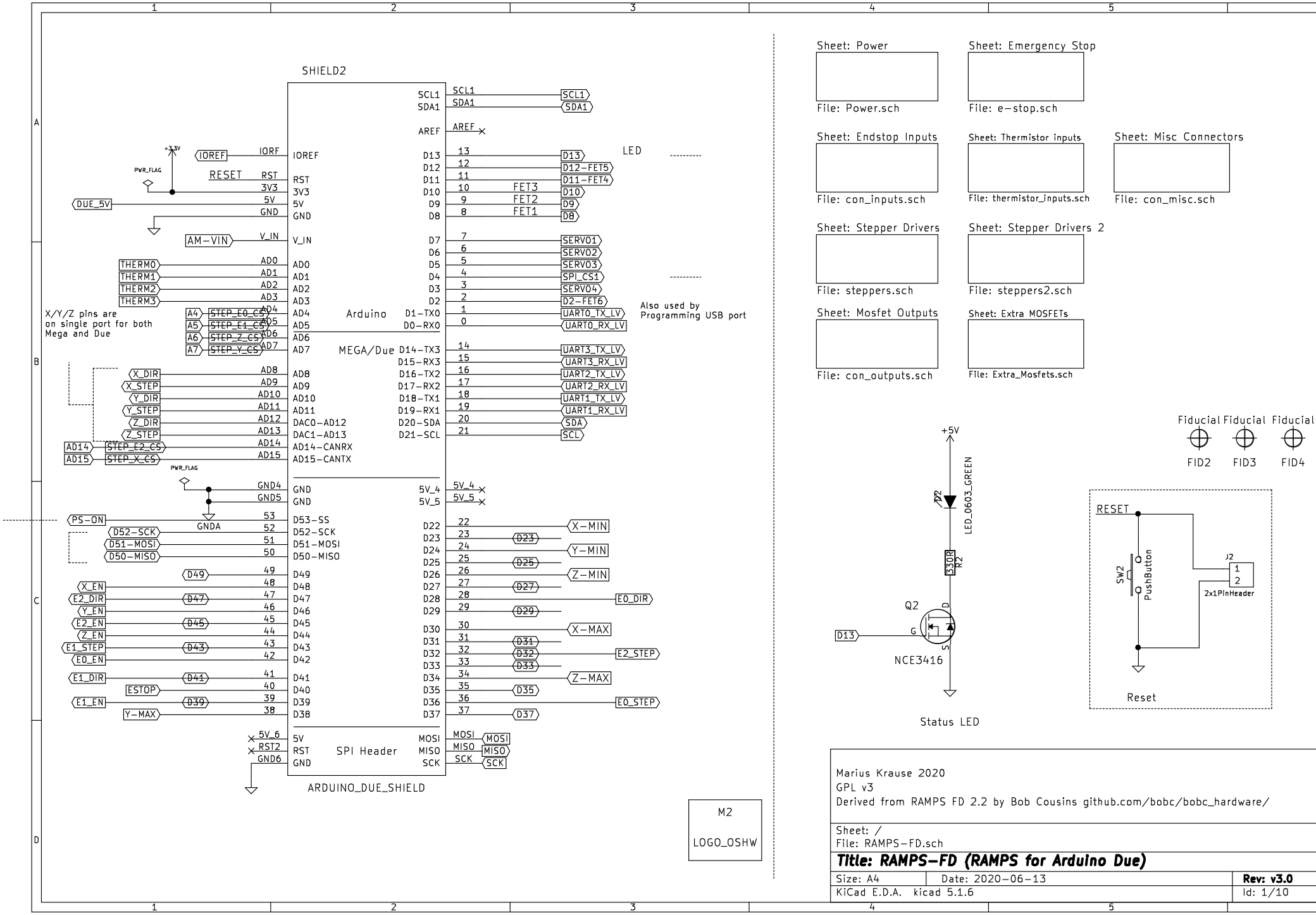
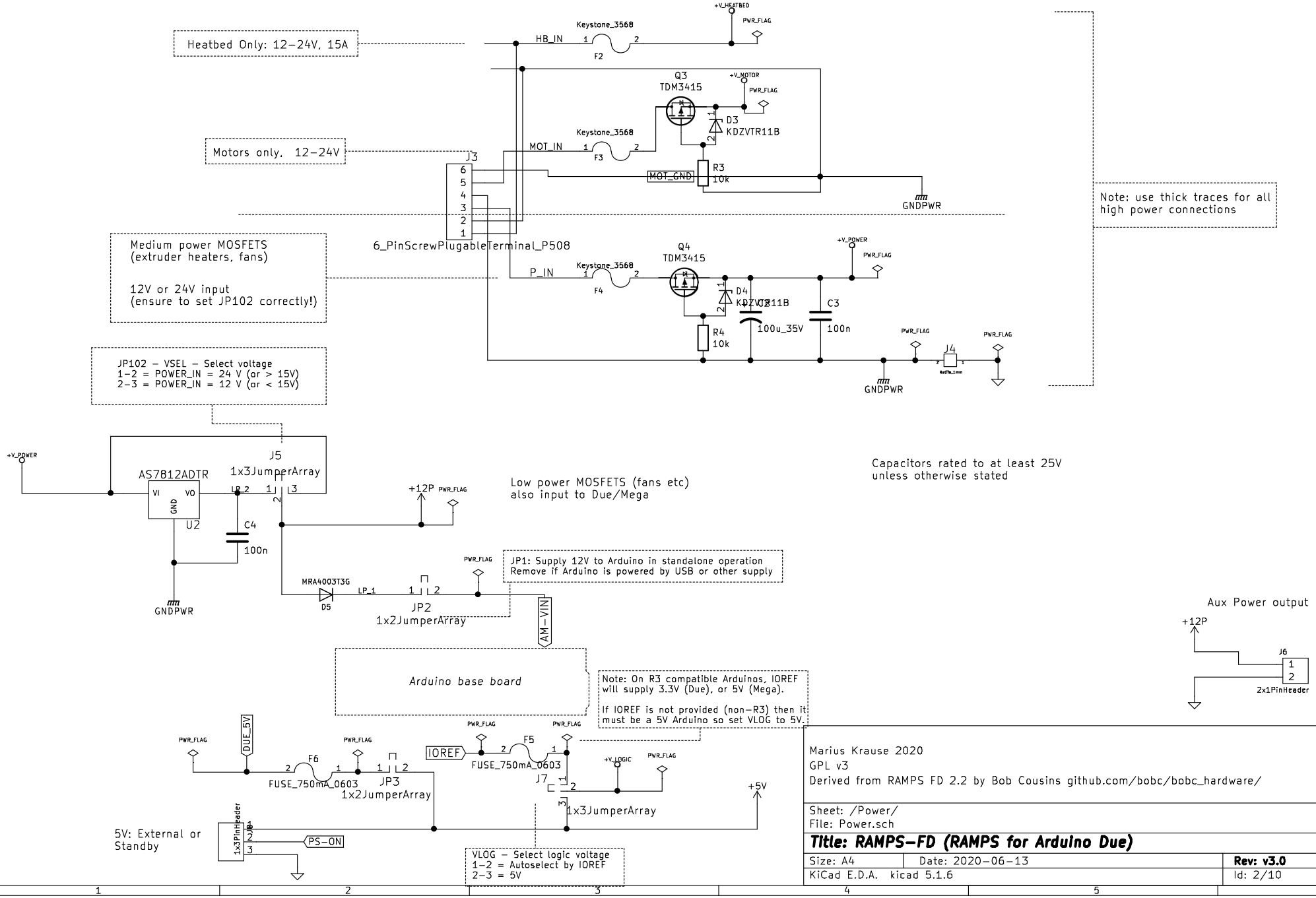

