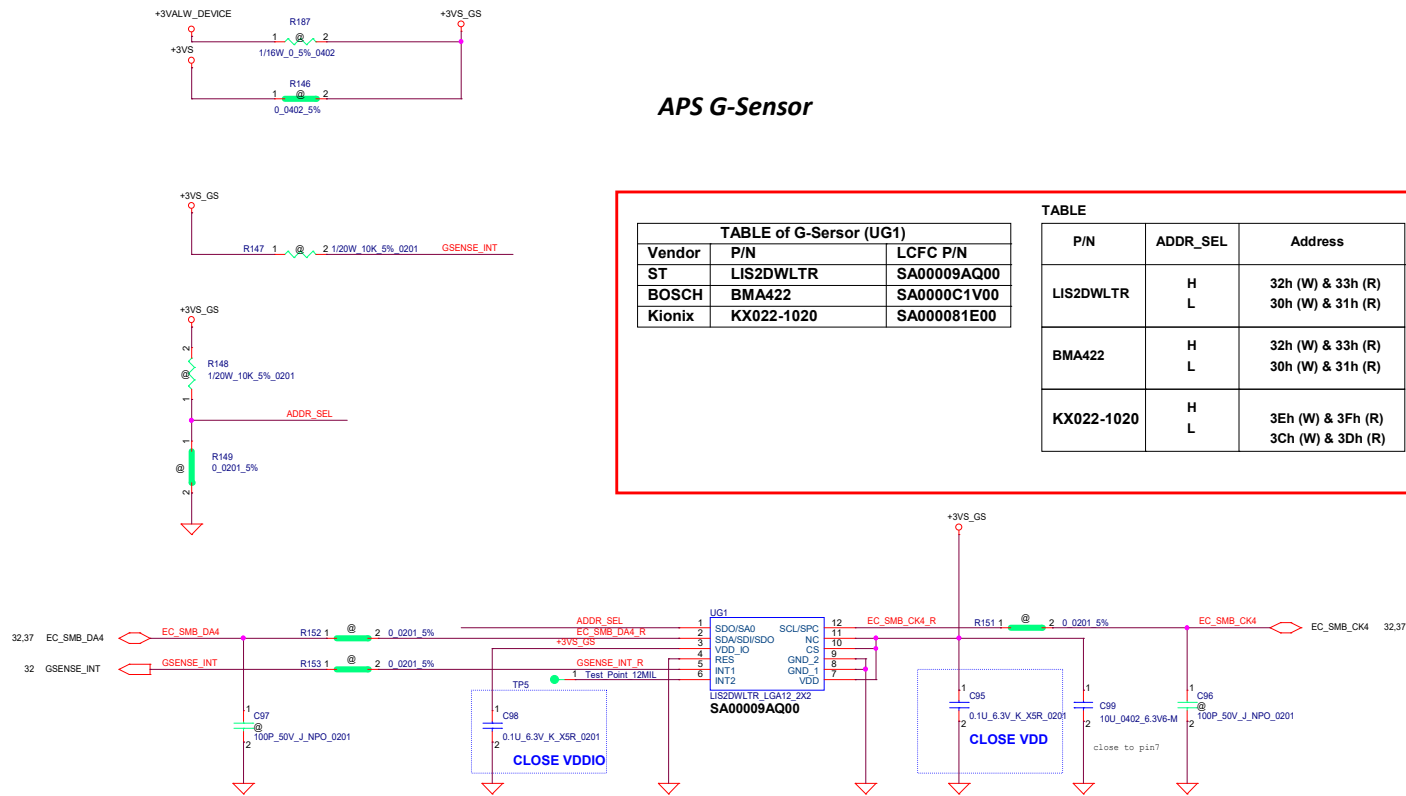
SLB_9672_2.0 : PIN9 , PIN14 , PIN32

TABLE of TPM (UM1)		
Vendor	LCFC P/N	Description
NUVOTON	SA00008KS30	S IC NPCT750LADYX QFN 32P TPM 2.0
ST	SA0000AB720	S IC ST33HTPH2X32AHD8 VQFN 32P TPM 2.0

NOTE:
Check timing sequence in SDV phase.



