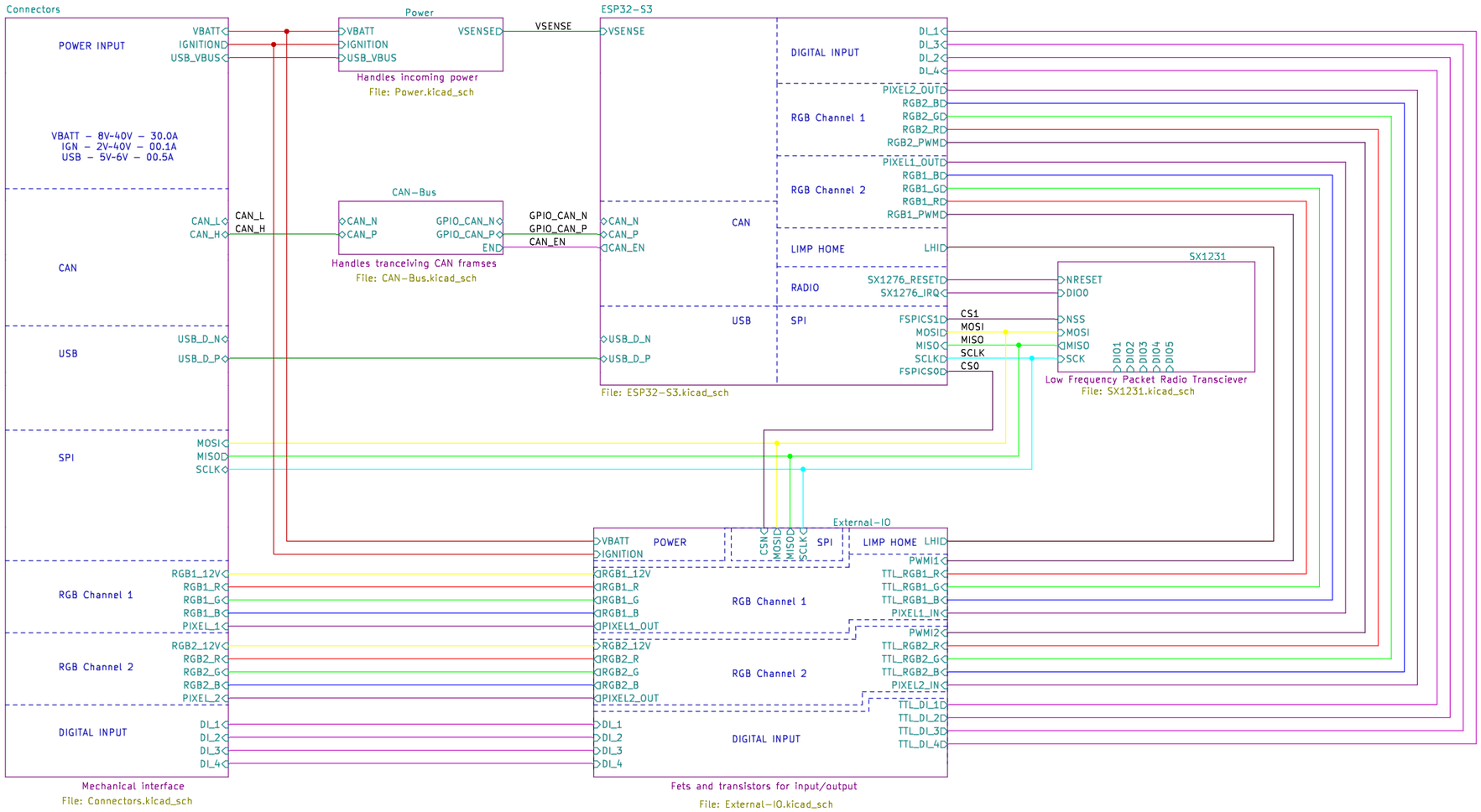


https://github.com/miata-bot/can-link

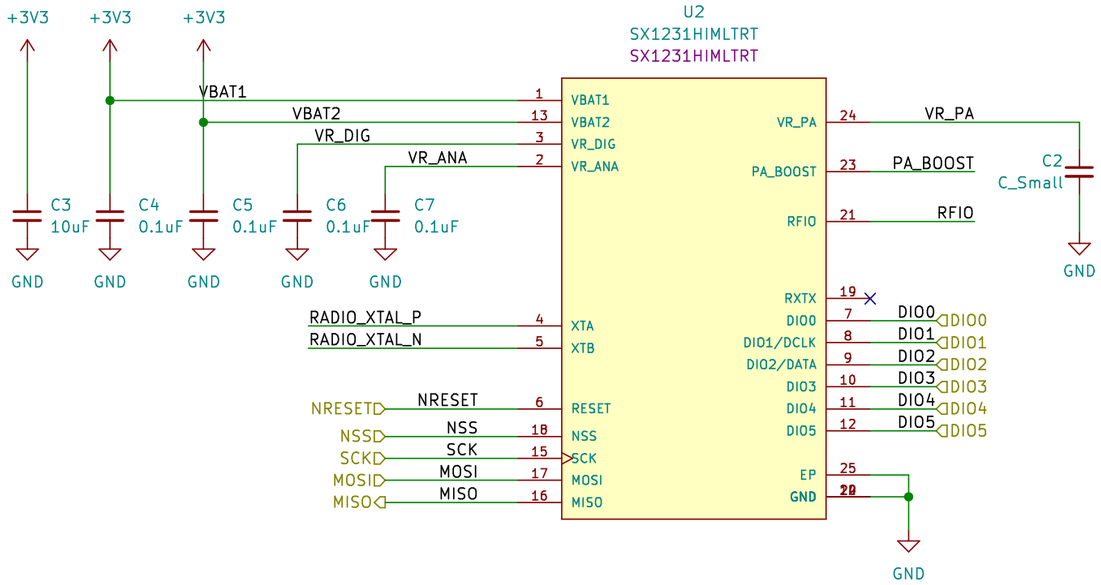
cone.codes

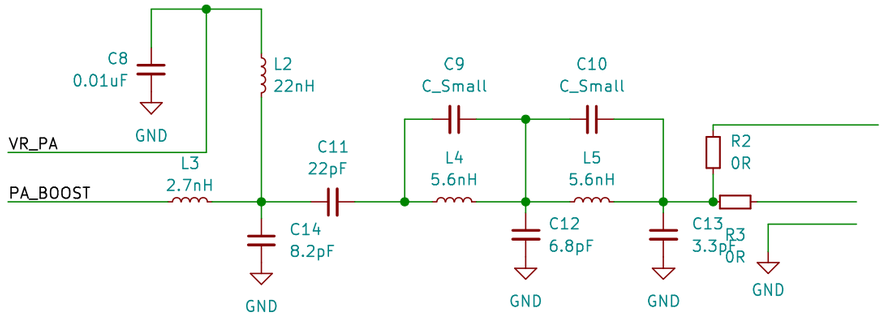
Sheet: /

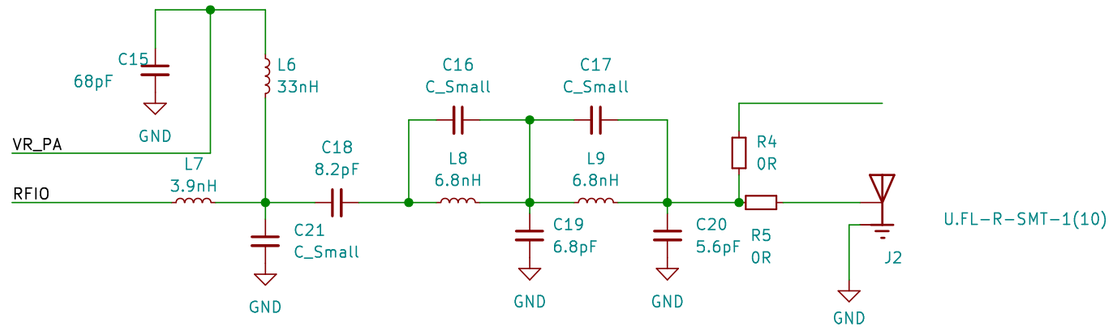
File: RGB-controller.kicad_sch

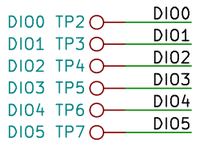
Title: CAN RGB Controller

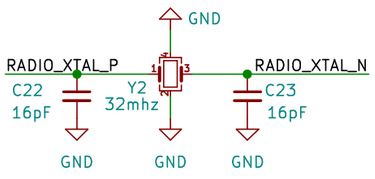
Size: A3	Date: 2022-05-30	**Rev: B**
KiCad E.D.A. kicad (6.0.2)		Id: 1/7











CX1 = CX2 = 2(10pF – 2pF) = 16pF

https://github.com/miata-bot/can-link

cone.codes

Sheet: /SX1231/

File: SX1231.kicad_sch

Title: CAN RGB Controller

Size: A4	Date: 2022-05-30	**Rev: B**