SHIELD2
Arduino
MEGA/Due
SPI Header
ARDUINO_DUE_SHIELD
LED
Also used by
Programming USB port
X/Y/Z pins are
on single port for both
Mega and Due
Sheet: Power
File: Power.sch
Sheet: Emergency Stop
File: e-stop.sch
Sheet: Endstop Inputs
File: con_inputs.sch
Sheet: Thermistor inputs
File: thermistor_inputs.sch
Sheet: Misc Connectors
File: con_misc.sch
Sheet: Stepper Drivers
File: steppers.sch
Sheet: Stepper Drivers 2
File: steppers2.sch
Sheet: Mosfet Outputs
File: con_outputs.sch
Sheet: Extra MOSFETs
File: Extra_Mosfets.sch
Fiducial
FID2
Fiducial
FID3
Fiducial
FID4
+5V
LED_0603_GREEN
330R
R2
Q2
NCE3416
Status LED
RESET
SW2
PushButton
J2
2x1PinHeader
Reset
M2
LOGO_OSHW
Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/
Sheet: /
File: RAMPS-FD.sch
Title: RAMPS-FD (RAMPS for Arduino Due)
Size: A4
Date: 2020-06-13
Rev: v3.0
KiCad E.D.A. kicad 5.1.6
Id: 1/10

