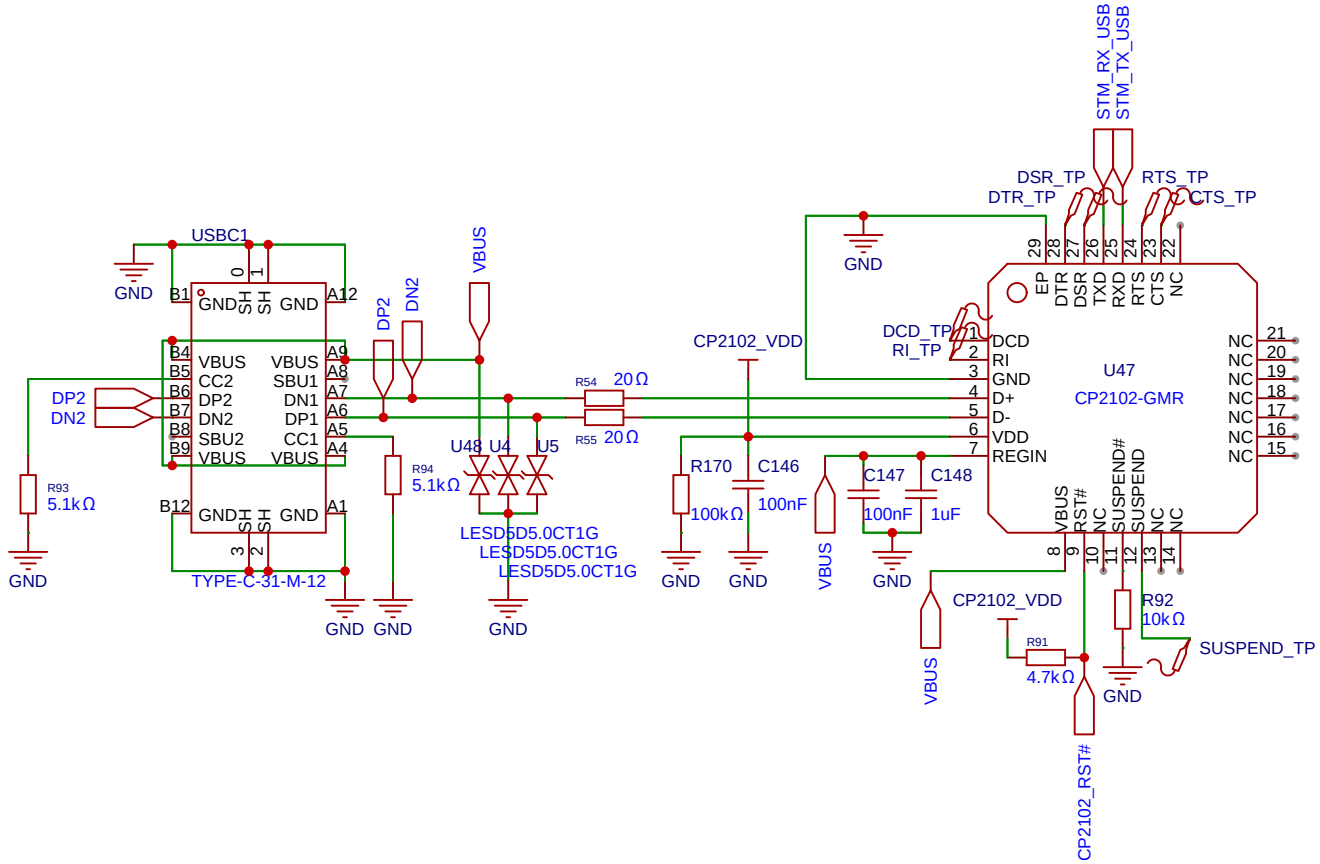
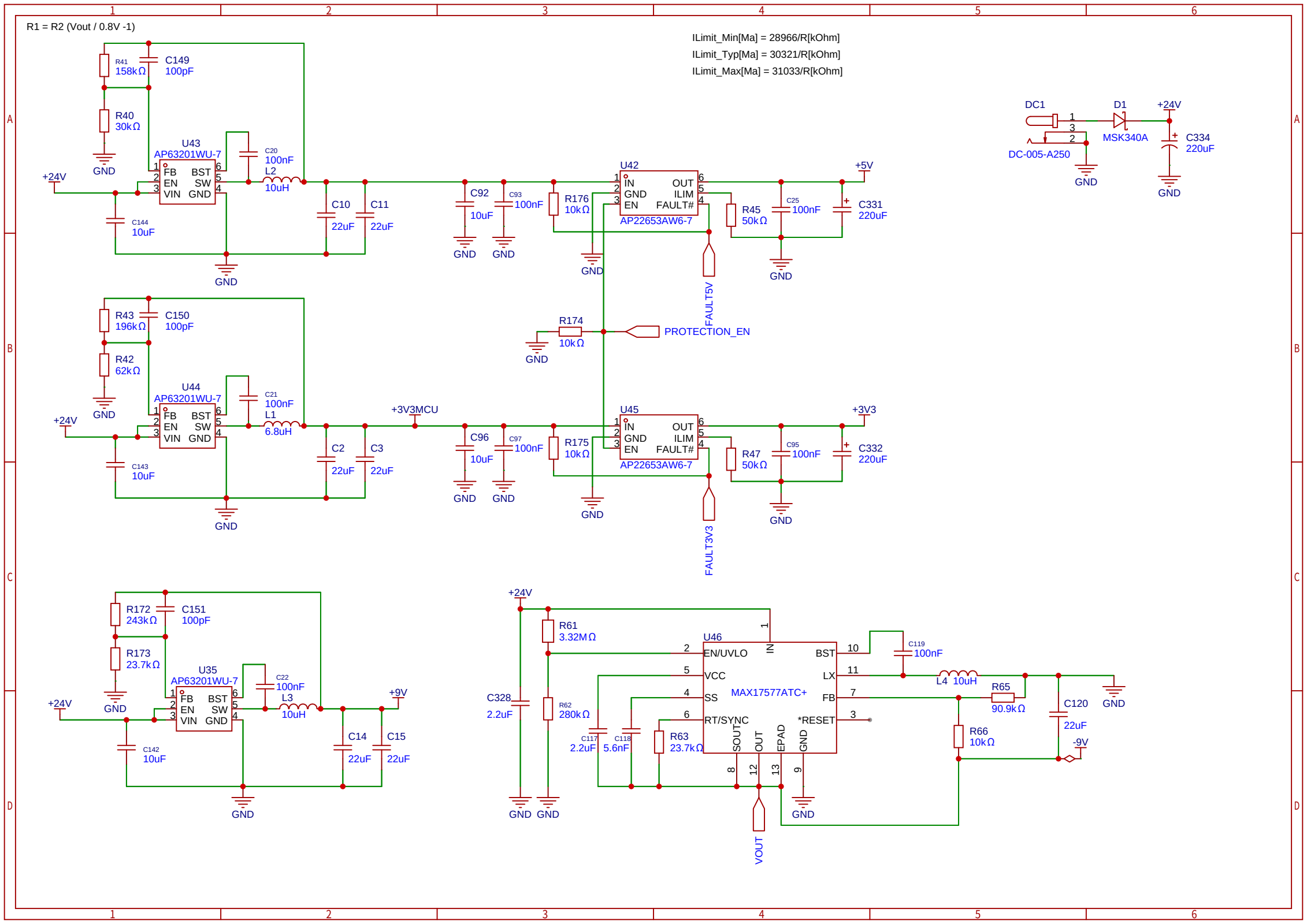
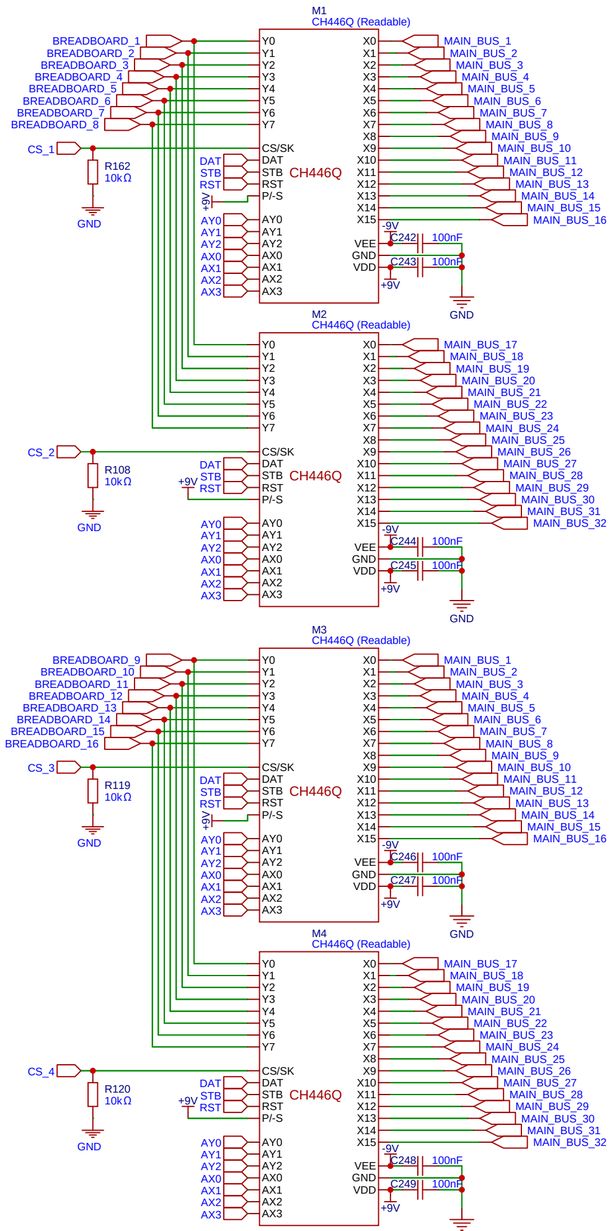
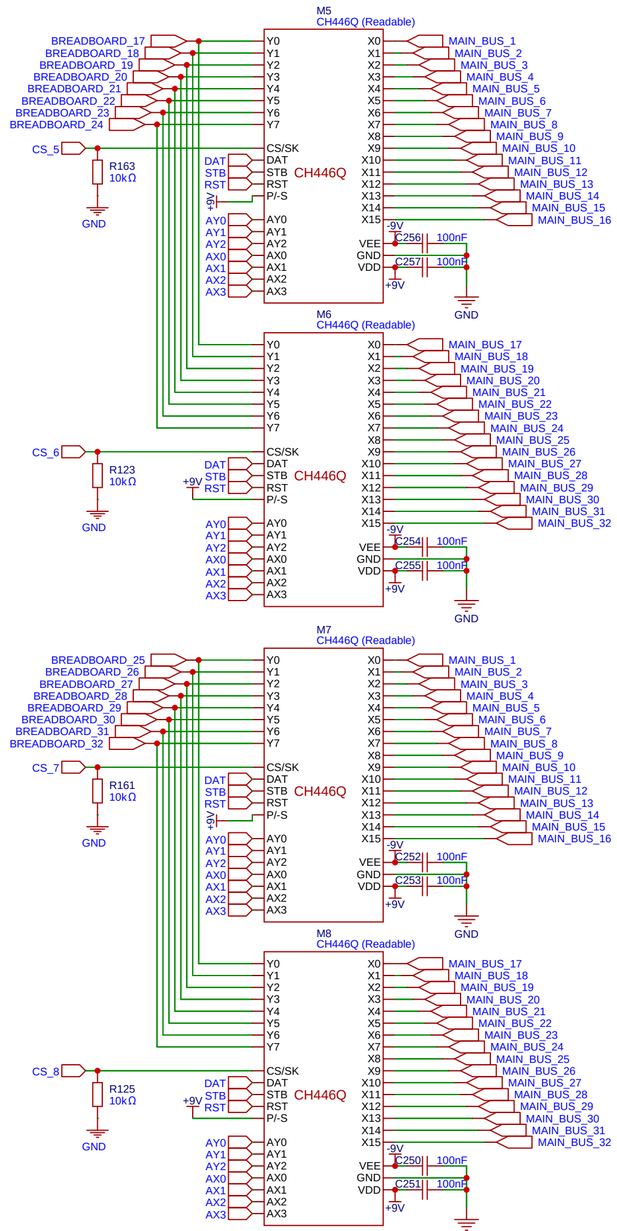


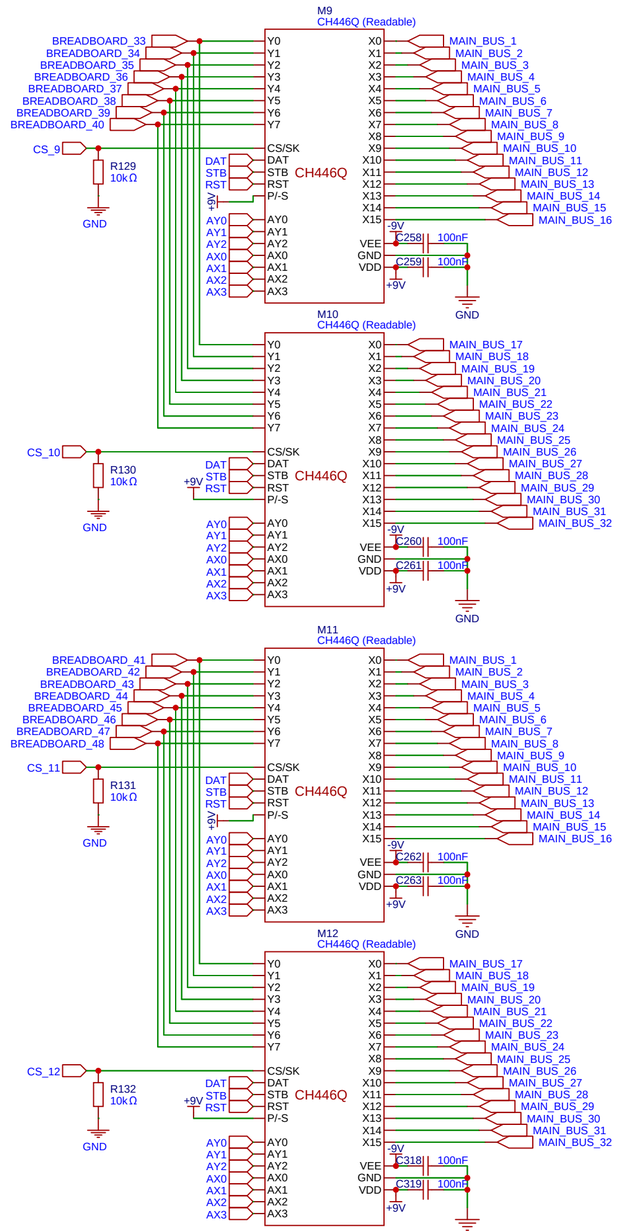
Schematic	Schematic1	Update Date	2025-01-28
		Create Date	2024-12-05
Page	FTDI	Part Number	JLCPCB-002
Drawn	EasyEDA	CableUndefinedV3	
Reviewed	EasyEDA		
		VER	SIZE	PAGE 1 OF 8
EasyEDA		V0.1	A4	EasyEDA.com

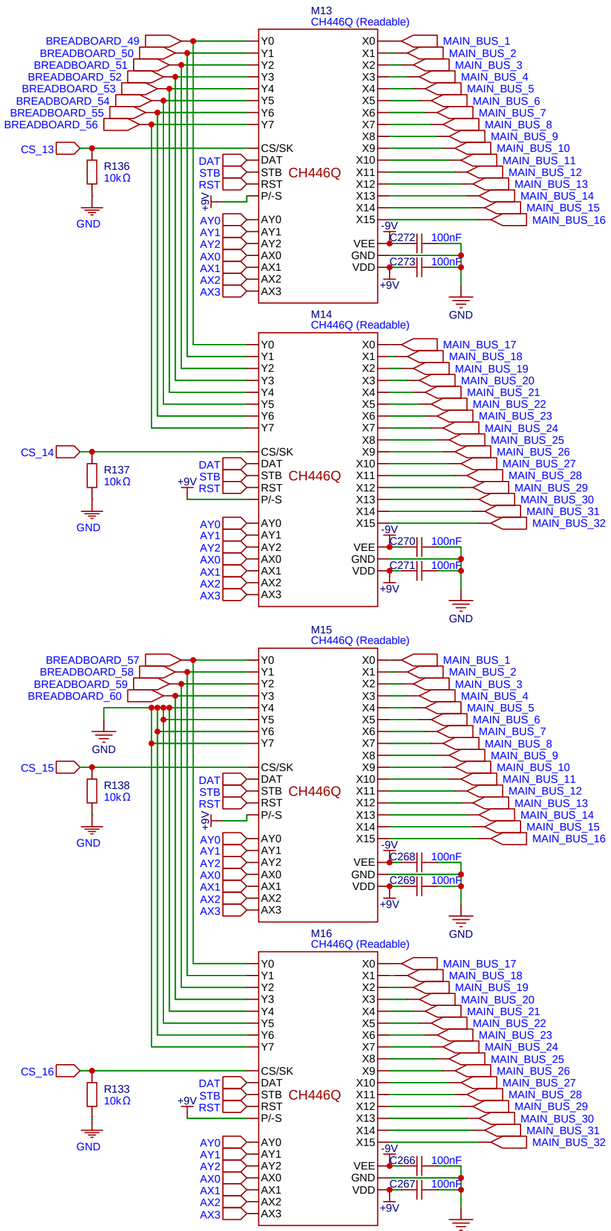

R1 = R2 (Vout / 0.8V -1)
ILimit_Min[Ma] = 28966/R[kOhm]
ILimit_Typ[Ma] = 30321/R[kOhm]
ILimit_Max[Ma] = 31033/R[kOhm]
R41 158kΩ
C149 100pF
R40 30kΩ