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Issued Date	2023/03/09	Deciphered Date	2023/03/09	TPM			
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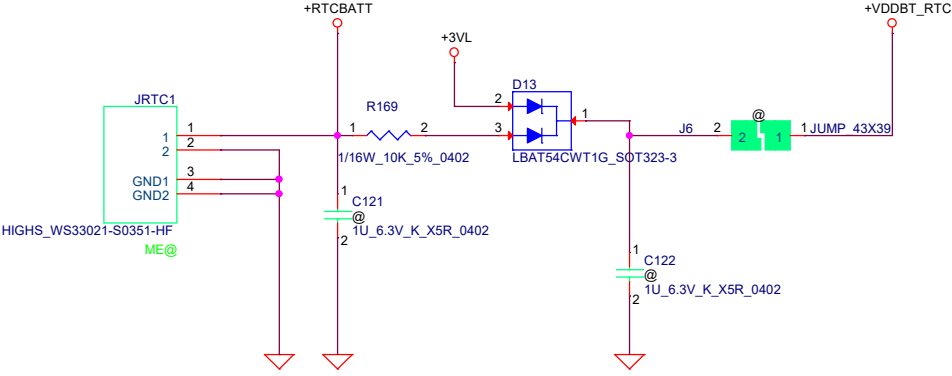


APS G-Sensor

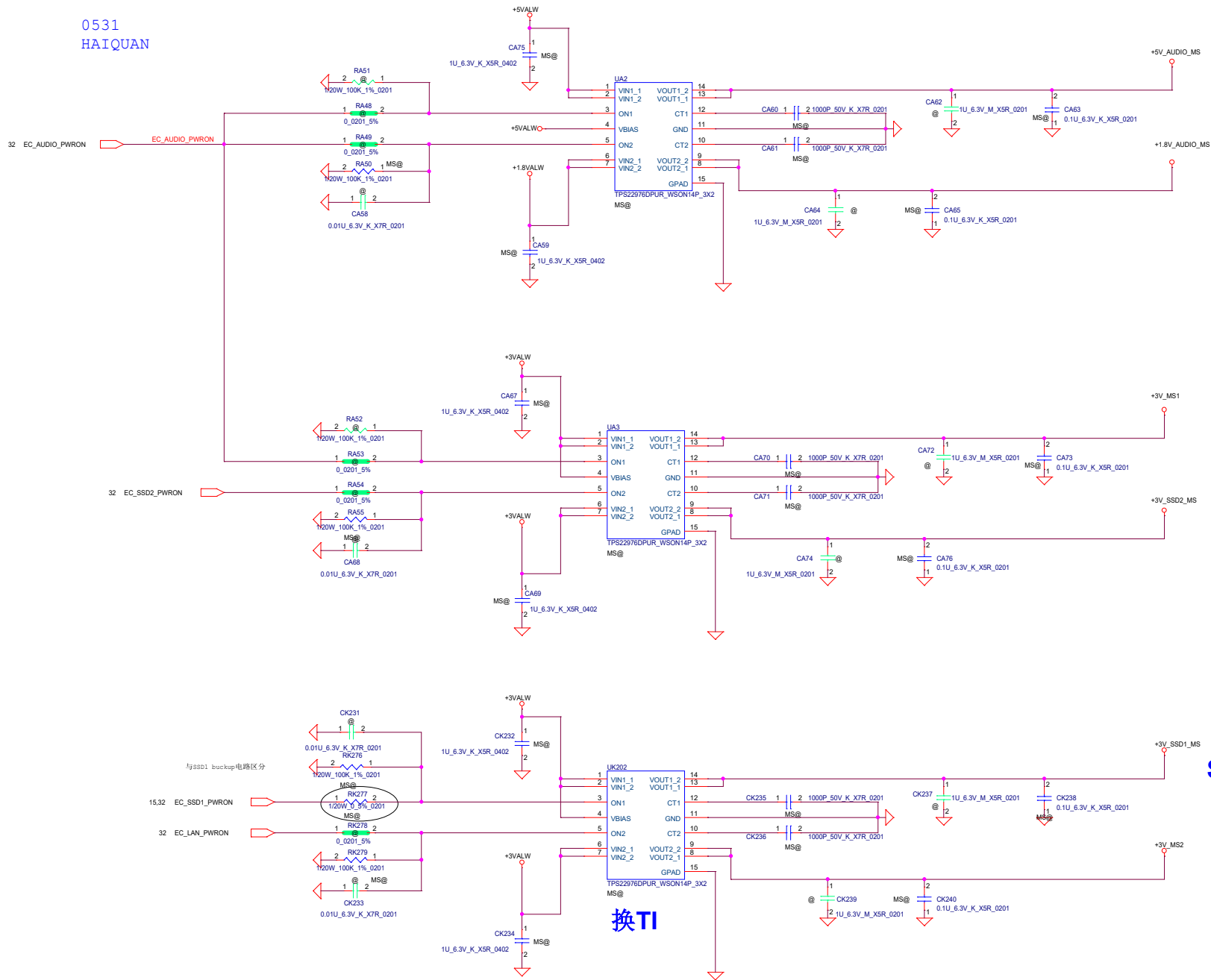
TABLE of G-Sensor (UG1)		
Vendor	P/N	LCFC P/N
ST	LIS2DWLTR	SA00009AQ00
BOSCH	BMA422	SA0000C1V00
Kionix	KX022-1020	SA000081E00

