

REVISION: 01_1
VARIANT: NO VARIATIONS

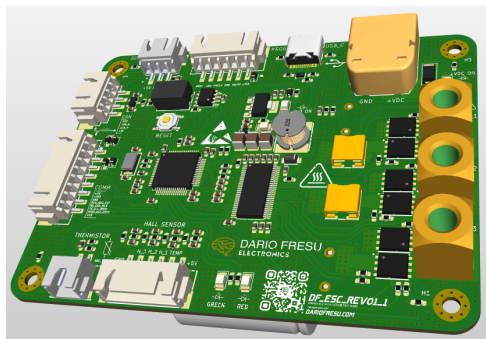
PAGE #	INDEX
1	BLOCK DIAGRAM
2	INPUT PROTECTION
3	STEP-DOWN
4	MCU
5	MOSFET DRIVER
6	MOSFETs
7	CAN
8	FILTERS
9	USB
10	MECHANICAL

RELEASED STATUS PROJECT:

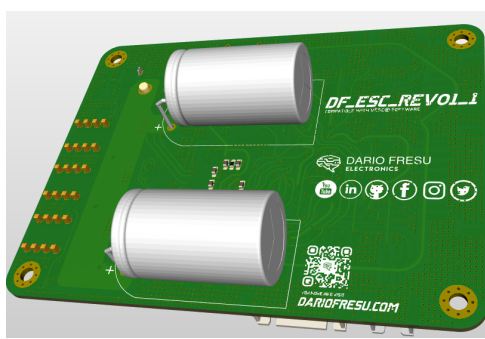
DRAFT

DATE: 2022-10-03

BOARD IMAGE FRONT

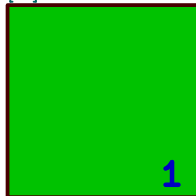


BOARD IMAGE BACK



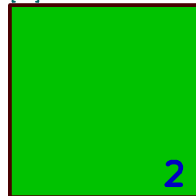
DF_ESC_rev01_1

[01] - BLOCK DIAGRAM



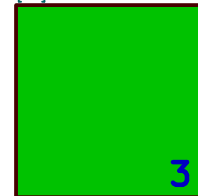
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[02] - INPUT PROTECTION



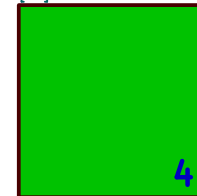
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[03] - STEP-DOWN



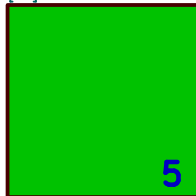
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[04] - MCU



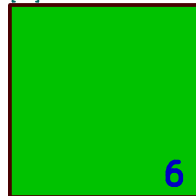
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[05] - MOSFET DRIVER



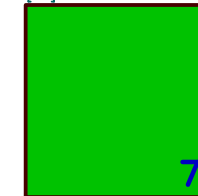
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[06] - MOSFETs



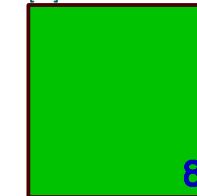
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[07] - CAN



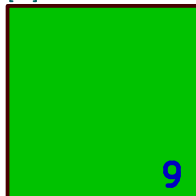
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[08] - FILTERS



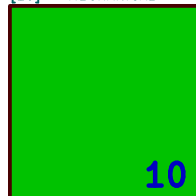
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[09] - USB



File: [09] - USB.kicad_sch

[10] - MECHANICAL



File: [10] - MECHANICAL.kicad_sch

Designer: Dario Fresu

Email: info@dariofresu.com

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Website: dariofresu.com

Company: DF Electronics

Sheet:

