CAN BUS Power Rail

Never powered Down so that
emergency signal keep blinking
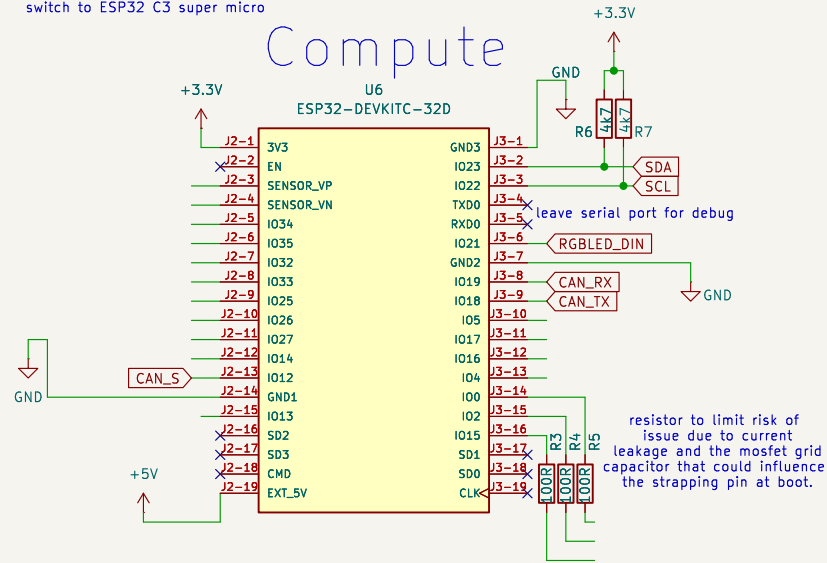
VBUS

Conn_01x04 CANH
CAN IN J1 CANL

Conn_01x04 CANH
CAN OUT J2 CANL

GND

+3.3V
GND

+12V
GND

5A MAX
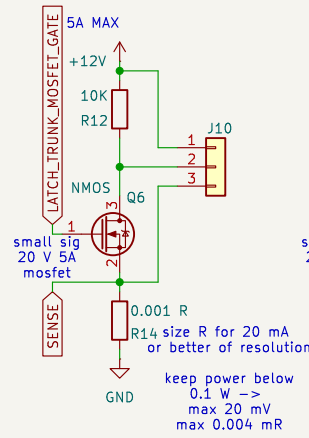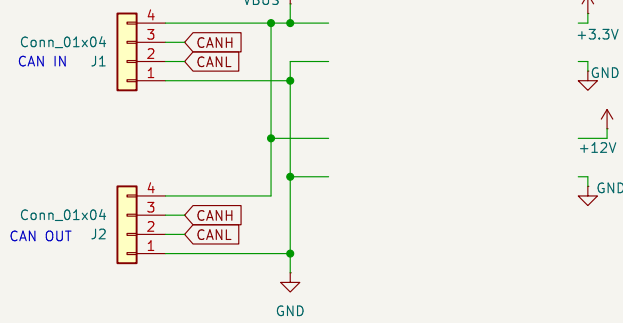
LATCH_TRUNK_MOSFET_GATE +12V 10K R12 J10
NMOS Q6
small sig 20 V 5A mosfet
SENSE
0.001 R R14 size R for 20 mA or better of resolution
GND
keep power below 0.1 W --> max 20 mV max 0.004 mR

5A MAX
LATCH_TRUNK_MOSFET_GATE +12V 10K R11 J9
NMOS Q5
small sig 20 V 5A mosfet
SENSE
0.001 R R15
GND

5A MAX
LATCH_TRUNK_MOSFET_GATE +12V 10K R10 J8
NMOS Q4
small sig 20 V 5A mosfet
SENSE
0.001 R R16
GND

5A MAX
LATCH_TRUNK_MOSFET_GATE +12V 10K R9 J7
NMOS Q3
small sig 20 V 5A mosfet
SENSE
0.001 R R17
GND

5A MAX
LATCH_TRUNK_MOSFET_GATE +12V 10K R8 J6
NMOS Q2
small sig 20 V 5A mosfet
SENSE
0.001 R R19
GND

5A MAX
LATCH_TRUNK_MOSFET_GATE +12V 10K R2 J5
NMOS Q1
small sig 20 V 5A mosfet
SENSE
0.001 R R20
GND

5A MAX
LATCH_TRUNK_MOSFET_GATE +12V 10K R1 J4
NMOS Q8
small sig 20 V 5A mosfet
SENSE
0.001 R R21
GND

