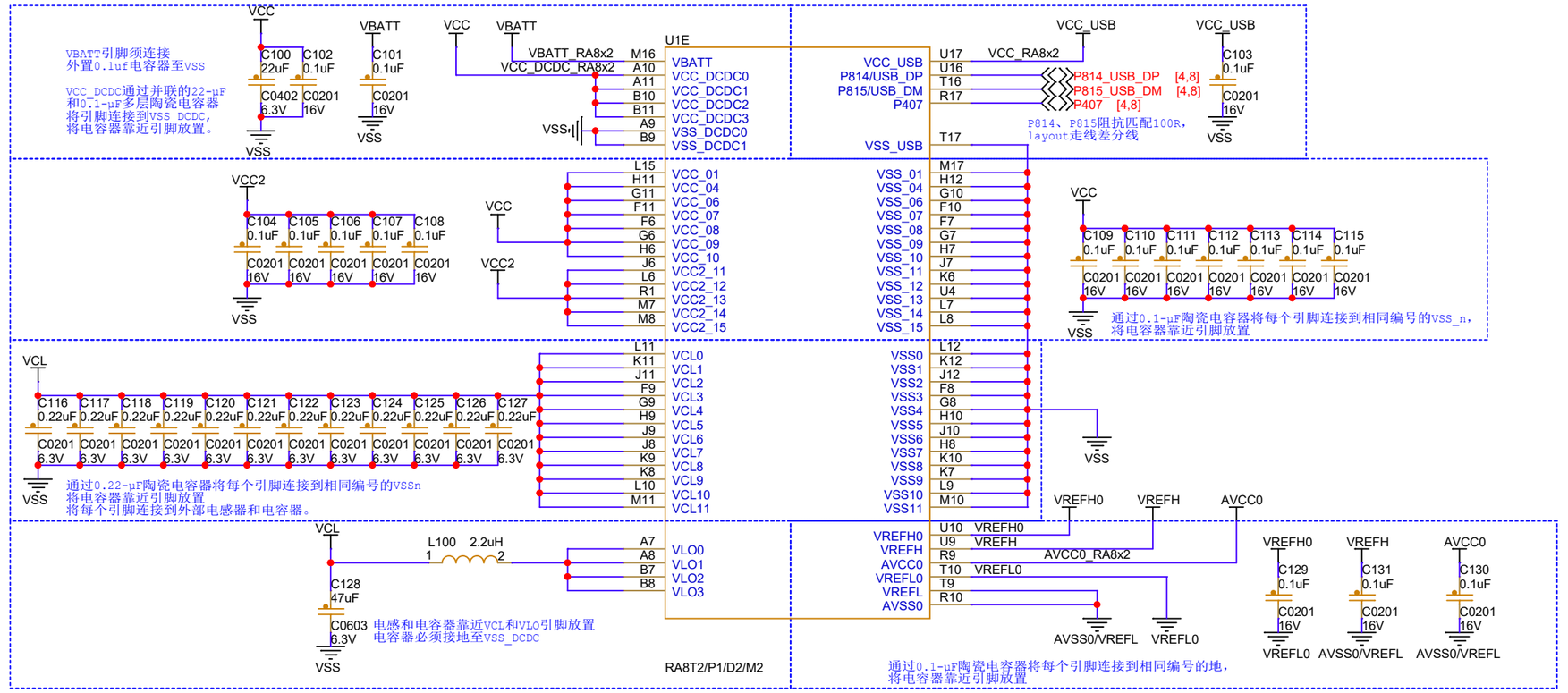
www.gitee.com/
ramcu/cpk_examples

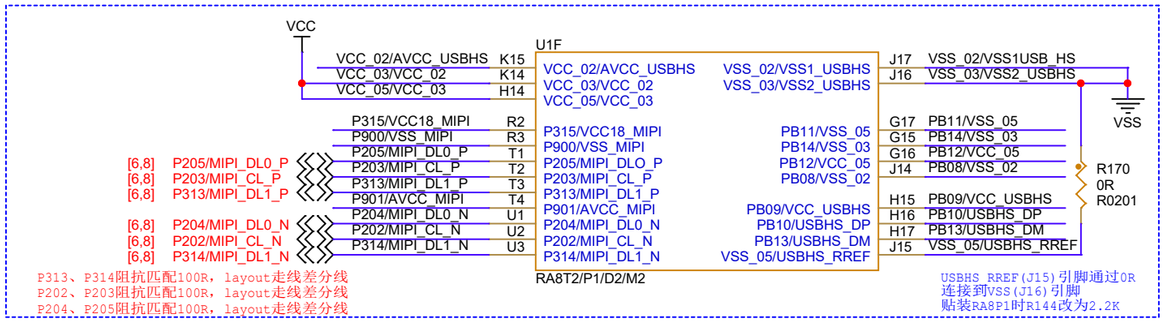
www.github.com/
renesas/cpk_examples



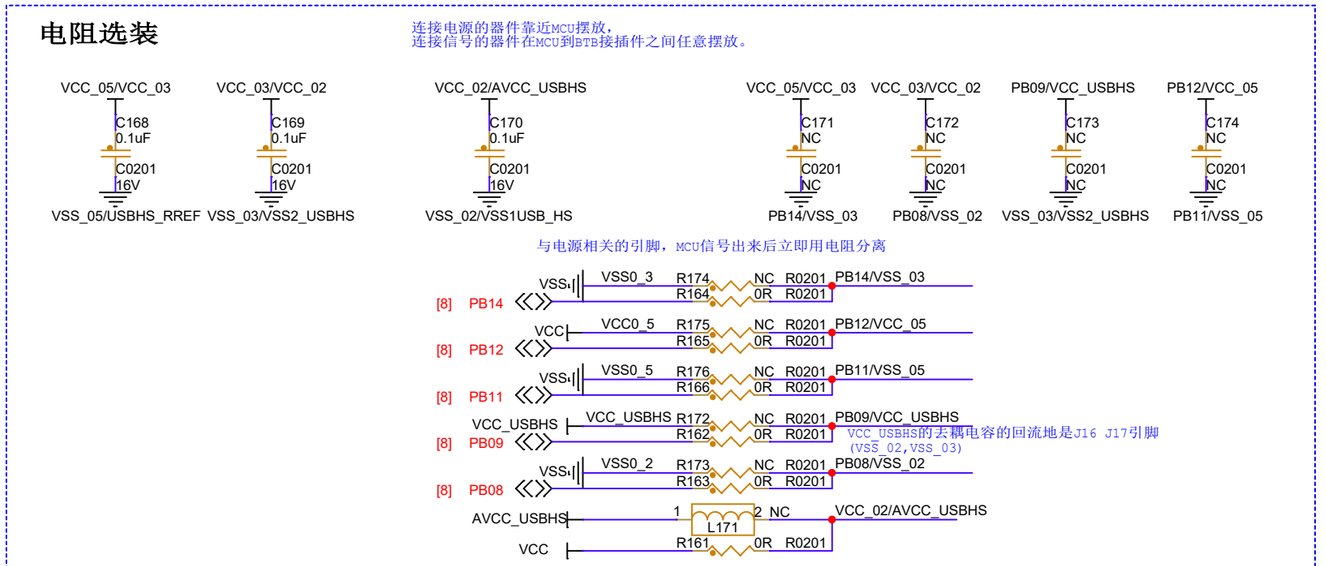
核心板缺省功能阻容设置

核心板芯片	R7KA8T2L	R7KA8P1K
C168-169	0.1uF	NC
C170	0.1uF	2.2uF
C171-C174	NC	0.1uF
C191-C192	NC	0.1UF
R145-R150	NC	NC
R151-R168	0R	NC
R170	0R	2.20K 1%
L171	NC	120R@100M
R172-R180	NC	0R
R191-R193	NC	0R