File: DF_ESC_rev01_1.kicad_sch

Title: DF_ESC_rev01_1

Size: A4

Date: 2022-10-03

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Rev: 01_1

Id: 1/11



[01] – BLOCK DIAGRAM

0 TO +60V

+VDC

PAGE 1

USB

PAGE 9

CAN

PAGE 7

HALL/ENCODER

PAGE 8

COM

PAGE 4

PAGE 4

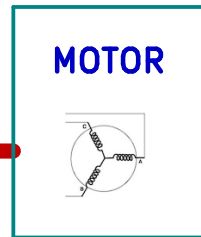
MCU

PAGE 5

MOSFET DRIVER

PAGE 6

MOSFETs



STEP-DOWN
3V3

PAGE 3

TEMP_SENSOR

PAGE 4

SERVO

PAGE 4

Designer: Dario Fresu

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Sheet: [01] – BLOCK DIAGRAM

File: [01] – BLOCK DIAGRAM.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

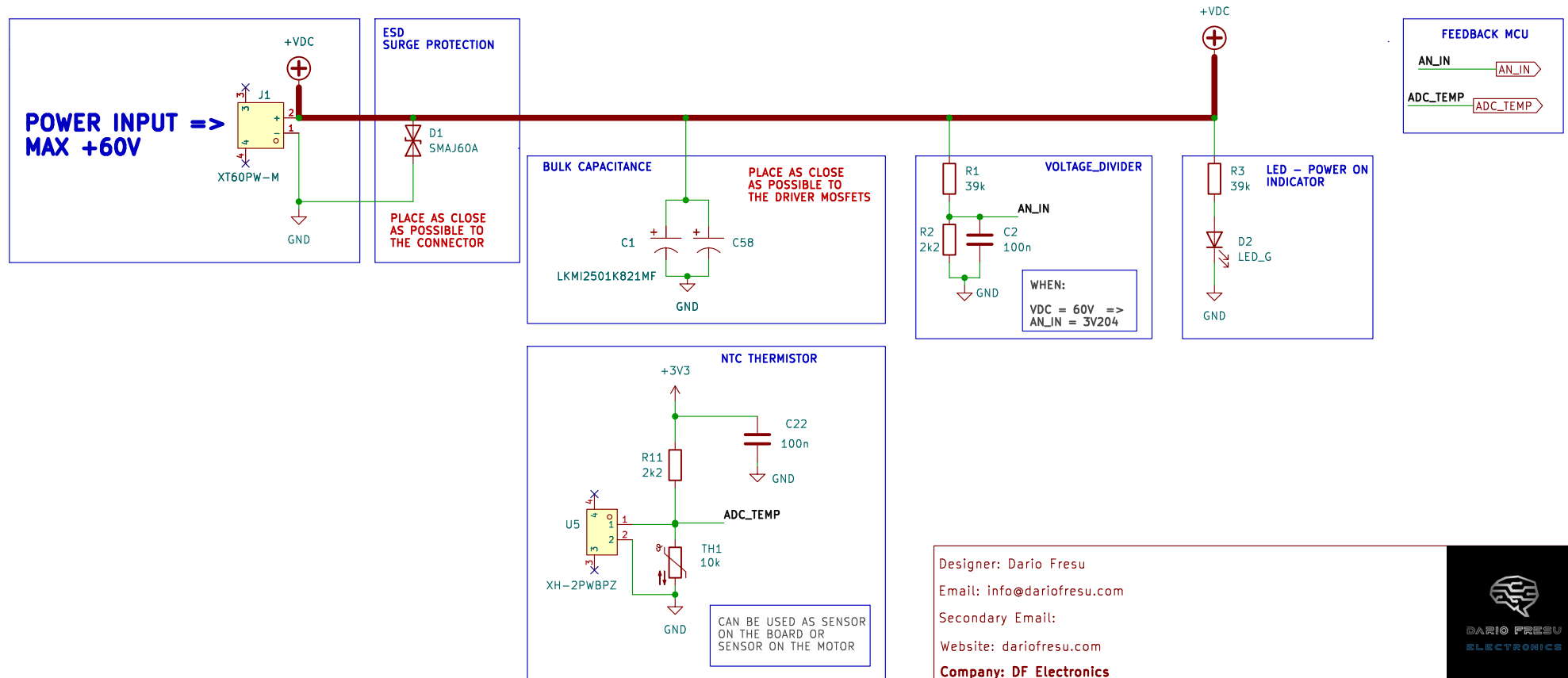
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Rev: 01_1

Id: 01/11

[02] – INPUT PROTECTION



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Sheet: [02] – INPUT PROTECTION
File: [02] – INPUT_PROTECTION.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

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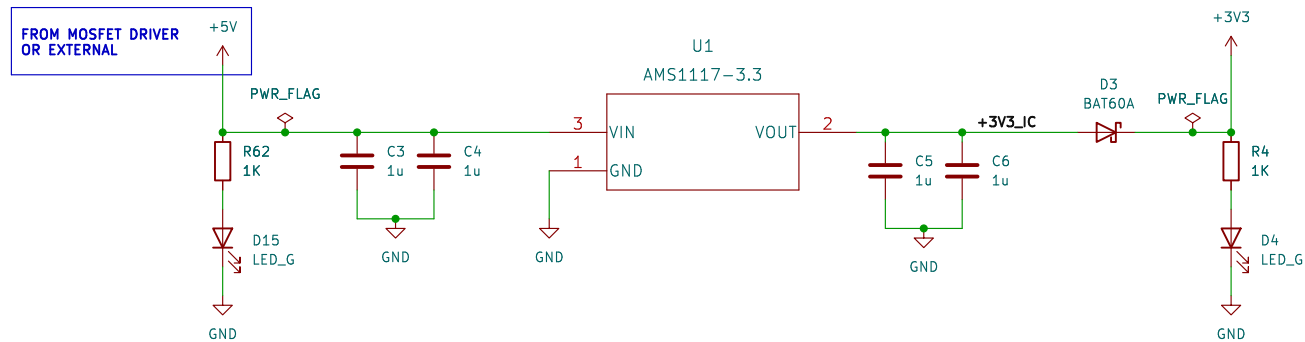
Rev: 01_1

