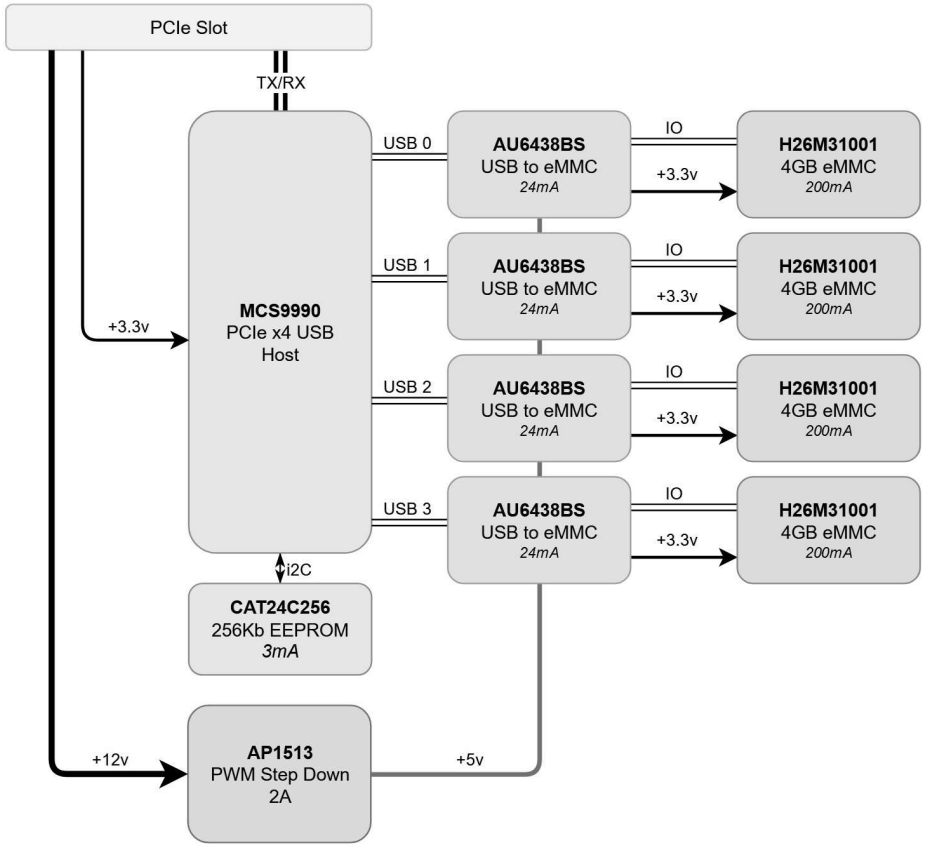
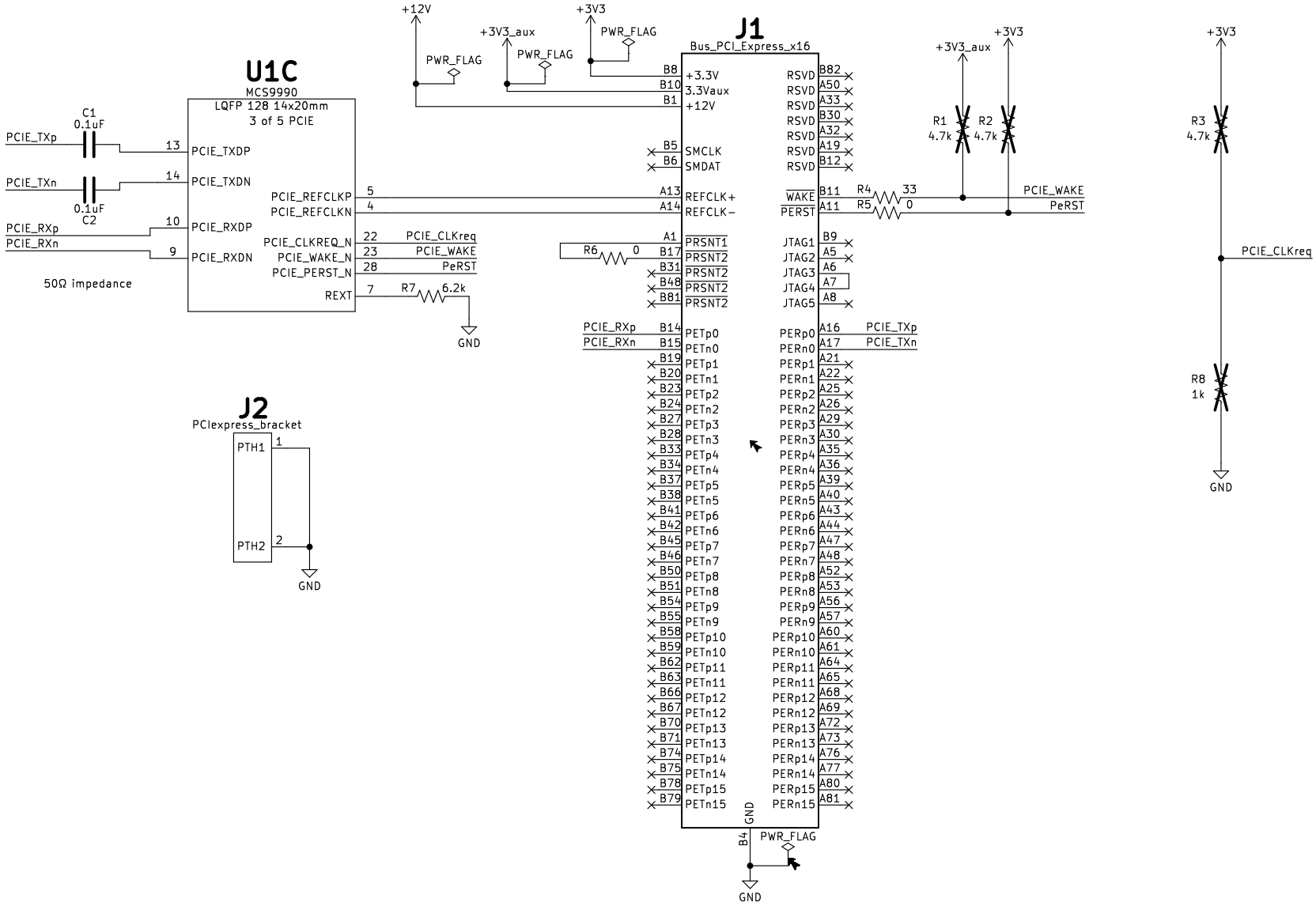