Power

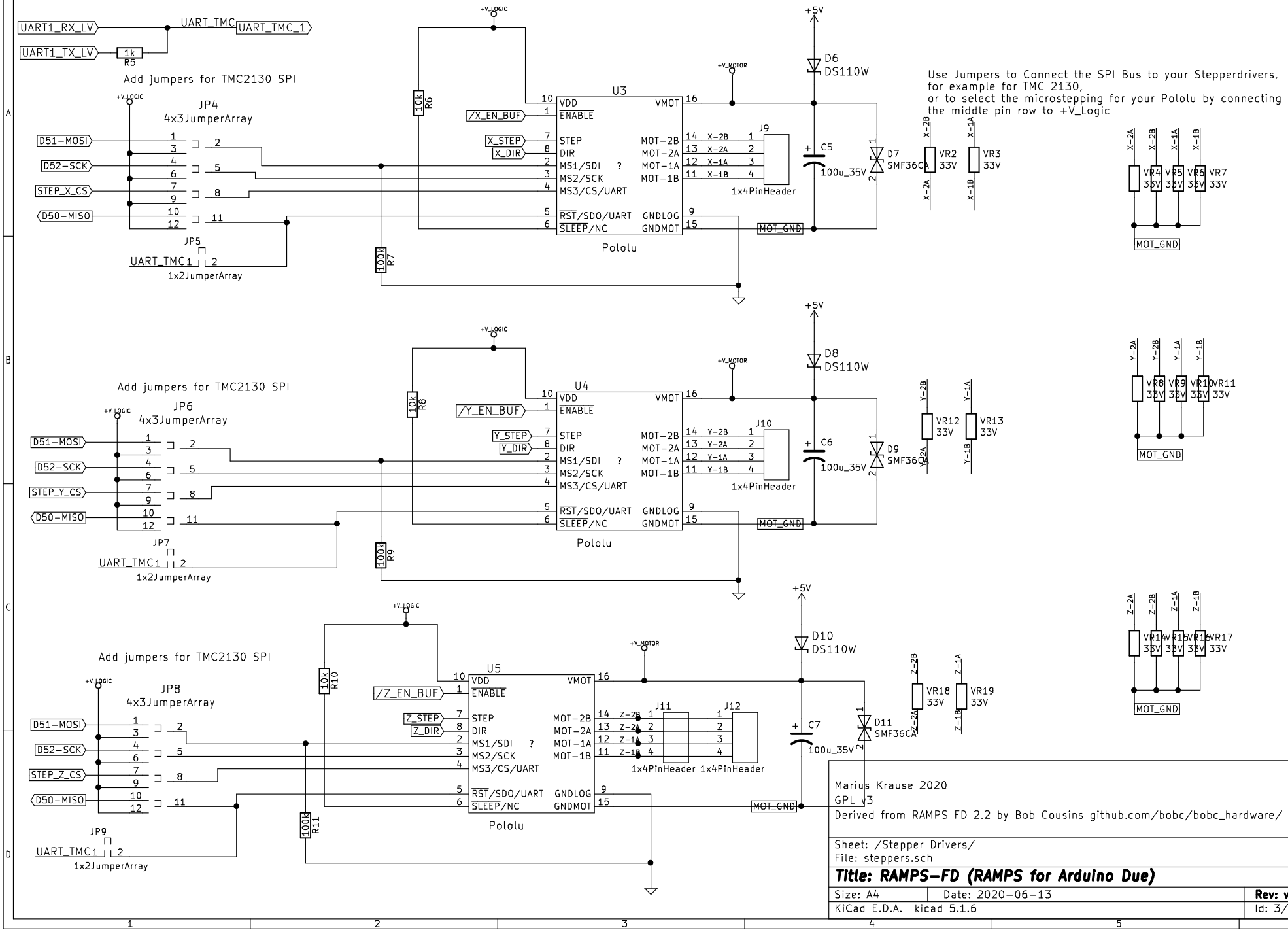


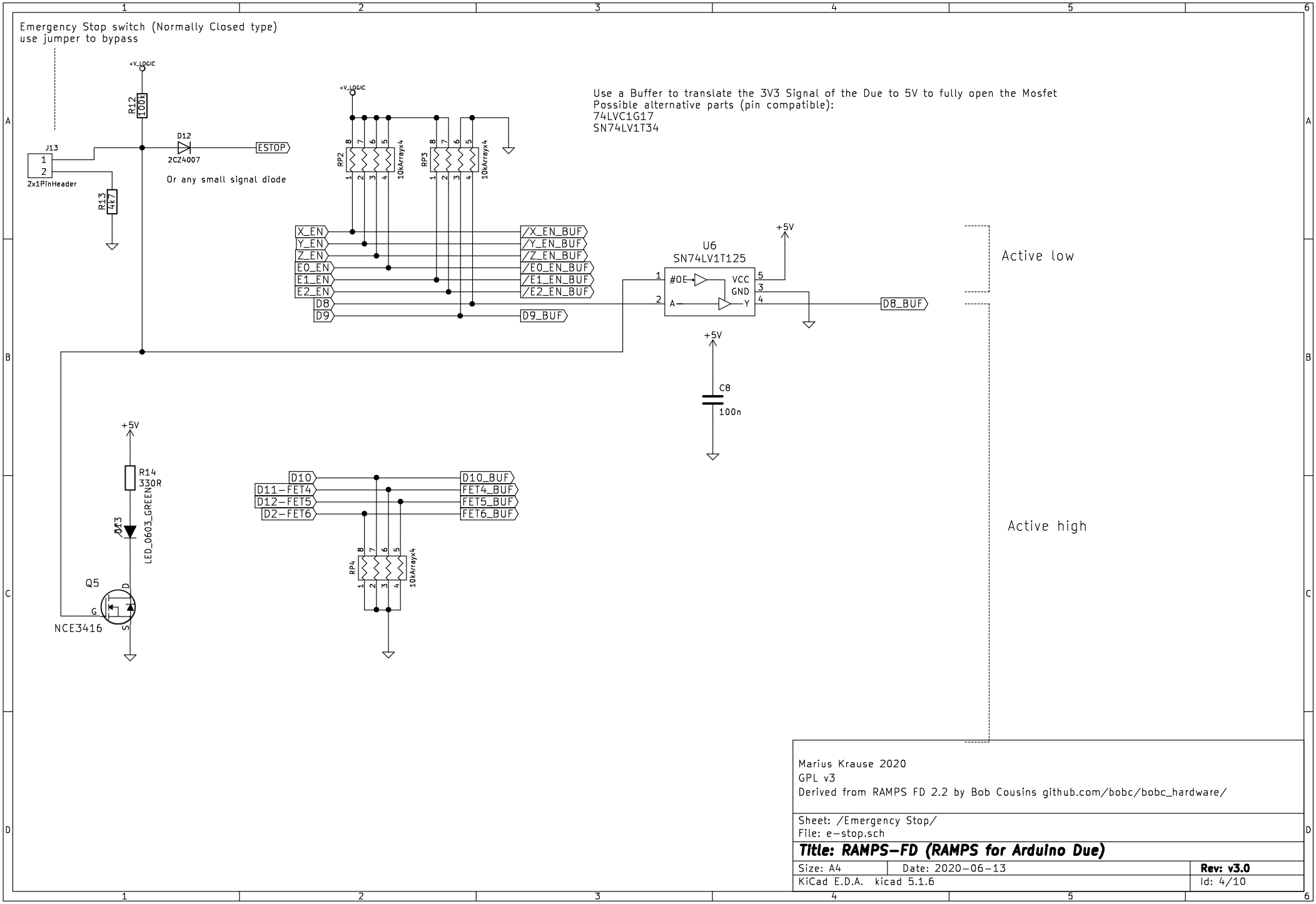
Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/

