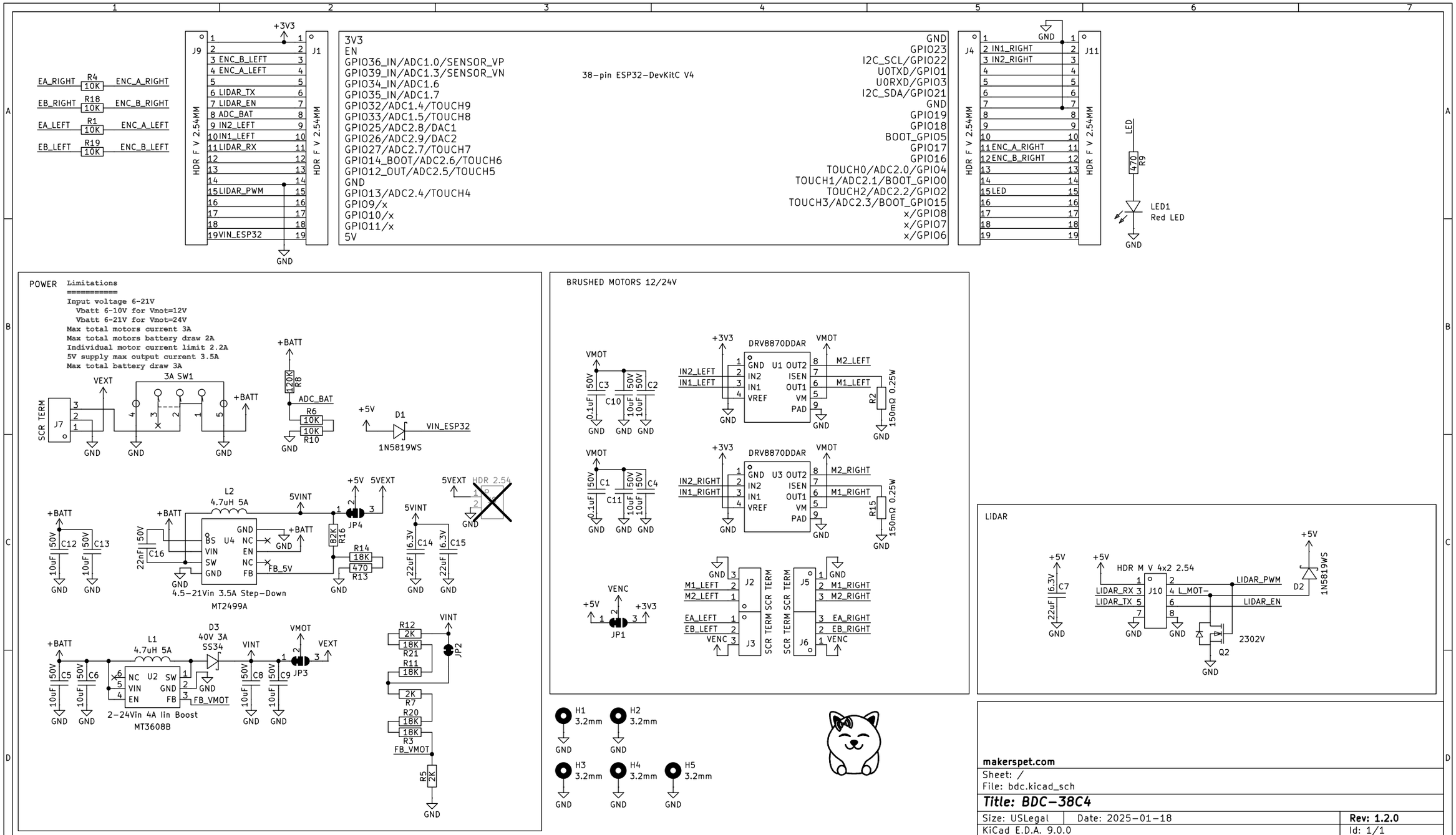
EA_RIGHT R4 10K ENC_A_RIGHT
EB_RIGHT R18 10K ENC_B_RIGHT
EA_LEFT R1 10K ENC_A_LEFT
EB_LEFT R19 10K ENC_B_LEFT
J9 HDR F V 2.54MM
1 +3V3
2
3 ENC_B_LEFT
4 ENC_A_LEFT
5
6 LIDAR_TX
7 LIDAR_EN
8 ADC_BAT
9 IN2_LEFT
10 IN1_LEFT
11 LIDAR_RX
12
13
14
15 LIDAR_PWM
16
17
18
19 VIN_ESP32
GND
J1 HDR F V 2.54MM
3V3
EN
GPIO36_IN/ADC1.0/SENSOR_VP
GPIO39_IN/ADC1.3/SENSOR_VN
GPIO34_IN/ADC1.6
GPIO35_IN/ADC1.7
GPIO32/ADC1.4/TOUCH9
GPIO33/ADC1.5/TOUCH8
GPIO25/ADC2.8/DAC1
GPIO26/ADC2.9/DAC2
GPIO27/ADC2.7/TOUCH7
GPIO14_BOOT/ADC2.6/TOUCH6
GPIO12_OUT/ADC2.5/TOUCH5
GND
GPIO13/ADC2.4/TOUCH4
GPIO9/x
GPIO10/x
GPIO11/x
5V
38-pin ESP32-DevKitC V4
GND
GPIO23
I2C_SCL/GPIO22
U0TXD/GPIO1
U0RXD/GPIO3
I2C_SDA/GPIO21
GND
GPIO19
GPIO18
BOOT_GPIO5
GPIO17
GPIO16
TOUCH0/ADC2.0/GPIO4
TOUCH1/ADC2.1/BOOT_GPIO0
TOUCH2/ADC2.2/GPIO2
TOUCH3/ADC2.3/BOOT_GPIO15
x/GPIO8
x/GPIO7
x/GPIO6
J4 HDR F V 2.54MM
1 GND
2 IN1_RIGHT
3 IN2_RIGHT
4
5
6
7
8
9
10
11 ENC_A_RIGHT
12 ENC_B_RIGHT
13
14
15 LED
16
17
18
19
J11 HDR F V 2.54MM
LED
470 R9
LED1
Red LED
GND
POWER
Limitations
==========
Input voltage 6-21V
Vbatt 6-10V for Vmot=12V
Vbatt 6-21V for Vmot=24V
Max total motors current 3A
Max total motors battery draw 2A
Individual motor current limit 2.2A
5V supply max output current 3.5A
Max total battery draw 3A
VEXT