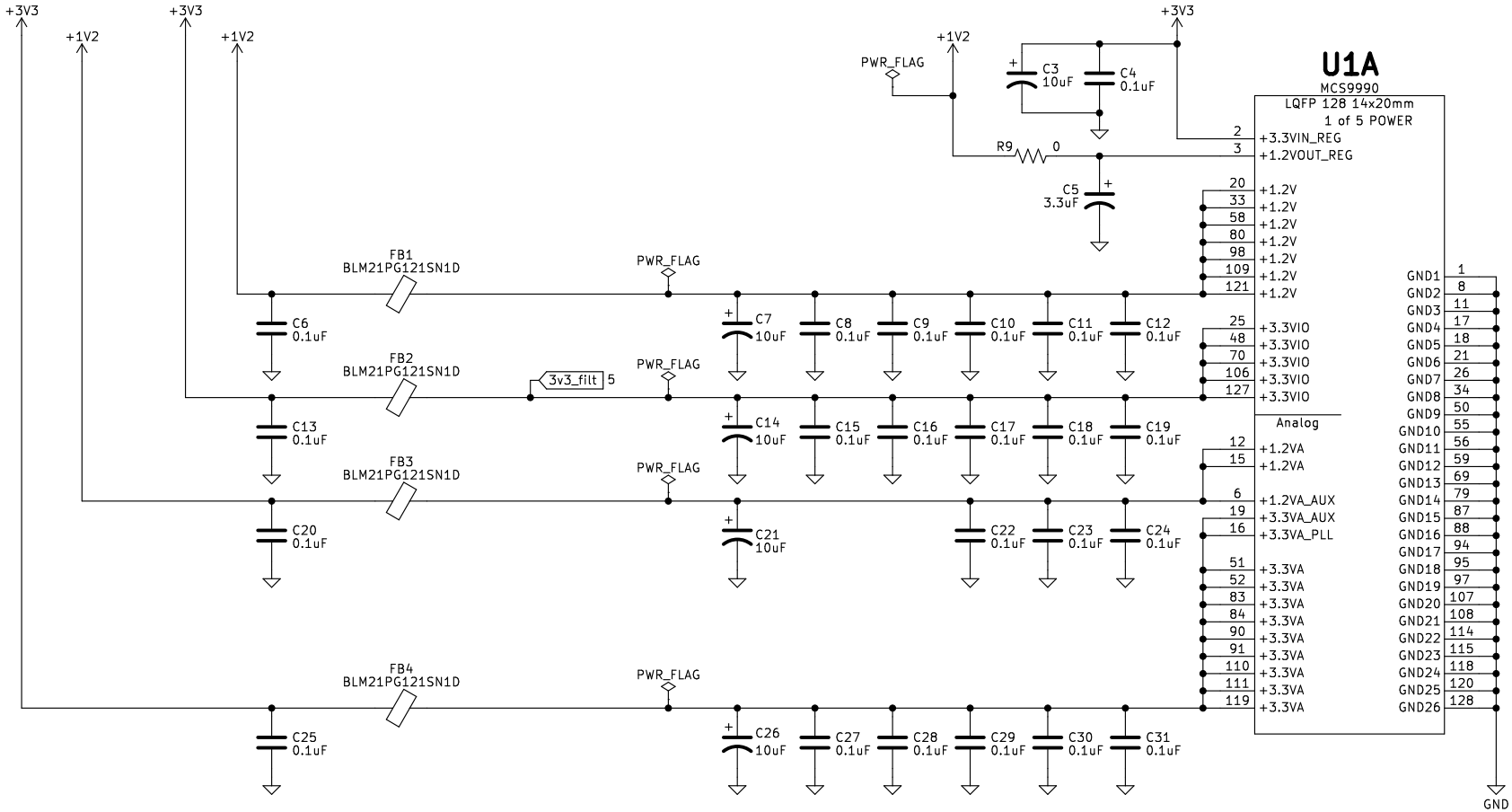
– – Pages – –

