

REVISION: 01_1
VARIANT: NO VARIATIONS

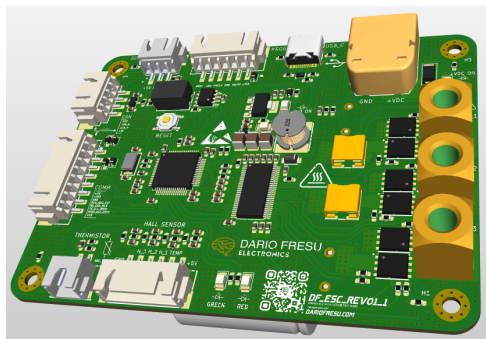
PAGE #	INDEX
1	BLOCK DIAGRAM
2	INPUT PROTECTION
3	STEP-DOWN
4	MCU
5	MOSFET DRIVER
6	MOSFETs
7	CAN
8	FILTERS
9	USB
10	MECHANICAL

RELEASED STATUS PROJECT:

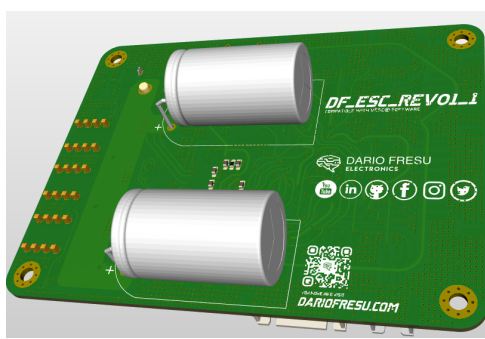
DRAFT

DATE: 2022-10-03

BOARD IMAGE FRONT

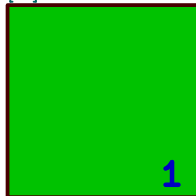


BOARD IMAGE BACK



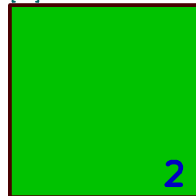
DF_ESC_rev01_1

[01] - BLOCK DIAGRAM



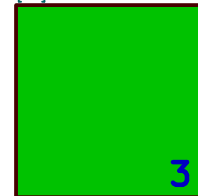
File: [01] - BLOCK DIAGRAM.kicad_sch

[02] - INPUT PROTECTION



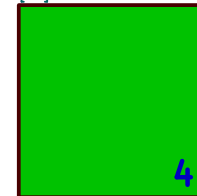
File: [02] - INPUT PROTECTION.kicad_sch

[03] - STEP-DOWN



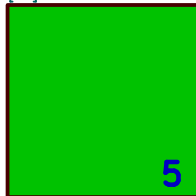
File: [03] - STEP-DOWN.kicad_sch

[04] - MCU



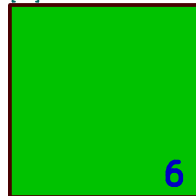
File: [04] - MCU.kicad_sch

[05] - MOSFET DRIVER



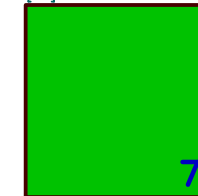
File: [05] - MOSFET DRIVER.kicad_sch

[06] - MOSFETs



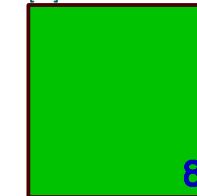
File: [06] - MOSFETs.kicad_sch

[07] - CAN



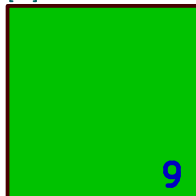
File: [07] - CAN.kicad_sch

[08] - FILTERS



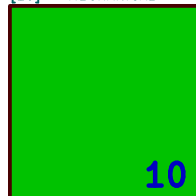
File: [08] - FILTERS.kicad_sch

[09] - USB



File: [09] - USB.kicad_sch

[10] - MECHANICAL



File: [10] - MECHANICAL.kicad_sch

Designer: Dario Fresu

Email: info@dariofresu.com

Secondary Email:

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

KiCad E.D.A. kicad 7.0.1

Rev: 01_1

Id: 1/11



[01] – BLOCK DIAGRAM

0 TO +60V



PAGE 1



PAGE 9



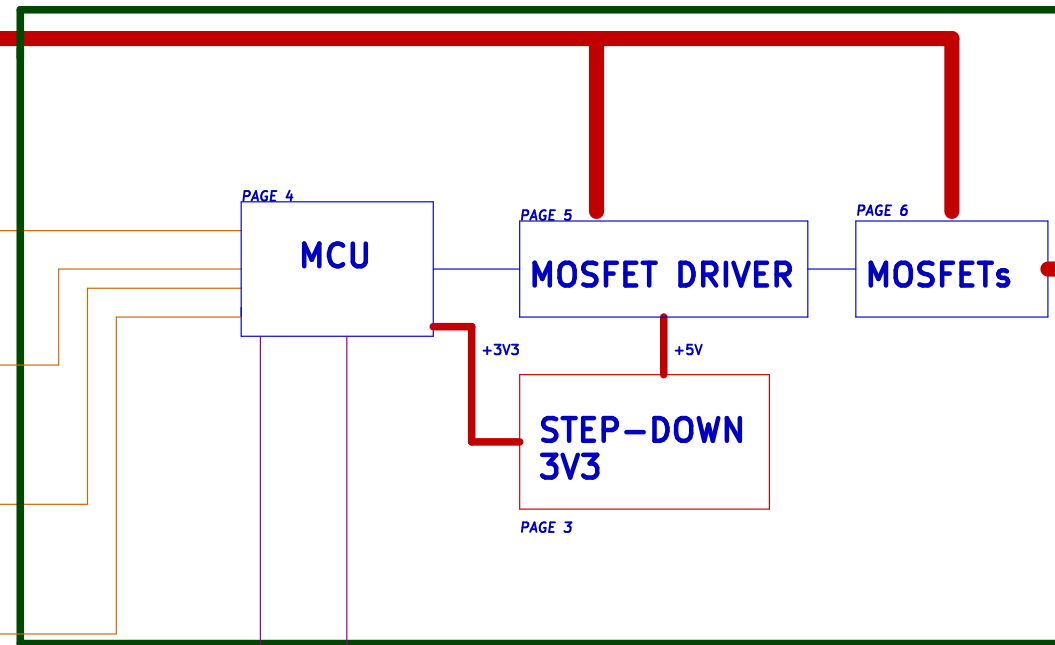
PAGE 7



PAGE 8



PAGE 4



PAGE 4



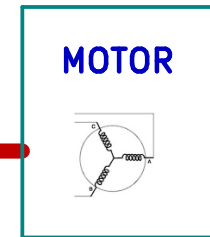
PAGE 4



PAGE 5



PAGE 6



Designer: Dario Fresu
Email: info@dariofresu.com
Secondary Email:
Website: dariofresu.com

Company: DF Electronics
Sheet: [01] – BLOCK DIAGRAM
File: [01] – BLOCK DIAGRAM.kicad_sch

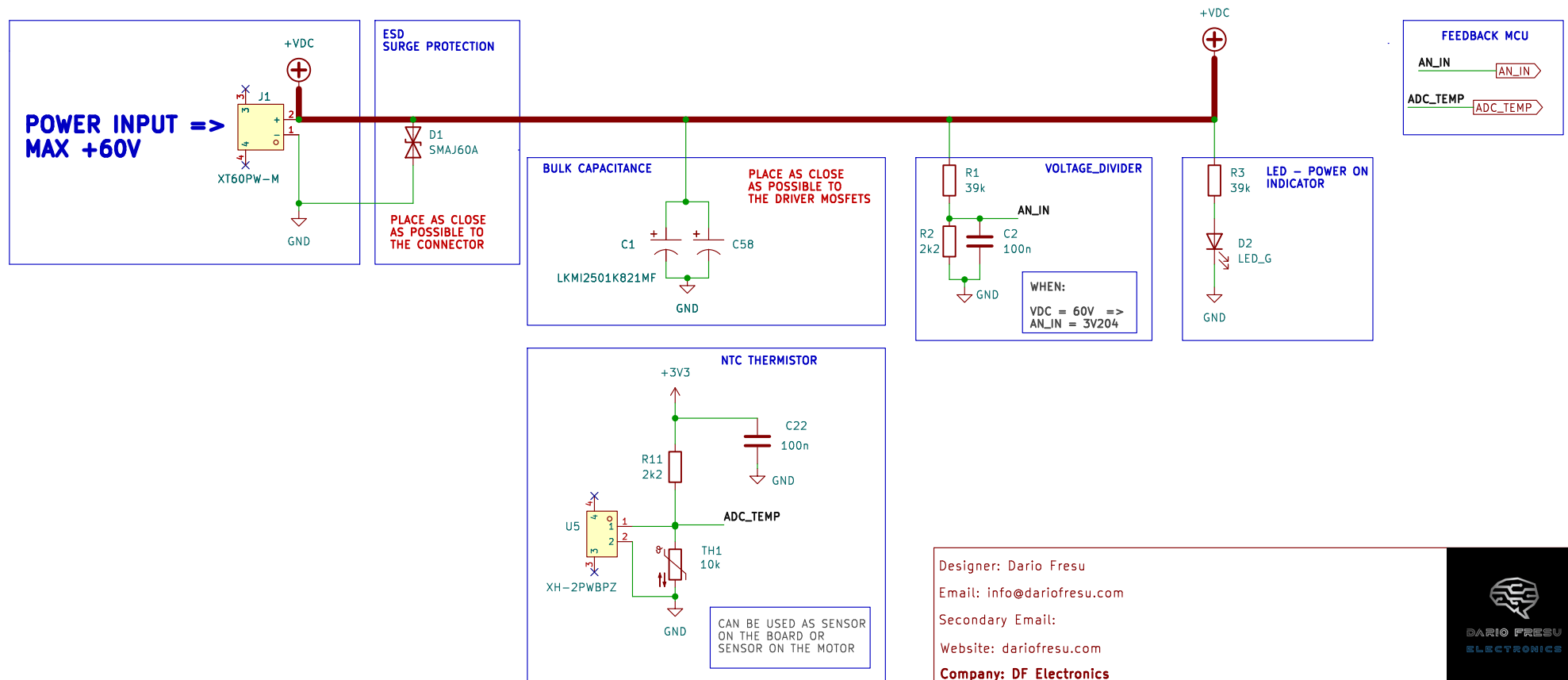
Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03
KiCad E.D.A. kicad 7.0.1