KiCad E.D.A. kicad (6.0.2)		Id: 3/7

U3
ESP32-S3R2
ESP32-S3

+3V3
R6
10k
CHIP_PU
LNA_IN
XTAL_P
XTAL_N
RTC_XTAL_P
RTC_XTAL_N
MTCK
MTDO
MTDI
MTMS
U0RXD
U0TXD
R7499R
SPIHD
SPIWP
SPICS0
SPICLK
SPIQ
SPID

VDDA1 55 VDDA
VDDA2 56 VDDA
VDD_SPI 29 VDDSPI
VDD3P3 3 VDD3V3
VDD3P3_CPU 46 VDDCPU
VDD3P3_RTC 20 VDDRTC +3V3
C32 0.1uF
C31 0.1uF
+3V3
C24 0.1uF
C25 1uF
C26 10uF
C27 0.1uF
C28 10uF
C29 1uF
C30 10uF
+3V3
GND

CHIP_PU 4
LNA_IN 1
XTAL_P 54
XTAL_N 53
XTAL_32K_P 21
XTAL_32K_N 22
MTCK 44
MTDO 45
MTDI 47
MTMS 48
U0RXD 50
U0TXD 49
SPICLK_P 37
SPICLK_N 36
SPIHD 30
SPIWP 31
SPICS0 32
SPICS1 28
SPICLK 33
SPIQ 34
SPID 35

GPIO0 5 FSPICS1
GPIO1 6 SX1276_RESET
GPIO2 7 SX1276_IRQ