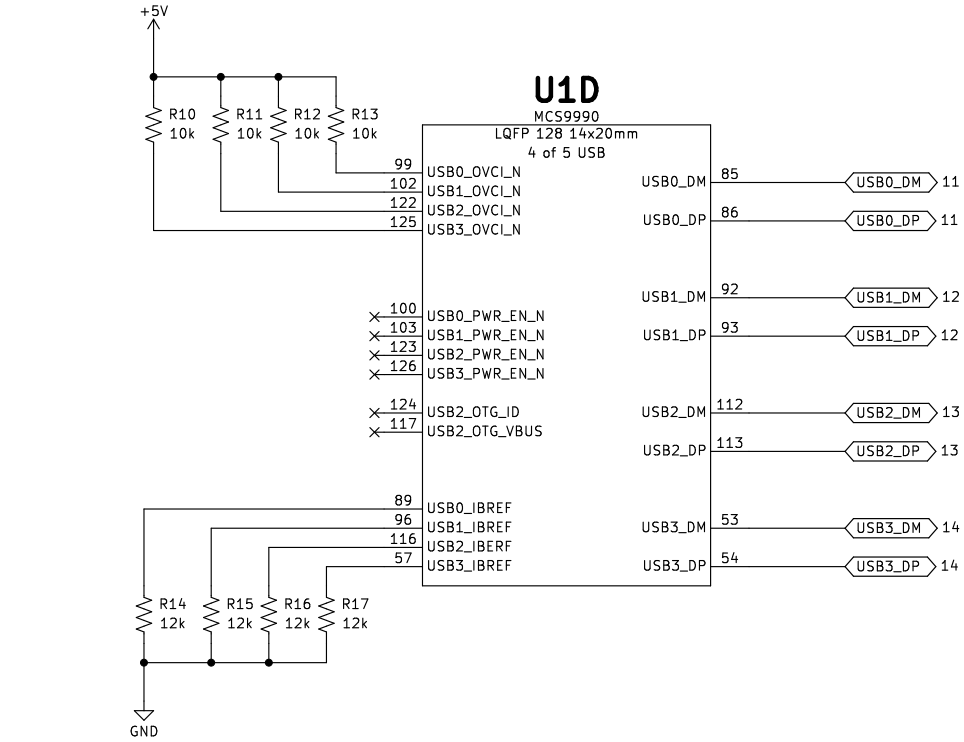
HTML Accelerator

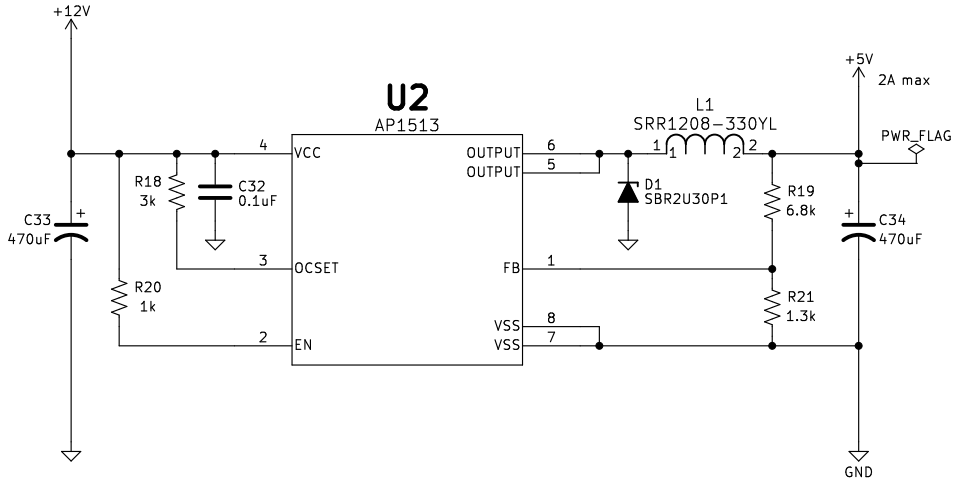
9/15/2024

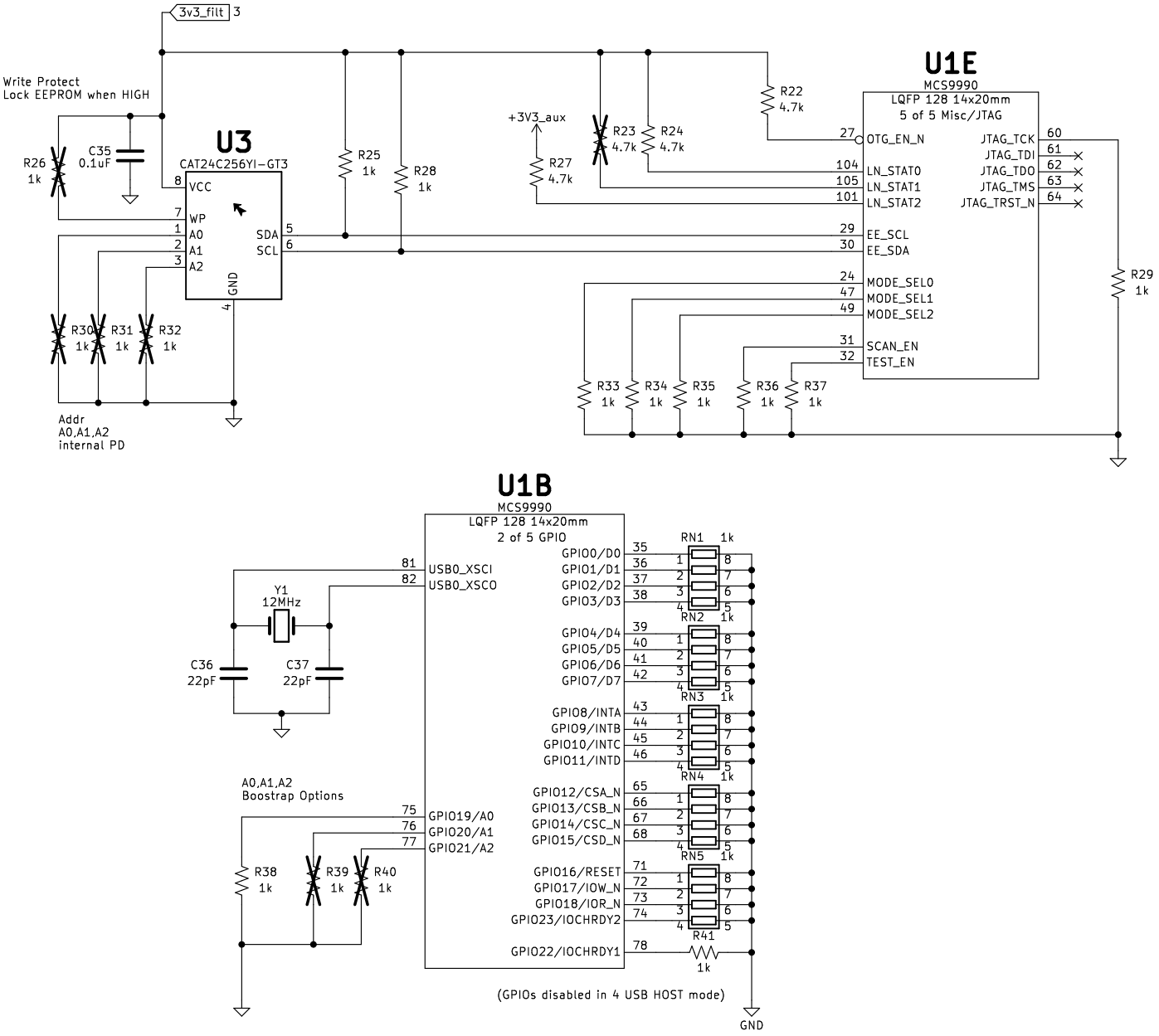



U1C
MCS9990
LQFP 128 14x20mm
3 of 5 PCIE
C1
0.1uF
C2
0.1uF
PCIE_TXp
PCIE_TXn
PCIE_RXp
PCIE_RXn
50Ω impedance
PCIE_TXDP
PCIE_TXDN
PCIE_RXDP
PCIE_RXDN
PCIE_REFCLKP
PCIE_REFCLKN
PCIE_CLKREQ_N
PCIE_WAKE_N
PCIE_PERST_N
REXT
R7
6.2k
GND
J1
Bus_PCI_Express_x16
+12V
+3V3
+3V3_aux
PWR_FLAG
+3.3V
3.3Vaux
SMCLK
SMDAT
REFCLK+
REFCLK−
PRSNT1
PRSNT2
PETp0
PETn0
PERp0
PERn0
RSVD
WAKE
PERST
JTAG1
JTAG2
JTAG3
JTAG4
JTAG5
R1
4.7k
R2
4.7k
R3
4.7k
R4
33
R5
0
R6
0
R8
1k
PCIE_WAKE
PeRST
PCIE_CLKreq
PCIE_TXp
PCIE_TXn
J2
PCIexpress_bracket
PTH1
PTH2


+3V3
+1V2
+3V3
+1V2
PWR_FLAG
+1V2
+3V3
C3
10uF
C4
0.1uF
U1A
MCS9990
LQFP 128 14x20mm
1 of 5 POWER
R9
0
C5
3.3uF
2 +3.3VIN_REG
3 +1.2VOUT_REG
20 +1.2V
33 +1.2V
58 +1.2V
80 +1.2V
98 +1.2V
109 +1.2V
121 +1.2V
FB1
BLM21PG121SN1D
PWR_FLAG
C6
0.1uF
C7
10uF
C8
0.1uF
C9
0.1uF
C10
0.1uF
C11
0.1uF
C12
0.1uF
25 +3.3VIO
48 +3.3VIO
70 +3.3VIO
106 +3.3VIO
127 +3.3VIO
FB2
BLM21PG121SN1D
3v3_filt
5
PWR_FLAG
C13
0.1uF
C14
10uF
C15
0.1uF
C16
0.1uF
C17
0.1uF
C18
0.1uF
C19
0.1uF
Analog
12 +1.2VA
15 +1.2VA
FB3
BLM21PG121SN1D
PWR_FLAG
6 +1.2VA_AUX
19 +3.3VA_AUX
16 +3.3VA_PLL
C20
0.1uF
C21
10uF
C22
0.1uF
C23
0.1uF
C24
0.1uF
51 +3.3VA
52 +3.3VA
83 +3.3VA
