

V06

- 1, Del NFC PN7150, Add CON24, UART1 for GNSS or Debug, SPI2 to CON24, UART2 for BT
- 2, Move SMC_BOOT0 to Page 22, TP6.
- 3, HKs Add Pull-up Resistor, And add Read state GPIO.
- 4, TYPE-C U27 LSX no connect.
- 5, Correct Y2, Y3 Connect.
- 6, Add Voltage Test Point, >40 point
- 7, Add SIM_DET D6.
- 8, CAMERA Modify. Add LDO for DVDD 1.2 and 1.05.
- 9, TFT con Modify.
- 10, STM32 PA10 NC. UART add Pull-up R108, R135

V07

- 1, UART1 to LSX, UART2 to GNSS, UART4 to bt, SPI1 to CON24
- 2, U329 I9PIN add Pull-up R229.

V08

- 1, UART2 to LSX
- 2, HW state IO add resister. R48, R66, R145
- 3, 4G, WIFI ant CON add Debug L,C
- 4, Add shielding Case Hold.
- 5, DEL F12, Modified IO U329 for L9 layer to GND.
- 6, INT_M/A/G, NFC_EN, NFC_IRQ modified IO to E1 for L2 to GND
- 7, ADD R232

V09

- 1, AUX_P, AUX_N swapped.
- 2, Add R236.
- 3, Del R153
- 4, LED_G to 8M D3 pin. NFC_IRQ to 8M E1 pin, INT_M/A/G to 8M L4 pin.
- 5, R122, R58 to 27K, R123 to 47K.
- 6, 4G used SAI6. ADD u5

V091

- 1, U5 8pin to SAI1_TXD5, 9pin to SAI1_RXD5.
- 2, ADD U7 for CAM_AFVDD, 2.8V 120mA.
- 3, U2 modified USB2642

V092

- 1, BOOT Resistor Modified.
- 2, EMMC 32G.
- 3, U3 NC.
- 4, PWM IO modify. MOTO E6, PMTC_5V T7, LED_B K6.

V093

- 1, R830 NC, R811 10k.

V094

- 1, BAT_CON Modified for 1000 times.
- 2, ADD L66 L67

V095

- 1, R115 Modified to 200.

V096

- 1, ADD R153 for TPS65983B Slave.
- 2, Modified LM36922 to I2C3, J10 to I2C4.

V097

- 0, CHG_STATUS_B connect Red LED.
- 1, Add N-mosfet Q8 on SD2_NCD.
- 2, TPS65982 LDO_IV8D Connected BUSPOWERZ.
- 3, VDD_3V3 add 4x22uf C231....
- 4, VSYS_3V4_4V3 add 7x22uf C281....
- 5, U27 TPS65982 F2 UART_RX 100k R223 connect GND.
- 6, Add NET_BT_WAKE
- 7, AUDIO_POWER_KEY connect Q2 PIN1.
- 8, ADD U68 NTSX2102
- 9, BOOT_CFG PU to NVCC_SNV3_3V3
- 10, R176 PU to NVCC_SNV3_3V3
- 11, R104 IO value.
- 12, R82 0402 0.1%
- 13, R934 100K
- 14, U2 USB2642 27,28 connect GND, 26 connect VDD.
- 15, ADD Q9, Modified WIFI_REG_ON, BT_REG_ON.
- 16, ADD R238 UART2_RXD PU USB_PD_LDO3V3
- 17, ADD Q10, R239, R240, R241
- 18, Add TYPEC_HRESET.
- 19, R42 1M,
- 20, U147 connect TPS65982
- 21, SW3,SW5,SW7 2-3PIN
- 22, J50 modified
- 23, J12 modified

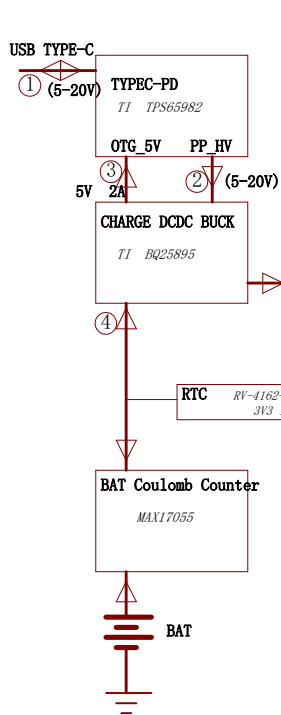
GNU GPLv3+
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Drawing Title:
Librem 5

Page Title:
VER note

Rev:	Date:	Design by:
Birch		
	Sheet	1 of 21



PMIC: BD71837

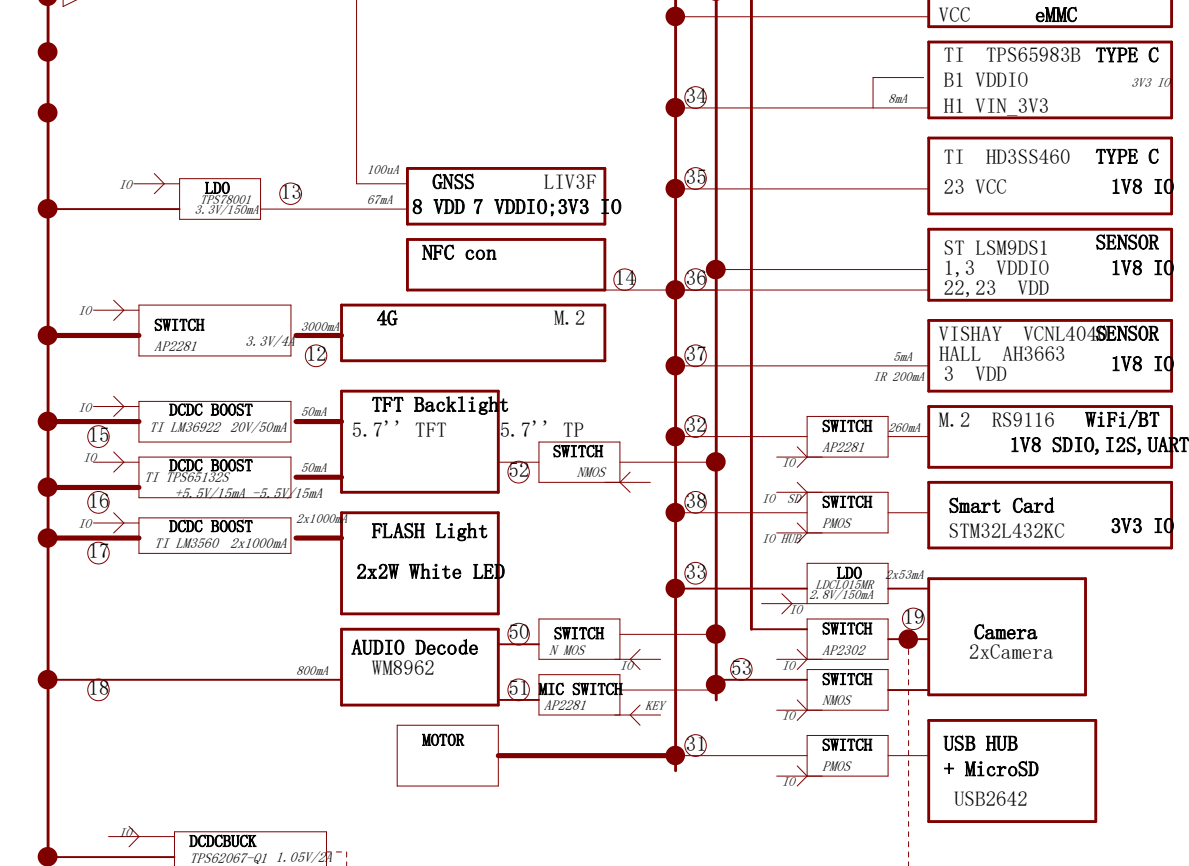
SEQ	PWR	TYP	Curr (mA)
LD01	3.3	10	
LD02	0.9	10	
BUCK1	0.9	3600	
LD04	0.9	250	
BUCK5	0.9	2500	
BUCK4	0.9	1000	
BUCK3	1.0	2100	
BUCK2	1.0	4000	
LD03	1.8	300	
BUCK6	3.3	3000	
BUCK7	1.8	1000	
BUCK8	1.1	2500	
LD05	1.8	300	
LD06	0.9	300	
LD07	3.3	150	

CPU: i.MX8M

SEQ	PWR	TYP	Curr (mA)
60	NVCC_SNVS	3.3	2
61	VDD_SNVS	0.9	2
62	RTC_RESET_B		
63	VDD_SOC	0.9	3600
64	VDDA_OP9	0.9	
65	VDD_DRAM	1.0	2500
66	VDD_VPU	0.9/1.0	1000
67	VDD_GPU	0.9/1.0	2000
68	VDD_ARM	0.9/1.0	4000
68	VDDA_IP8_XXX	1.8	250
68	VDDA_DRAM	1.8	50
69	NVCC_3V3	3.3	150
69	NVCC_1V8	1.8	100
69	NVCC_DRAM	1.1/1.2/1.35	35
69	NVCC_SD2	1.8/3.3	700
21	1.8V PHY	1.8	50
22	0.9V PHY	0.9	250
23	3.3V PHY	3.3	100
	POR_B		

VSYS_3V4_4V3

VSYS_3V_4V2



i.MX8M

NVCC_x			
_JTAG	3V3	VDD_3V3	JTAG
_NAND1	1V8	VDD_1V8	
_NAND2	1V8	VDD_1V8	
_SAI1_1	3V3	VDD_3V3	BOOT
_SAI1_2	3V3	VDD_3V3	BOOT
_SAI2	1V8	VDD_1V8	AUDIO
_SAI3	1V8	VDD_1V8	BT
_SAI5	1V8	VDD_1V8	4G
_GPIO1	3V3	VDD_3V3	
_GPIO2	3V3	VDD_3V3	
_I2C	1V8	VDD_1V8	_I2C2, 3, 4
_UART	3V3	VDD_3V3	SC Card GPS
_ECSPI	3V3	VDD_3V3	SPI FLASH BT
_SD1_1	1V8	VDD_1V8	EMMC
_SD1_2	1V8	VDD_1V8	EMMC
_SD2	1V8	VDD_1V8	WIFI
_ENET	1V8	VDD_1V8	

I2C

I2C#	Component	Part Number	Address	Voltage	Current
I2C1	PMIC	BD71837	0x08	3V3	55*
	TYPE-C-PD	TPS65983B	0x0F	3V3	B1*
	RTC	RV-4162-C7	0x68	3V3	
I2C2	Light	VCNL4040	0x60	1V8	
	FLASH	LM3560	0xA6, 0xA7	1V8	
	AGM sensor	LSM9DS1	0x6A, 0x1E	1V8	1, 3*
	TFT BAIS	TPS65132S	0x7C	1V8	
I2C3	CAMERA1		0x20, 0x21	1V8	
	TP		0x70	1V8	
	CODEC	WM8962	0x34	1V8	G3*
	BackLight	LM36922	0x36	1V8	
I2C4	BAT	MAX17055	0x36	1V8	
	CHARGE	BQ25895	0x6A	1V8	
	CAMERA2		0x20, 0x21	1V8	
	EXT CON			1V8	