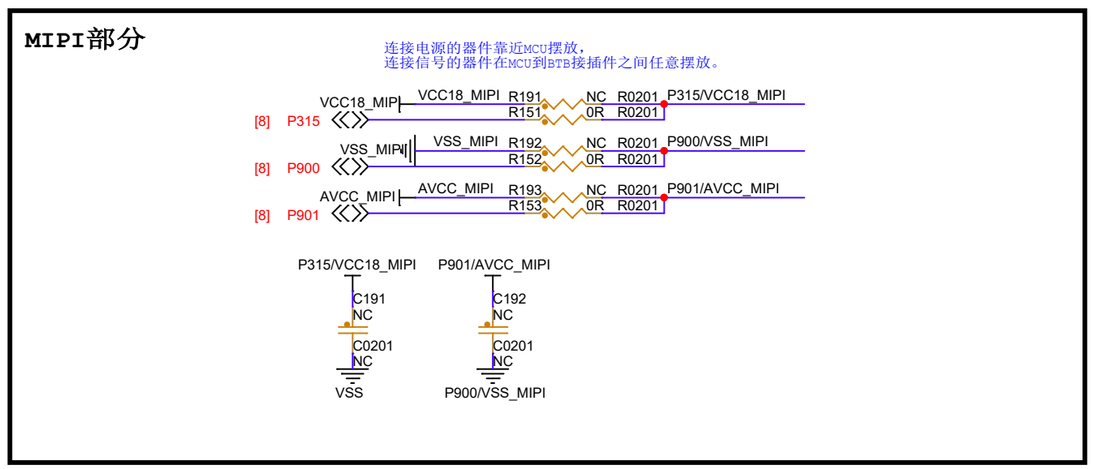
由于RA8P1/D2/M2和RA8T2的部分管脚网络不同，通过选装阻容的方式，应对不同型号的IC贴装。
此原理图为贴装RA8T2时的器件贴装。

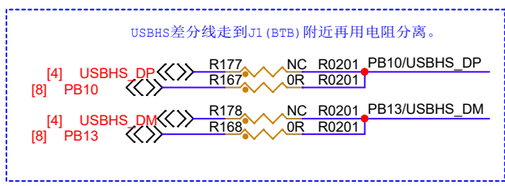


电阻选装

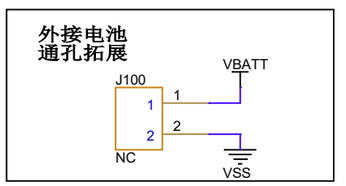


MIPI部分





外接电池
通孔拓展



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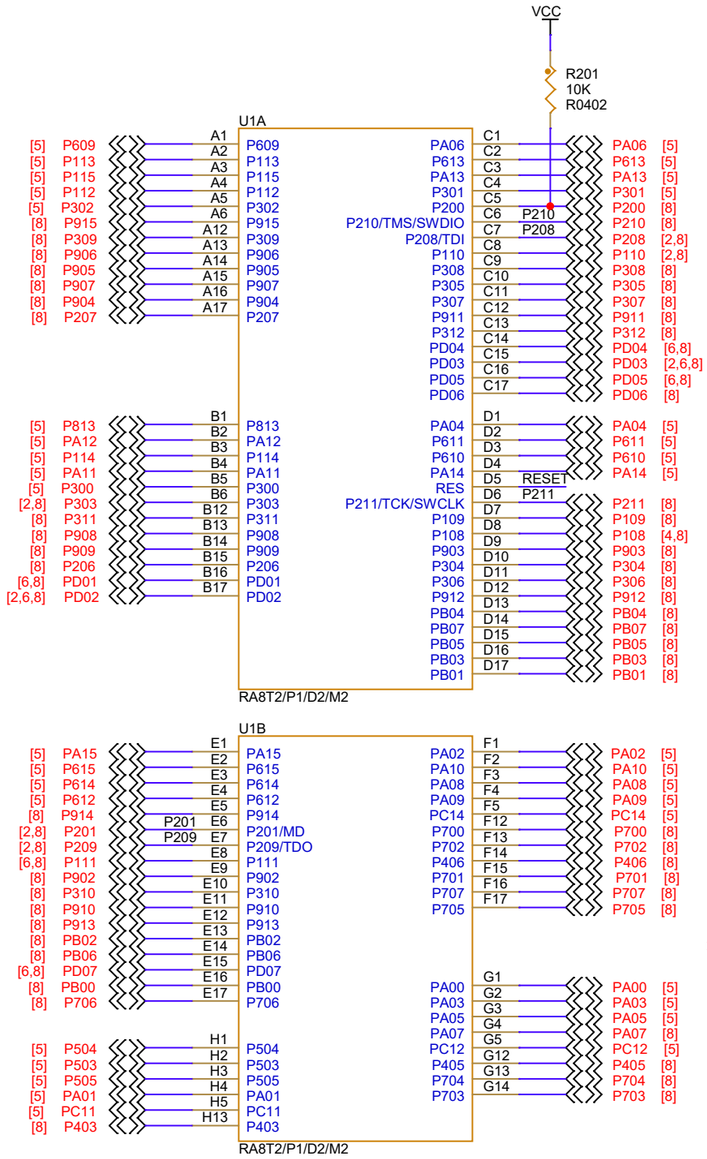
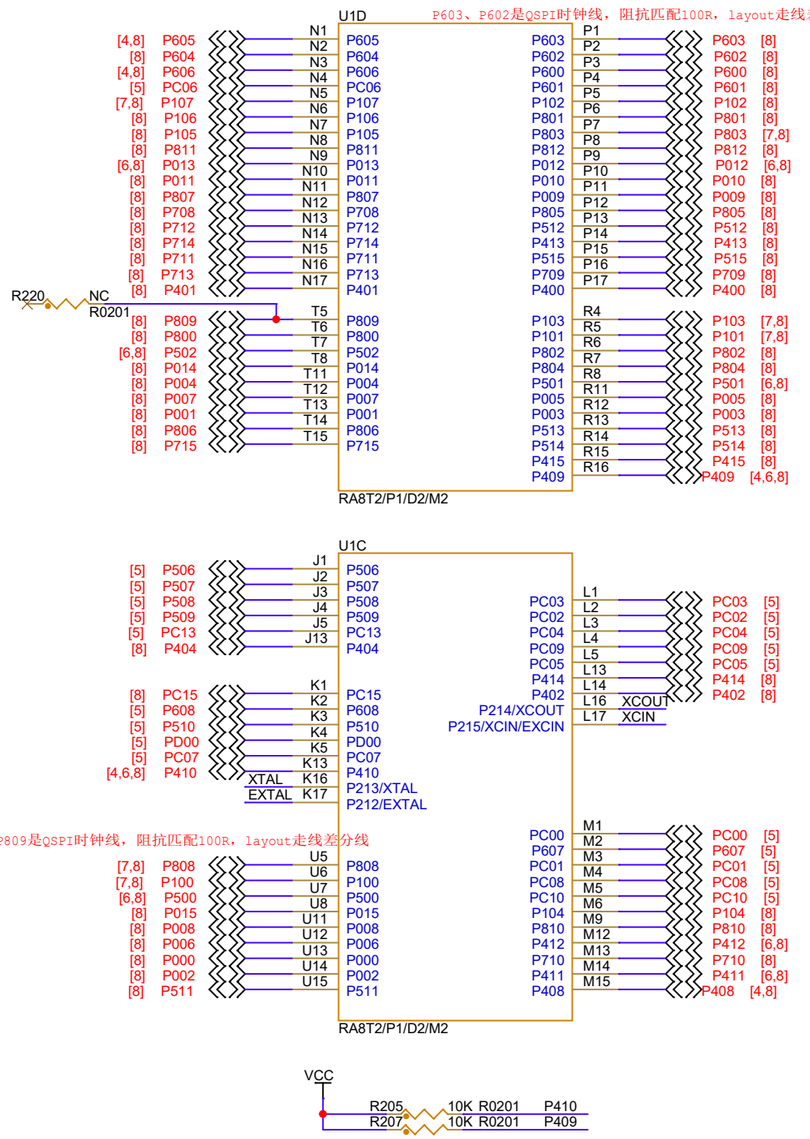
Title: CPKNET-RA8T2 核心板		
Size: A3	Document Number: MCU 电源	Rev: V1.1
Date: Wednesday, January 07, 2026	Sheet 1 of 10	





