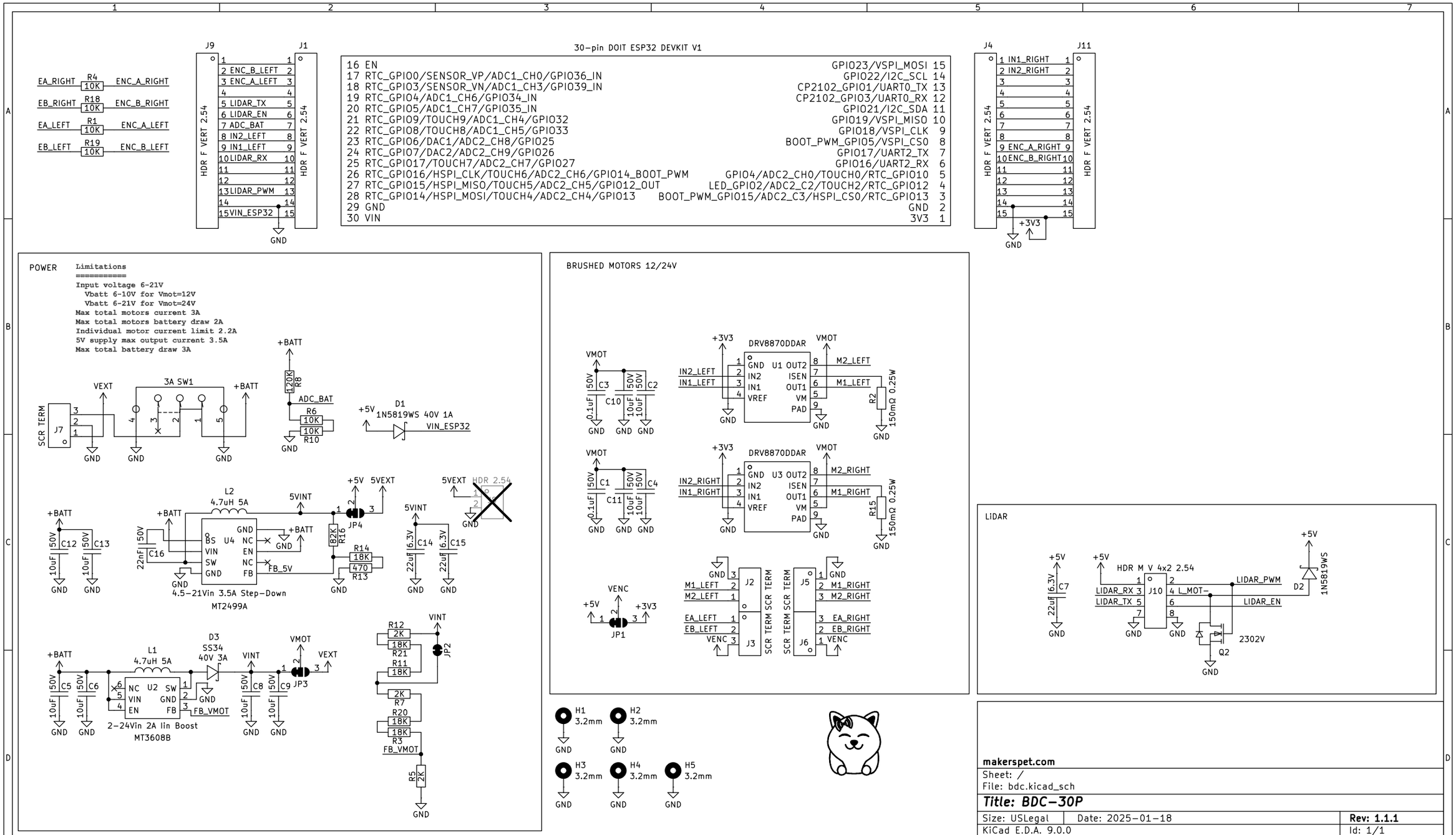
EA_RIGHT R4 10K ENC_A_RIGHT
EB_RIGHT R18 10K ENC_B_RIGHT
EA_LEFT R1 10K ENC_A_LEFT
EB_LEFT R19 10K ENC_B_LEFT
J9 HDR F VERT 2.54
1
2 ENC_B_LEFT
3 ENC_A_LEFT
4
5 LIDAR_TX
6 LIDAR_EN
7 ADC_BAT
8 IN2_LEFT
9 IN1_LEFT
10 LIDAR_RX
11
12
13 LIDAR_PWM
14
15 VIN_ESP32
GND
J1 HDR F VERT 2.54
30-pin DOIT ESP32 DEVKIT V1
16 EN
17 RTC_GPIO0/SENSOR_VP/ADC1_CH0/GPIO36_IN
18 RTC_GPIO3/SENSOR_VN/ADC1_CH3/GPIO39_IN
19 RTC_GPIO4/ADC1_CH6/GPIO34_IN
20 RTC_GPIO5/ADC1_CH7/GPIO35_IN
21 RTC_GPIO9/TOUCH9/ADC1_CH4/GPIO32
22 RTC_GPIO8/TOUCH8/ADC1_CH5/GPIO33
23 RTC_GPIO6/DAC1/ADC2_CH8/GPIO25
24 RTC_GPIO7/DAC2/ADC2_CH9/GPIO26
25 RTC_GPIO17/TOUCH7/ADC2_CH7/GPIO27
26 RTC_GPIO16/HSPI_CLK/TOUCH6/ADC2_CH6/GPIO14_BOOT_PWM
27 RTC_GPIO15/HSPI_MISO/TOUCH5/ADC2_CH5/GPIO12_OUT
28 RTC_GPIO14/HSPI_MOSI/TOUCH4/ADC2_CH4/GPIO13
29 GND
30 VIN
GPIO23/VSPI_MOSI 15
GPIO22/I2C_SCL 14
CP2102_GPIO1/UART0_TX 13
CP2102_GPIO3/UART0_RX 12
GPIO21/I2C_SDA 11
GPIO19/VSPI_MISO 10
GPIO18/VSPI_CLK 9
BOOT_PWM_GPIO5/VSPI_CS0 8
GPIO17/UART2_TX 7
GPIO16/UART2_RX 6
GPIO4/ADC2_CH0/TOUCH0/RTC_GPIO10 5
LED_GPIO2/ADC2_C2/TOUCH2/RTC_GPIO12 4
BOOT_PWM_GPIO15/ADC2_C3/HSPI_CS0/RTC_GPIO13 3
GND 2
3V3 1
J4 HDR F VERT 2.54
1 IN1_RIGHT
2 IN2_RIGHT
3
4
5
6
7
8
9 ENC_A_RIGHT
10 ENC_B_RIGHT
11
12
13
14
15
+3V3
GND
J11 HDR F VERT 2.54