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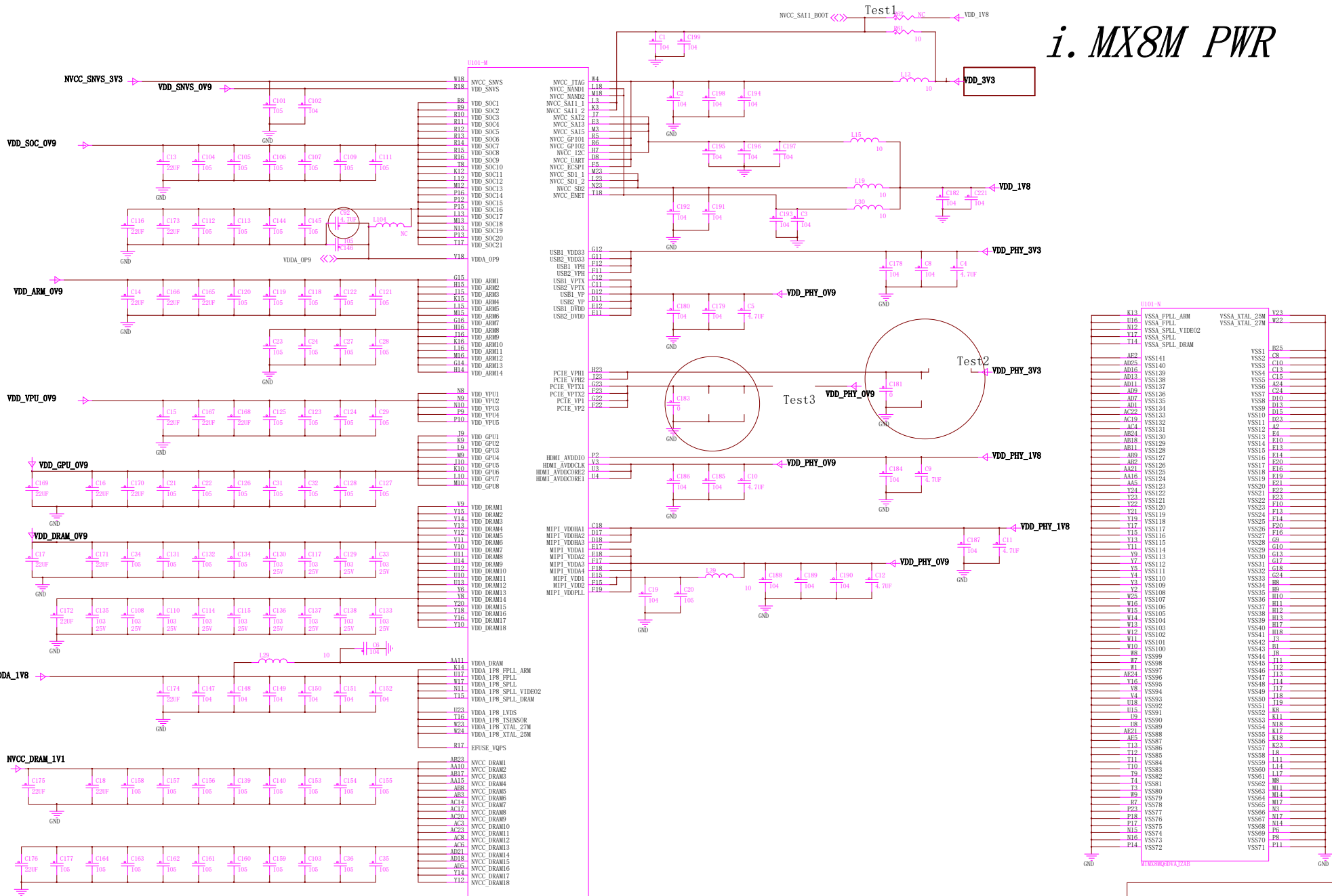
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Page Title: **POWER TREE**

Rev: **v0.9.7** Date: Design by:

Sheet 2 of 21

i.MX8M PWR



U101-N		U22	
K13	VSSA_FPLL_ARM	VSSA_XTAL_25M	V25
U16	VSSA_FPLL	VSSA_XTAL_27M	V22
U12	VSSA_SPLL_VIDEO2		
V17	VSSA_SPLL		
T14	VSSA_SPLL_DRAM		
A22	VSS141	VSS1	R25
ADG5	VSS140	VSS2	C8
AD16	VSS139	VSS3	C10
AD13	VSS138	VSS4	C13
AD11	VSS137	VSS5	C16
AD9	VSS136	VSS6	C24
AD7	VSS135	VSS8	D10
AD1	VSS134	VSS9	D15
AC22	VSS133	VSS10	D16
AC19	VSS132	VSS11	D23
AG4	VSS131	VSS12	A2
AB24	VSS130	VSS13	E4
AB18	VSS129	VSS14	F10
AB11	VSS128	VSS15	F13
AD9	VSS127	VSS16	E14
AD2	VSS126	VSS17	E20
AG1	VSS125	VSS18	F16
AA16	VSS124	VSS19	F19
AA5	VSS123	VSS20	E24
Y24	VSS122	VSS21	E22
Y23	VSS121	VSS22	E23
Y22	VSS120	VSS23	F10
Y21	VSS119	VSS24	F13
Y19	VSS118	VSS25	F14
Y17	VSS117	VSS26	F20
Y15	VSS116	VSS27	G10
D18	VSS115	VSS28	G9
Y11	VSS114	VSS29	G10
Y9	VSS113	VSS30	G13
Y7	VSS112	VSS31	G17
Y5	VSS111	VSS32	G18
Y4	VSS110	VSS33	G24
Y2	VSS109	VSS34	H8
W25	VSS108	VSS35	H10
W16	VSS107	VSS36	H9
W15	VSS106	VSS37	H11
W14	VSS105	VSS38	H12
W13	VSS104	VSS39	H13
W12	VSS103	VSS40	H17
W11	VSS102	VSS41	H18
W10	VSS101	VSS42	J3
W9	VSS100	VSS43	J8
W8	VSS99	VSS44	J8
W7	VSS98	VSS45	J11
W6	VSS97	VSS46	J12
W5	VSS96	VSS47	J13
W4	VSS95	VSS48	J14
W3	VSS94	VSS49	J17
W2	VSS93	VSS50	J18
W1	VSS92	VSS51	J19
V4	VSS91	VSS52	K11
V3	VSS90	VSS53	K8
V2	VSS89	VSS54	K18
V1	VSS88	VSS55	K18
AE5	VSS87	VSS56	K18
AE4	VSS86	VSS57	K23
T12	VSS85	VSS58	L8
T11	VSS84	VSS59	L11
T10	VSS83	VSS60	L14
T9	VSS82	VSS61	L17
T8	VSS81	VSS62	M8
T7	VSS80	VSS63	M11
T6	VSS79	VSS64	M14
T5	VSS78	VSS65	M17
T4	VSS77	VSS66	M18
T3	VSS76	VSS67	M19
T2	VSS75	VSS68	M19
T1	VSS74	VSS69	N14
M6	VSS73	VSS70	P8
M5	VSS72	VSS71	P11

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Page Title: **CPU POWER**

Rev: v0.9.7	Date:	Design by:
Sheet 3 of 21		

LPDDR4

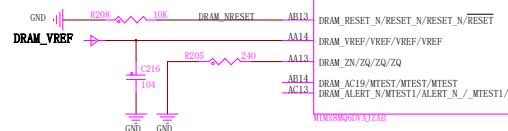
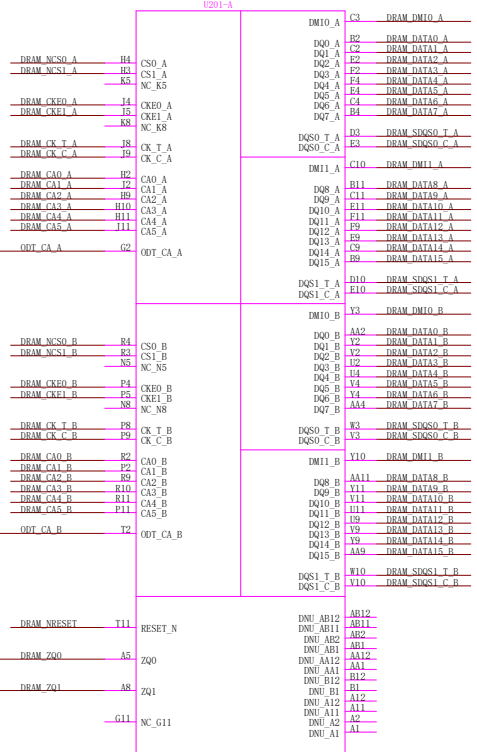
I.MX8M - DDR

DRAM_CA0_A	AD17	DRAM_AC08/CA0_A/A12/A12 / BC	DRAM_DQ00/DQ0_A/DQ0_A/DQ0_A	AE27	DRAM_DATA0_A
DRAM_CA1_A	AE16	DRAM_AC09/CA1_A/A11/A11	DRAM_DQ01/DQ1_A/DQ1_A/DQ1_A	AE28	DRAM_DATA1_A
DRAM_CA2_A	AD20	DRAM_AC10/CA2_A/A7/A7 (LPDDR4/DOR4/DOR3)	DRAM_DQ02/DQ2_A/DQ2_A/DQ2_A	AE29	DRAM_DATA2_A
DRAM_CA3_A	AE20	DRAM_AC11/CA3_A/A8/A8	DRAM_DQ03/DQ3_A/DQ3_A/DQ3_A	AE22	DRAM_DATA3_A
DRAM_CA4_A	AD19	DRAM_AC12/CA4_A/A6/A6	DRAM_DQ04/DQ4_A/DQ4_A/DQ4_A	AE23	DRAM_DATA4_A
DRAM_CA5_A	AE18	DRAM_AC13/CA5_A/A5/A5	DRAM_DQ05/DQ5_A/DQ5_A/DQ5_A	AE24	DRAM_DATA5_A
DRAM_CS0_A	AE18	DRAM_AC02/CS0_A/CS0_N/CS0	DRAM_DQ06/DQ6_A/DQ6_A/DQ6_A	AE25	DRAM_DATA6_A
DRAM_CS1_A	AC18	DRAM_AC03/CS1_A/CO/	DRAM_DQ07/DQ7_A/DQ7_A/DQ7_A	AE26	DRAM_DATA7_A
DRAM_CKE0_A	AC16	DRAM_AC00/CKE0_A/CKE0/CKE0	DRAM_DQ08/DQ8_A/DQ0_A/DQ0_A	AE27	DRAM_DATA8_A
DRAM_CKE1_A	AE14	DRAM_AC01/CKE1_A/CKE1/CKE1	DRAM_DQ09/DQ9_A/DQ1_A/DQ1_A	AE28	DRAM_DATA9_A
DRAM_CK_T_A	AD14	DRAM_AC04/CK_T_A/B/G0/BA2	DRAM_DQ10/DQ10_A/DQ2_A/DQ2_A	AE29	DRAM_DATA10_A
DRAM_CK_C_A	AE14	DRAM_AC05/CK_C_A/B/G1/A14	DRAM_DQ11/DQ11_A/DQ3_A/DQ3_A	AE30	DRAM_DATA11_A
			DRAM_DQ12/DQ12_A/DQ4_A/DQ4_A	AE31	DRAM_DATA12_A
			DRAM_DQ13/DQ13_A/DQ5_A/DQ5_A	AE32	DRAM_DATA13_A
			DRAM_DQ14/DQ14_A/DQ6_A/DQ6_A	AE33	DRAM_DATA14_A
			DRAM_DQ15/DQ15_A/DQ7_A/DQ7_A	AE34	DRAM_DATA15_A