U43 AP63201WU-7
C20 100nF
L2 10uH
C144 10uF
C10 22uF
C11 22uF
+24V
GND
C92 10uF
C93 100nF
R176 10kΩ
U42 AP22653AW6-7
R45 50kΩ
C25 100nF
C331 220uF
+5V
FAULT5V
R174 10kΩ
PROTECTION_EN
R43 196kΩ
C150 100pF
R42 62kΩ
U44 AP63201WU-7
C21 100nF
L1 6.8uH
C143 10uF
C2 22uF
C3 22uF
+3V3MCU
C96 10uF
C97 100nF
R175 10kΩ
U45 AP22653AW6-7
R47 50kΩ
C95 100nF
C332 220uF
+3V3
FAULT3V3
DC1
DC-005-A250
D1
MSK340A
C334 220uF
R172 243kΩ
C151 100pF
R173 23.7kΩ
U35 AP63201WU-7
C22 100nF
L3 10uH
C142 10uF
C14 22uF
C15 22uF
+9V
R61 3.32MΩ
C328 2.2uF
R62 280kΩ
U46 MAX17577ATC+
EN/UVLO
VCC
SS
RT/SYNC
IN
BST
LX
FB
*RESET
SOUT
OUT
EPAD
GND
C117 2.2uF
C118 5.6nF
R63 23.7kΩ
C119 100nF
L4 10uH
R65 90.9kΩ
R66 10kΩ
C120 22uF
-9V
VOUT

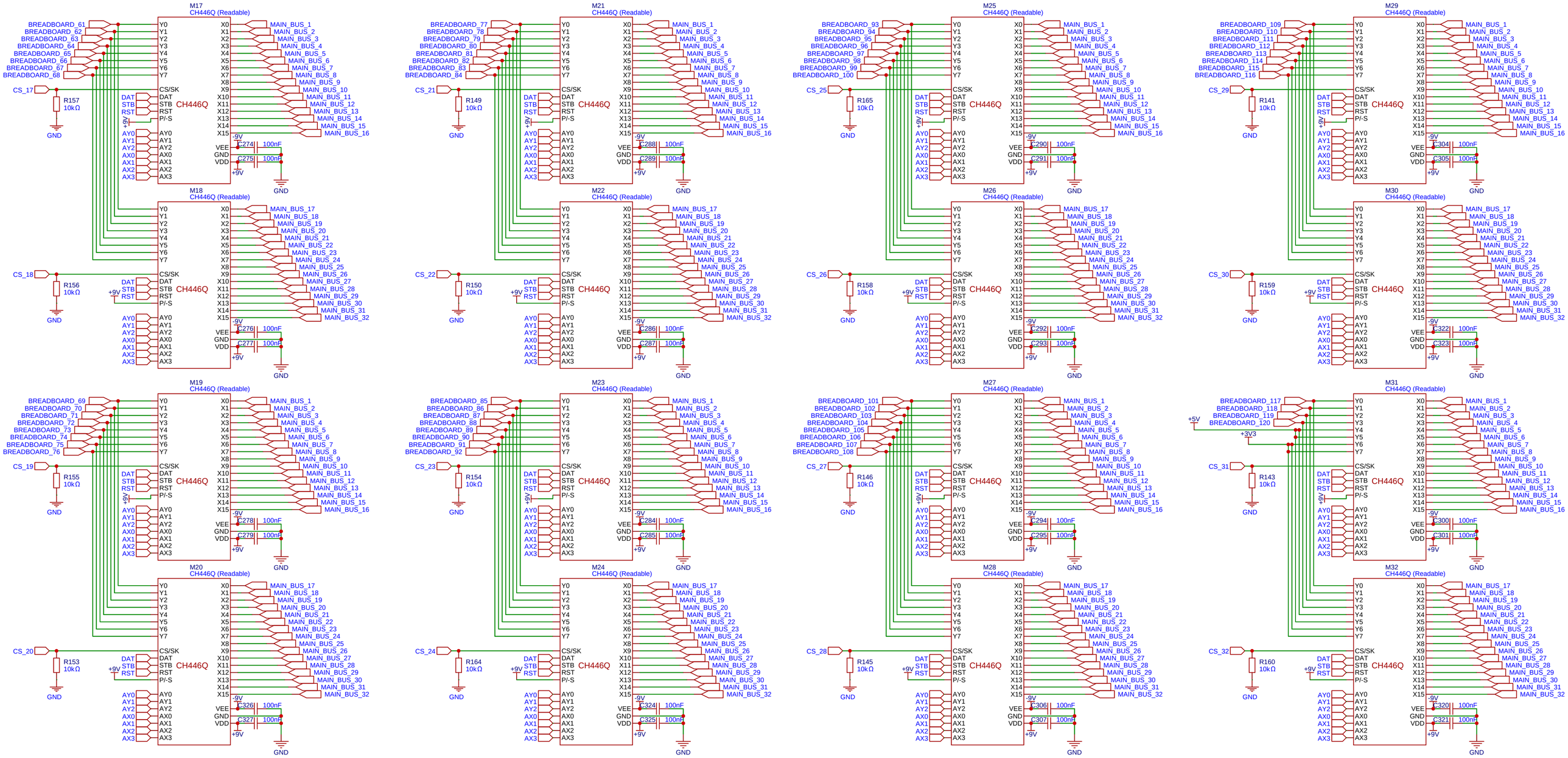
Breadboard TOP MUXes

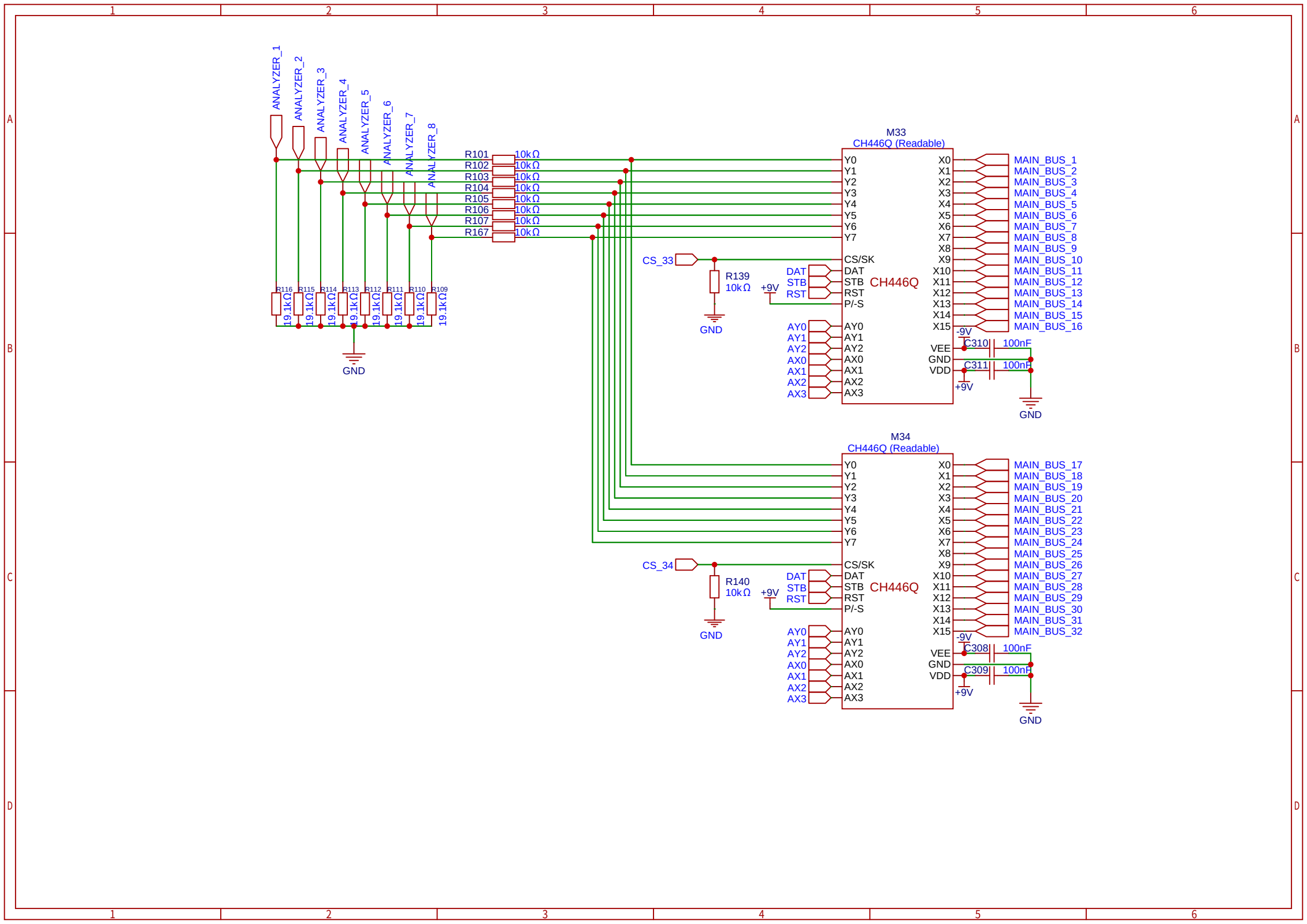


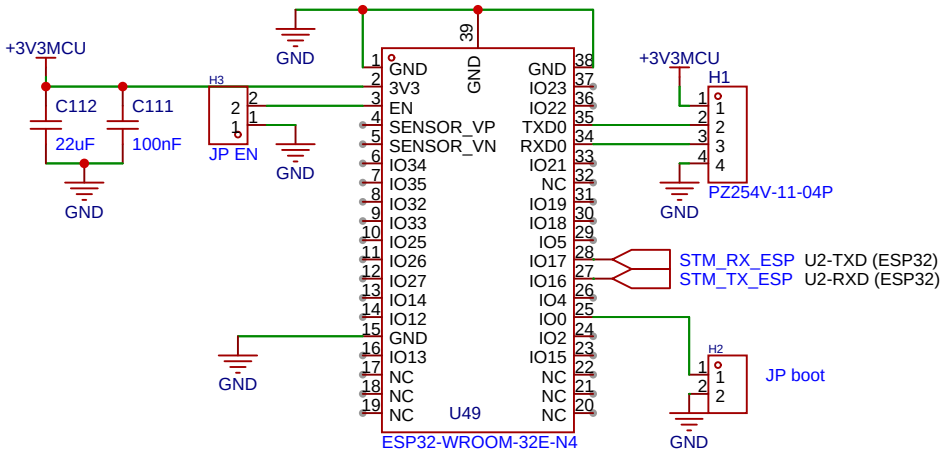




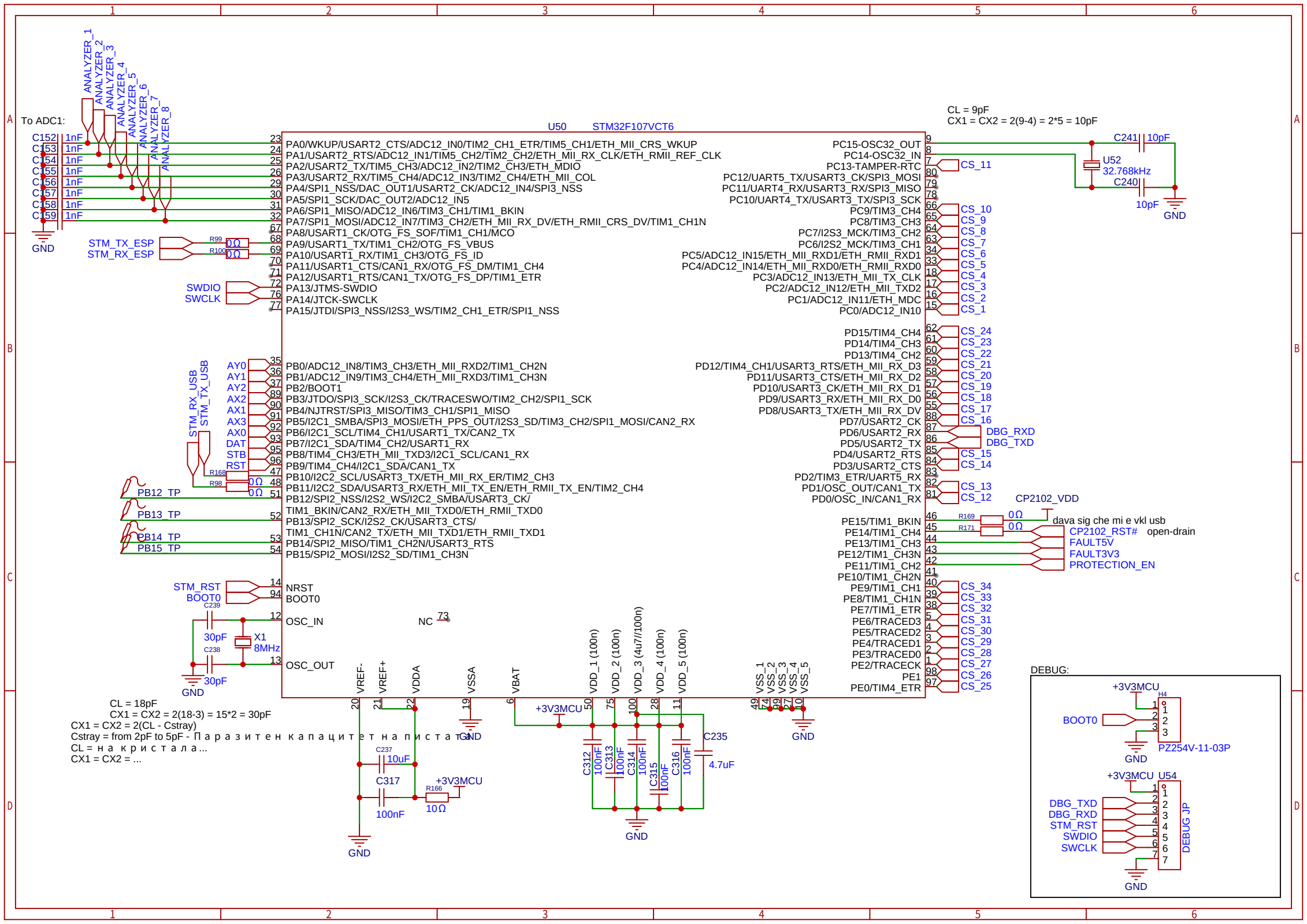
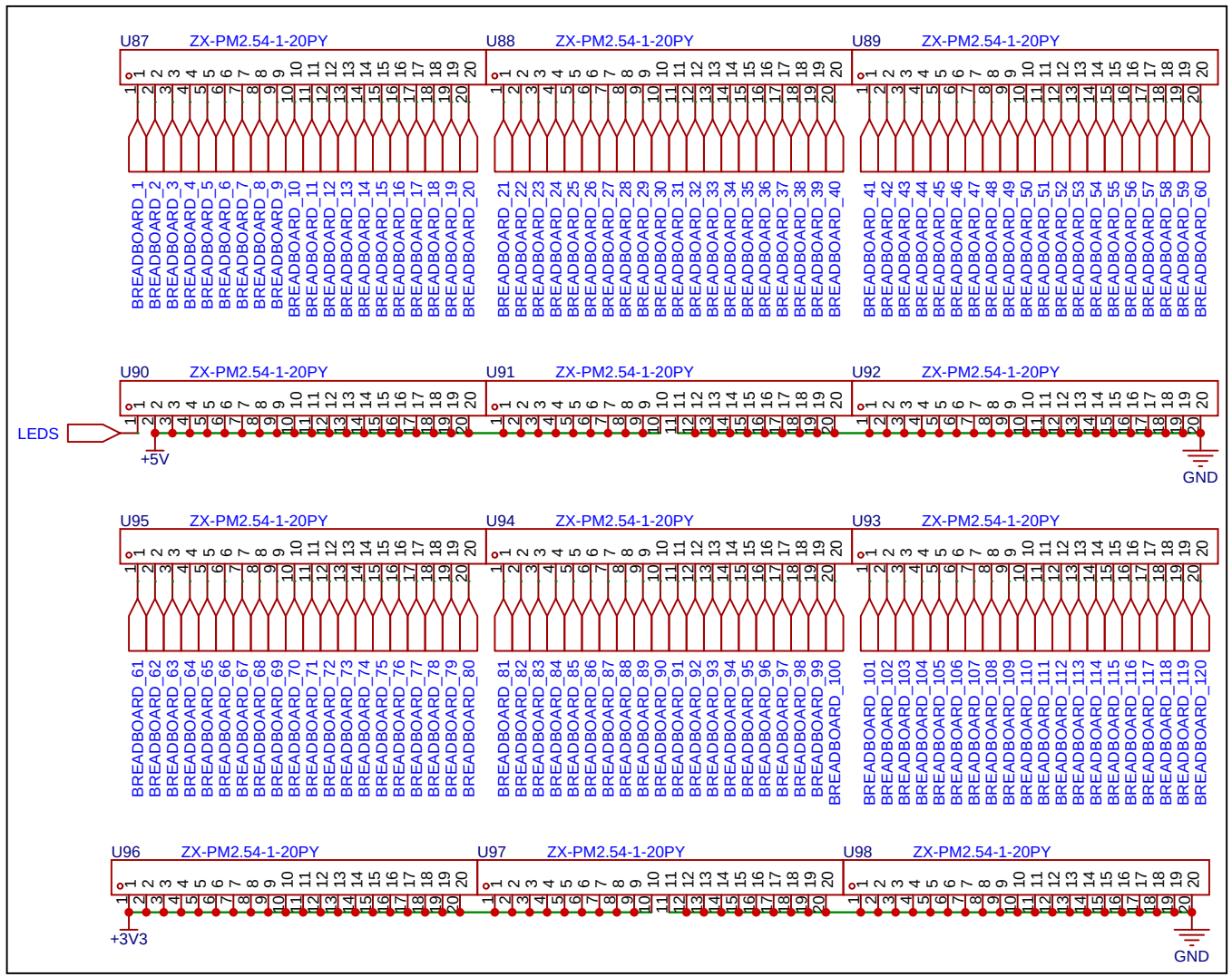



M17
CH446Q (Readable)
M18
CH446Q (Readable)
M19
CH446Q (Readable)
M20
CH446Q (Readable)
M21
CH446Q (Readable)
M22
CH446Q (Readable)
M23
CH446Q (Readable)
M24
CH446Q (Readable)
M25
CH446Q (Readable)
M26
CH446Q (Readable)
M27
CH446Q (Readable)
M28