GPIO3 8 GPIO3 RGB1_PWM
GPIO4 9 GPIO4 RGB1_R
GPIO5 10 GPIO5 RGB1_G
GPIO6 11 GPIO6 RGB1_B
GPIO7 12 GPIO7 RGB2_PWM
GPIO8 13 GPIO8 RGB2_R
GPIO9 14 GPIO9 RGB2_G
GPIO10 15 GPIO10 RGB2_B
GPIO11 16 GPIO11 PIXEL1_OUT
GPIO12 17 GPIO12 PIXEL2_OUT
GPIO13 18 GPIO38 VSENSE
GPIO14 19 GPIO14 LHI
GPIO17 23 GPIO17 CAN_P
GPIO18 24 GPIO_18 CAN_N
GPIO19 25 GPIO19 R8 0R USB_D_N USB_D_N
GPIO20 26 GPIO20 R9 0R USB_D_P USB_D_P
GPIO21 27 GPIO21 CAN_EN
GPIO33 38 GPIO13 DI_4
GPIO34 39 GPIO34 FSPICS0
GPIO35 40 GPIO35 FSPID MOSI SPID = MOSI
GPIO36 41 GPIO36 FSPICLK SCLK SPIQ = MISO
GPIO37 42 GPIO37 FSPIQ MISO
GPIO38 43 GPIO38 DI_1
GPIO45 51 GPIO45 DI_2
GPIO46 52 GPIO46 DI_3
GND 57 GND