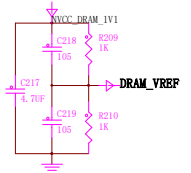
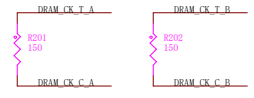
NVCC_DRAM_IV1

NVCC_DRAM_IV1

NVCC_DRAM_IV1



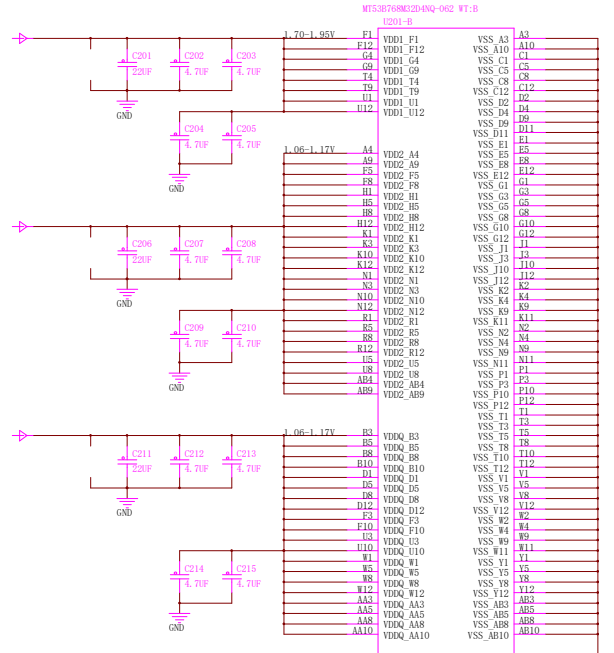
LPDDR4 Power supply voltage ramp:
RESET_n is held LOW.
VDD1 >= VDD2
VDD2 >= VDD0



VDD1V8

NVCC_DRAM_IV1

NVCC_DRAM_IV1



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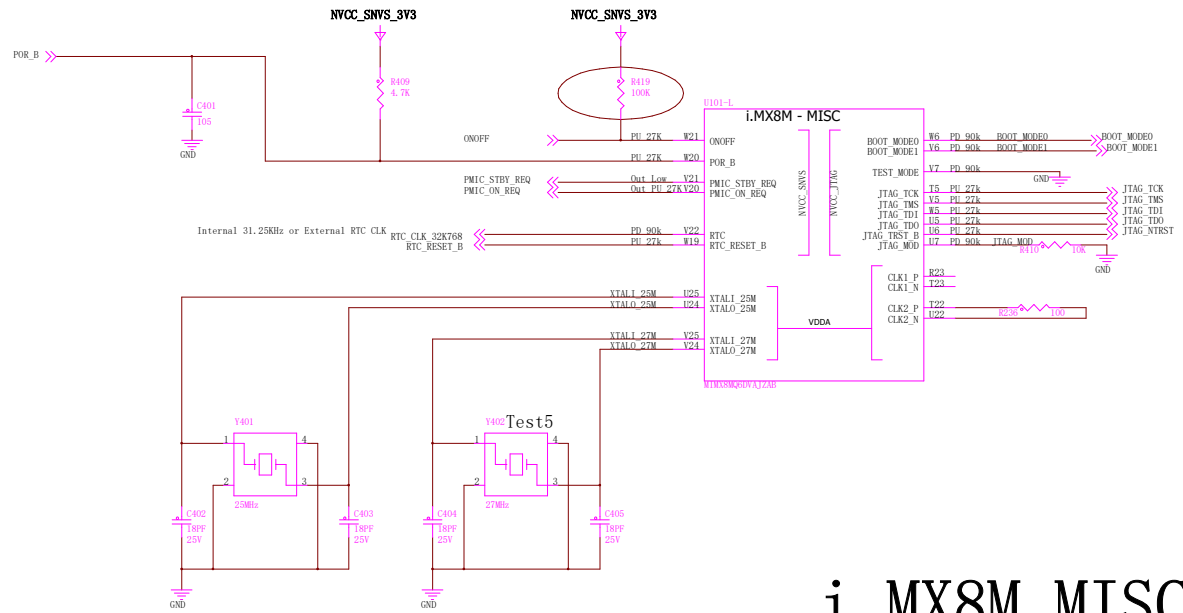
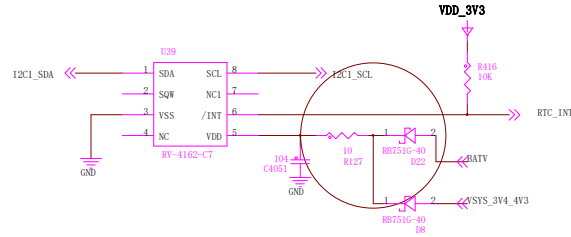
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Page Title: **LPDDR4**

Rev: VO.9.7	Date:	Design by:
		Sheet 4 of 21

RTC

JTAG Debug

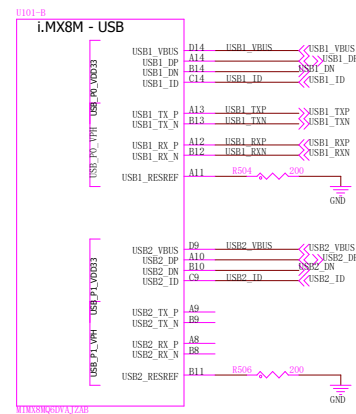
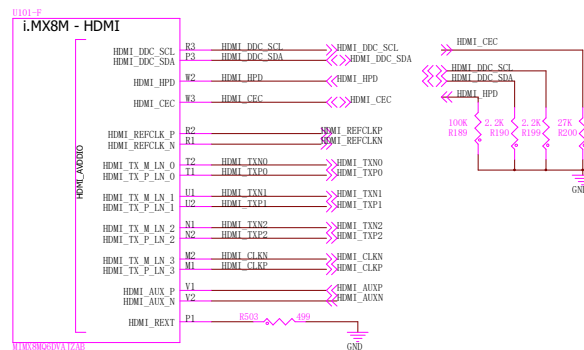
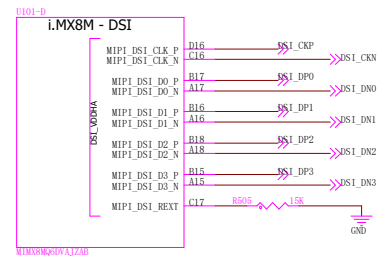
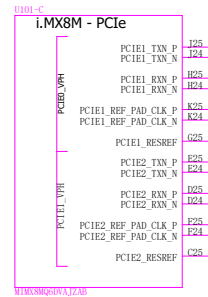
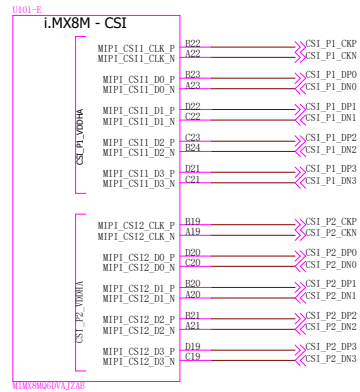


i.MX8M MISC

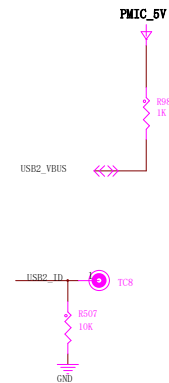
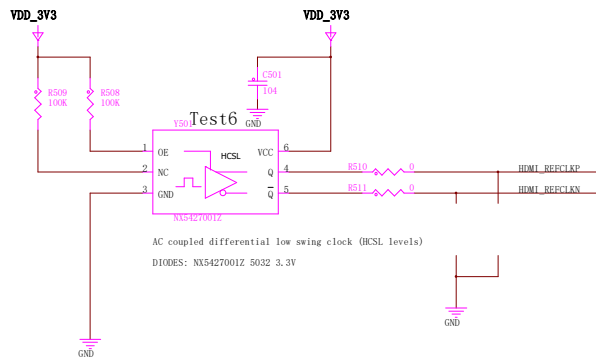
Purism		
Drawing Title: Librem 5		
Page Title: CPU MISC, RTC		
Rev: v0.9.7	Date:	Design by:
		Sheet 6 of 21

i.MX8M PHY

USB_RESREF: Attach a 200-Ω 1% 100-ppm/C precision resistor-to-ground on the board.
 MIPIDSI_REXT: 15k-Ω
 PCIe: 200-Ω ±1% ± 100 ppm/°C precision resistor-to-ground on the board.
 HDMI: a 499Ω (±1% tolerance) resistor-to-ground on the board



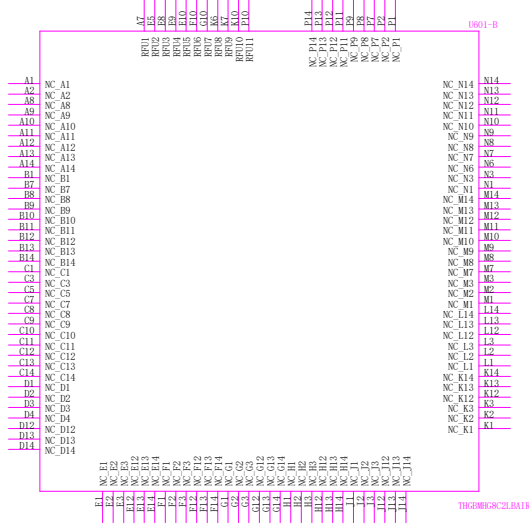
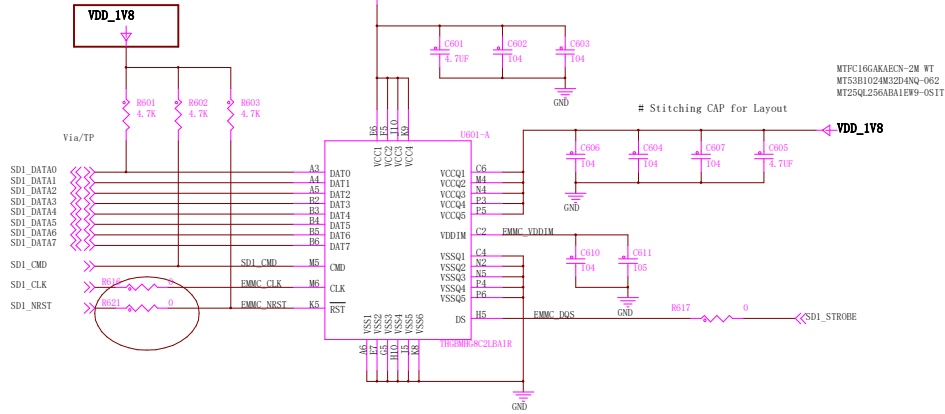
AC coupled differential low swing clock (HCSL levels)