Id: 02/11



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[03] – STEP-DOWN



Designer: Dario Fresu
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Company: DF Electronics

Sheet: [03] – STEP-DOWN
File: [03] – STEP-DOWN.kicad_sch

Title: DF_ESC_rev01_1

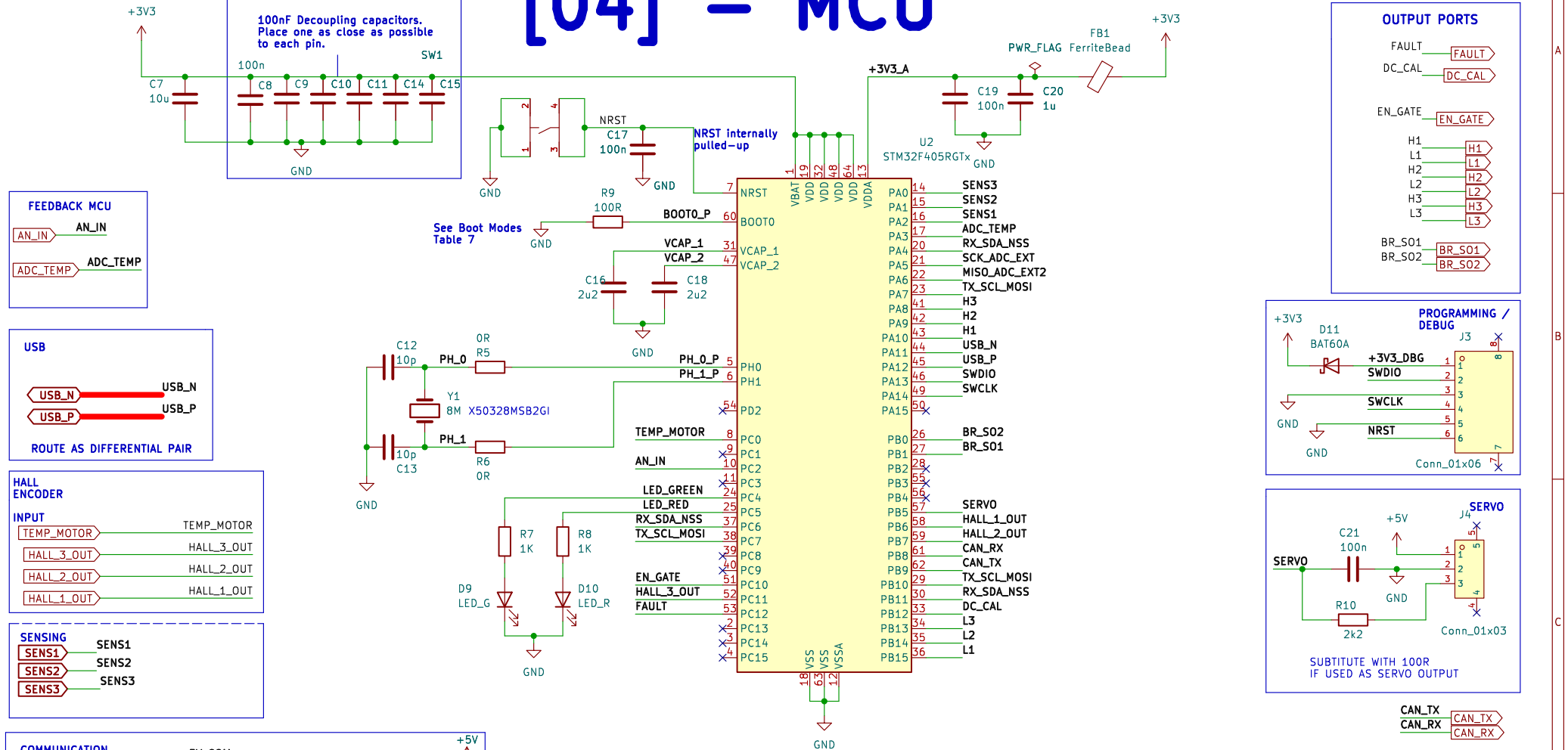
Size: A4 Date: 2022-10-03
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Rev: 01_1
Id: 03/11

[04] – MCU



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Company: DF Electronics

Sheet: [04] – MCU
File: [04] – MCU.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

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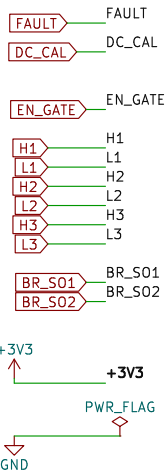
DARIO FRESU ELECTRONICS