5A MAX
LATCH_TRUNK_MOSFET_GATE +12V 10K R13 J11
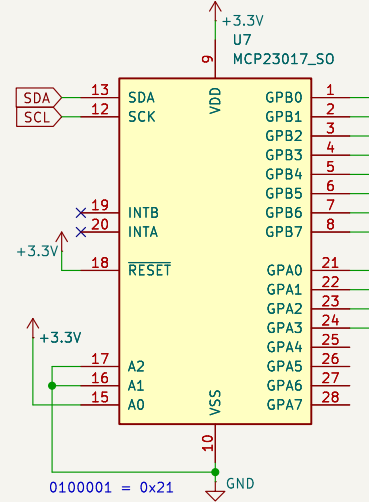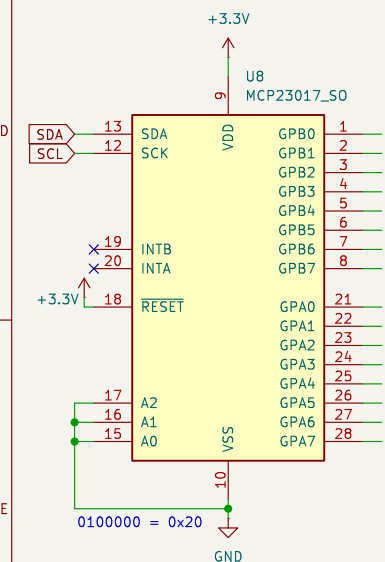NMOS Q7
small sig 20 V 5A mosfet
SENSE
0.001 R R22
GND

add ADC here with 8 channel

Compute

3v3 provided by internal LDO of ESP32 devboard

switch to ESP32 C3 super micro

+3.3V
GND
+3.3V

U6
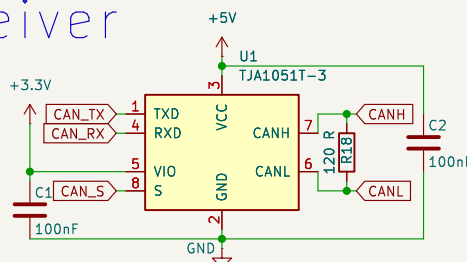ESP32-DEVKITC-32D
R6 4k7 R7

J2-1 3V3 GND3 J3-1
J2-2 EN IO23 J3-2 SDA
J2-3 SENSOR_VP IO22 J3-3 SCL
J2-4 SENSOR_VN TXD0 J3-4 leave serial port for debug
J2-5 IO34 RXD0 J3-5
J2-6 IO35 IO21 J3-6 RGBLED_DIN
J2-7 IO32 GND2 J3-7 GND
J2-8 IO33 IO19 J3-8 CAN_RX
J2-9 IO25 IO18 J3-9 CAN_TX
J2-10 IO26 IO5 J3-10
J2-11 IO27 IO17 J3-11
J2-12 IO14 IO16 J3-12
J2-13 IO12 IO4 J3-13
GND CAN_S J2-14 GND1 IO0 J3-14
J2-15 IO13 IO2 J3-15
J2-16 SD2 IO15 J3-16
J2-17 SD3 SD1 J3-17
J2-18 CMD SD0 J3-18 R3 R4 R5
+5V J2-19 EXT_5V CLK J3-19

resistor to limit risk of issue due to current leakage and the mosfet grid capacitor that could influence the strapping pin at boot.

proximity sensor

+3.3V
U8
MCP23017_SO

SDA 13 SDA VDD 9 GPB0 1
SCL 12 SCK GPB1 2
GPB2 3
GPB3 4
GPB4 5
GPB5 6
INTB 19 INTB GPB6 7
INTA 20 INTA GPB7 8
+3.3V 18 RESET GPA0 21
GPA1 22
GPA2 23
GPA3 24
GPA4 25
A2 17 A2 GPA5 26
A1 16 A1 GPA6 27
A0 15 A0 GPA7 28
VSS 10

0100000 = 0x20
GND

+3.3V
U7
MCP23017_SO

SDA 13 SDA VDD 9 GPB0 1
SCL 12 SCK GPB1 2
GPB2 3
GPB3 4
GPB4 5
GPB5 6
INTB 19 INTB GPB6 7
+3.3V 20 INTA GPB7 8
+3.3V 18 RESET GPA0 21
GPA1 22
GPA2 23
GPA3 24
GPA4 25
A2 17 A2 GPA5 26
A1 16 A1 GPA6 27
A0 15 A0 GPA7 28
VSS 10

0100001 = 0x21
GND

daylight sensor

RGB strip

+5V

RGBLED_DIN
D4 US1M diode --> little hack to drive the WS2812 using 3v3 logic
D5 WS2812B
DIN 4 VDD DOUT 2
VSS 1 J3
Conn_01x03

GND

https://hackaday.com/2017/01/20/cheating-at-5v-ws2812-control-to-use-a-3-3v-data-line/

CAN Transceiver

+5V
U1
TJA1051T-3

+3.3V
CAN_TX 1 TXD VCC 3
CAN_RX 4 RXD CANH 7 CANH
VIO 5 VIO CANL 6 CANL
CAN_S 8 S GND 2
R18 120 R
C2 100nF
C1 100nF

GND

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Date:
Rev:
KiCad E.D.A. 9.0.6
Id: 1/1