Purism		
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Page Title: CPU PHY		
Rev: v0.9.7	Date:	Design by:
Sheet 7		of 21

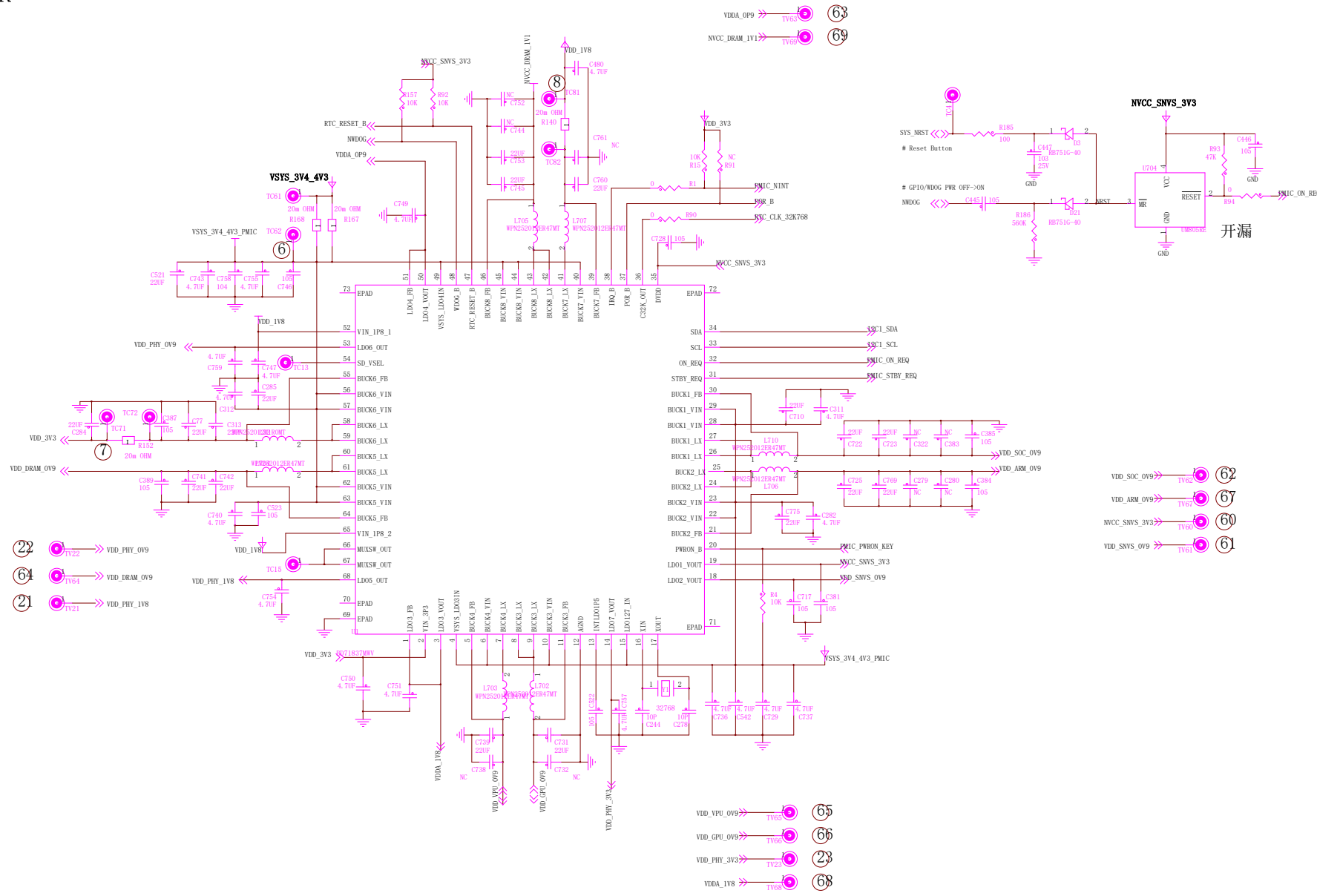
eMMC 5.0 Footprint

VDD_3V3
eMMC/TF co-Layout



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Page Title: EMMC		
Rev: v0.9.7	Date:	Design by:
		Sheet 8 of 21

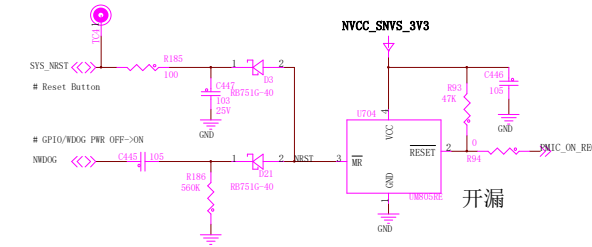
SYS PMIC/PWR



- 62 VDD_SOC_0V9 → TV62
- 67 VDD_ARM_0V9 → TV67
- 60 NVCC_SWS_3V3 → TV60
- 61 VDD_SNS_0V9 → TV61

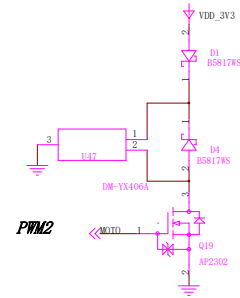
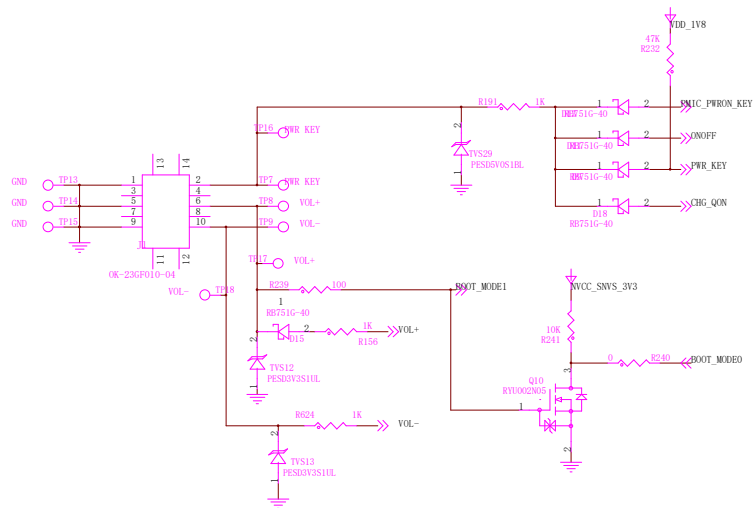
- 22 TV22 → VDD_PHY_0V9
- 64 TV64 → VDD_DRAM_0V9
- 21 TV21 → VDD_PHY_1V8

- 65 VDD_FPU_0V9 → TV65
- 66 VDD_GPU_0V9 → TV66
- 23 TV23 → VDD_PHY_3V3
- 68 VDDA_1V8 → TV68

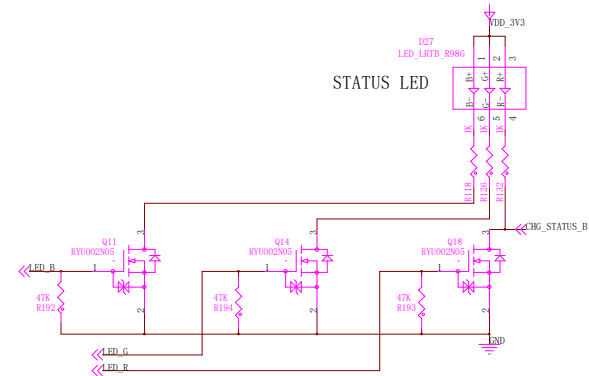
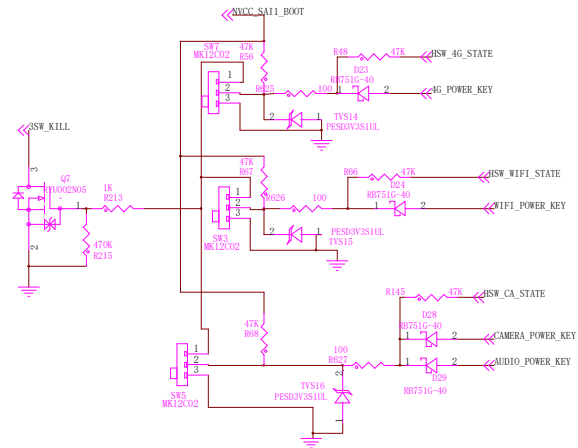
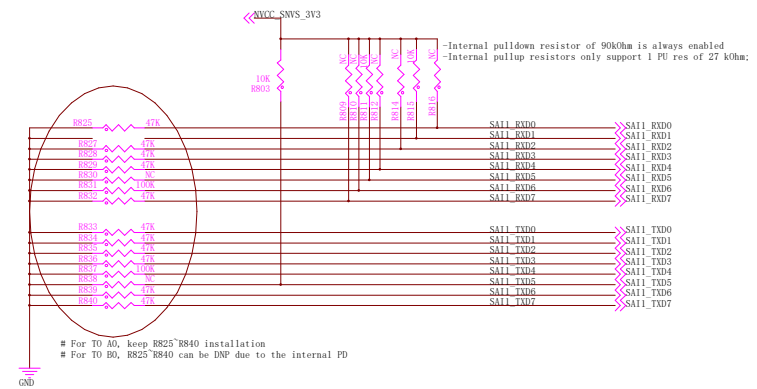


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Rev: v0.9.7	Date:	Design by:
		Sheet 9 of 21