3A SW1
+BATT
SCR TERM
J7
GND
+BATT
120K R8
ADC_BAT
R6 10K
R10 10K
GND
+5V
D1
VIN_ESP32
1N5819WS
+BATT
C12 50V 10uF
C13 50V 10uF
GND
L2
4.7uH 5A
5VINT
+BATT
C16 50V 22nF
U4
BS
VIN
SW
GND
GND
NC
EN
NC
FB
+BATT
GND
FB_5V
82K R16
R14 18K
R13 470
GND
4.5-21Vin 3.5A Step-Down
MT2499A
+5V 5VEXT
JP4
5VEXT HDR 2.54
GND
5VINT
C14 6.3V 22uF
C15 6.3V 22uF
GND
+BATT
C5 50V 10uF
C6 50V 10uF
L1
4.7uH 5A
U2
NC
VIN
EN
SW
GND
FB
GND
FB_VMOT
2-24Vin 4A lin Boost
MT3608B
D3
40V 3A
SS34
VINT
VMOT
VEXT
JP3
C8 50V 10uF
C9 50V 10uF
GND
R12 2K
R21 18K
R11 18K
VINT
JP2
R7 2K
R20 18K
R3 18K
FB_VMOT
R5 2K
GND
BRUSHED MOTORS 12/24V
VMOT
C3 50V 0.1uF
C10 50V 10uF
C2 50V 10uF
GND
+3V3
DRV8870DDAR
IN2_LEFT
IN1_LEFT
GND
IN2
IN1
VREF
U1
OUT2
ISEN
OUT1
VM
PAD
M2_LEFT
M1_LEFT
R2 150mΩ 0.25W
VMOT
C1 50V 0.1uF
C11 50V 10uF
C4 50V 10uF
IN2_RIGHT
IN1_RIGHT
U3
M2_RIGHT
M1_RIGHT
R15 150mΩ 0.25W
VENC
+5V
JP1
+3V3
GND
M1_LEFT
M2_LEFT
EA_LEFT
EB_LEFT
VENC
J2
J3
SCR TERM SCR TERM
J5
J6
M1_RIGHT
M2_RIGHT
EA_RIGHT
EB_RIGHT
VENC
H1 3.2mm
H2 3.2mm
H3 3.2mm
H4 3.2mm
H5 3.2mm
LiDAR
+5V
C7 6.3V 22uF
HDR M V 4x2 2.54
J10
LIDAR_RX 3
LIDAR_TX 5
L_MOT-
LIDAR_PWM
LIDAR_EN
D2
1N5819WS
2302V
Q2
GND
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Size: USLegal
Date: 2025-01-18
Rev: 1.2.0
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Id: 1/1