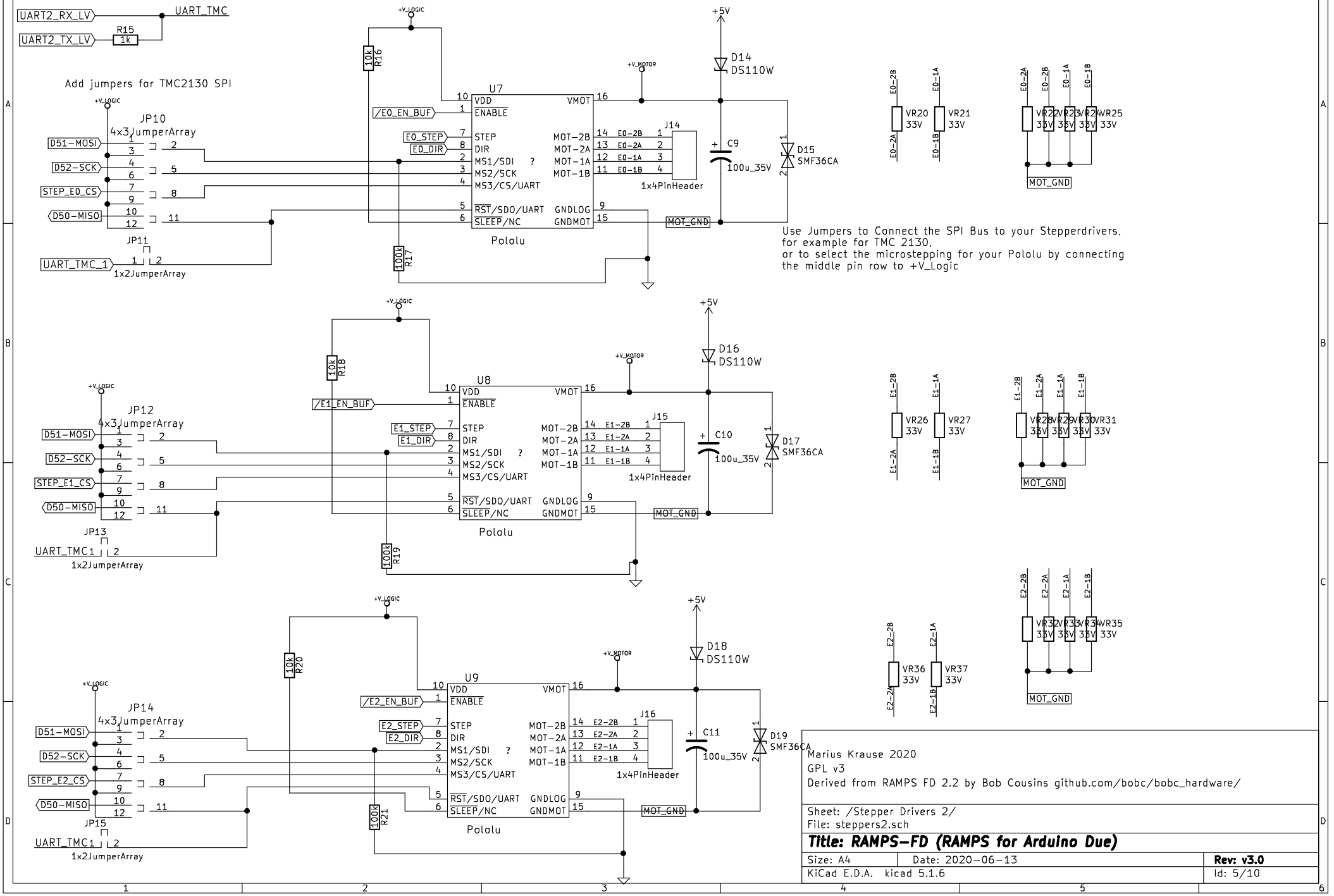
Sheet: /Power/
File: Power.sch

Title: RAMPS–FD (RAMPS for Arduino Due)