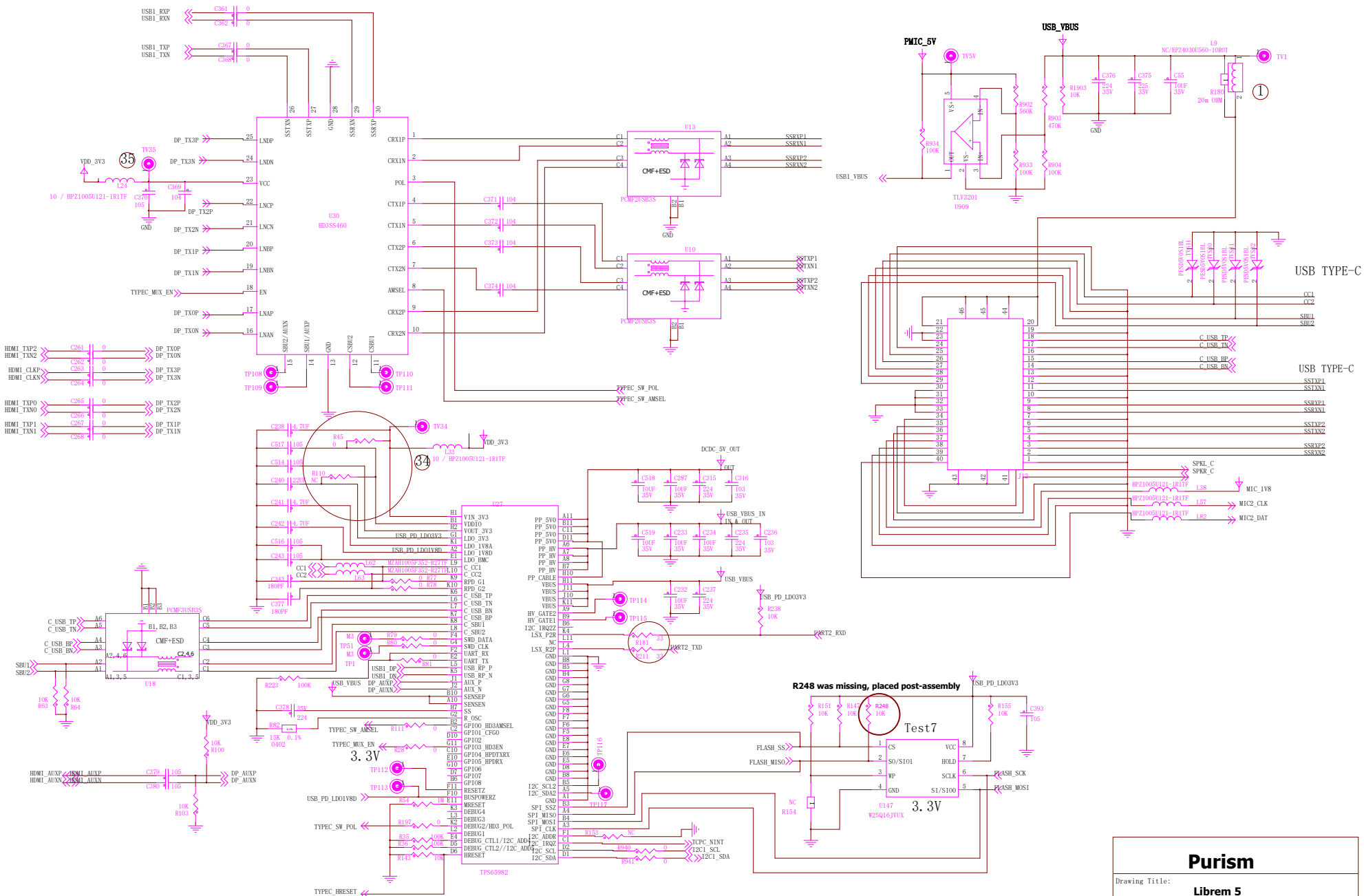


Boot Device: eMMC

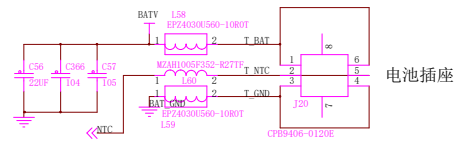
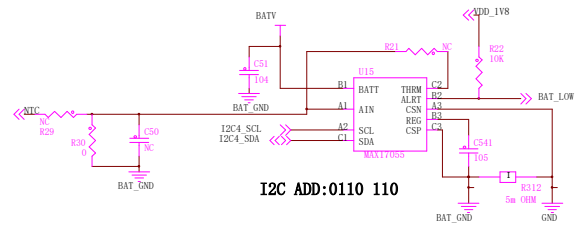
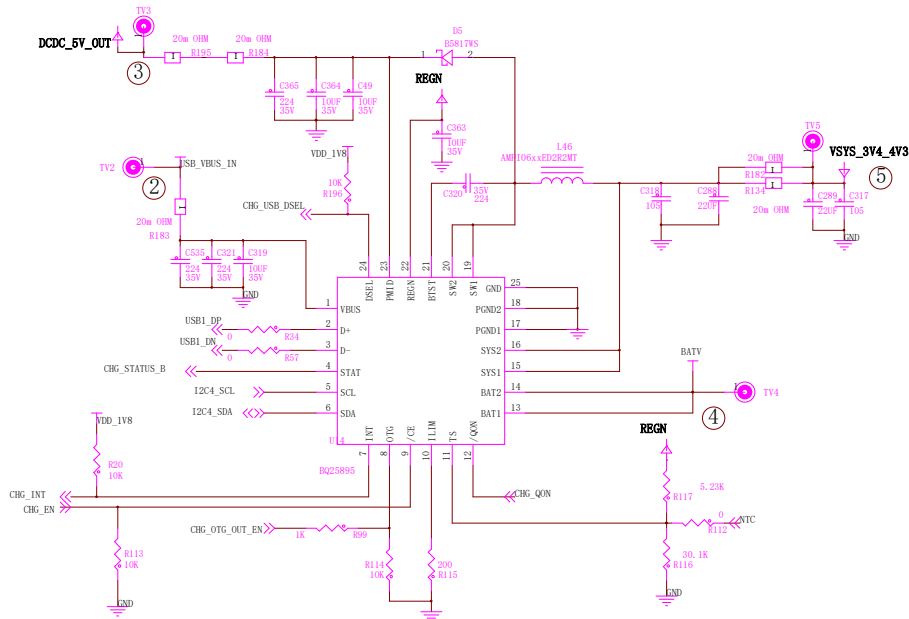


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Rev: v0.9.7	Date:	Design by:
		Sheet 10 of 21

USB3.0/2.0 TYPE-C/HOST



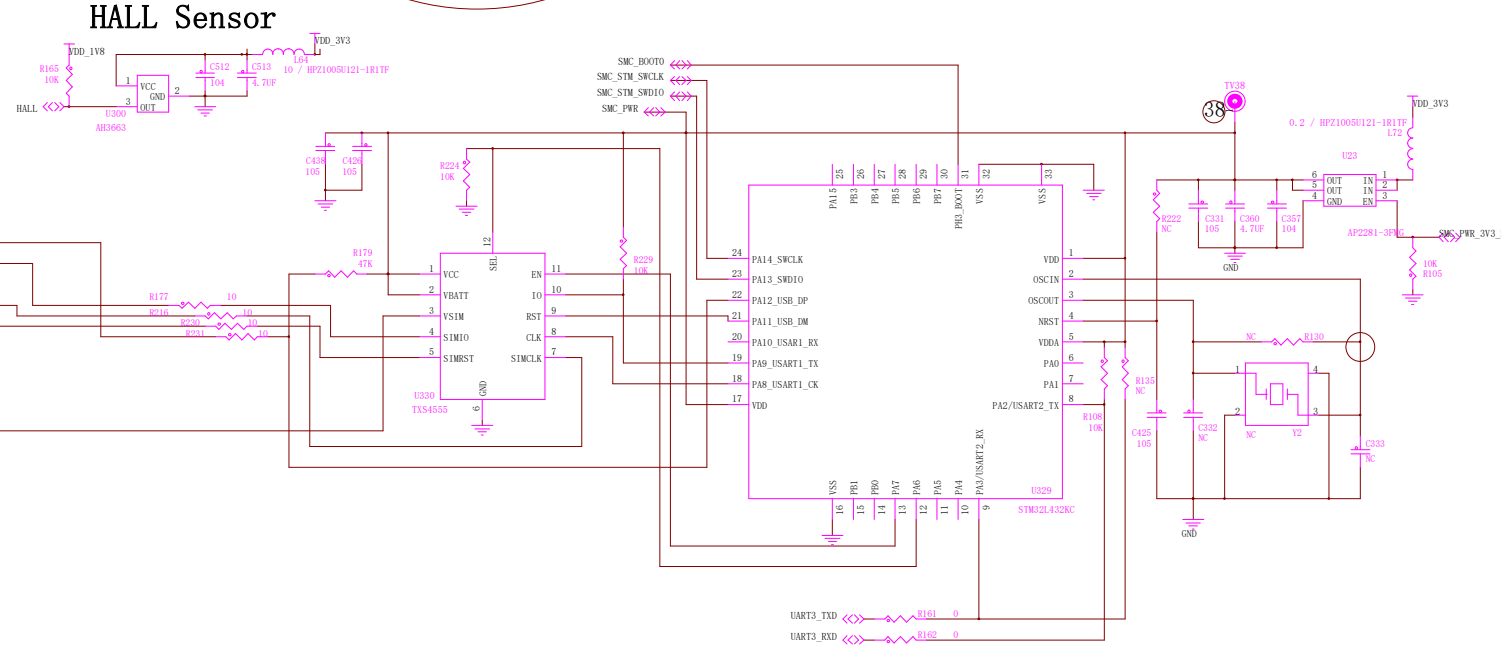
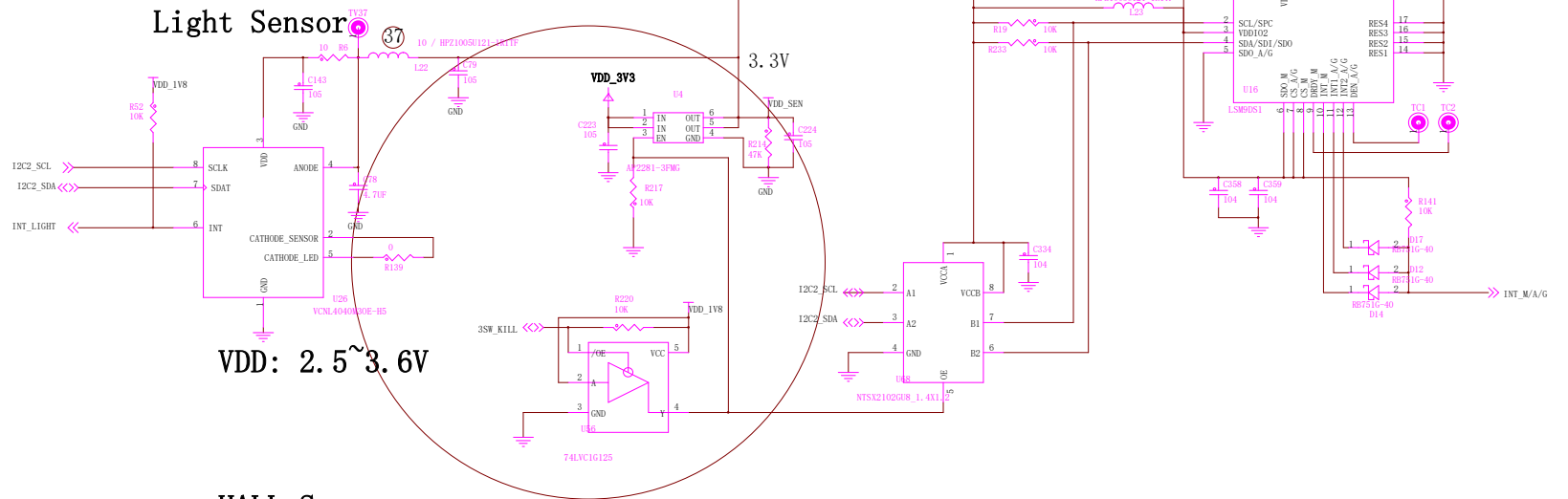
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Rev: v0.9.7	Date:	Design by:
		Sheet 11 of 21