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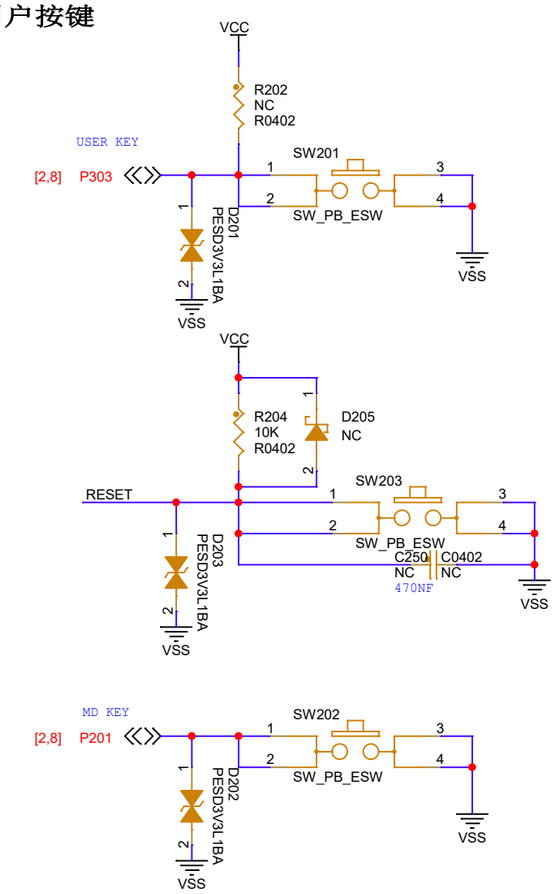
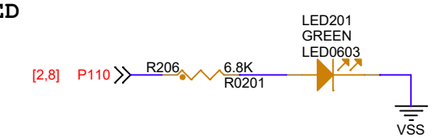
Page3: Jlink OB
Page4: USB HS
Page5: SDRAM
Page6: STORAGE MEMORY
Page7: 电源LDO/DCDC/MIPI/FLASH
Page8: BTB

用户按键

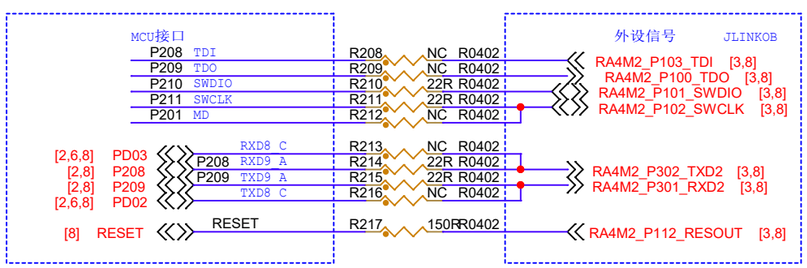


LED

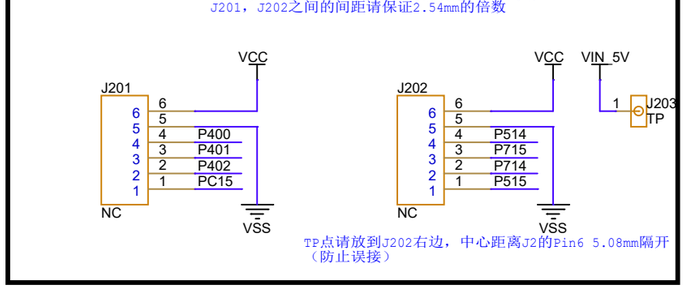


如果使用USB HS，主晶振只能选12/20/24/48MHz

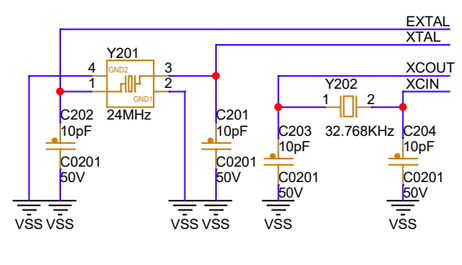
接口信号



通孔拓展



晶振



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Title: CPKNET-RA8T2核心板		
Size: A3	Document Number: MCU IO	Rev: V1.1
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Jlink OB

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Page8: BTB

MCU调试/下载接口

[2,8] RA4M2_P302_TXD2
[2,8] RA4M2_P301_RXD2
[2,8] RA4M2_P100_TDO
[2,8] RA4M2_P101_SWDIO
[2,8] RA4M2_P102_SWCLK
[2,8] RA4M2_P103_TDI
JLOB_RESOUT
[2,8] RA4M2_P112_RESOUT

TDO
SWDIO
SWCLK
TDI

VCC_RA4M2
R306 30K R0201
U5
R7FA4M2AD3CNE

P000 48
P001 47
P002 46
P013 40
P014 39
P015 38
P100 36
P101 35
P102 34
P103 33
P104 32
P108/TMS/SWDIO 25
P109/TDO/SWO 26
P110/TDI 27
P111 28
P112 29
P200 21
P201/MD 20
P206 18
P207 17
P212/EXTAL 8
P213/XTAL 7
XCIN 4
XCOUT 5
VCL 3

P300/TCK/SWCLK 24
P301 23
P302 22
P402 1
P407 12
P408 11
P409 10
P500 37
RES 19
USB_DP 15
USB_DM 14
VBATT 2
VCC1 9
VCC2 30
VCC_USB 16
VREFH0 45
VREFH 41
AVCC0 42
VSS1 6
VSS2 31
AVSS0/VREFL 43
VREFL0 44
VSS_USB 13
EPAD 49

LED301 YELLOW LED0603
DBG_USBFS_VBUS
R311 10K R0201
R313 10K R0201
R314 10K R0201
4M2_MD
VCC_RA4M2
VCC_RA4M2

Y301 12MHz
C309 18pF C0201 50V
C310 18pF C0201 50V
C311 0.22uF C0201 6.3V
R317 10K R0201

VSS_RA4M2

4M2_RES
R301 10K R0201
R305 NC R0402
4M2_P407
R303 15K R0201
R307 30K R0201
VCC_5V
D301 B340A
J301 NC
DBG_USBFS_VBUS
二极管压降影响系统运行时短接J301

R319 0R R0402
R320 0R R0402
DBG_USB_DP
DBG_USB_DM
DBG_USB_VBUS [4]
DBG_USB_DP [4]
DBG_USB_DM [4]

JDBG TYPE-C
A1 GND1
A4 VBUS1
A5 CC1
A6 DP1
A7 DN1
A8 SBU1
A9 VBUS2
A12 GND2
B12 GND3
B9 VBUS3
B8 SBU2
B7 DN2
B6 DP2
B5 CC2
B4 VBUS4
B1 GND4
SH1 SH2 SH3 SH4
C1 C2 C3 C4
JDBG_EGND

U302 SR05-N
DM DP VBUS GND
R315 5.1K R0201
R316 5.1K R0201

layout: USB差分线控阻抗90R:
DBG_USB_DP/DBG_USB_DM

注意：R7FA4M2作为JlinkOB使用时，只能使用12MHz晶振

VCC_RA4M2
C306 10uF C0402 10V
C301 0.1uF C0201 16V
C302 0.1uF C0201 16V
C307 0.1uF C0201 16V
C303 0.1uF C0201 16V
C308 0.1uF C0201 16V
C304 0.1uF C0201 16V
C305 0.1uF C0201 16V
VSS_RA4M2