Size: A4	Date: 2020–06–13	**Rev: v3.0**
KiCad E.D.A. kicad 5.1.6		Id: 2/10


UART1_RX_LV
UART1_TX_LV
1k
R5
UART_TMC
UART_TMC_1
Add jumpers for TMC2130 SPI
JP4
4x3JumperArray
D51-MOSI
D52-SCK
STEP_X_CS
D50-MISO
JP5
UART_TMC1
1x2JumperArray
+V_LOGIC
10k
R6
100k
R7
U3
/X_EN_BUF
X_STEP
X_DIR
VDD
ENABLE
STEP
DIR
MS1/SDI ?
MS2/SCK
MS3/CS/UART
RST/SDO/UART
SLEEP/NC
VMOT
MOT-2B
MOT-2A
MOT-1A
MOT-1B
GNDLOG
GNDMOT
Pololu
+V_MOTOR
+5V
D6
DS110W
J9
1x4PinHeader
C5
100u_35V
D7
SMF36CA
VR2
33V
VR3
33V
MOT_GND
Use Jumpers to Connect the SPI Bus to your Stepperdrivers,
for example for TMC 2130,
or to select the microstepping for your Pololu by connecting
the middle pin row to +V_Logic
X-2A
X-2B
X-1A
X-1B
VR4
VR5
VR6
VR7
Add jumpers for TMC2130 SPI
JP6
4x3JumperArray
D51-MOSI
D52-SCK
STEP_Y_CS
D50-MISO
JP7
UART_TMC1
1x2JumperArray
10k
R8
100k
R9
U4
/Y_EN_BUF
Y_STEP
Y_DIR
Pololu
D8
DS110W
J10
1x4PinHeader
C6
100u_35V
D9
SMF36CA
VR12
33V
VR13
33V
MOT_GND
Y-2A
Y-2B
Y-1A
Y-1B
VR8
VR9
VR10
VR11
Add jumpers for TMC2130 SPI
JP8
4x3JumperArray
D51-MOSI
D52-SCK
STEP_Z_CS
D50-MISO
JP9
UART_TMC1
1x2JumperArray
10k
R10
100k
R11
U5
/Z_EN_BUF
Z_STEP
Z_DIR
Pololu
D10
DS110W
J11
J12
1x4PinHeader
1x4PinHeader
C7
100u_35V
D11
SMF36CA
VR18
33V
VR19
33V
MOT_GND
Z-2A
Z-2B
Z-1A
Z-1B
VR14
VR15
VR16
VR17
Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/
Sheet: /Stepper Drivers/
File: steppers.sch
Title: RAMPS-FD (RAMPS for Arduino Due)
Size: A4
Date: 2020-06-13
Rev: v3.0
KiCad E.D.A. kicad 5.1.6
Id: 3/10


Emergency Stop switch (Normally Closed type)
use jumper to bypass
+V_LOGIC
R12
100K
D12
2CZ4007
ESTOP
J13
1
2
2x1PinHeader
Or any small signal diode
R13
4k7
Use a Buffer to translate the 3V3 Signal of the Due to 5V to fully open the Mosfet
Possible alternative parts (pin compatible):
74LVC1G17
SN74LV1T34
RP2
RP3
10kArrayx4
X_EN
Y_EN
Z_EN
E0_EN
E1_EN
E2_EN
D8
D9
/X_EN_BUF
/Y_EN_BUF
/Z_EN_BUF
/E0_EN_BUF
/E1_EN_BUF
/E2_EN_BUF
D9_BUF
U6
SN74LV1T125
#OE
A
VCC
GND
Y
+5V
D8_BUF
Active low
C8
100n
R14
330R
D13
LED_0603_GREEN
Q5
NCE3416
D10
D11-FET4
D12-FET5
D2-FET6
D10_BUF
FET4_BUF
FET5_BUF
FET6_BUF
RP4
Active high
Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/
Sheet: /Emergency Stop/
File: e-stop.sch
Title: RAMPS-FD (RAMPS for Arduino Due)
Size: A4
Date: 2020-06-13
Rev: v3.0
KiCad E.D.A. kicad 5.1.6
Id: 4/10