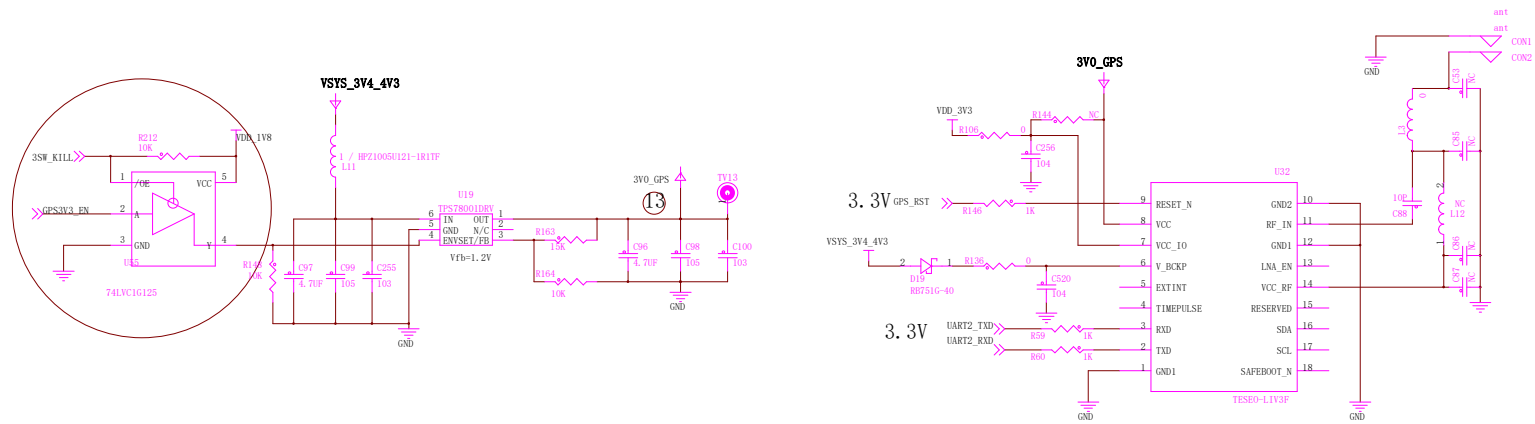
Purism		
Drawing Title: Librem 5		
Page Title: CHARGE, BAT, LED		
Rev: v0.9.7	Date:	Design by:
		Sheet 12 of 21

Sensor

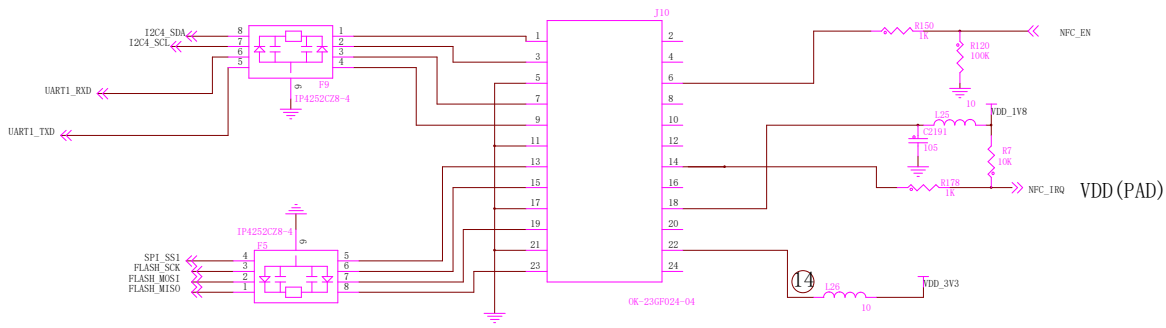
大于16V



Purism		
Drawing Title: Librem 5		
Page Title: SENSOR, SMART CARD		
Rev: v0.9.7	Date:	Design by:
Sheet 13 of 21		

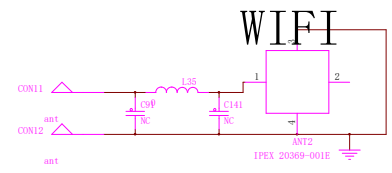
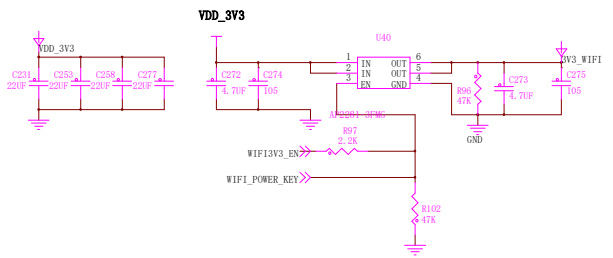
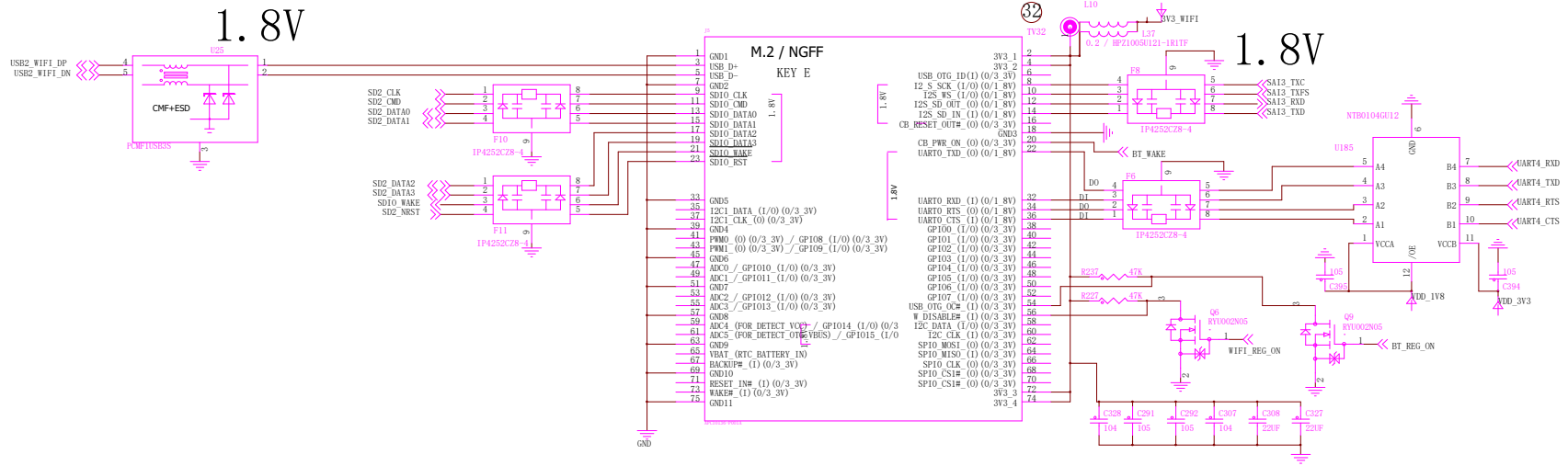


EXT CON

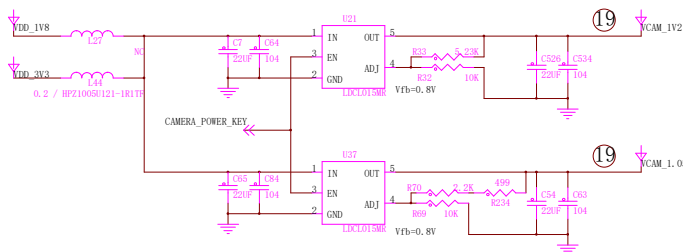
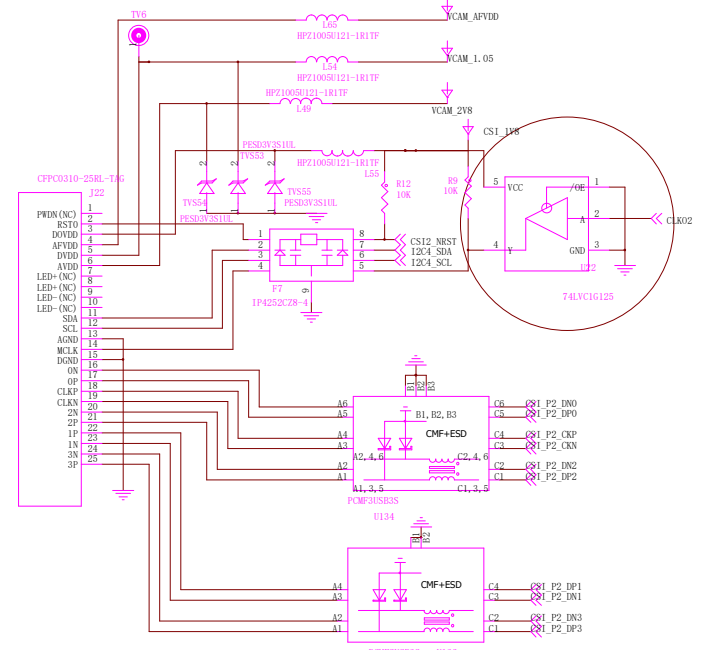
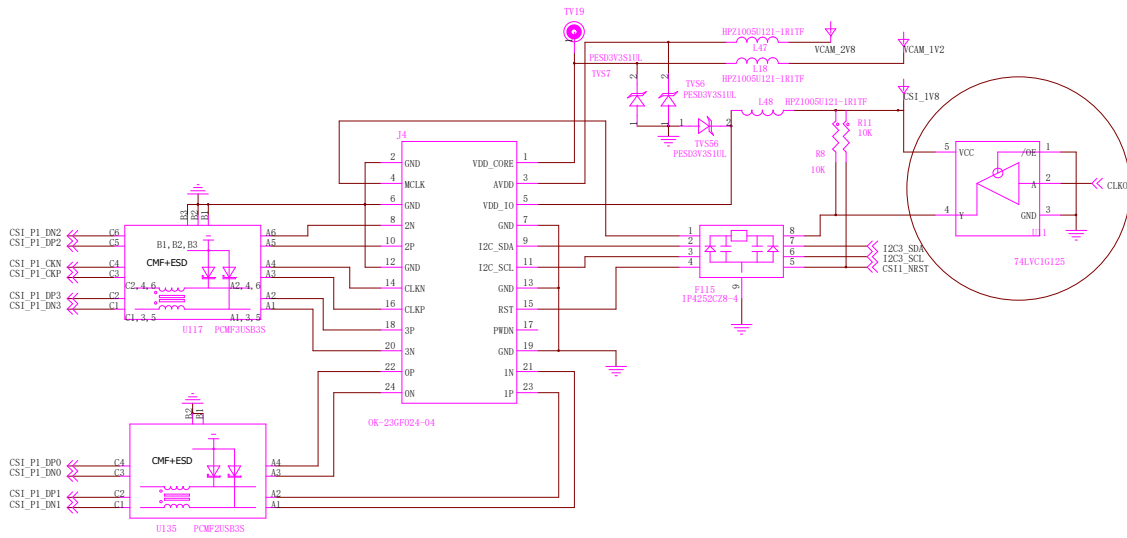
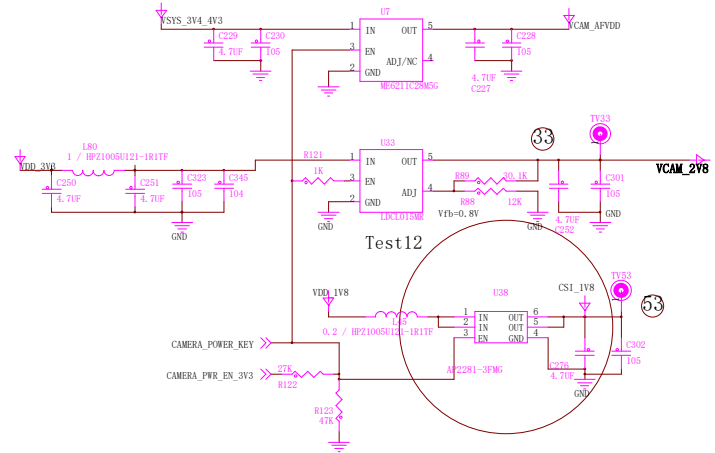
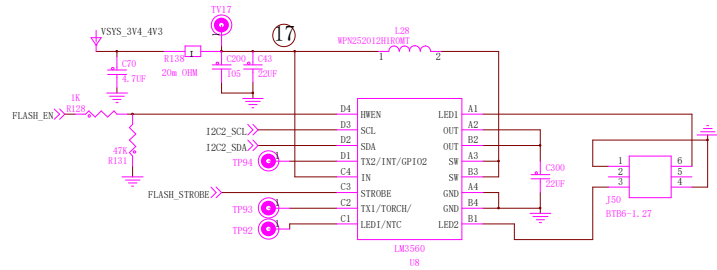