Rev: 01_1
Id: 01/11

[02] – INPUT PROTECTION



Designer: Dario Fresu
Email: info@dariofresu.com
Secondary Email:
Website: dariofresu.com

Company: DF Electronics

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

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

KiCad E.D.A. kicad 7.0.1

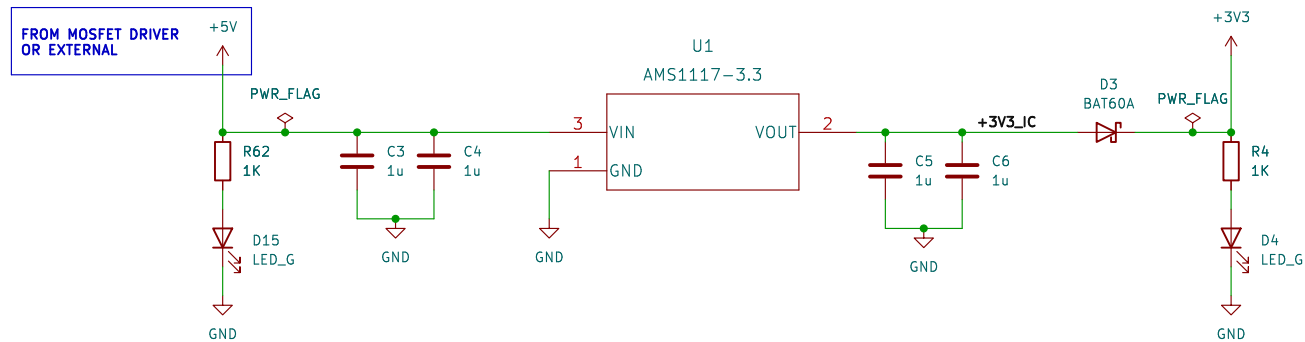
Rev: 01_1

Id: 02/11



**DARIO FRESU
ELECTRONICS**

[03] – STEP-DOWN



Designer: Dario Fresu

Email: info@dariofresu.com

Secondary Email:

Website: dariofresu.com

Company: DF Electronics

Sheet: [03] – STEP-DOWN

File: [03] – STEP-DOWN.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: 03/11