TABLE		
P/N	ADDR_SEL	Address
LIS2DWLTR	H	32h (W) & 33h (R)
	L	30h (W) & 31h (R)
BMA422	H	32h (W) & 33h (R)
	L	30h (W) & 31h (R)
KX022-1020	H	3Eh (W) & 3Fh (R)
	L	3Ch (W) & 3Dh (R)

RTC BATTERY



0531
HAIQUAN



Audio

AUDIO 3V
CP
CAM
DMIC

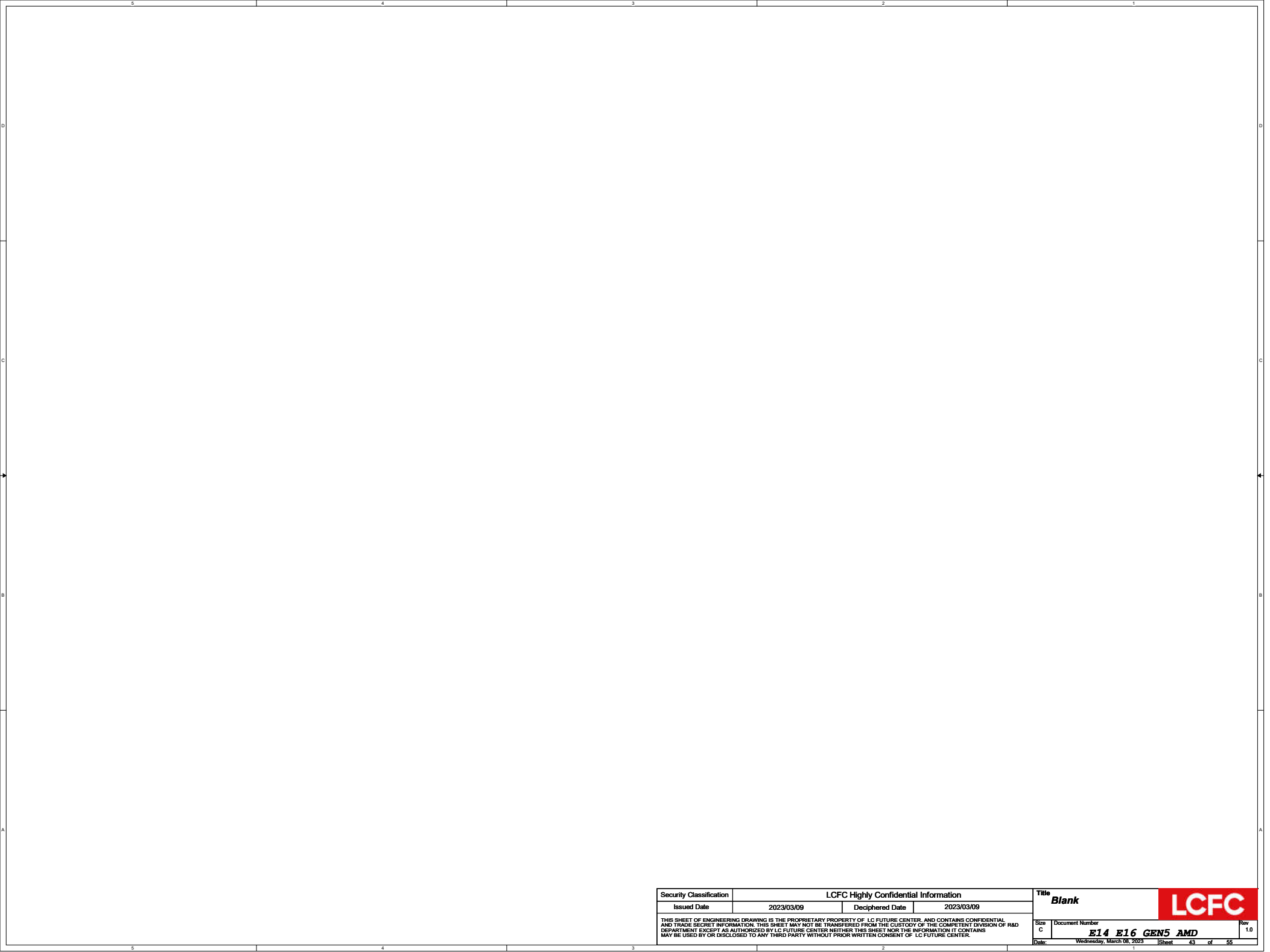
SSD2

SSD1

WLAN
LAN

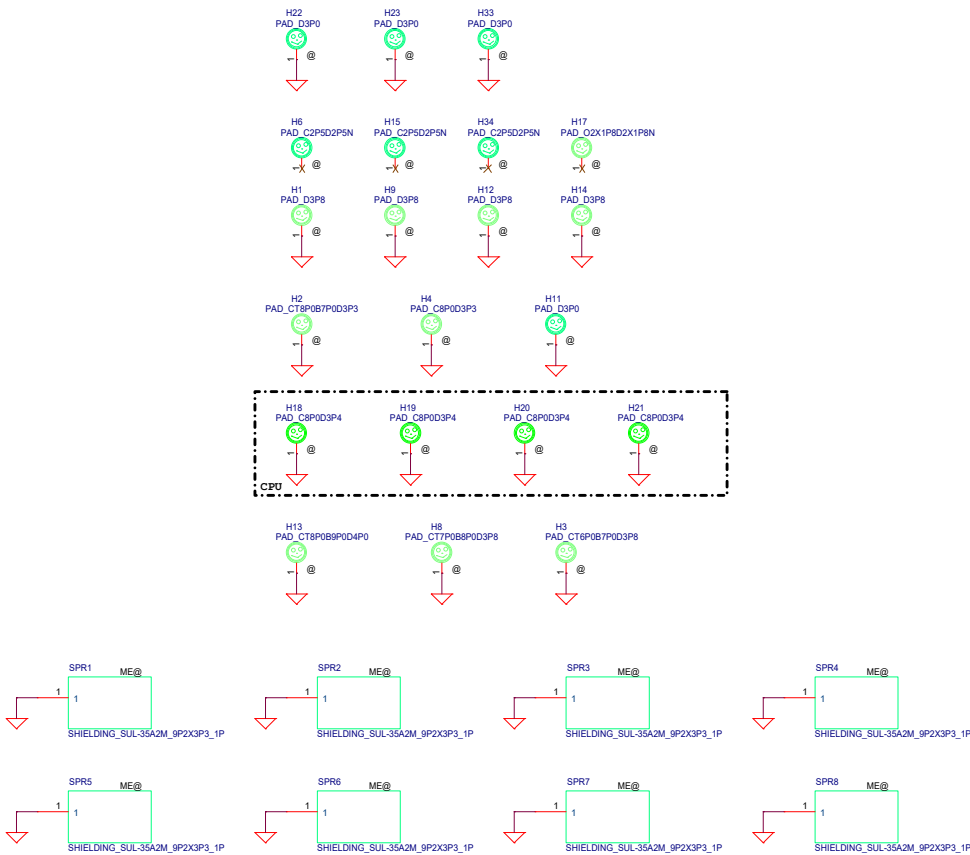
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Title			
MS Power			
Size	Document Number		Rev
C	E14 E16 GENS AMD		1.0
Date:	Wednesday, March 08, 2023	Sheet	42 of 55