Rev: 01_1

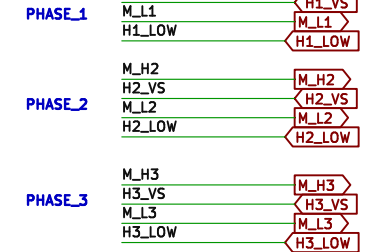
Id: 04/11

[05] – MOSFET DRIVER

INPUT PORTS



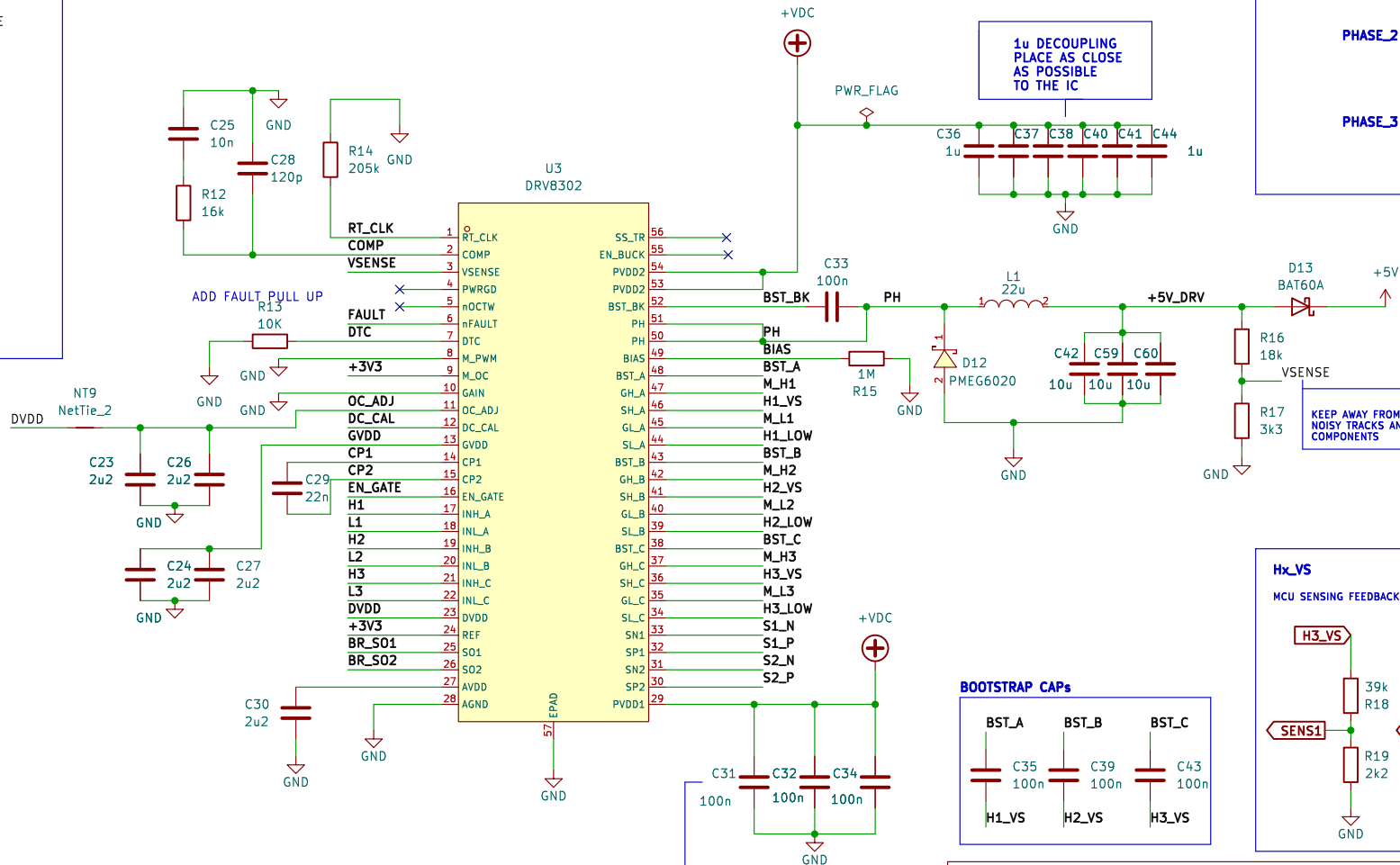
OUTPUT PORTS



SENSE 1 – PHASE 1



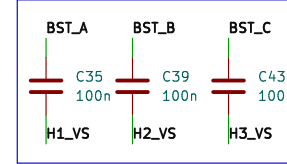
SENSE 2 – PHASE 2



1u DECOUPLING
PLACE AS CLOSE
AS POSSIBLE
TO THE IC

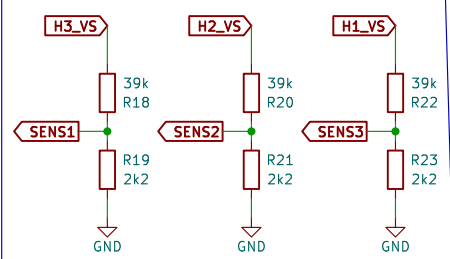
KEEP AWAY FROM
NOISY TRACKS AND
COMPONENTS