CH446Q (Readable)
M29
CH446Q (Readable)
M30
CH446Q (Readable)
M31
CH446Q (Readable)
M32
CH446Q (Readable)
CH446Q
DAT
STB
RST
P/S
CS/SK
VEE
GND
VDD
AY0
AY1
AY2
AX0
AX1
AX2
AX3
+9V
-9V
+5V
+3V3
R157 10kΩ
R156 10kΩ
R155 10kΩ
R153 10kΩ
R149 10kΩ
R150 10kΩ
R154 10kΩ
R164 10kΩ
R165 10kΩ
R158 10kΩ
R146 10kΩ
R145 10kΩ
R141 10kΩ
R159 10kΩ
R143 10kΩ
R160 10kΩ
C274 100nF
C275 100nF
C276 100nF
C277 100nF
C278 100nF
C279 100nF
C326 100nF
C327 100nF
C288 100nF
C289 100nF
C286 100nF
C287 100nF
C284 100nF
C285 100nF
C324 100nF
C325 100nF
C290 100nF
C291 100nF
C292 100nF
C293 100nF
C294 100nF
C295 100nF
C306 100nF
C307 100nF
C304 100nF
C305 100nF
C322 100nF
C323 100nF
C300 100nF
C301 100nF
C320 100nF
C321 100nF


ANALYZER_1
ANALYZER_2
ANALYZER_3
ANALYZER_4
ANALYZER_5
ANALYZER_6
ANALYZER_7
ANALYZER_8
R101 10kΩ
R102 10kΩ
R103 10kΩ
R104 10kΩ
R105 10kΩ
R106 10kΩ
R107 10kΩ
R167 10kΩ
R116 19.1kΩ
R115 19.1kΩ
R114 19.1kΩ
R113 19.1kΩ
R112 19.1kΩ
R111 19.1kΩ
R110 19.1kΩ
R109 19.1kΩ
GND
M33
CH446Q (Readable)
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
CS/SK
DAT
STB
RST
P/-S
AY0
AY1
AY2
AX0
AX1
AX2
AX3
X0
X1
X2
X3
X4
X5
X6
X7
X8
X9
X10
X11
X12
X13
X14
X15
VEE
GND
VDD
CH446Q
CS_33
R139
10kΩ
+9V
-9V
C310
100nF