84 +3.3VA
90 +3.3VA
91 +3.3VA
110 +3.3VA
111 +3.3VA
119 +3.3VA
FB4
BLM21PG121SN1D
PWR_FLAG
C25
0.1uF
C26
10uF
C27
0.1uF
C28
0.1uF
C29
0.1uF
C30
0.1uF
C31
0.1uF
GND1 1
GND2 8
GND3 11
GND4 17
GND5 18
GND6 21
GND7 26
GND8 34
GND9 50
GND10 55
GND11 56
GND12 59
GND13 69
GND14 79
GND15 87
GND16 88
GND17 94
GND18 95
GND19 97
GND20 107
GND21 108
GND22 114
GND23 115
GND24 118
GND25 120
GND26 128
GND


+5V
U1D
MCS9990
LQFP 128 14x20mm
4 of 5 USB
R10 10k
R11 10k
R12 10k
R13 10k
99 USB0_OVCI_N
102 USB1_OVCI_N
122 USB2_OVCI_N
125 USB3_OVCI_N
100 USB0_PWR_EN_N
103 USB1_PWR_EN_N
123 USB2_PWR_EN_N
126 USB3_PWR_EN_N
124 USB2_OTG_ID
117 USB2_OTG_VBUS
89 USB0_IBREF
96 USB1_IBREF
116 USB2_IBERF
57 USB3_IBREF
USB0_DM 85 USB0_DM 11
USB0_DP 86 USB0_DP 11
USB1_DM 92 USB1_DM 12
USB1_DP 93 USB1_DP 12
USB2_DM 112 USB2_DM 13
USB2_DP 113 USB2_DP 13
USB3_DM 53 USB3_DM 14
USB3_DP 54 USB3_DP 14
R14 12k
R15 12k
R16 12k
R17 12k
GND


+12V
U2
AP1513
L1
SRR1208-330YL
+5V
2A max
PWR_FLAG
C33 470uF
R18 3k
C32 0.1uF
R20 1k
4 VCC
3 OCSET
2 EN
OUTPUT 6
OUTPUT 5
FB 1
VSS 8
VSS 7
D1 SBR2U30P1
R19 6.8k
R21 1.3k
C34 470uF
GND



Mode Selection

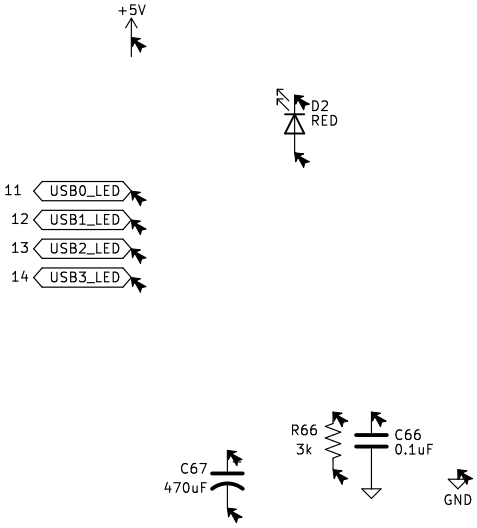
MCS9990 supports following four functional modes, selectable through device mode select pins at board level. The I2C EEPROM is also required to be used in these modes.