Purism		
Drawing Title: Librem 5		
Page Title: GNSS		
Rev: v0.9.7	Date:	Design by:
		Sheet 14 of 21

WiFi/BT 802.11a/b/g/n/ac + Bluetooth 4.1/ EDR

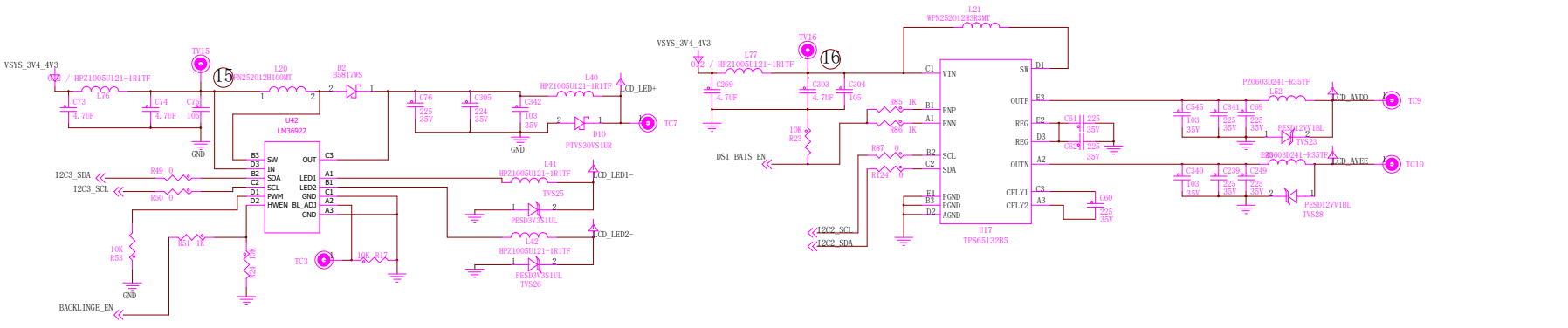
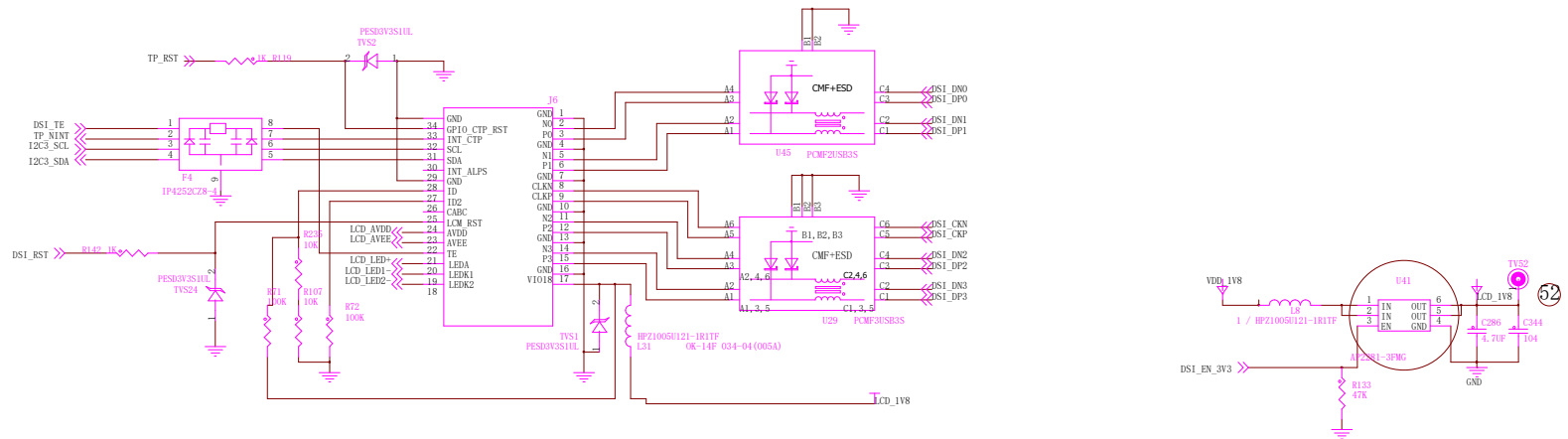


Purism		
Drawing Title: Librem 5		
Page Title: WiFi, BT		
Rev: v0.9.7	Date:	Design by:
		Sheet 15 of 21



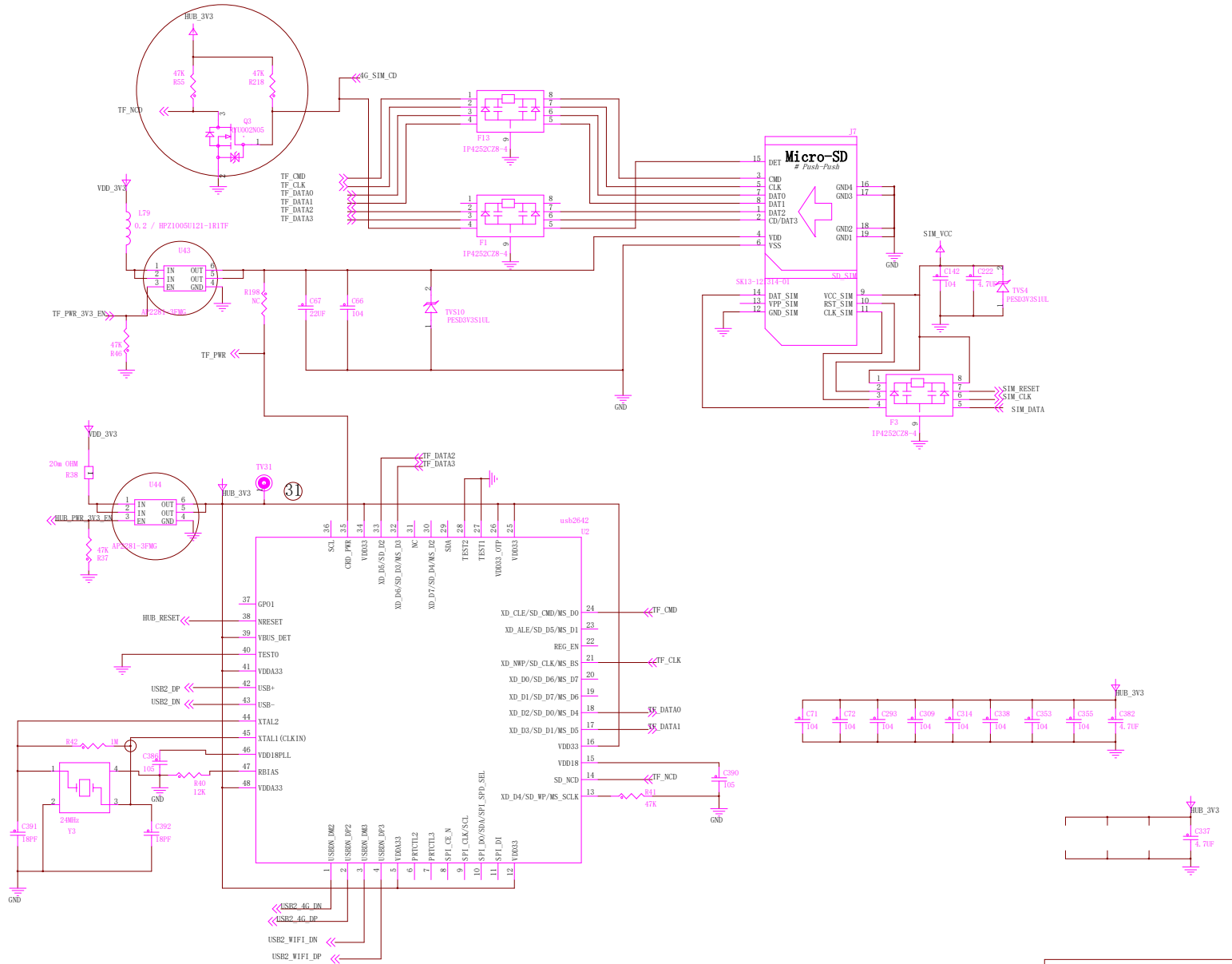
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Page Title: MIPI, DSI, CSI		
Rev: v0.9.7	Date:	Design by:
Sheet 17 of 21		