[04] – MCU

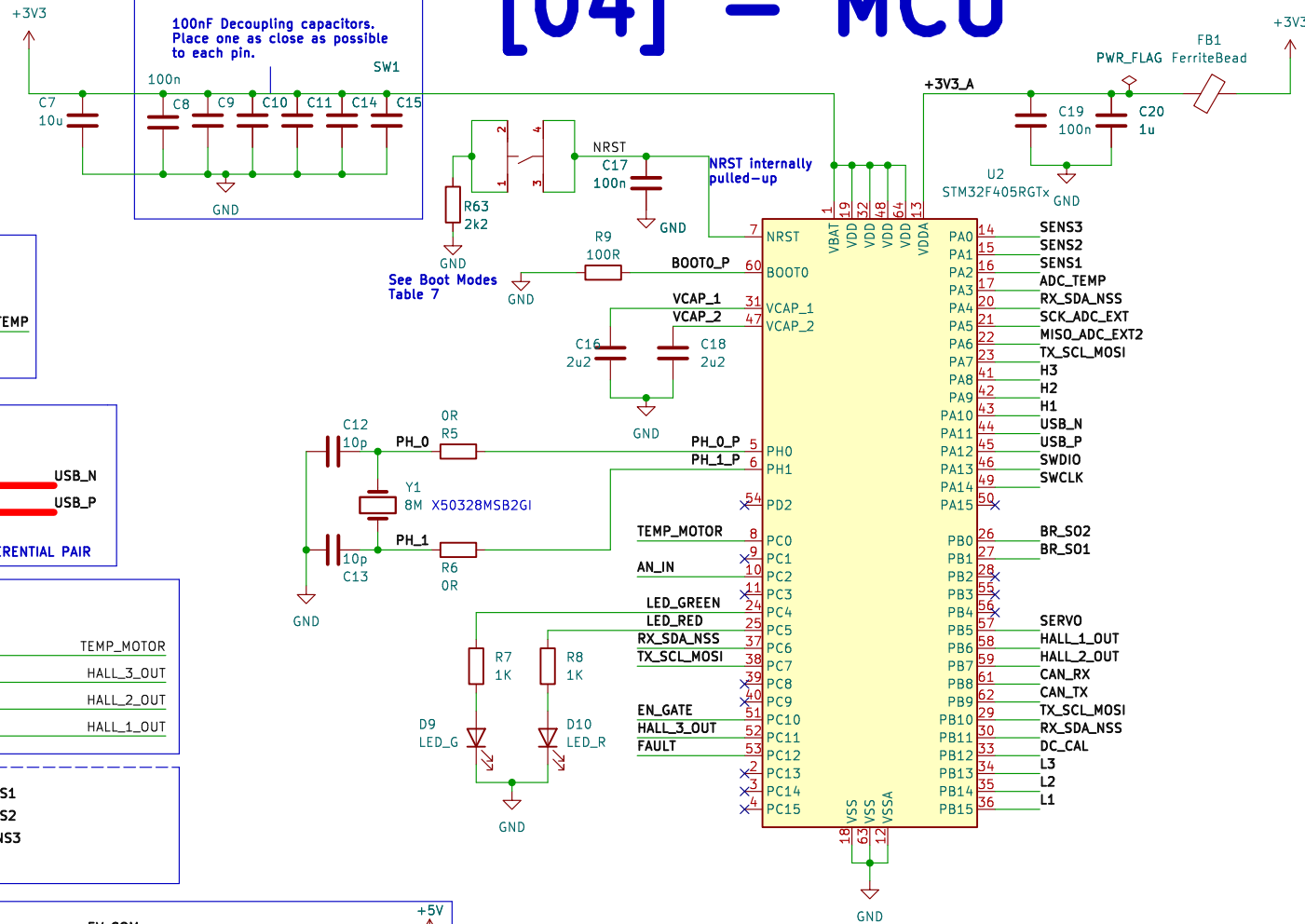


Table 7. Boot modes

BOOT mode selection pins	Boot mode	Aliaing
BOOT1	BOOT0	
x	0	Main Flash memory
0	1	System memory
1	1	Embedded SRAM

Designer: Dario Fresu
Email: info@dariofresu.com
Secondary Email:
Website: dariofresu.com

Company: DF Electronics

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

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

KiCad E.D.A. kicad 7.0.1

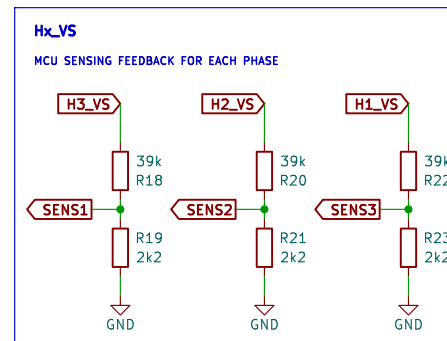
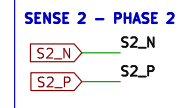
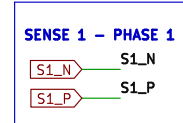
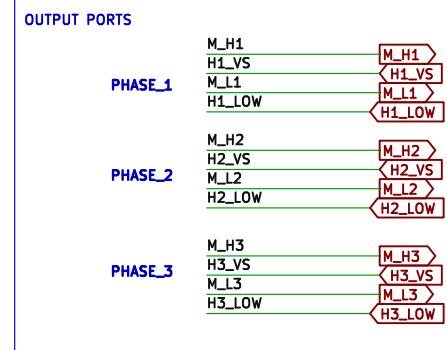
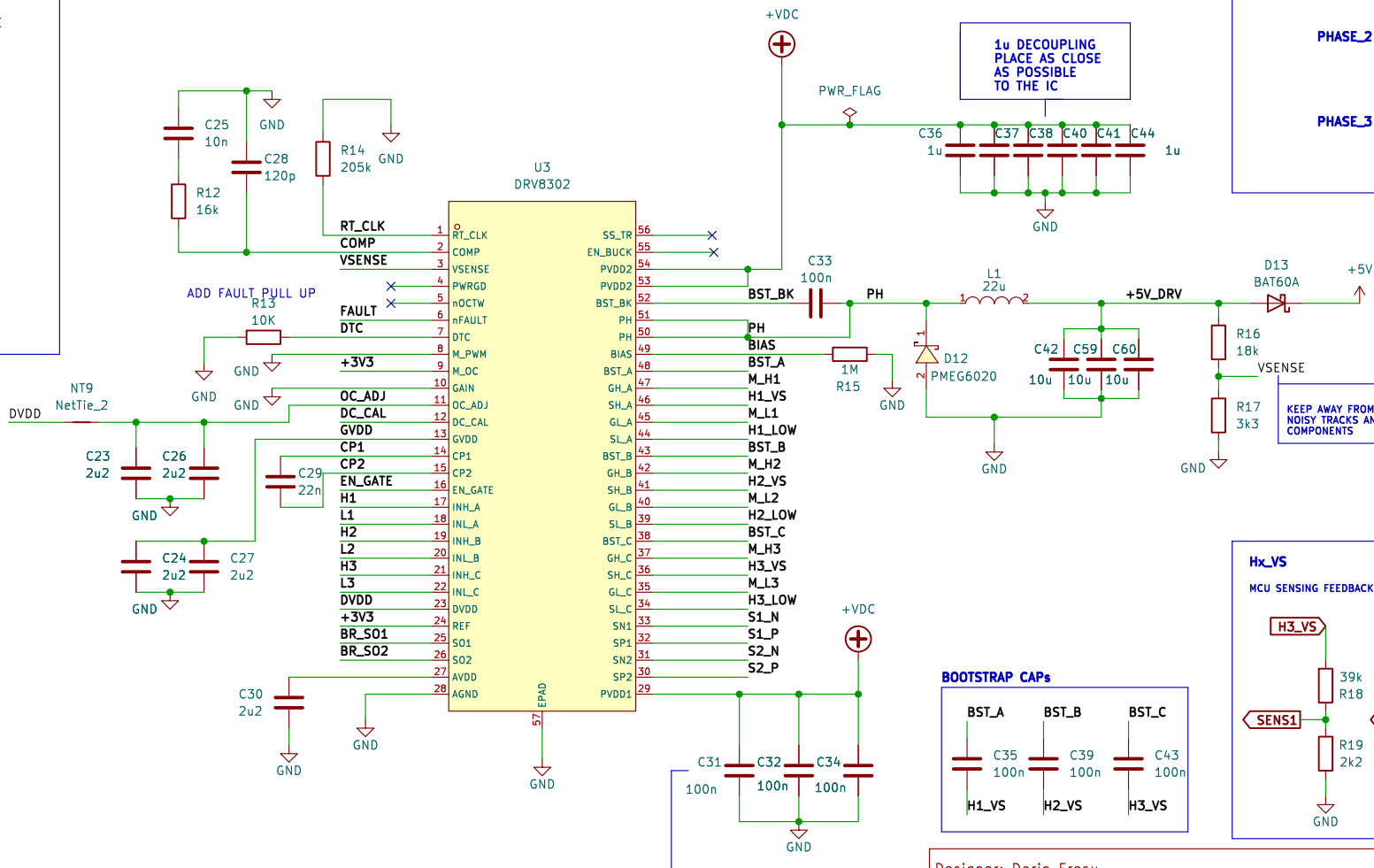
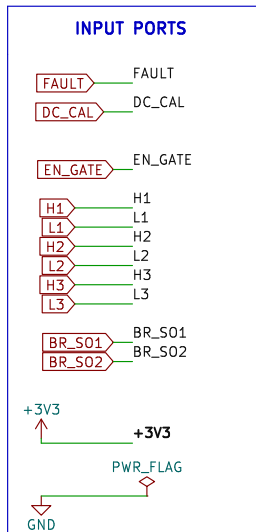
Rev: 01_1