PROGRAMMING AND DEBUG CONNECTOR

CONSOLE
J3
1 GND
2 RXD
3 TXD
4
5 CTS
6 RTS

RF ANTENNA WiFi/BT

only r22 or r28 should be installed at a time

LNA_IN
L10 2nH
C33 4.6pF
C34 4pF
RF_ANT
L11 2.2nH
C35 2pF
R10 0R
RF_ANT_CHIP
R11 0R
AE2
SRCW004
GND

RF_ANT
R13 0R
RF_ANT_EXT
J4
U.FL-R-SMT-1(10)
GND

FLASH

VDDSPI
C36 0.1uF
R12 100k
U4
W25Q128JVS
SPICS0 1 CS
SPICLK 6 CLK
8 VCC
4 GND
DI(IO0) 5 SPID
DO(IO1) 2 SPIQ
IO2 3 SPIWP
IO3 7 SPIHD
GND

CLOCKS

Y3
XTAL_P
GND 40MHZ
XTAL_N
C38 16pF
C39 16pF
GND
CX1 = CX2 = 2(10pF - 2pF) = 16pF

BOOTSTRAP PINS

CHIP_PU
SW2 SW_Push
C37 1uF
GND

GPIO0
R14 10k
SW3 SW_Push
R15 10k
GPIO0_BOOTSTRAP
GND

GPIO45
R16 10k
GPIO45_BOOTSTRAP
GND

GPIO46
GPIO46_BOOTSTRAP
GND

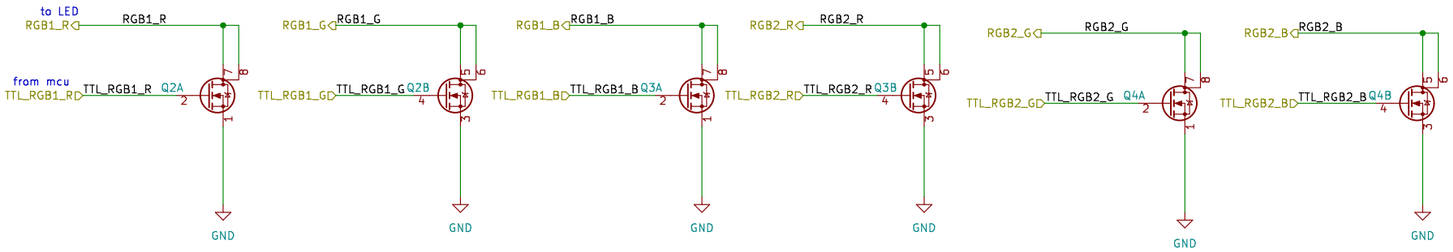
https://github.com/miata-bot/can-link
cone.codes

Sheet: /ESP32-S3/
File: ESP32-S3.kicad_sch

Title: CAN RGB Controller

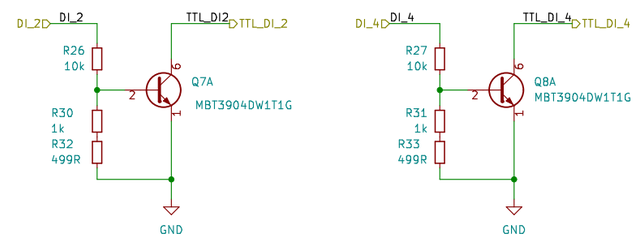
Size: A4	Date: 2022-05-30	**Rev: B**
KiCad E.D.A. kicad (6.0.2)		Id: 4/7