C311
100nF
MAIN_BUS_1
MAIN_BUS_2
MAIN_BUS_3
MAIN_BUS_4
MAIN_BUS_5
MAIN_BUS_6
MAIN_BUS_7
MAIN_BUS_8
MAIN_BUS_9
MAIN_BUS_10
MAIN_BUS_11
MAIN_BUS_12
MAIN_BUS_13
MAIN_BUS_14
MAIN_BUS_15
MAIN_BUS_16
M34
CH446Q (Readable)
CS_34
R140
10kΩ
C308
100nF
C309
100nF
MAIN_BUS_17
MAIN_BUS_18
MAIN_BUS_19
MAIN_BUS_20
MAIN_BUS_21
MAIN_BUS_22
MAIN_BUS_23
MAIN_BUS_24
MAIN_BUS_25
MAIN_BUS_26
MAIN_BUS_27
MAIN_BUS_28
MAIN_BUS_29
MAIN_BUS_30
MAIN_BUS_31
MAIN_BUS_32



Schematic	Schematic1	Update Date	2025-01-09
		Create Date	2024-12-26
Page	ESP32	Part Number	JLCPCB-002
Drawn	EasyEDA	CableUndefinedV3	
Reviewed	EasyEDA		
		VER / SIZE / PAGE 6 OF 8	
EasyEDA	V0.1 / A4	EasyEDA.com	


To ADC1:
ANALYZER_1
ANALYZER_2
ANALYZER_3
ANALYZER_4
ANALYZER_5
ANALYZER_6
ANALYZER_7
ANALYZER_8
C152 1nF
C153 1nF
C154 1nF
C155 1nF
C156 1nF
C157 1nF
C158 1nF
C159 1nF
GND
STM_TX_ESP
STM_RX_ESP
R99 0Ω
R100 0Ω
SWDIO
SWCLK
STM_RX_USB
STM_TX_USB
AY0
AY1
AY2
AX2
AX1
AX3
AX0
DAT
STB
RST
R168
R98 0Ω
PB12_TP
PB13_TP
PB14_TP
PB15_TP
STM_RST
BOOT0
C239
30pF
X1
8MHz
C238
30pF
GND
CL = 18pF
CX1 = CX2 = 2(18-3) = 15*2 = 30pF
CX1 = CX2 = 2(CL - Cstray)
Cstray = from 2pF to 5pF - Паразитен капацитет на пистата
CL = на кристала...
CX1 = CX2 = ...