Id: 04/11



DARIO FRESU
ELECTRONICS

[05] – MOSFET DRIVER



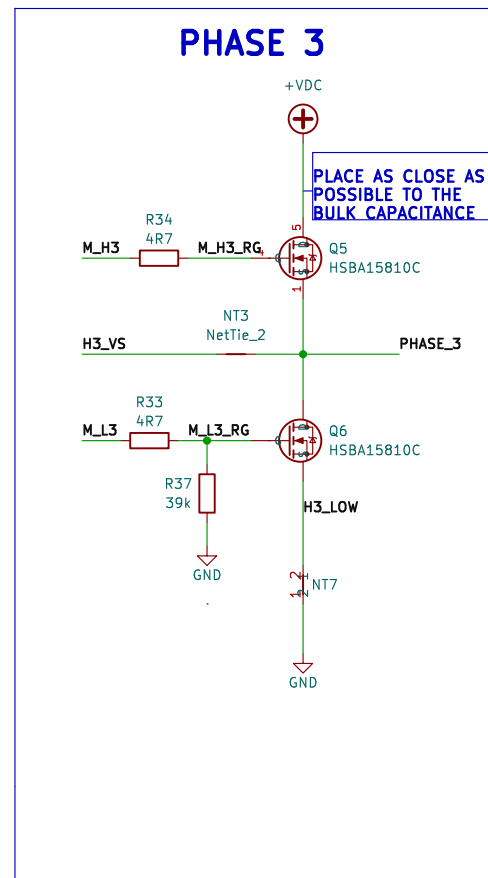
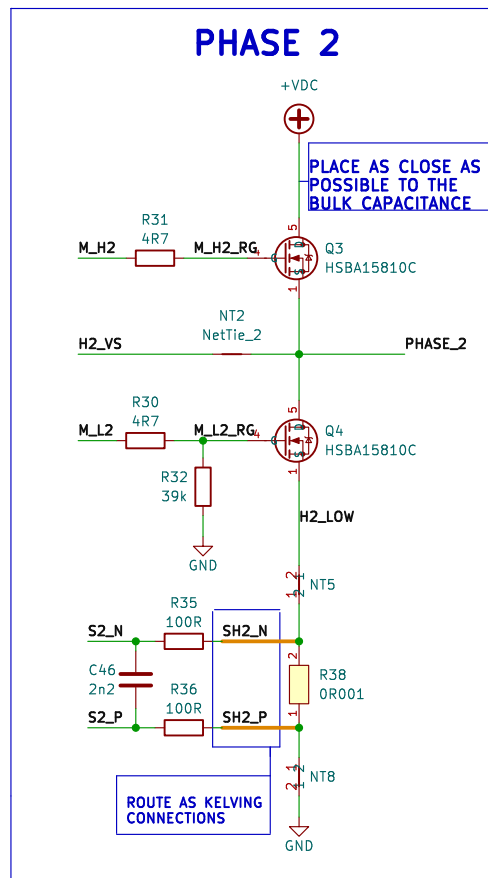
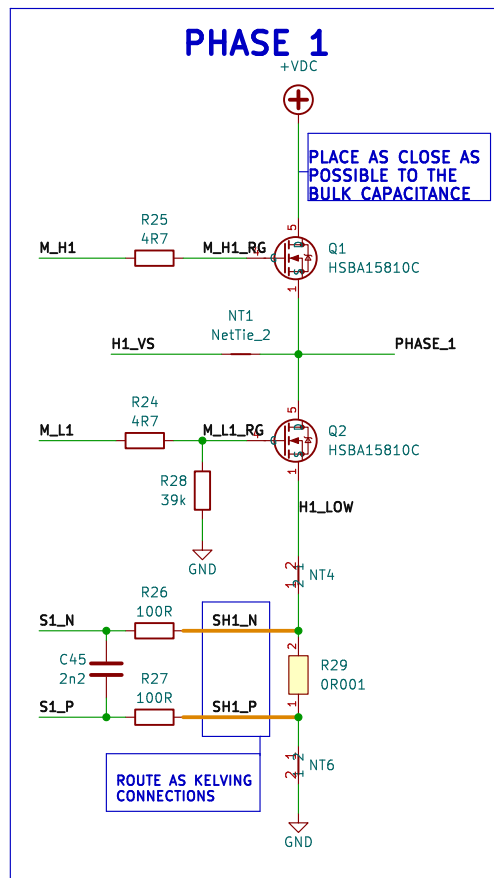
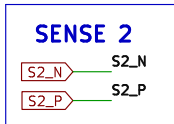
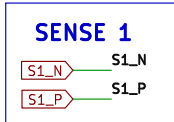
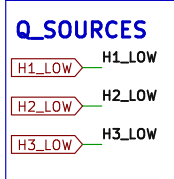
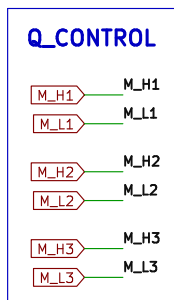
BOOTSTRAP CAPs