BOOTSTRAP CAPs



Hx_VS

MCU SENSING FEEDBACK FOR EACH PHASE



BULK CAPACITANCE
KEEP AS CLOSE AS POSSIBLE TO THE IC
AND TO THE DRIVER INPUT LOOP

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Sheet: [05] – MOSFET DRIVER

File: [05] – MOSFET DRIVER.kicad_sch

Title: DF_ESC_rev01_1

Size: A4

Date: 2022-10-03

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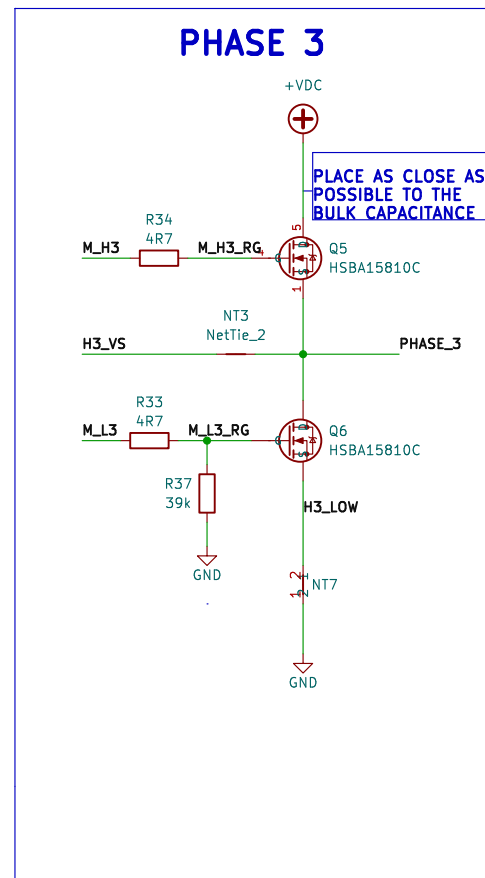
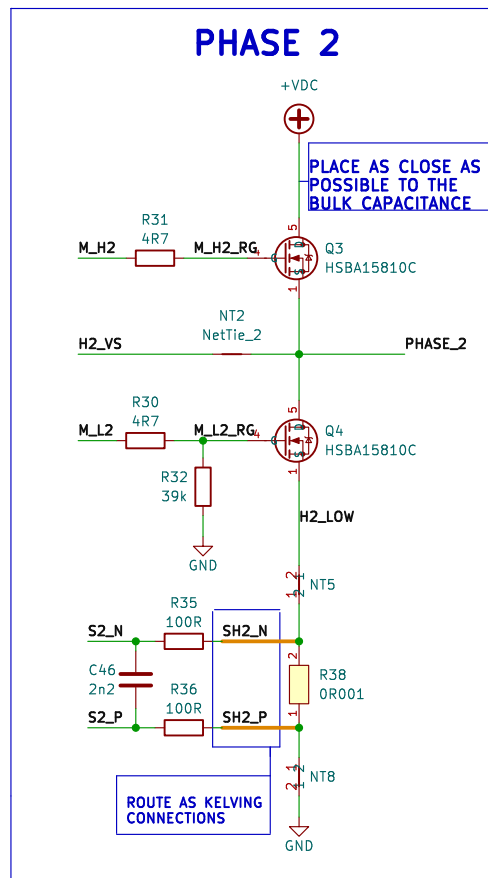
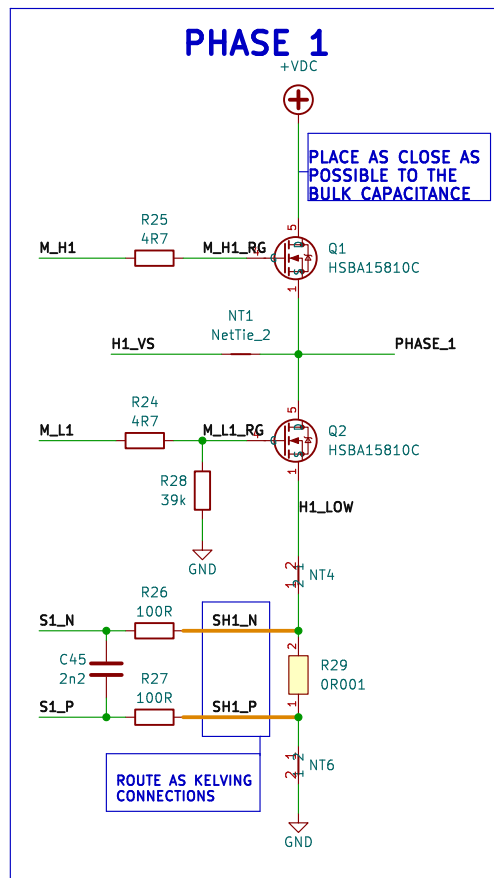
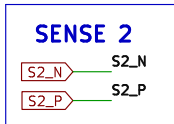
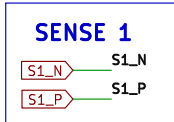
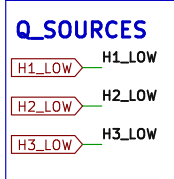
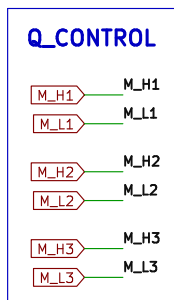
Rev: 01_1