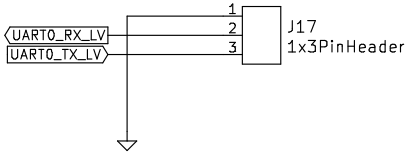

UART2_RX_LV
UART2_TX_LV
R15
1k
UART_TMC
Add jumpers for TMC2130 SPI
JP10
4x3JumperArray
D51-MOSI
D52-SCK
STEP_E0_CS
D50-MISO
JP11
UART_TMC_1
1x2JumperArray
+V_LOGIC
+V_MOTOR
+5V
10k R16
100k R17
U7
VDD
ENABLE
/E0_EN_BUF
E0_STEP
E0_DIR
STEP
DIR
MS1/SDI
MS2/SCK
MS3/CS/UART
RST/SDO/UART
SLEEP/NC
MOT-2B
MOT-2A
MOT-1A
MOT-1B
GNDLOG
GNDMOT
VMOT
J14
1x4PinHeader
D14
DS110W
C9
100u_35V
D15
SMF36CA
MOT_GND
Pololu
E0-2B
E0-1A
E0-2A
E0-1B
VR20 33V
VR21 33V
VR22 33V
VR23 33V
VR24 33V
VR25 33V
Use Jumpers to Connect the SPI Bus to your Stepperdrivers,
for example for TMC 2130,
or to select the microstepping for your Pololu by connecting
the middle pin row to +V_Logic
JP12
4x3JumperArray
D51-MOSI
D52-SCK
STEP_E1_CS
D50-MISO
JP13
UART_TMC1
1x2JumperArray
10k R18
100k R19
U8
/E1_EN_BUF
E1_STEP
E1_DIR
J15
D16
DS110W
C10
100u_35V
D17
SMF36CA
E1-2B
E1-1A
E1-2A
E1-1B
VR26 33V
VR27 33V
VR28 33V
VR29 33V
VR30 33V
VR31 33V
JP14
4x3JumperArray
D51-MOSI
D52-SCK
STEP_E2_CS
D50-MISO
JP15
UART_TMC1
1x2JumperArray
10k R20
100k R21
U9
/E2_EN_BUF
E2_STEP
E2_DIR
J16
D18
DS110W
C11
100u_35V
D19
SMF36CA
E2-2B
E2-1A
E2-2A
E2-1B
VR32 33V
VR33 33V
VR34 33V
VR35 33V
VR36 33V
VR37 33V
Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/
Sheet: /Stepper Drivers 2/
File: steppers2.sch
Title: RAMPS-FD (RAMPS for Arduino Due)
Size: A4
Date: 2020-06-13
Rev: v3.0
KiCad E.D.A. kicad 5.1.6
Id: 5/10

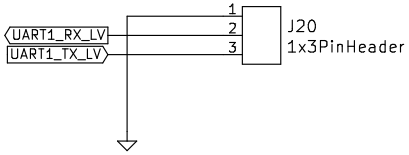
NB: On Arduino Due: IOs on this page are not 5V tolerant. Do not exceed 3.3V.

Serial

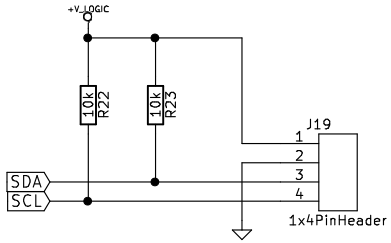
Note: this serial port is shared with USB programming port

UART-TTL



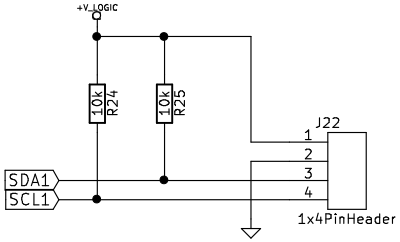


I2C



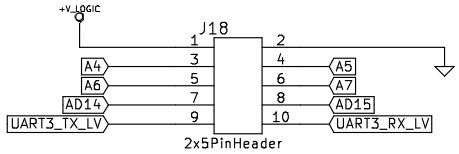
1k5 Pull ups on Due

Must not have external pullups to 5V if IOREF = 3.3V



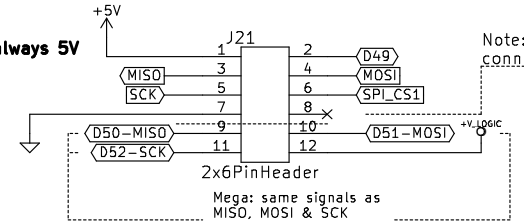
Aux connectors

Aux2



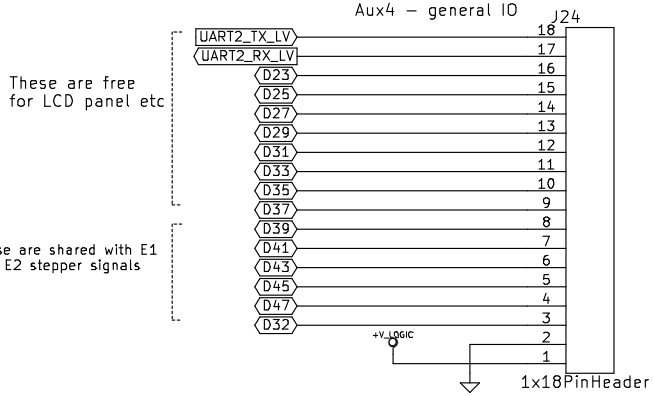
Aux3 – SPI

NB This pin is always 5V



Note: Some addon boards connect this pin to GND.