Mode Selection	TEST_EN	MODE_SEL2	MODE_SEL1	MODE_SEL0	OTG_EN_N
4 USB Host	0	0	0	0	1
2 USB Host + OTG	0	0	0	1	0
2 USB Host + OTG + ISA	0	0	1	0	0
2 USB Host + OTG + GPIO	0	0	1	1	0

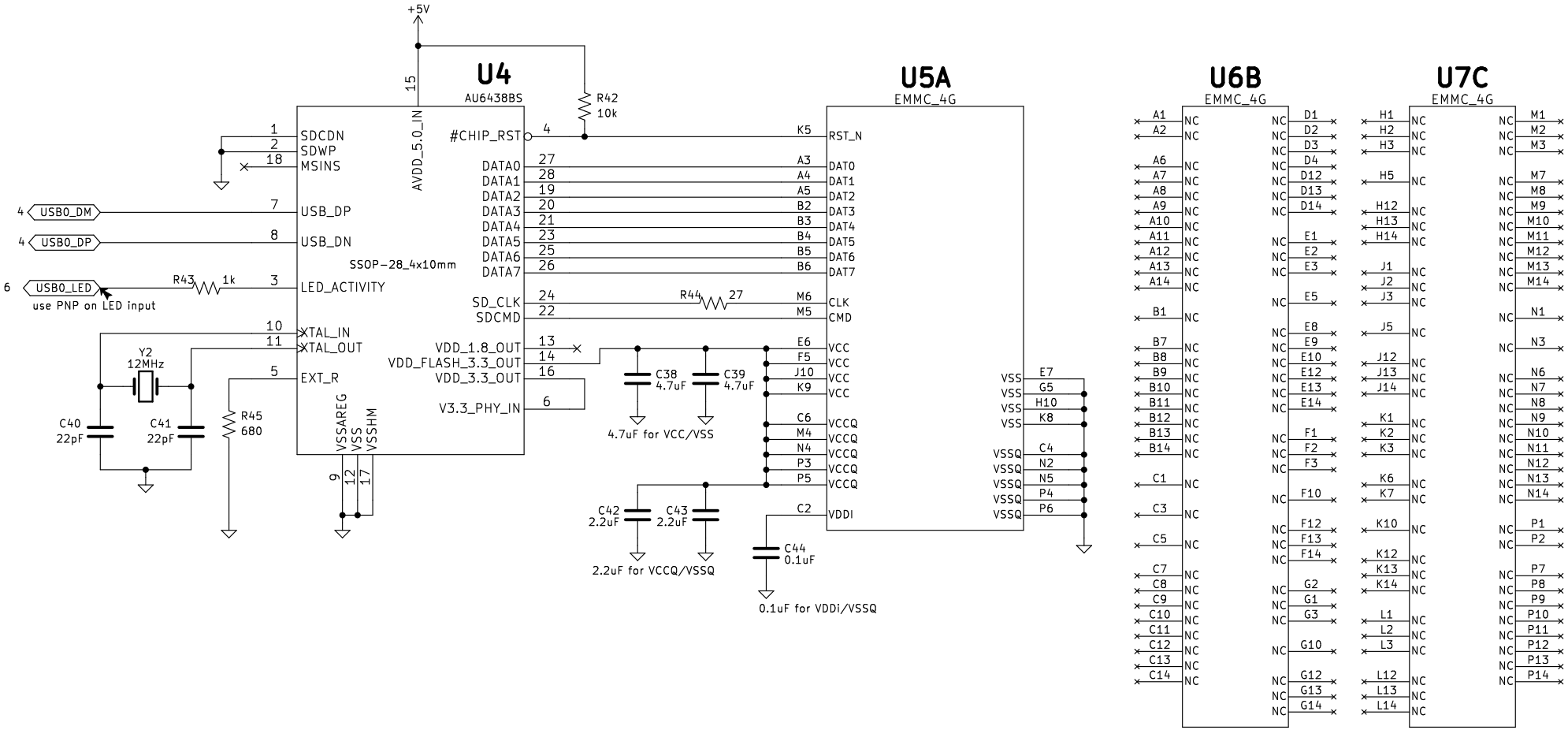
5. Bootstrap Options

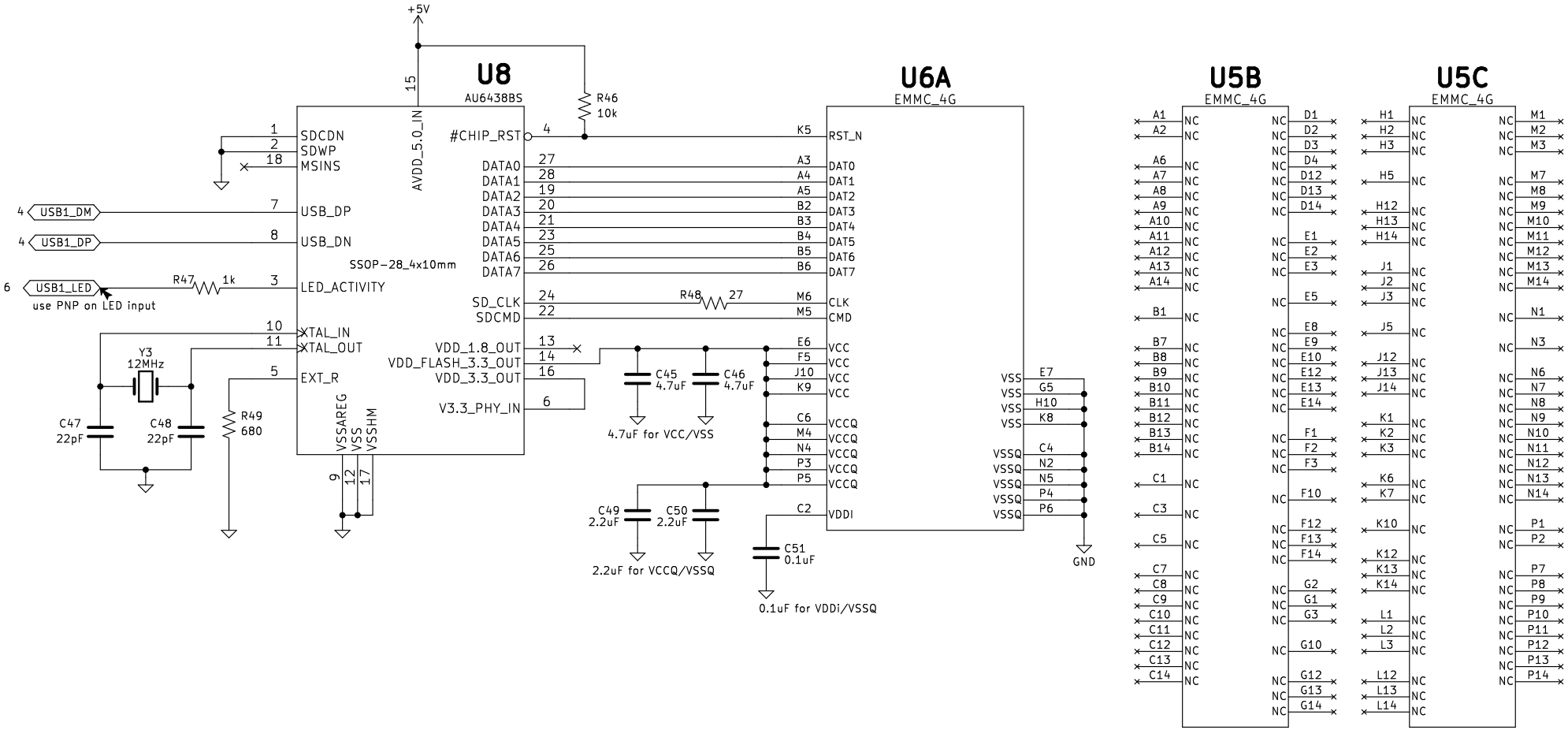
In MCS9990, six bootstrap options are present.

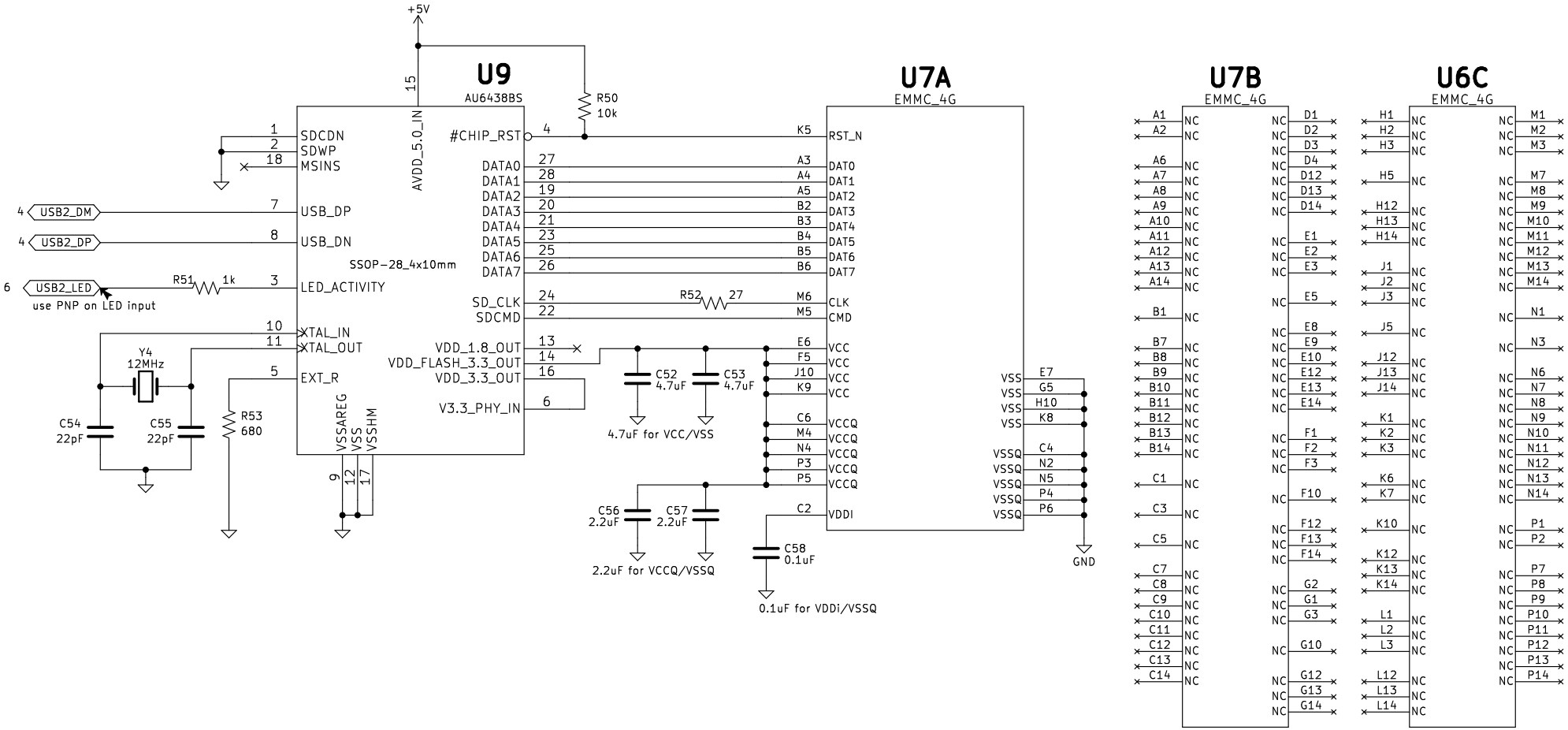
Pin Name	Bootstrap	Internal PU/PD	Default External PU/PD	Description
LN_STAT0	PCIEXP_ERR_MSK	PD	PU	To mask PCIe error bits. By default logic 'Low' is present to mask error reporting
LN_STAT1	MAXRD_128BYTES	PD	Open	To set maximum read request size from EP to be 128 bytes by passing high logic on the line. By default logic 'Low' is present
LN_STAT2	AUX_POWER	PD	PU	For auxiliary power detection, connected to 'Vaux' detect circuit at board level. By default logic 'Low' is present
GPIO19	ASPM_CNTRL	PU	PD	To Provide ASPM support controllability. By default logic 'High' is present to enable ASPM
GPIO20	ADV_ERROR_REPORT	PU	Open	To provide Advance Error Report support controllability. By default logic 'High' is present to enable the feature.
GPIO21	WAKE_HIB_EN	PU	Open	To provide wake from D3 Cold (Hibernate) state through device connected under USB host. By default logic 'High' is present to disable this feature. To enable the feature provide weak pull down at board level.