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Title: CPKNET-RA8T2核心板		
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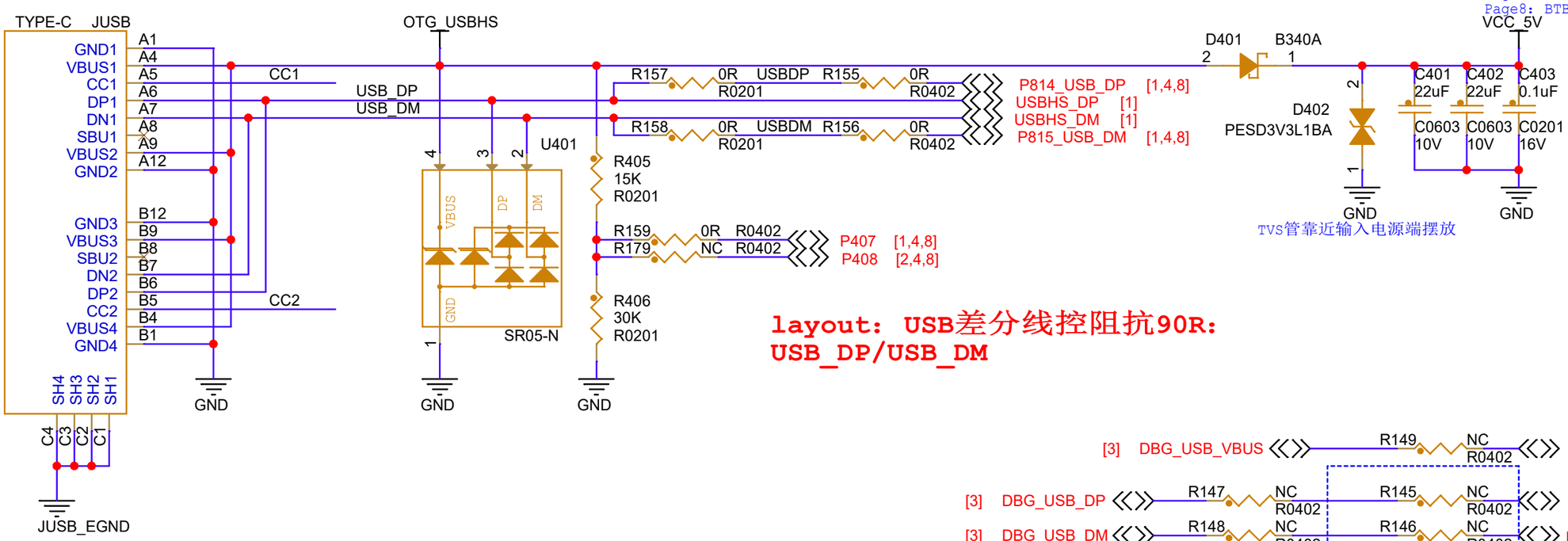
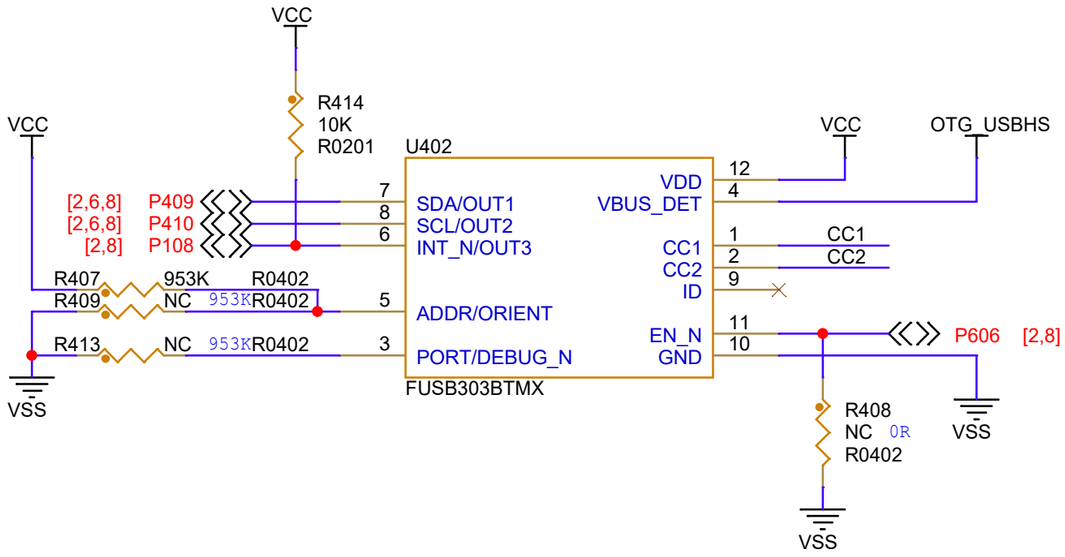
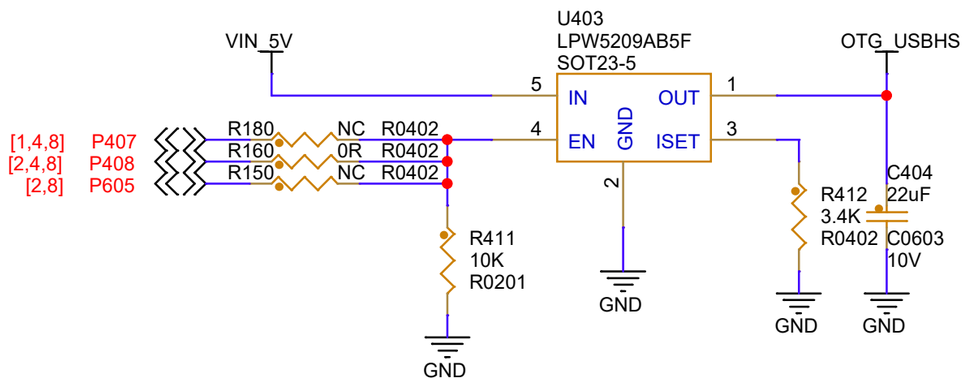
USB HS

如果使用USB HS，主晶振只能选12/20/24/48MHz







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Title: CPKNET-RA8T2核心板		
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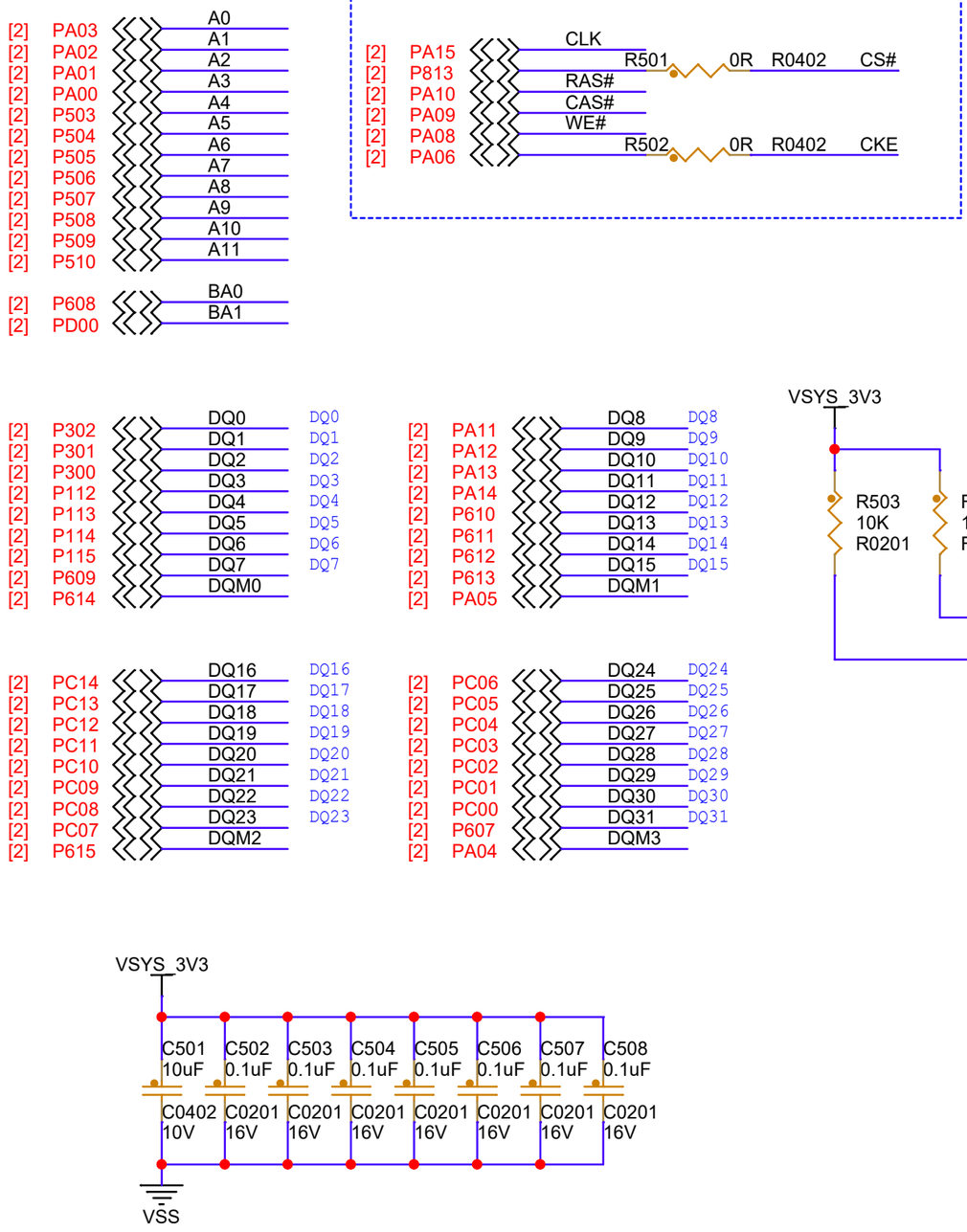
SDRAM