DSI LCD IF

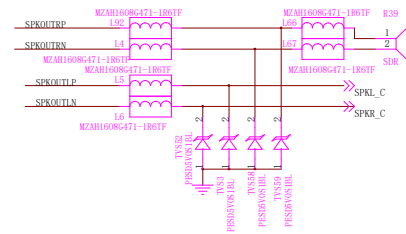
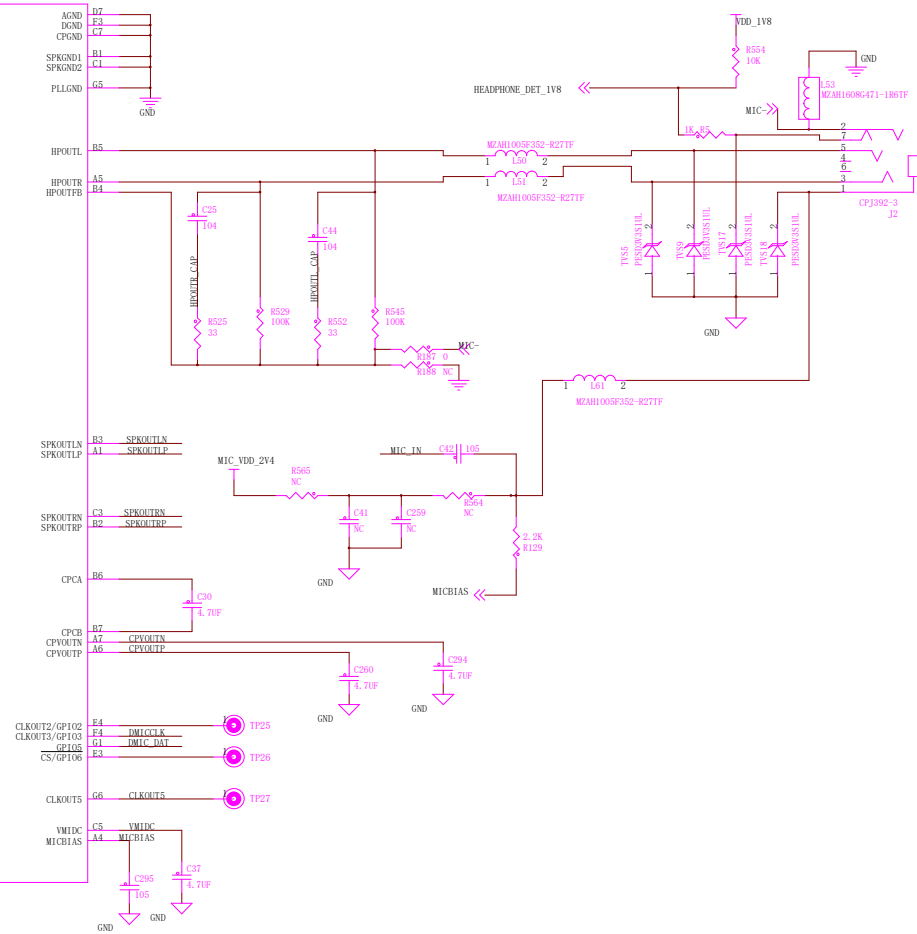
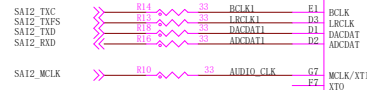
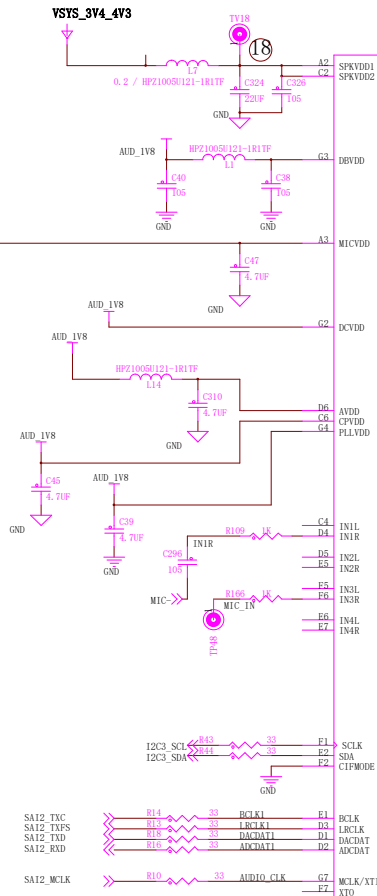
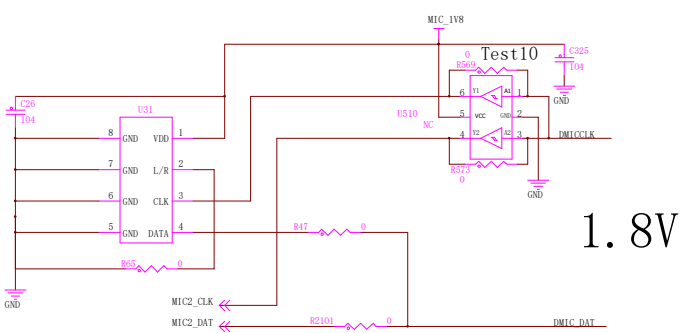
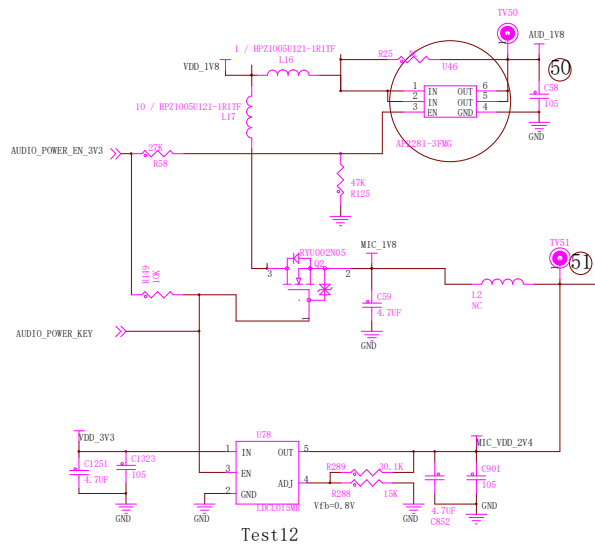


Purism		
Drawing Title: Librem 5		
Page Title: MICROSD, MOTO		
Rev: v0.9.7	Date:	Design by:
		Sheet 18 of 21

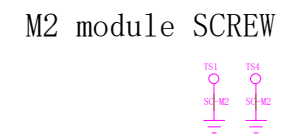
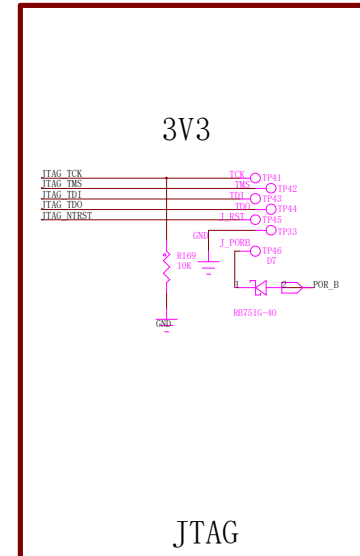
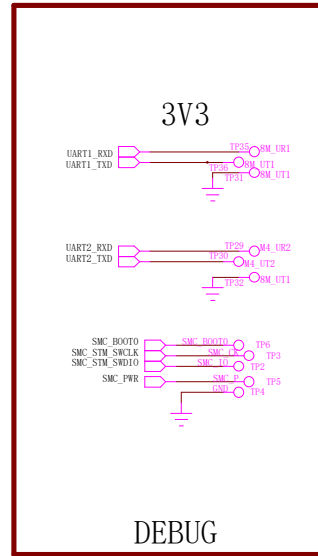
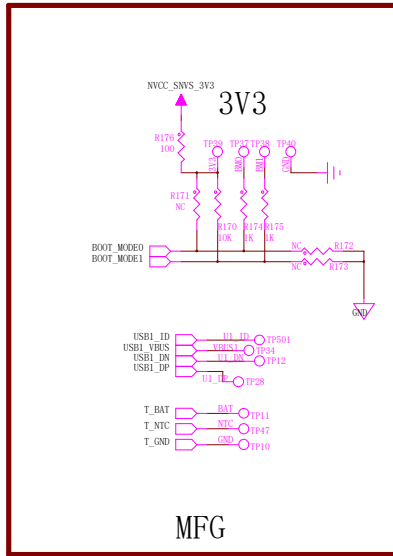
USB HUB + SDIO BRIDGE



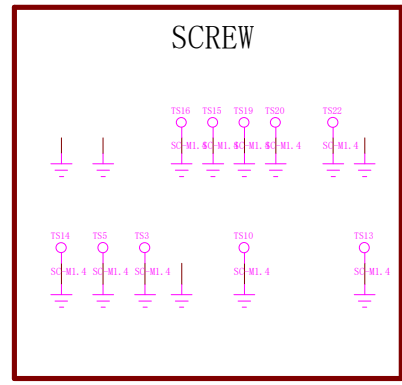
Purism		
Drawing Title: Librem 5		
Page Title: USB HUB		
Rev: v0.9.7	Date:	Design by:
		Sheet 19 of 21



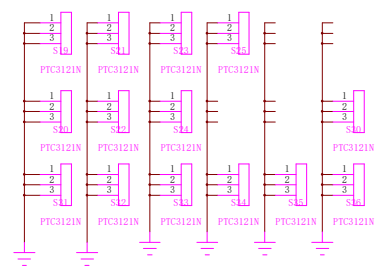
Purism		
Drawing Title: Librem 5		
Page Title: AUDIO		
Rev: v0.9.7	Date:	Design by:
		Sheet 20 of 21



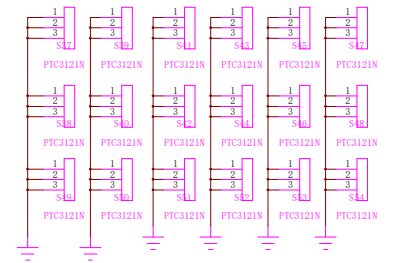
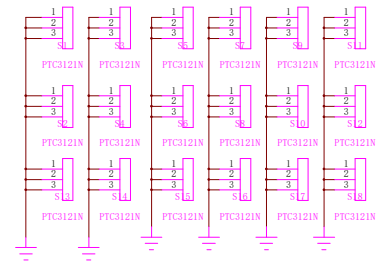
BMODE[1:0]	BOOT TYPE
00	Boot From Fuses
01	Serial Downloader
10	Internal Boot (Development)
11	Reserved



Shielding Case



Shielding Case Hold



Purism		
Drawing Title: Librem 5		
Page Title: DEBUG		
Rev: v0.9.7	Date:	Design by:
		Sheet 21 of 21