The diagram shows three bootstrap capacitors, C35, C39, and C43, each with a value of 100n. They are connected to nodes BST_A, BST_B, and BST_C respectively. The other terminal of each capacitor is connected to a common ground, labeled H1_VS, H2_VS, and H3_VS.



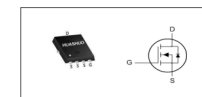
DARIO FRESCHI
ELECTRONICS

[06] – MOSFETs



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

PRPAK5*6 Pin Configuration



OUTPUT PHASE 1

PHASE_1 1 J5
7461084

OUTPUT PHASE 2

PHASE_2 1 J6
7461084

OUTPUT PHASE 3

PHASE_3 1 J7
7461084

Hx_VS

H1_VS
H2_VS
H3_VS

MCU SENSING
FEEDBACK
FOR EACH PHASE

Designer: Dario Fresu

Email: info@dariofresu.com

Secondary Email:

Website: dariofresu.com

Company: DF Electronics

Sheet: [06] – MOSFETs

File: [06] - MOSFETs.kicad_sch

Title: DF_ESC_rev01_1

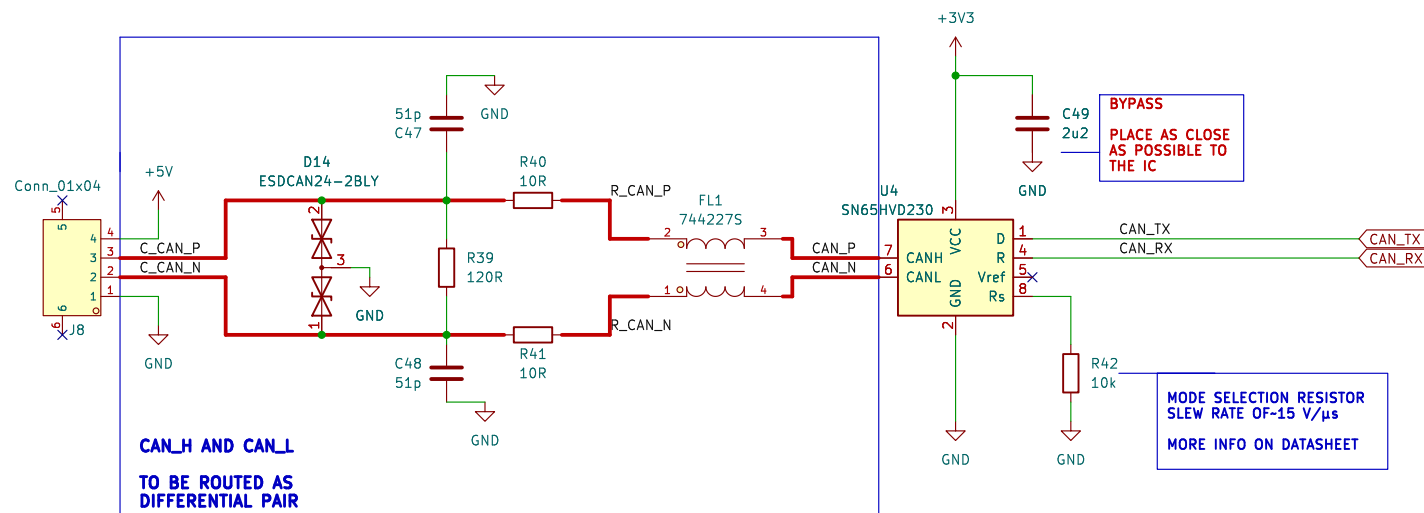
Size: A4	Date: 2022-10-03
----------	------------------