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
SCR TERM J7
VEXT
3A SW1
+BATT
GND
+BATT
120K R8
ADC_BAT
R6 10K
R10 10K
GND
+5V D1 1N5819WS 40V 1A VIN_ESP32
C12 10uF 50V
C13 10uF 50V
+BATT
C16 22nF 50V
L2 4.7uH 5A
5VINT
+5V 5VEXT
JP4
5VEXT HDR 2.54
U4 BS VIN SW GND NC EN NC FB
FB_5V
R16 82K
R14 18K
R13 470
4.5-21Vin 3.5A Step-Down
MT2499A
5VINT
C14 22uF 6.3V
C15 22uF 6.3V
L1 4.7uH 5A
D3 SS34 40V 3A
VINT
VMOT
VEXT
JP3
C5 10uF 50V
C6 10uF 50V
U2 NC VIN EN SW GND FB
FB_VMOT
2-24Vin 2A lin Boost
MT3608B
C8 10uF 50V
C9 10uF 50V
R12 2K
R21 18K
R11 18K
VINT
JP2
R7 2K
R20 18K
R3 18K
FB_VMOT
R5 2K
BRUSHED MOTORS 12/24V
VMOT
C3 0.1uF 50V
C10 10uF 50V
C2 10uF 50V
DRV8870DDAR
+3V3
IN2_LEFT
IN1_LEFT
U1 GND IN2 IN1 VREF OUT2 ISEN OUT1 VM PAD
M2_LEFT
M1_LEFT
R2 150mΩ 0.25W
C1 0.1uF 50V
C11 10uF 50V
C4 10uF 50V
IN2_RIGHT
IN1_RIGHT
U3 GND IN2 IN1 VREF OUT2 ISEN OUT1 VM PAD
M2_RIGHT
M1_RIGHT
R15 150mΩ 0.25W
VENC
+5V
+3V3
JP1
J2 GND M1_LEFT M2_LEFT
J3 EA_LEFT EB_LEFT VENC
SCR TERM SCR TERM
J5 GND M1_RIGHT M2_RIGHT
J6 EA_RIGHT EB_RIGHT VENC
H1 3.2mm
H2 3.2mm
H3 3.2mm
H4 3.2mm
H5 3.2mm
LiDAR
+5V
C7 22uF 6.3V
HDR M V 4x2 2.54
J10
LIDAR_RX
LIDAR_TX
LIDAR_PWM
L_MOT-
LIDAR_EN
D2 1N5819WS
Q2 2302V
makerspet.com
Sheet: /
File: bdc.kicad_sch
Title: BDC-30P
Size: USLegal
Date: 2025-01-18
Rev: 1.1.1
KiCad E.D.A. 9.0.0
Id: 1/1