Id: 05/11

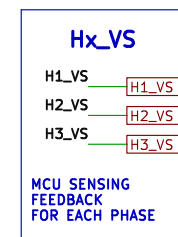
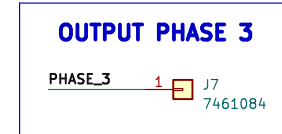
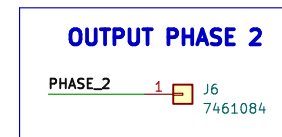
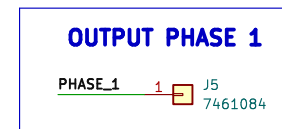
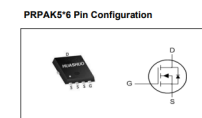


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ELECTRONICS

[06] – MOSFETs



V_{DS}	100	V
$R_{DS(ON),typ}$	3.7	m Ω
I_D	100	A



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Sheet: [06] – MOSFETs

File: [06] - MOSFETs.kicad_sch

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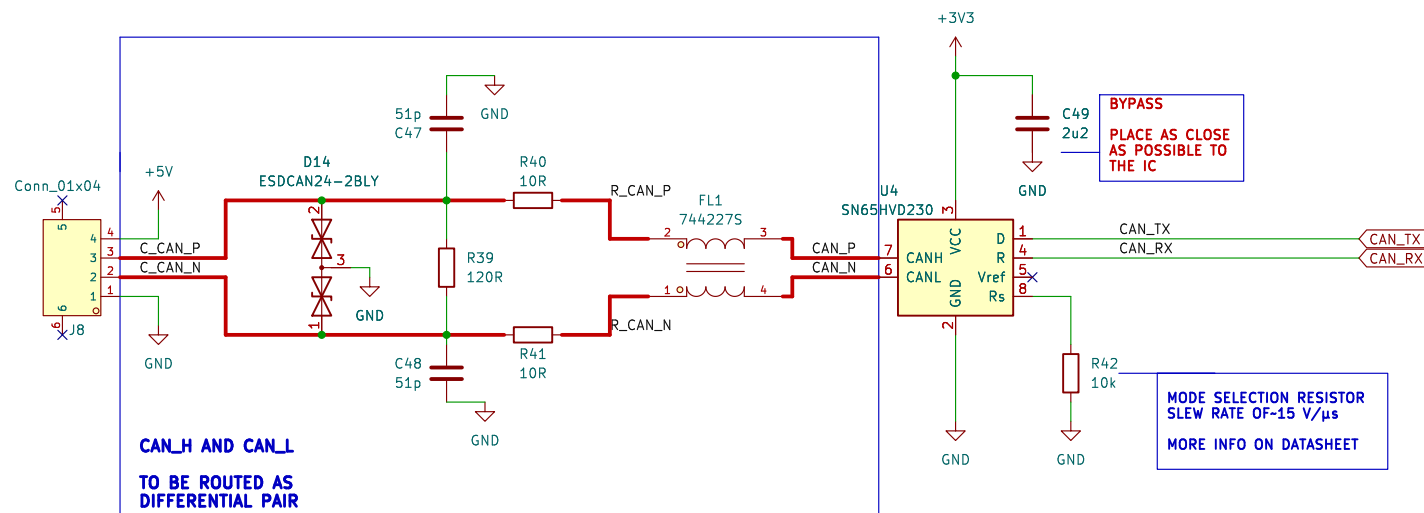
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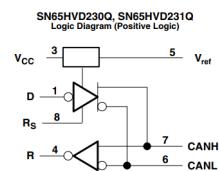