Size: A4	Date: 2025-01-27
KiCad E.D.A.	kicad 7.0.1

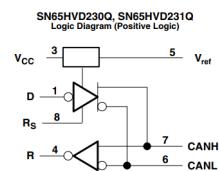


DARIO FRESU
ELECTRONICS

[07] – CAN



LOGIC DIAGRAM



Designer: Dario Fresu

Email: info@dariofresu.com

Secondary Email:

Website: dariofresu.com

Company: DF Electronics

Sheet: [07] – CAN

File: [07] – CAN.kicad_sch

Title: DF_ESC_rev01_1

Size: A4 Date: 2022-10-03

KiCad E.D.A. kicad 7.0.1

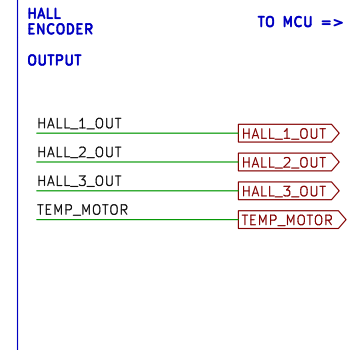
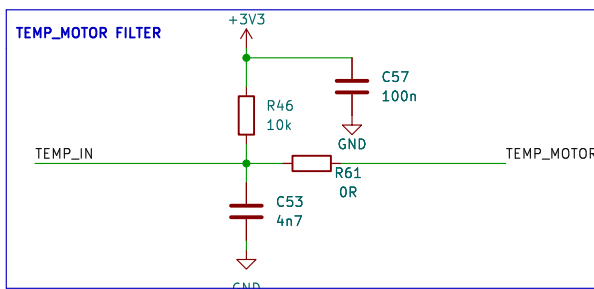
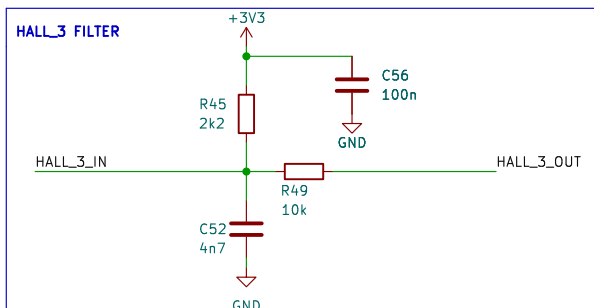
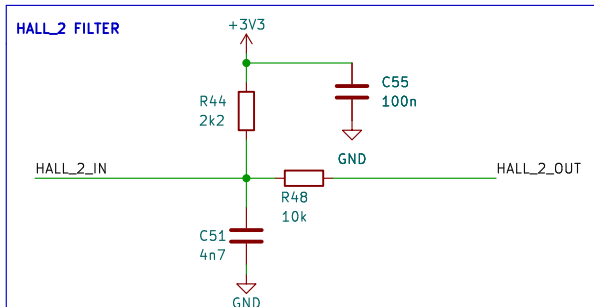
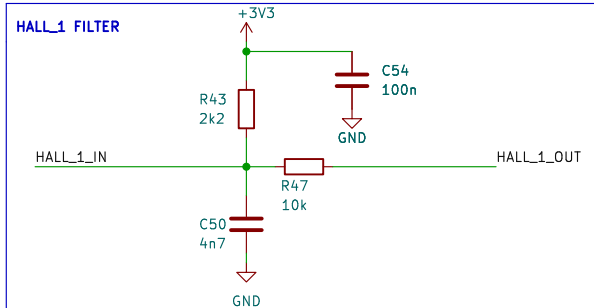
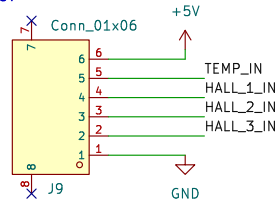


Rev: 01_1

Id: 07/11

[08] – FILTERS

HALL ENCODER INPUT



Designer: Dario Fresu

Email: info@dariofresu.com

Secondary Email:

Website: dariofresu.com

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

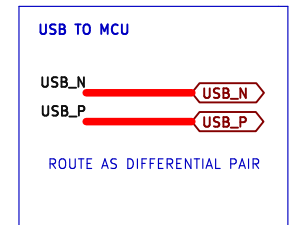
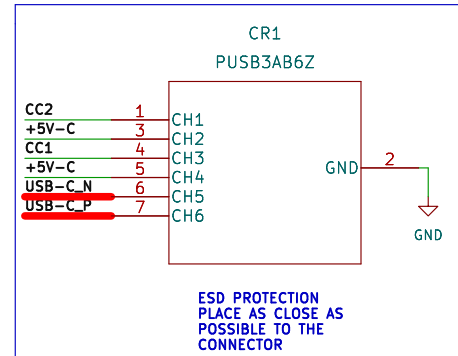
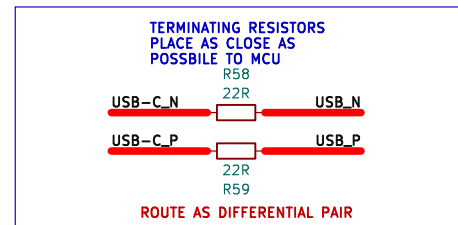
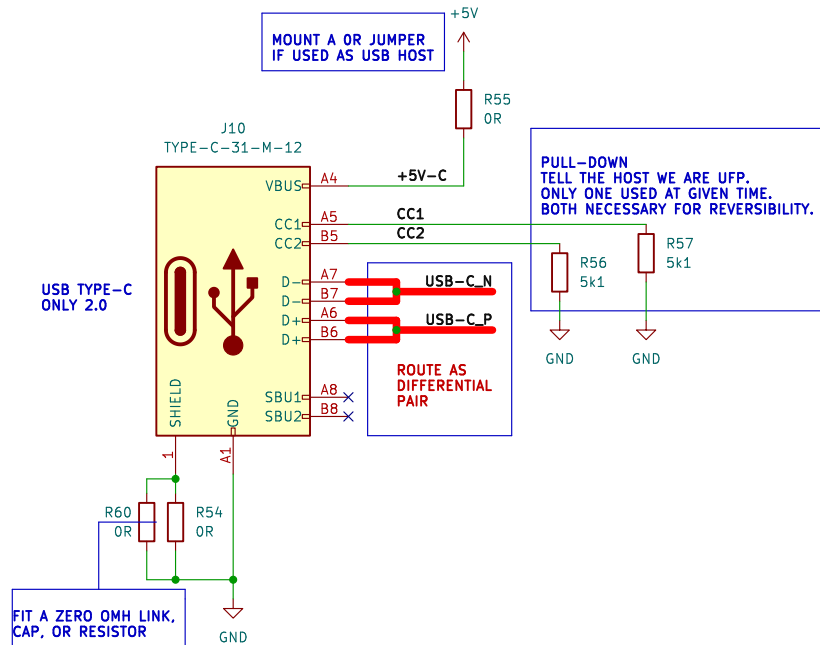


DARIO FRESU
ELECTRONICS

Rev: 01_1

Id: 08/11

[09] – USB



Designer: Dario Fresu
Email: info@dariofresu.com
Secondary Email:
Website: dariofresu.com

Company: DF Electronics

Sheet: [09] – USB
File: [09] – USB.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: 09/11

[10] – MECHANICAL

LOGOS

LOG01
DF_LOGO

LOG02
DF_LOGO_NO_SLK

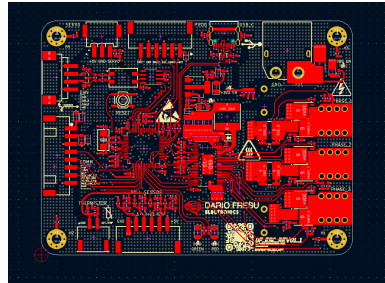
QR1
DF_QR_CODE

DF_LOGO

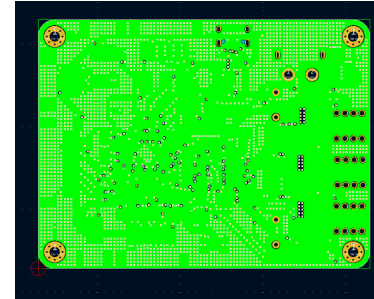
DF_LOGO_NO_SLK

DF_QR_CODE

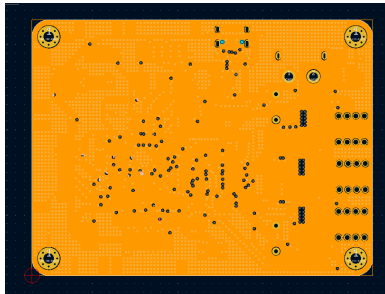
L1



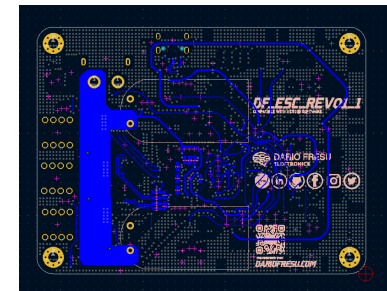
L2



L3



L4



LABELS

BOARD NAME AND REVISION

M.DATE

NOTES

B_NAME1
DF_ESC_REV01_1

M_DATE1
M_DATE

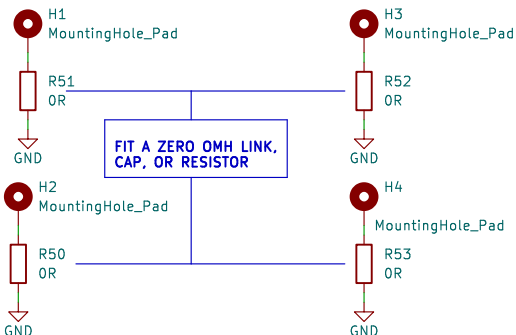
NOTES1
NOTES

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!!

Designer: Dario Fresu

Email: info@dariofresu.com

Secondary Email:

Website: dariofresu.com

Company: DF Electronics

Sheet: [10] – MECHANICAL

File: [10] – MECHANICAL.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: 09/11