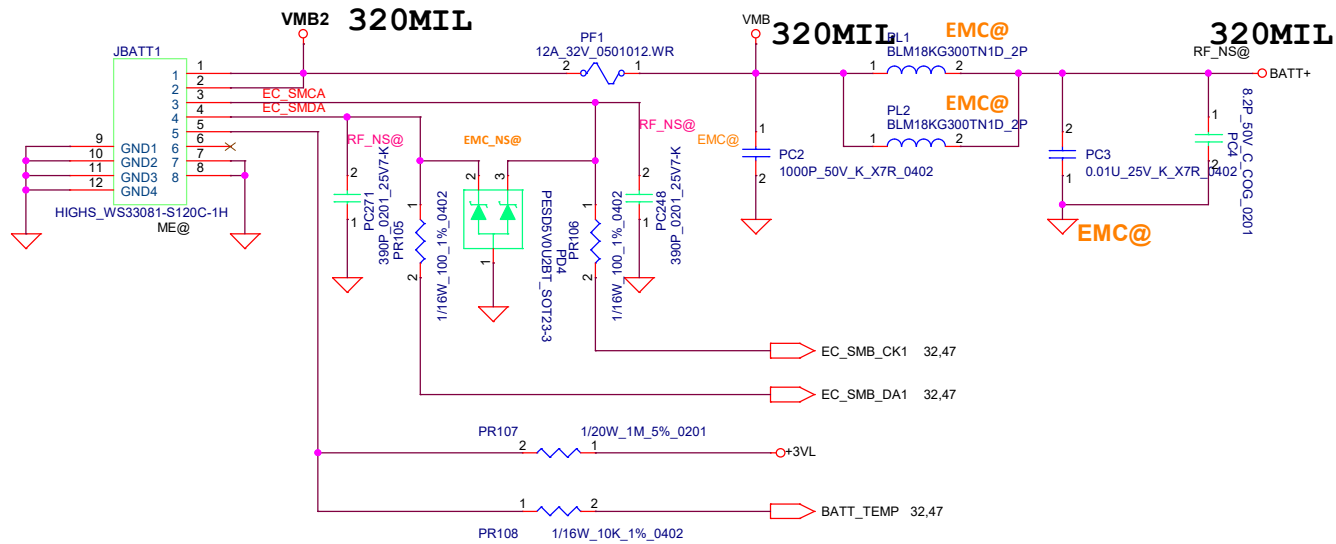
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C	E14 E16 GEN5 AMD			Wednesday, March 08, 2023 1 Sheet 43 of 55					1.0		