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[07] – CAN



LOGIC DIAGRAM



Designer: Dario Fresu

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Sheet: [07] – CAN

File: [07] – CAN.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

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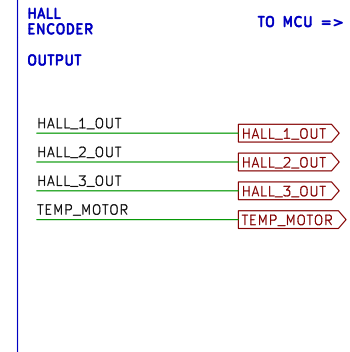
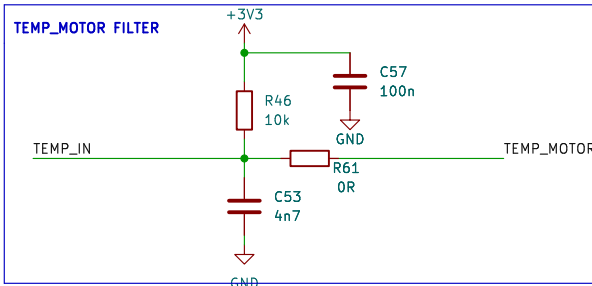
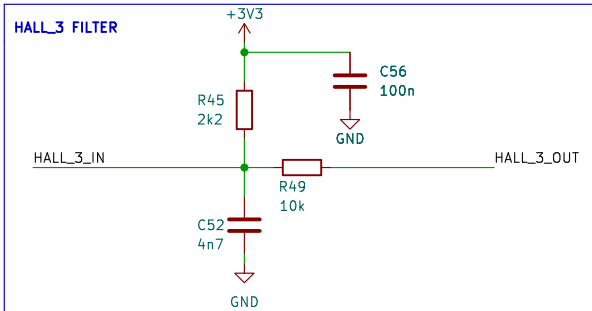
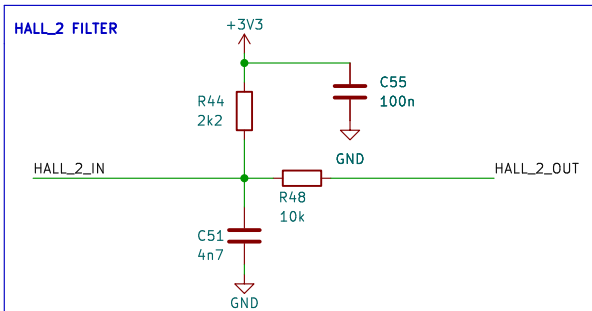
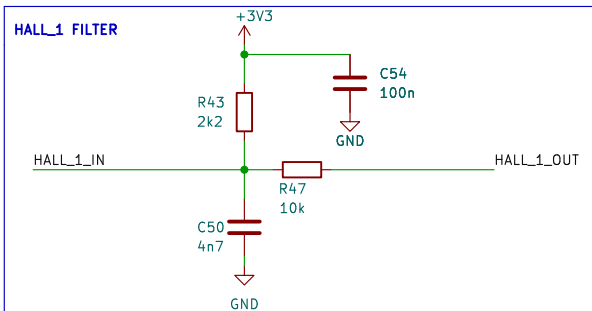
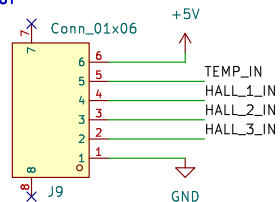


Rev: 01_1

Id: 07/11

[08] – FILTERS

HALL ENCODER INPUT



Designer: Dario Fresu

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Company: DF Electronics

Sheet: [08] – FILTERS

File: [08] – FILTERS.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

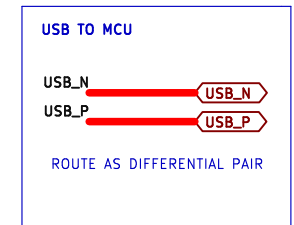
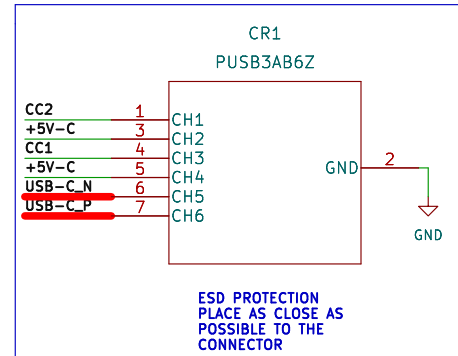
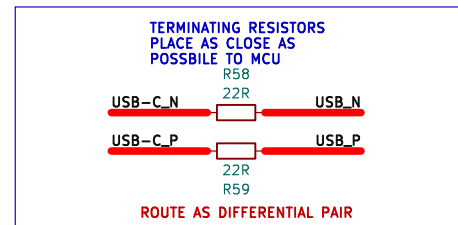
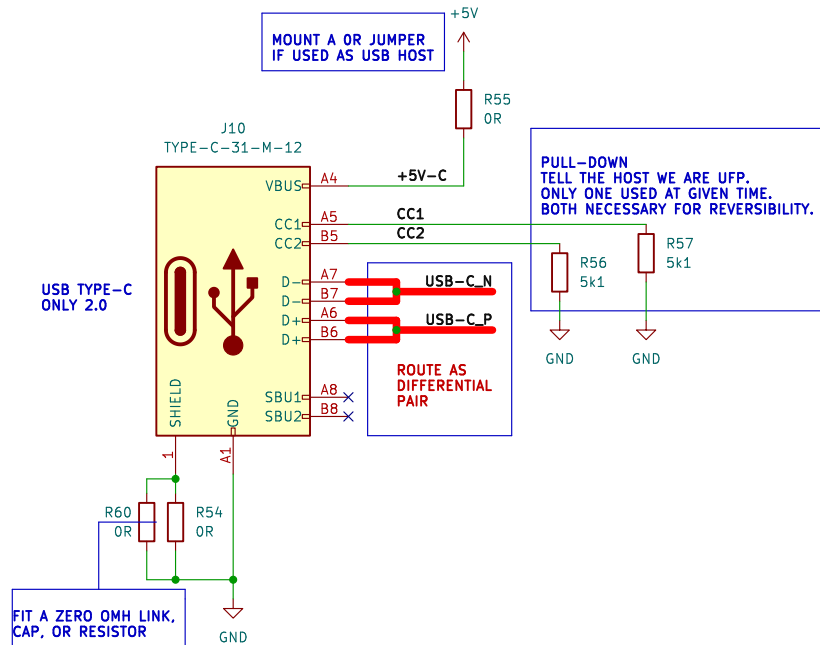
KiCad E.D.A. kicad 7.0.1