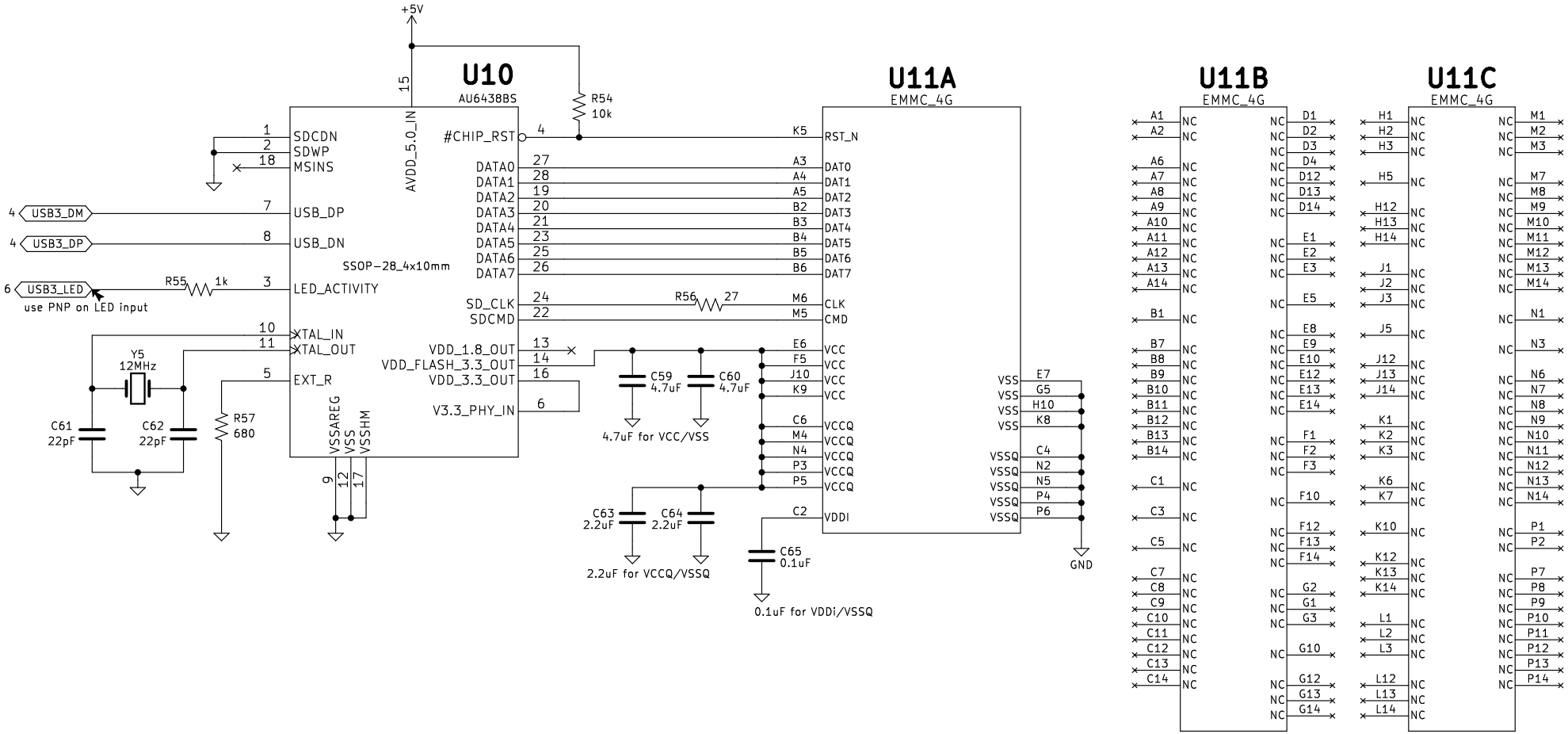


TOdo:
place PCB and see how much space left for all the LEDs


U4
AU6438BS
SSOP-28_4x10mm
+5V
15
AVDD_5.0_IN
R42
10k
1 SDCDN
2 SDWP
18 MSINS
4 USB0_DM
7 USB_DP
4 USB0_DP
8 USB_DN
6 USB0_LED
use PNP on LED input
R43 1k
3 LED_ACTIVITY
10 XTAL_IN
11 XTAL_OUT
Y2
12MHz
5 EXT_R
C40
22pF
C41
22pF
R45
680
VSSAREG
VSS
VSSHM
9
12
17
#CHIP_RST 4
DATA0 27
DATA1 28
DATA2 19
DATA3 20
DATA4 21
DATA5 23
DATA6 25
DATA7 26
SD_CLK 24
SDCMD 22
R44 27
VDD_1.8_OUT 13
VDD_FLASH_3.3_OUT 14
VDD_3.3_OUT 16
V3.3_PHY_IN 6
C38
4.7uF
C39
4.7uF
4.7uF for VCC/VSS
C42
2.2uF
C43
2.2uF
2.2uF for VCCQ/VSSQ
C44
0.1uF
0.1uF for VDDi/VSSQ
U5A
EMMC_4G
RST_N K5
DAT0 A3
DAT1 A4
DAT2 A5
DAT3 B2
DAT4 B3
DAT5 B4
DAT6 B5
DAT7 B6
CLK M6
CMD M5
VCC E6
VCC F5
VCC J10
VCC K9
VCCQ C6
VCCQ M4
VCCQ N4
VCCQ P3
VCCQ P5
VDDI C2
VSS E7
VSS G5
VSS H10
VSS K8
VSSQ C4
VSSQ N2
VSSQ N5
VSSQ P4
VSSQ P6
U6B
EMMC_4G
U7C
EMMC_4G


U8
AU6438BS
SSOP-28_4x10mm
+5V
15
AVDD_5.0_IN
R46
10k
1 SDCDN
2 SDWP
18 MSINS
4 USB1_DM
7 USB_DP
4 USB1_DP
8 USB_DN
6 USB1_LED
use PNP on LED input
R47 1k
3 LED_ACTIVITY
10 XTAL_IN
11 XTAL_OUT
Y3
12MHz
5 EXT_R
C47
22pF
C48
22pF
R49
680
VSSAREG
VSS
VSSHM
9
12
17
#CHIP_RST 4
DATA0 27
DATA1 28
DATA2 19
DATA3 20
DATA4 21
DATA5 23
DATA6 25
DATA7 26
SD_CLK 24
SDCMD 22
R48 27
VDD_1.8_OUT 13
VDD_FLASH_3.3_OUT 14
VDD_3.3_OUT 16
V3.3_PHY_IN 6
C45
4.7uF
C46
4.7uF
4.7uF for VCC/VSS
C49
2.2uF
C50
2.2uF
2.2uF for VCCQ/VSSQ
C51
0.1uF
0.1uF for VDDi/VSSQ