Screw Hole




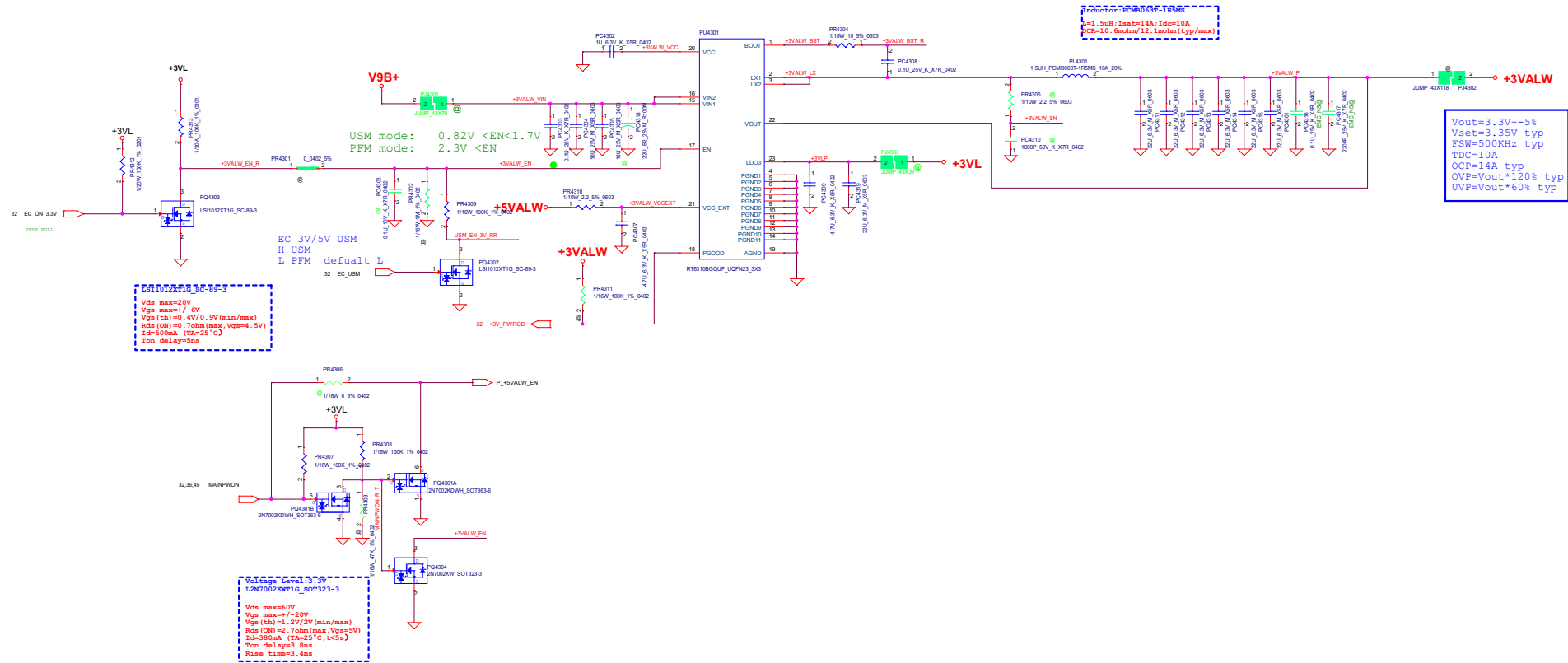
PCB Federal Mark PAD

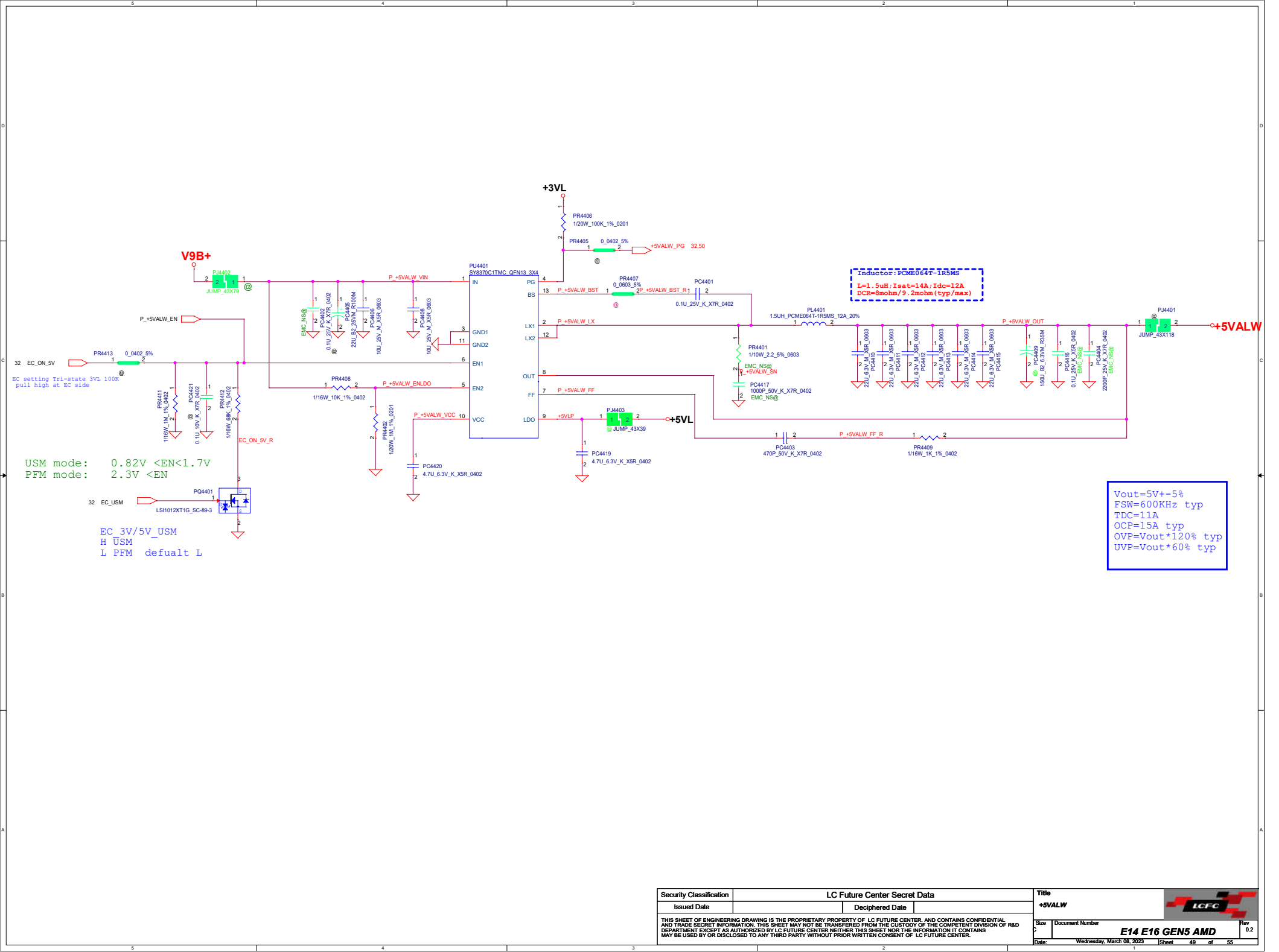