U50 STM32F107VCT6
23 PA0/WKUP/USART2_CTS/ADC12_IN0/TIM2_CH1_ETR/TIM5_CH1/ETH_MII_CRS_WKUP
24 PA1/USART2_RTS/ADC12_IN1/TIM5_CH2/TIM2_CH2/ETH_MII_RX_CLK/ETH_RMII_REF_CLK
25 PA2/USART2_TX/TIM5_CH3/ADC12_IN2/TIM2_CH3/ETH_MDIO
26 PA3/USART2_RX/TIM5_CH4/ADC12_IN3/TIM2_CH4/ETH_MII_COL
29 PA4/SPI1_NSS/DAC_OUT1/USART2_CK/ADC12_IN4/SPI3_NSS
30 PA5/SPI1_SCK/DAC_OUT2/ADC12_IN5
31 PA6/SPI1_MISO/ADC12_IN6/TIM3_CH1/TIM1_BKIN
32 PA7/SPI1_MOSI/ADC12_IN7/TIM3_CH2/ETH_MII_RX_DV/ETH_RMII_CRS_DV/TIM1_CH1N
67 PA8/USART1_CK/OTG_FS_SOF/TIM1_CH1/MCO
68 PA9/USART1_TX/TIM1_CH2/OTG_FS_VBUS
69 PA10/USART1_RX/TIM1_CH3/OTG_FS_ID
70 PA11/USART1_CTS/CAN1_RX/OTG_FS_DM/TIM1_CH4
71 PA12/USART1_RTS/CAN1_TX/OTG_FS_DP/TIM1_ETR
72 PA13/JTMS-SWDIO
76 PA14/JTCK-SWCLK
77 PA15/JTDI/SPI3_NSS/I2S3_WS/TIM2_CH1_ETR/SPI1_NSS
35 PB0/ADC12_IN8/TIM3_CH3/ETH_MII_RXD2/TIM1_CH2N
36 PB1/ADC12_IN9/TIM3_CH4/ETH_MII_RXD3/TIM1_CH3N
37 PB2/BOOT1
89 PB3/JTDO/SPI3_SCK/I2S3_CK/TRACESWO/TIM2_CH2/SPI1_SCK
90 PB4/NJTRST/SPI3_MISO/TIM3_CH1/SPI1_MISO
91 PB5/I2C1_SMBA/SPI3_MOSI/ETH_PPS_OUT/I2S3_SD/TIM3_CH2/SPI1_MOSI/CAN2_RX
92 PB6/I2C1_SCL/TIM4_CH1/USART1_TX/CAN2_TX
93 PB7/I2C1_SDA/TIM4_CH2/USART1_RX
95 PB8/TIM4_CH3/ETH_MII_TXD3/I2C1_SCL/CAN1_RX
96 PB9/TIM4_CH4/I2C1_SDA/CAN1_TX
47 PB10/I2C2_SCL/USART3_TX/ETH_MII_RX_ER/TIM2_CH3
48 PB11/I2C2_SDA/USART3_RX/ETH_MII_TX_EN/ETH_RMII_TX_EN/TIM2_CH4
51 PB12/SPI2_NSS/I2S2_WS/I2C2_SMBA/USART3_CK/TIM1_BKIN/CAN2_RX/ETH_MII_TXD0/ETH_RMII_TXD0
52 PB13/SPI2_SCK/I2S2_CK/USART3_CTS/TIM1_CH1N/CAN2_TX/ETH_MII_TXD1/ETH_RMII_TXD1
53 PB14/SPI2_MISO/TIM1_CH2N/USART3_RTS
54 PB15/SPI2_MOSI/I2S2_SD/TIM1_CH3N
14 NRST
94 BOOT0
12 OSC_IN
13 OSC_OUT
NC 73
9 PC15-OSC32_OUT
8 PC14-OSC32_IN
7 PC13-TAMPER-RTC
80 PC12/UART5_TX/USART3_CK/SPI3_MOSI
79 PC11/UART4_RX/USART3_RX/SPI3_MISO
78 PC10/UART4_TX/USART3_TX/SPI3_SCK
66 PC9/TIM3_CH4
65 PC8/TIM3_CH3
64 PC7/I2S3_MCK/TIM3_CH2
63 PC6/I2S2_MCK/TIM3_CH1
34 PC5/ADC12_IN15/ETH_MII_RXD1/ETH_RMII_RXD1
33 PC4/ADC12_IN14/ETH_MII_RXD0/ETH_RMII_RXD0
18 PC3/ADC12_IN13/ETH_MII_TX_CLK
17 PC2/ADC12_IN12/ETH_MII_TXD2
16 PC1/ADC12_IN11/ETH_MDC
15 PC0/ADC12_IN10
62 PD15/TIM4_CH4
61 PD14/TIM4_CH3
60 PD13/TIM4_CH2
59 PD12/TIM4_CH1/USART3_RTS/ETH_MII_RX_D3
58 PD11/USART3_CTS/ETH_MII_RX_D2
57 PD10/USART3_CK/ETH_MII_RX_D1
56 PD9/USART3_RX/ETH_MII_RX_D0
55 PD8/USART3_TX/ETH_MII_RX_DV
88 PD7/USART2_CK
87 PD6/USART2_RX
86 PD5/USART2_TX
85 PD4/USART2_RTS
84 PD3/USART2_CTS
83 PD2/TIM3_ETR/UART5_RX
82 PD1/OSC_OUT/CAN1_TX
81 PD0/OSC_IN/CAN1_RX
46 PE15/TIM1_BKIN
45 PE14/TIM1_CH4
44 PE13/TIM1_CH3
43 PE12/TIM1_CH3N
42 PE11/TIM1_CH2
41 PE10/TIM1_CH2N
40 PE9/TIM1_CH1
39 PE8/TIM1_CH1N
38 PE7/TIM1_ETR
5 PE6/TRACED3
4 PE5/TRACED2
3 PE4/TRACED1
2 PE3/TRACED0
1 PE2/TRACECK
98 PE1
97 PE0/TIM4_ETR
CS_11
CS_10
CS_9
CS_8
CS_7
CS_6
CS_5
CS_4
CS_3
CS_2
CS_1
CS_24
CS_23
CS_22
CS_21
CS_20
CS_19
CS_18
CS_17
CS_16
DBG_RXD
DBG_TXD
CS_15
CS_14
CS_13
CS_12
R169 0Ω
R171 0Ω
CP2102_VDD
dava sig che mi e vkl usb
CP2102_RST# open-drain
FAULT5V
FAULT3V3
PROTECTION_EN
CS_34
CS_33
CS_32
CS_31
CS_30
CS_29
CS_28
CS_27
CS_26
CS_25
CL = 9pF
CX1 = CX2 = 2(9-4) = 2*5 = 10pF
C241 10pF
U52 32.768kHz
C240 10pF
GND
20 VREF-
21 VREF+
22 VDDA
19 VSSA
6 VBAT
50 VDD_1 (100n)
75 VDD_2 (100n)
100 VDD_3 (4u7//100n)
28 VDD_4 (100n)
11 VDD_5 (100n)
49 VSS_1
74 VSS_2
99 VSS_3
27 VSS_4
10 VSS_5
+3V3MCU
C312 100nF
C313 100nF
C314 100nF
C315 100nF
C316 100nF
C235 4.7uF
C237 10uF
C317 100nF
R166 10Ω
DEBUG:
+3V3MCU
H4
BOOT0
PZ254V-11-03P
+3V3MCU U54
DBG_TXD
DBG_RXD
STM_RST
SWDIO
SWCLK
DEBUG JP

Connectors to top board CHECK IF THEY CONNECT AS THEY SHOULD