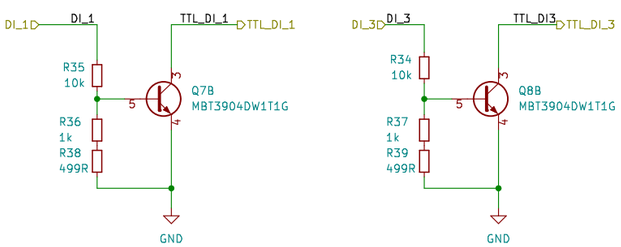
RGB PWM LED CONTROL



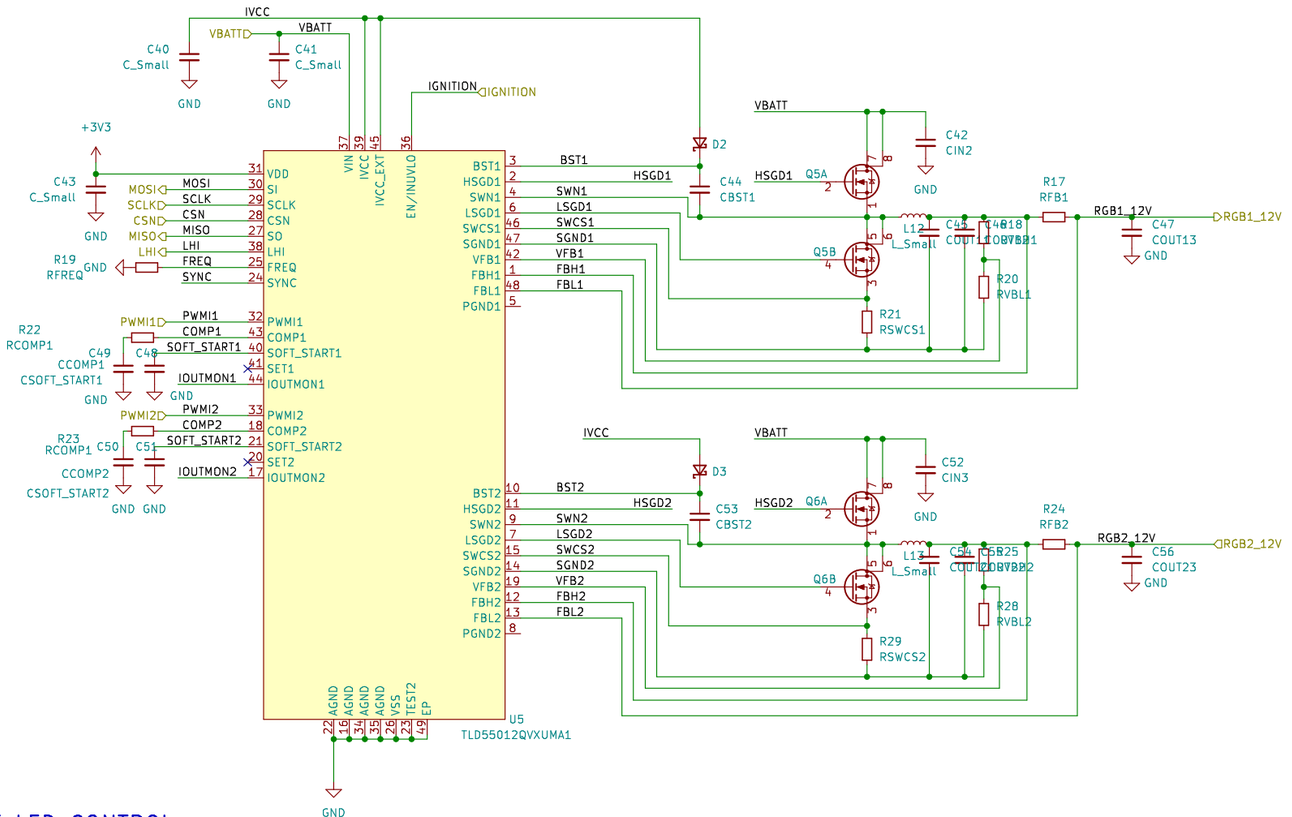
N-Channel low side Mosfets
driven at TTL levels, drivers might be necessary