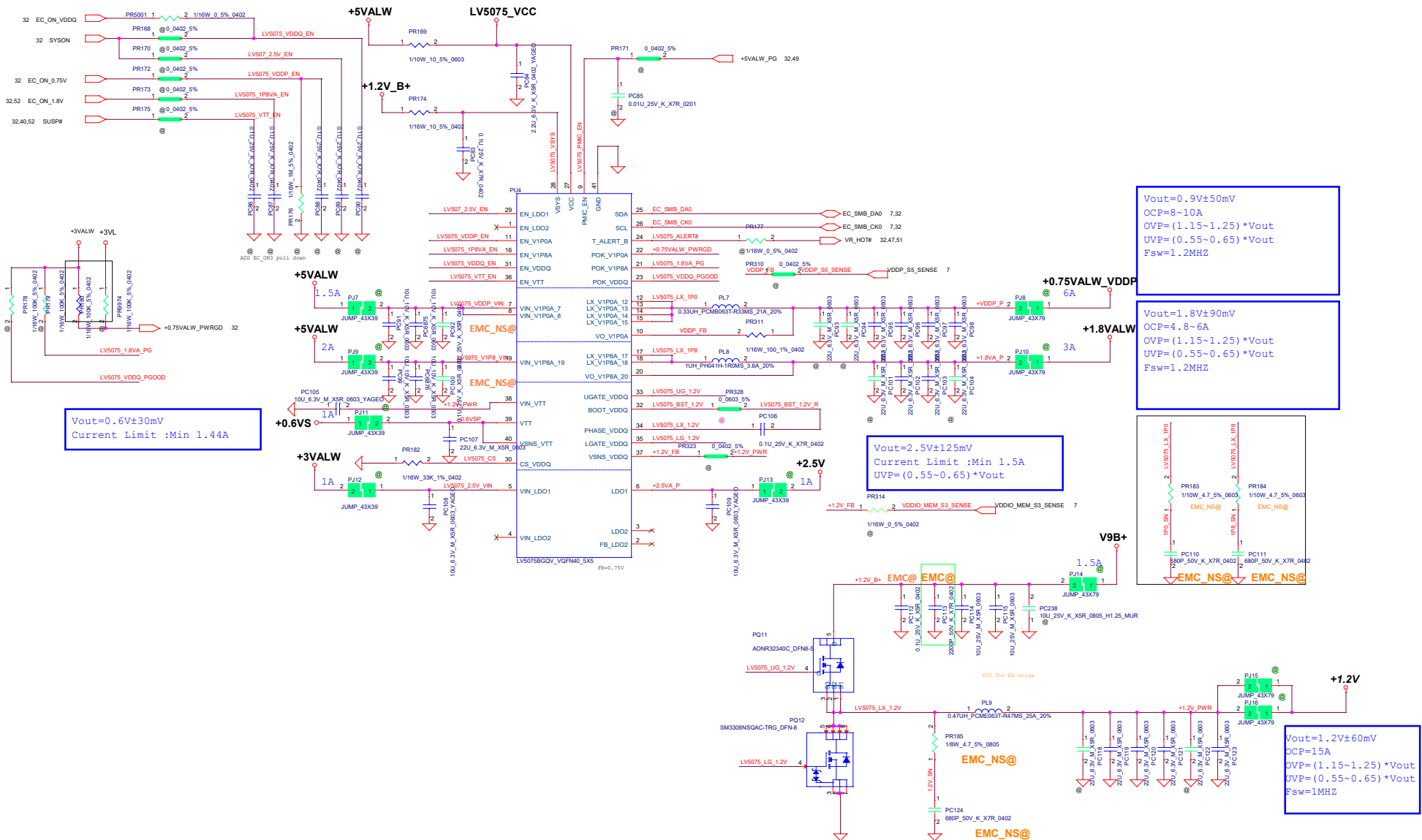


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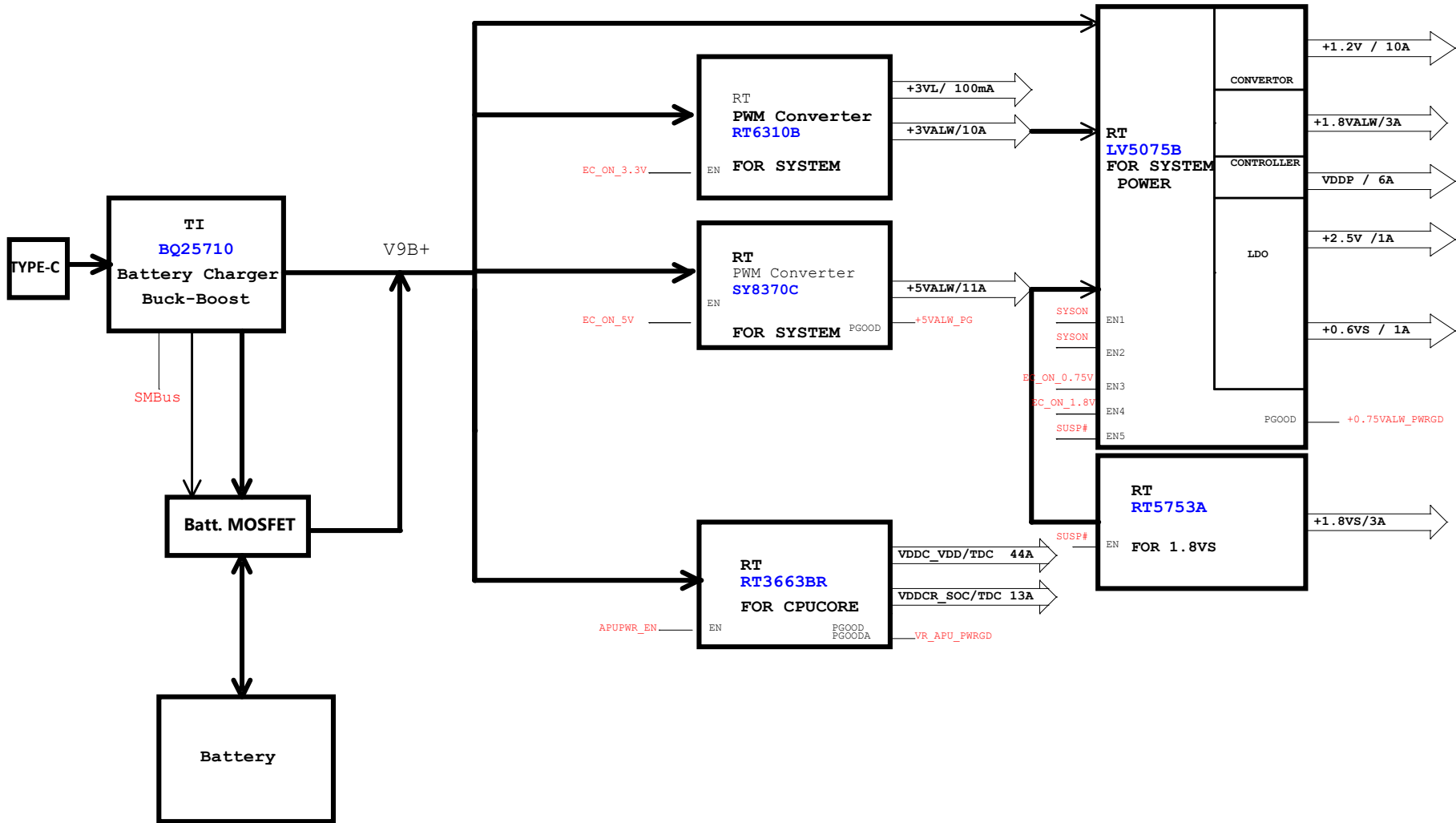
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<Variant Name>

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