layout: SDRAM走线控阻抗50R:



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Title: CPKNET-RA8T2核心板		
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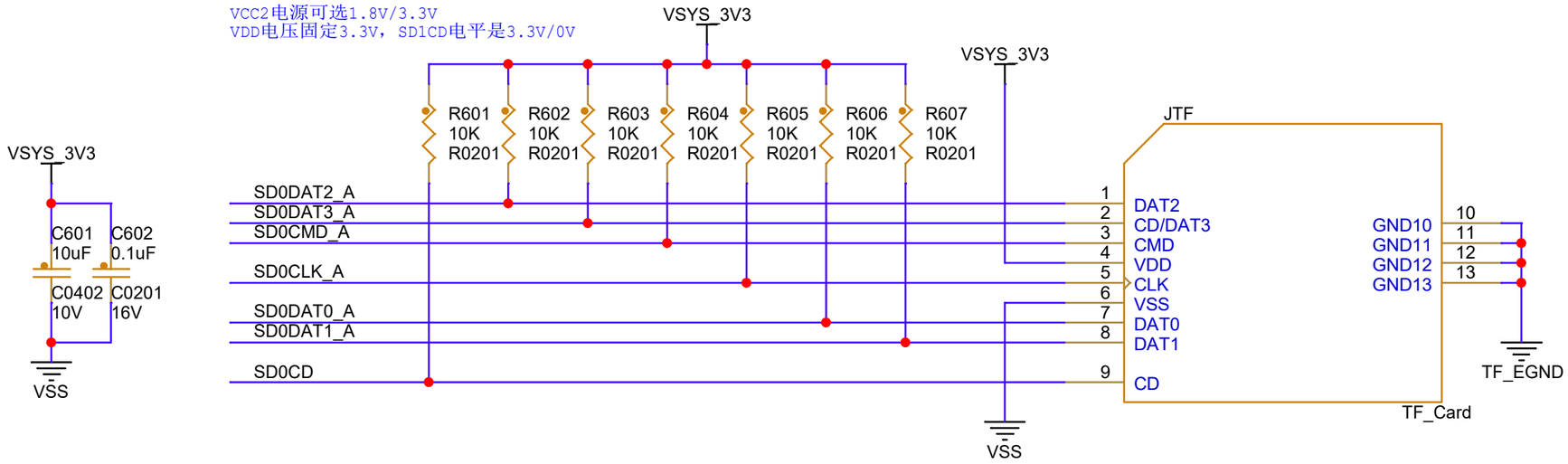
SD卡



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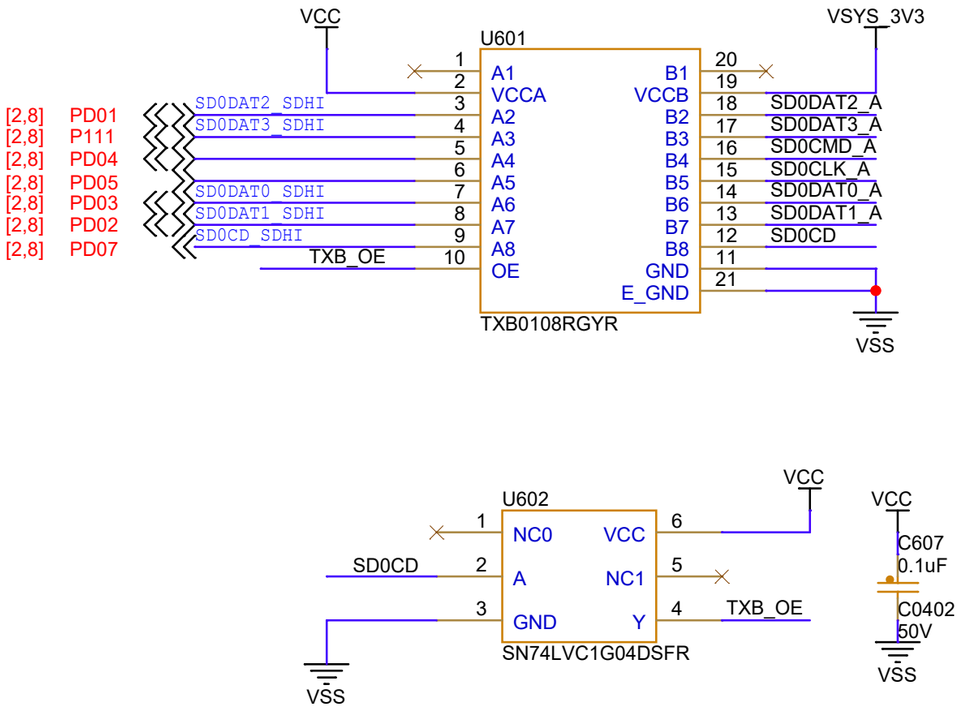
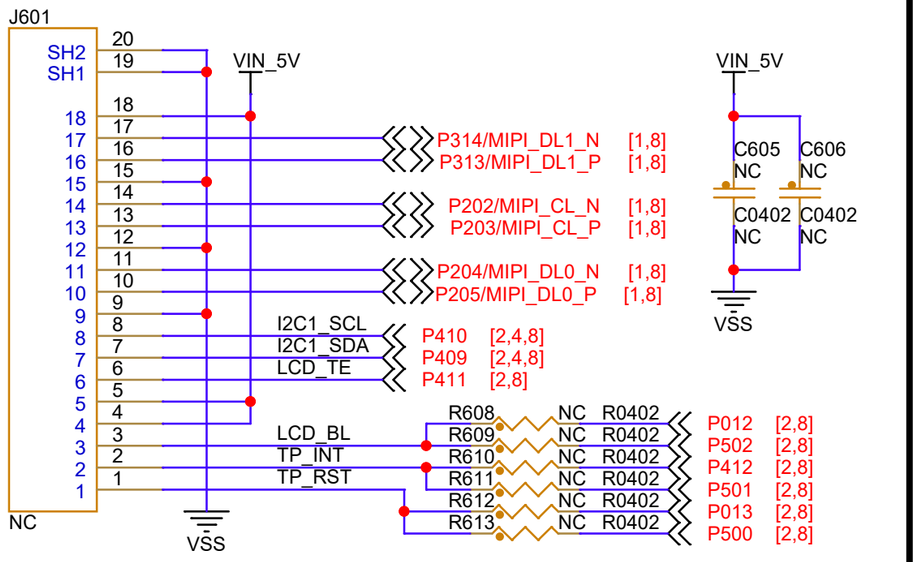
SD卡电平转换