DIGITAL INPUT





INDIVIDUALLY ADDRESSABLE LED CONTROL



https://github.com/miata-bot/can-link

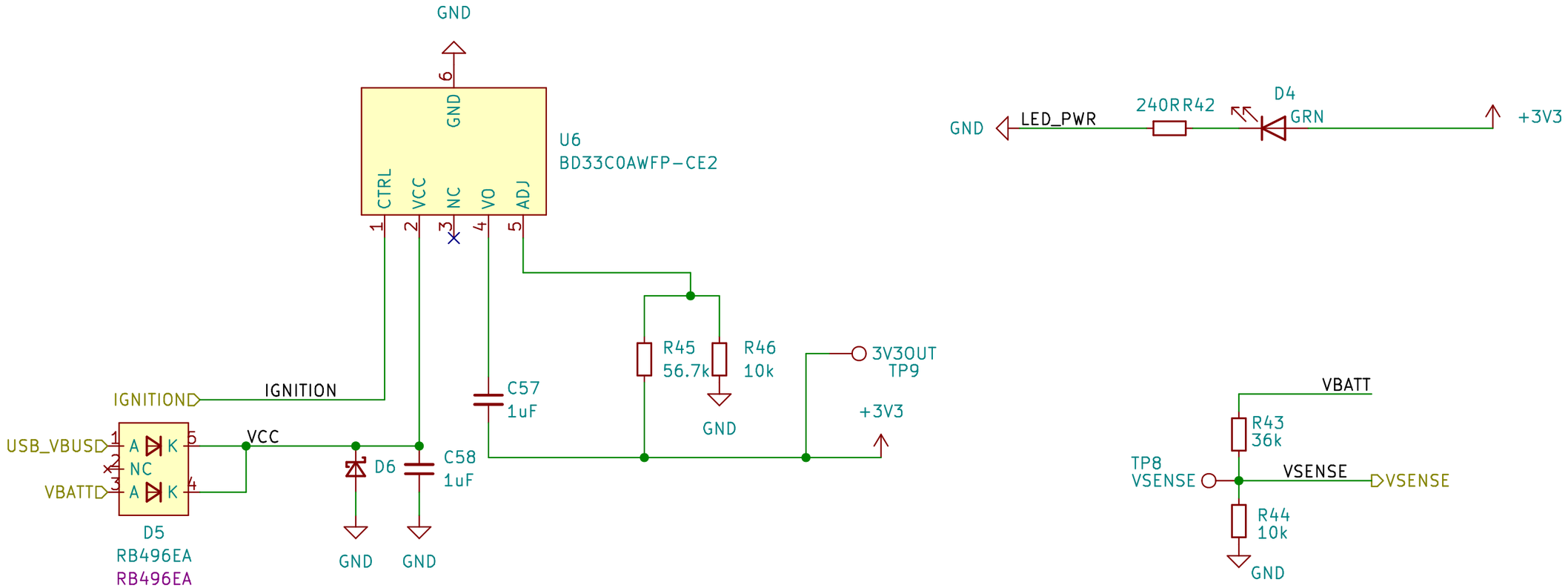
cone.codes

Sheet: /External-IO/
File: External-IO.kicad_sch

Title: CAN RGB Controller

Size: A3	Date: 2022-05-30	**Rev: B**
KiCad E.D.A. kicad (6.0.2)		Id: 6/7

BUCK CONVERTER



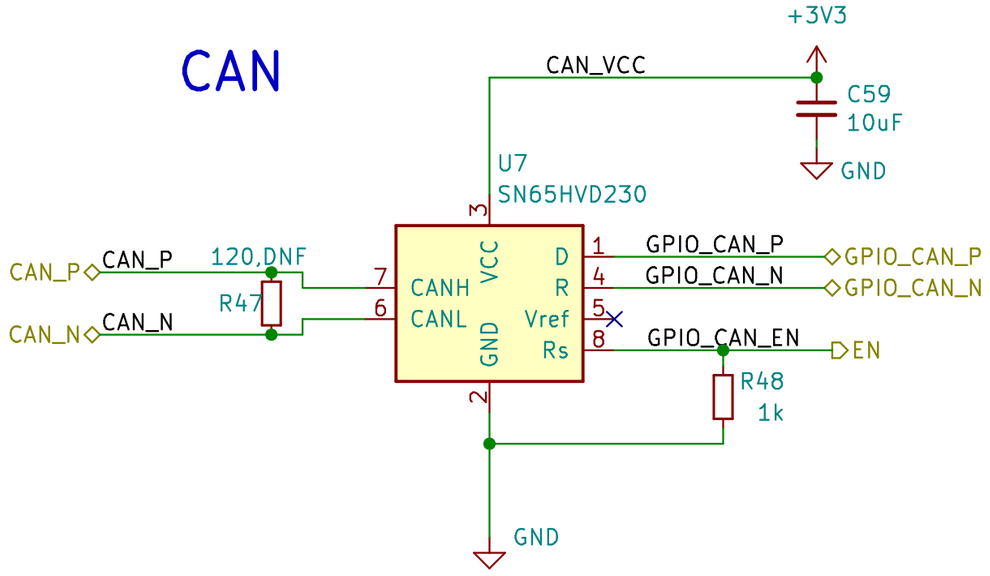
https://github.com/miata-bot/can-link

cone.codes

Sheet: /Power/
File: Power.kicad_sch

Title: CAN RGB Controller

Size: A5	Date: 2022-05-30	**Rev: B**
KiCad E.D.A. kicad (6.0.2)		Id: 8/7