U6A
EMMC_4G
RST_N K5
DAT0 A3
DAT1 A4
DAT2 A5
DAT3 B2
DAT4 B3
DAT5 B4
DAT6 B5
DAT7 B6
CLK M6
CMD M5
VCC E6
VCC F5
VCC J10
VCC K9
VCCQ C6
VCCQ M4
VCCQ N4
VCCQ P3
VCCQ P5
VDDI C2
VSS E7
VSS G5
VSS H10
VSS K8
VSSQ C4
VSSQ N2
VSSQ N5
VSSQ P4
VSSQ P6
GND
U5B
EMMC_4G
U5C
EMMC_4G


U9
AU6438BS
SSOP-28_4x10mm
+5V
AVDD_5.0_IN
SDCDN
SDWP
MSINS
USB_DP
USB_DN
LED_ACTIVITY
XTAL_IN
XTAL_OUT
EXT_R
VSSAREG
VSS
VSSHM
#CHIP_RST
DATA0
DATA1
DATA2
DATA3
DATA4
DATA5
DATA6
DATA7
SD_CLK
SDCMD
VDD_1.8_OUT
VDD_FLASH_3.3_OUT
VDD_3.3_OUT
V3.3_PHY_IN
USB2_DM
USB2_DP
USB2_LED
use PNP on LED input
R51 1k
R50 10k
R52 27
R53 680
Y4 12MHz
C54 22pF
C55 22pF
C52 4.7uF
C53 4.7uF
4.7uF for VCC/VSS
C56 2.2uF
C57 2.2uF
2.2uF for VCCQ/VSSQ
C58 0.1uF
0.1uF for VDDi/VSSQ
U7A
EMMC_4G
RST_N
DAT0
DAT1
DAT2
DAT3
DAT4
DAT5
DAT6
DAT7
CLK
CMD
VCC
VCCQ
VDDI
VSS
VSSQ
GND
U7B
EMMC_4G
U6C
EMMC_4G
NC


U10
AU6438BS
SSOP-28_4x10mm
+5V
AVDD_5.0_IN
SDCDN
SDWP
MSINS
USB_DP
USB_DN
LED_ACTIVITY
XTAL_IN
XTAL_OUT
EXT_R
VSSAREG
VSS
VSSHM
#CHIP_RST
DATA0
DATA1
DATA2
DATA3
DATA4
DATA5
DATA6
DATA7
SD_CLK
SDCMD
VDD_1.8_OUT
VDD_FLASH_3.3_OUT
VDD_3.3_OUT
V3.3_PHY_IN
USB3_DM
USB3_DP
USB3_LED
use PNP on LED input
R54
10k
R55
1k
R56
27
R57
680
Y5
12MHz
C61
22pF
C62
22pF
C59
4.7uF
C60
4.7uF
4.7uF for VCC/VSS
C63
2.2uF
C64
2.2uF
2.2uF for VCCQ/VSSQ
C65
0.1uF
0.1uF for VDDi/VSSQ
U11A
EMMC_4G
RST_N
DAT0
DAT1
DAT2
DAT3
DAT4
DAT5
DAT6
DAT7
CLK
CMD
VCC
VCCQ
VDDI
VSS
VSSQ
GND
U11B
EMMC_4G
U11C
EMMC_4G
NC