MIPI接口



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Title	CPKNET-RA8T2核心板	
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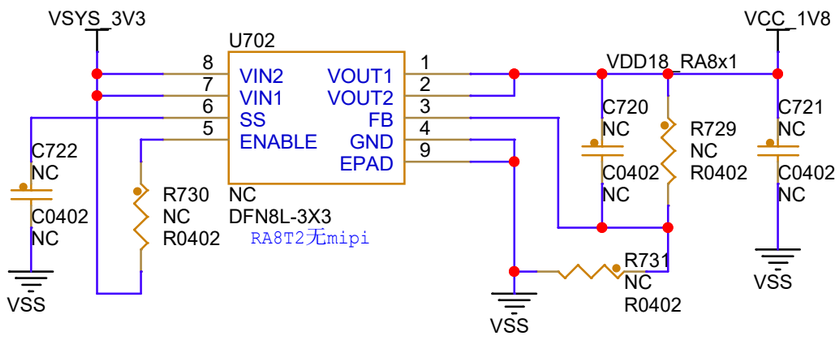
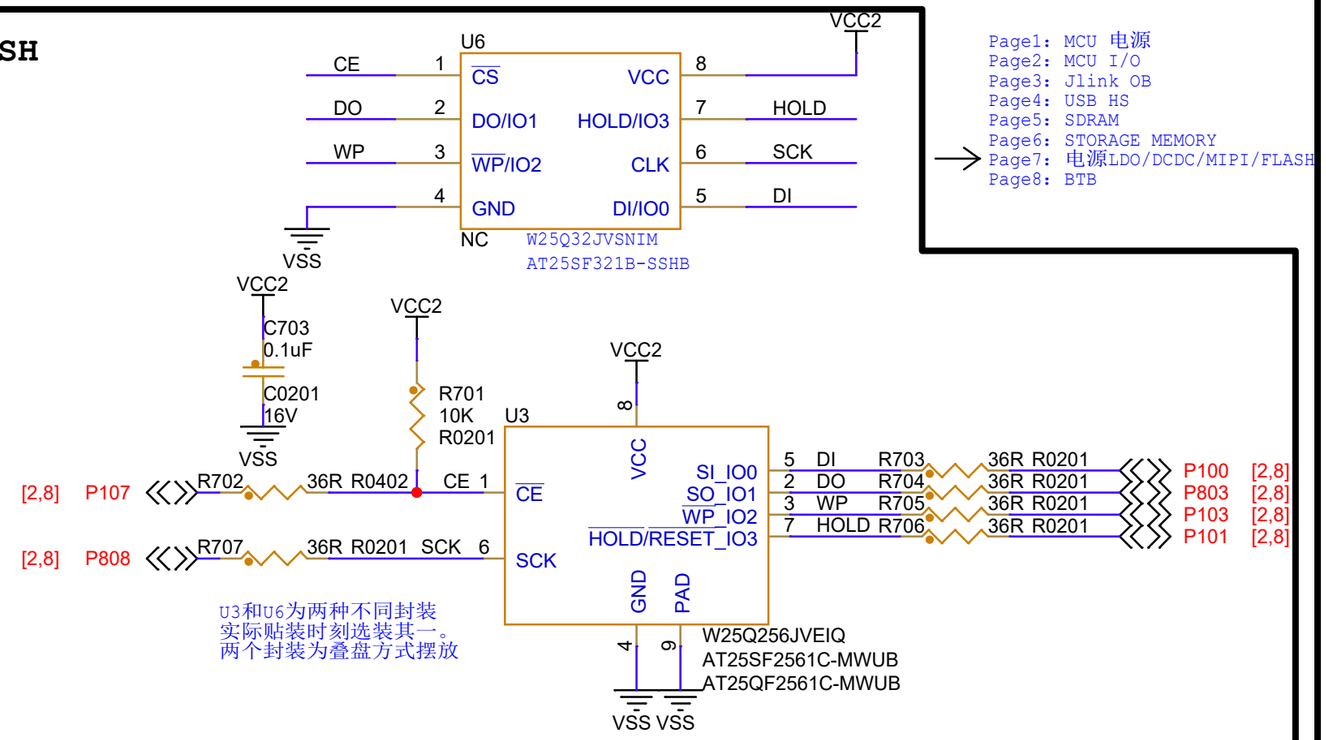
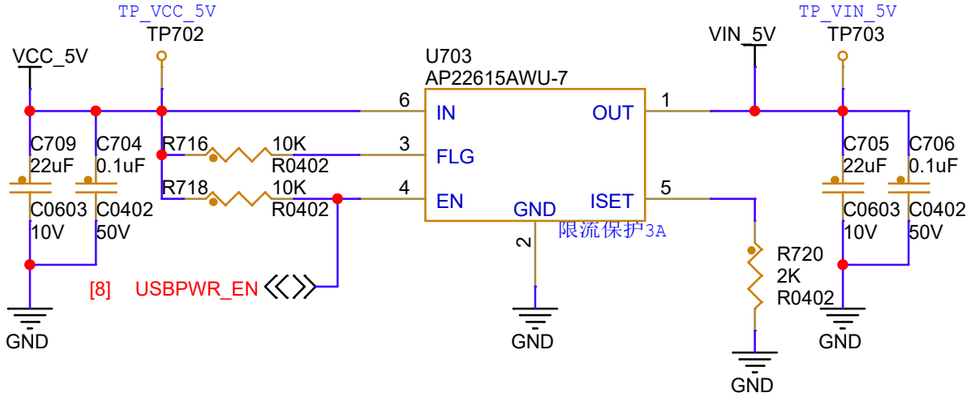
1.8V电源