Rev: 01_1

Id: 08/11



[09] – USB



Designer: Dario Fresu
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Company: DF Electronics

Sheet: [09] – USB
File: [09] – USB.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

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Rev: 01_1

Id: 09/11

[10] – MECHANICAL

LOGOS

LOG01
DF_LOGO

LOG02
DF_LOGO_NO_SLK

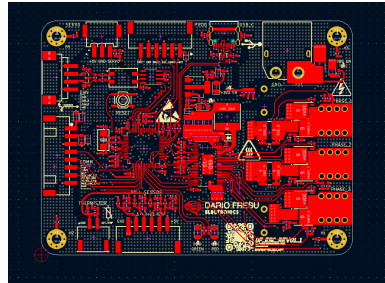
QR1
DF_QR_CODE

DF_LOGO

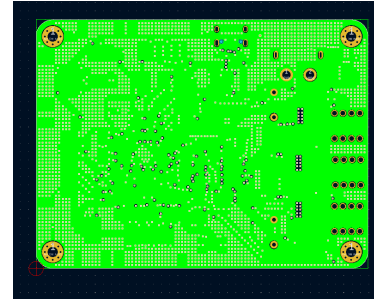
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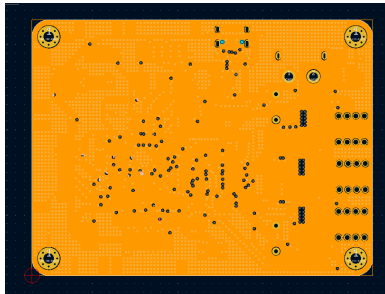
L1



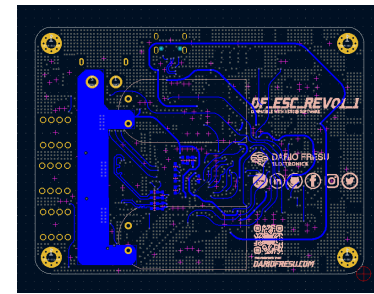
L2



L3



L4



LABELS

BOARD NAME AND REVISION

M.DATE

NOTES

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DF_ESC_REV01_1

M_DATE1
M_DATE

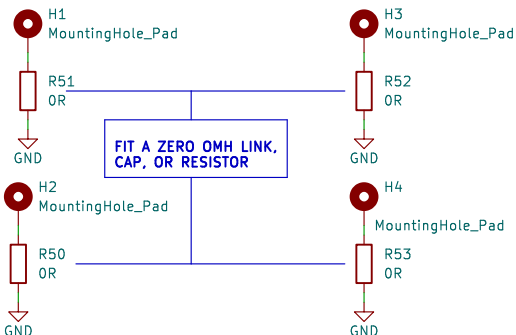
NOTES1
NOTES

BOARD NAME

M_DATE

NOTES

MOUNTING HOLES



PCB

PCB1
PCB

PCB

MODIFICATION FROM VESC 4.11:

- THERMISTOR MOVED TO LOWER LEG OF THE ADC PIN
- BOOT PIN PULLED-DOWN TO GND
- CHANGED BULK CAPACITANCE
- CHANGED PHASE SENSE RESISTORS
- CHANGED NETS SENSE PHASES TO DIFFERENTIAL PAIRS
- INVERTED TX AND RX CONNECTOR PINS

IMPORTANT!!
COMPATIBLE VESC FIRMWARE 5.02
OTHER VERSIONS MIGHT DAMAGE THE HARDWARE!!

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Company: DF Electronics

Sheet: [10] – MECHANICAL

File: [10] – MECHANICAL.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

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Rev: 01_1

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