https://github.com/miata-bot/can-link

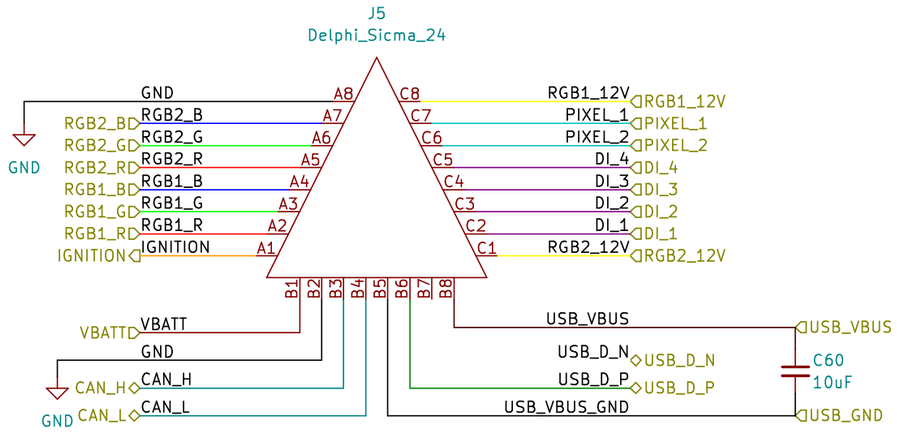
cone.codes

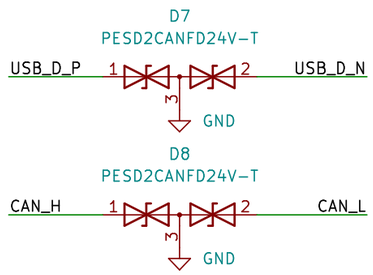
Sheet: /CAN-Bus/
File: CAN-Bus.kicad_sch

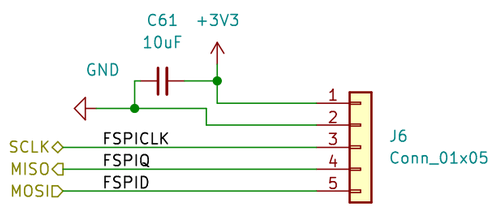
Title: CAN RGB Controller

Size: A5	Date: 2022-05-30	**Rev: B**
KiCad E.D.A. kicad (6.0.2)		Id: 9/7

CONNECTORS







https://github.com/miata-bot/can-link

cone.codes

Sheet: /Connectors/
File: Connectors.kicad_sch

Title: CAN RGB Controller

Size: A4	Date: 2022-05-30	**Rev: B**
KiCad E.D.A. kicad (6.0.2)		Id: 10/7