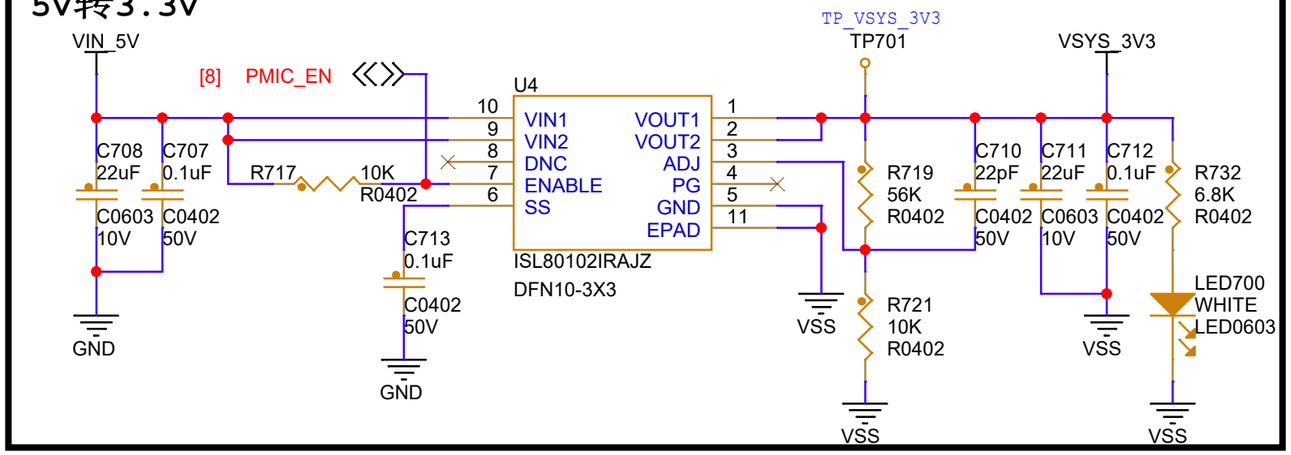
FLASH



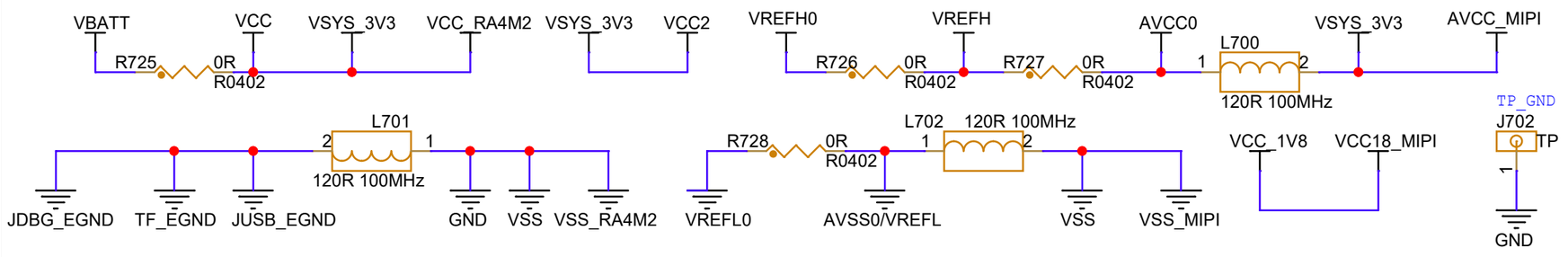
电源保护

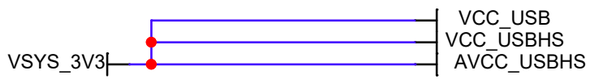


5V转3.3V



电源分割





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BTB座子

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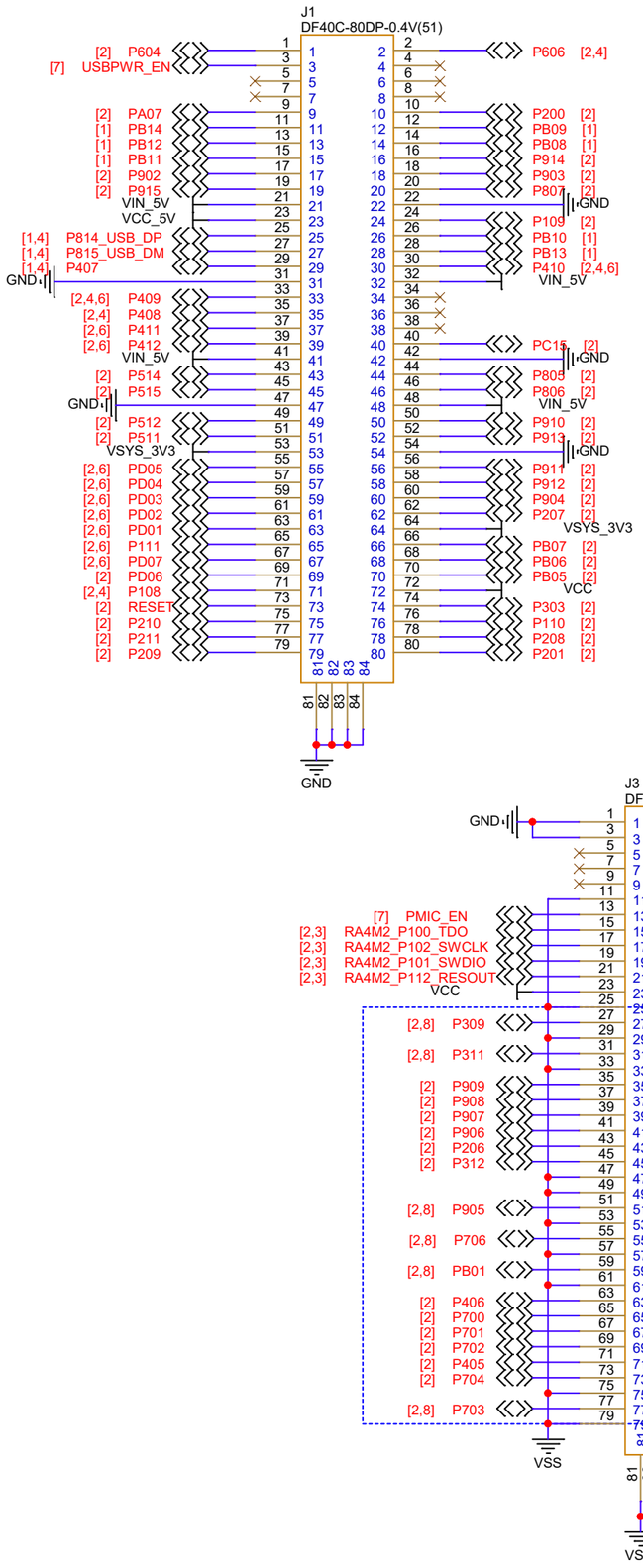
Page8: BTB



定位孔

SS801	SS802	SS803	SS804
NPTH_M2	NPTH_M2	NPTH_M2	NPTH_M2

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Title		
CPKNET-RA8T2核心板		
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历史版本

版本号	日期	设计	描述
V1.0	2025-08-28	LPC	初始版本
V1.1	2025-09-17	LPC	修正VCC_USB连接

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CPKNET-RA8T2 核心板 原理图

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CPK-RA8

SS804
SS802
SS801
SS803
J202
J203
J702
J201
J301
J100
J601
JDBG
JUSB
J302
5V
GND
3V3
TP701
TP703
TP702
Y301
Y201
Y202
D301
D401
D402
D202
D203
LED201
LED301
LED700
L100
U5
U2
U4
U302
U402
U401
U703
U403
U702
R217
R207
R725
R206
R303
R315
R307
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R731
R729
R730
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C302
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C308
C304
C306
C307
C305
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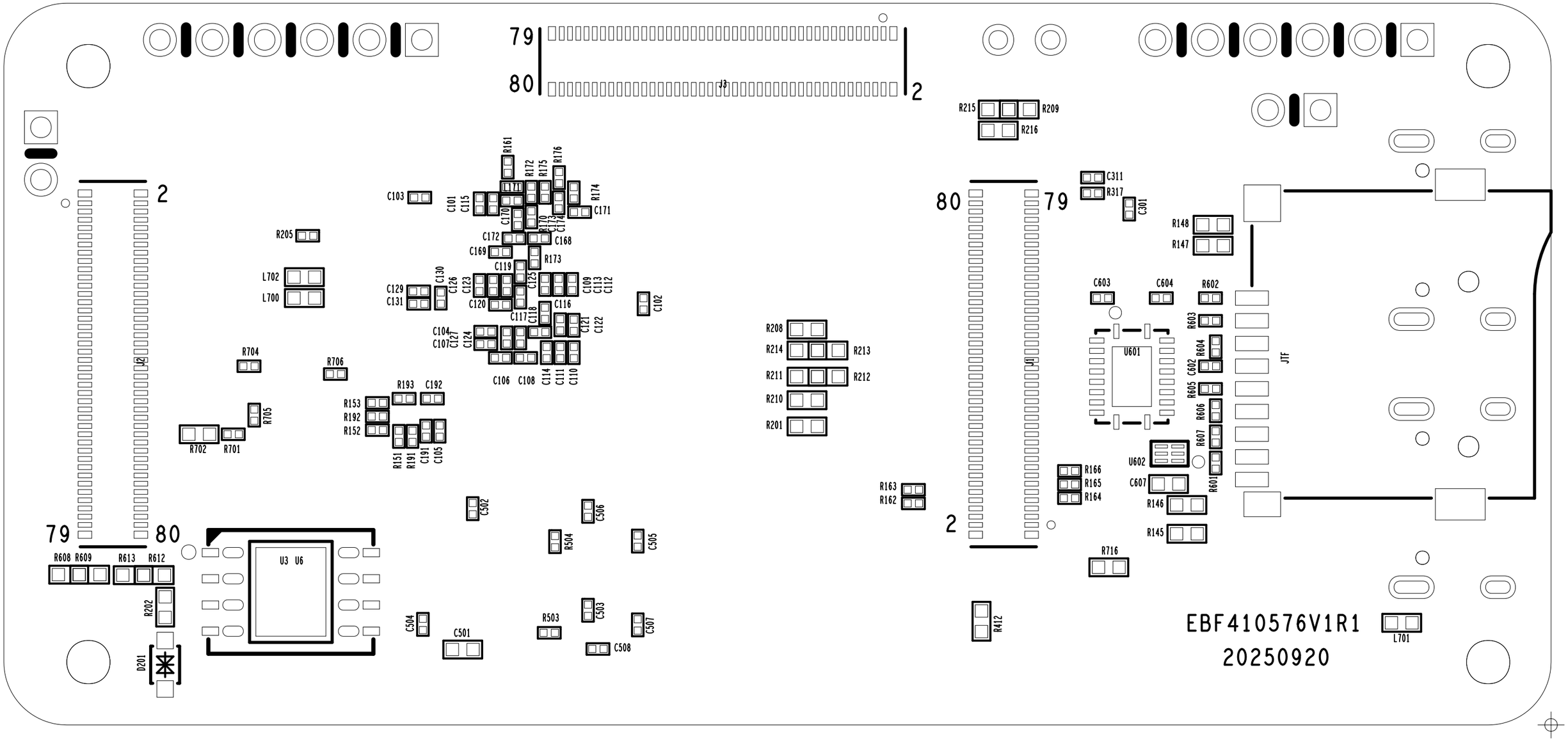
C601
C128
C100
C713
C250
R204
R721
C710
C712
C708
C707
C711
C704
C706
C705
C404
C402
C401
C709
C403
C605
C606
C703
C720
C721
C722
SW202
SW203
SW201
MD KEY
RESET
USER KEY


79
80
J3
2
R215
R209
R216
80
79
C311
R317
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R603
R604
C602
R605
R606
R607
R601
U601
JTF
U602
C607
R146
R145
R716
R166
R165
R164
R163
R162
R412
L701
EBF410576V1R1
20250920
C103
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R172
R175
R176
R174
C101
C115
C170
R170
C173
C174
C171
R205
C172
C168
C169
R173
L702
L700
C119
C130
C129
C131
C126
C123
C125
C109
C113
C112
C120
C116
C117
C118
C121
C122
C102
C104
C107
C127
C124
C106
C108
C114
C111
C110
R208
R214
R213
R211
R212
R210
R201
R704
R706
R193
C192
R153
R192
R152
R705
R702
R701
R151
R191
C191
C105
C502
C506
R504
C505
C504
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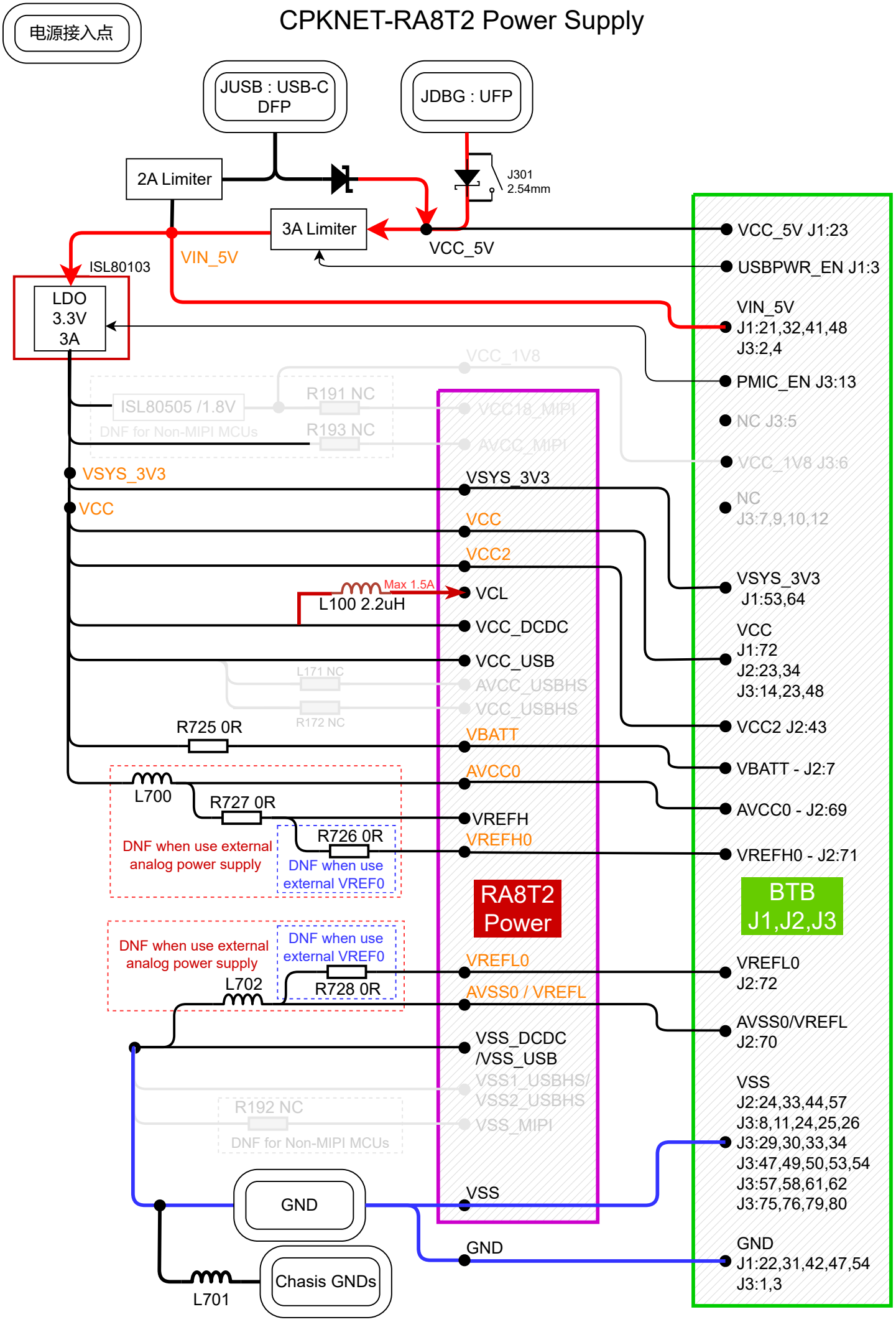
R503
C503
C507
C508
R608
R609
R613
R612
R202
D201
U3
U6


CPKNET-RA8T2 Power Supply
电源接入点
JUSB : USB-C DFP
JDBG : UFP
2A Limiter
3A Limiter
J301 2.54mm
VCC_5V
VIN_5V
ISL80103
LDO 3.3V 3A
ISL80505 /1.8V
DNF for Non-MIPI MCUs
R191 NC
R193 NC
VCC_1V8
VCC18_MIPI
AVCC_MIPI
VSYS_3V3
VCC
VCC2
Max 1.5A
L100 2.2uH
VCL
VCC_DCDC
VCC_USB
L171 NC
R172 NC
AVCC_USBHS
VCC_USBHS
R725 0R
VBATT
L700
R727 0R
AVCC0
VREFH
R726 0R
VREFH0
DNF when use external analog power supply
DNF when use external VREF0
RA8T2 Power
L702
R728 0R
VREFL0
AVSS0 / VREFL
VSS_DCDC /VSS_USB
VSS1_USBHS/ VSS2_USBHS
VSS_MIPI
R192 NC
VSS
GND
Chasis GNDs
L701
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VCC_5V J1:23
USBPWR_EN J1:3
VIN_5V J1:21,32,41,48 J3:2,4
PMIC_EN J3:13
NC J3:5
VCC_1V8 J3:6
NC J3:7,9,10,12
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