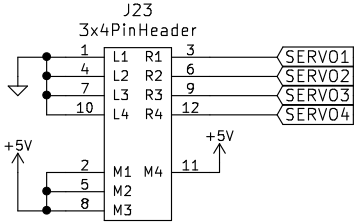
Aux4 – general IO



These are free for LCD panel etc

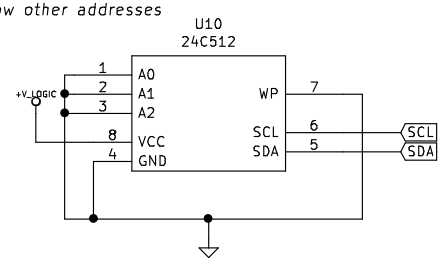
These are shared with E1 and E2 stepper signals

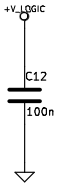
Servos



EEPROM

Might want to allow other addresses





Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/

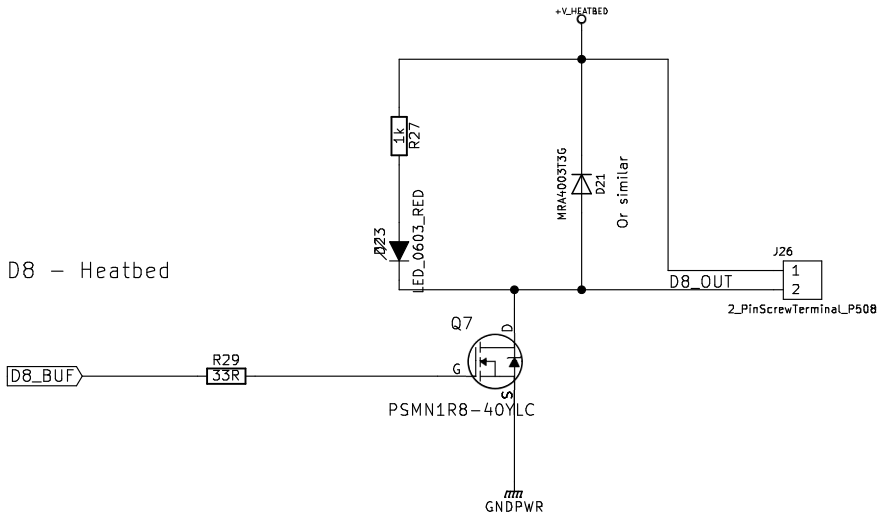
Sheet: /Misc Connectors/
File: con_misc.sch

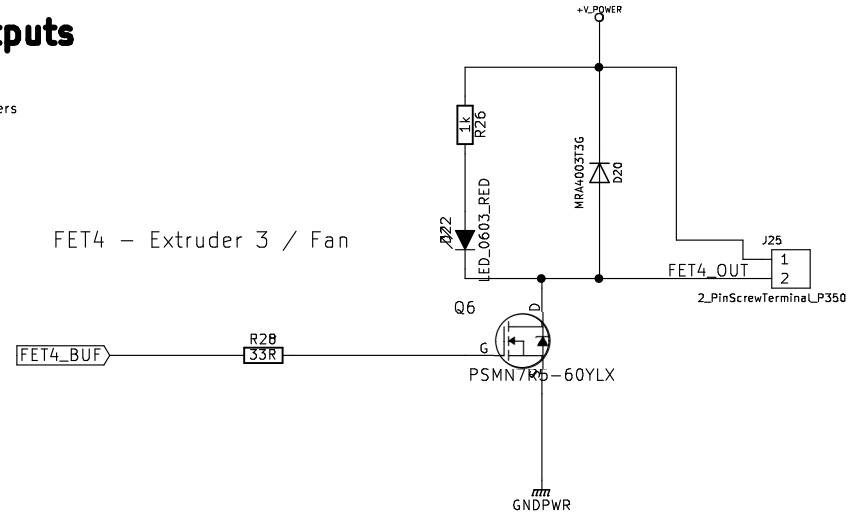
Title: RAMPS-FD (RAMPS for Arduino Due)

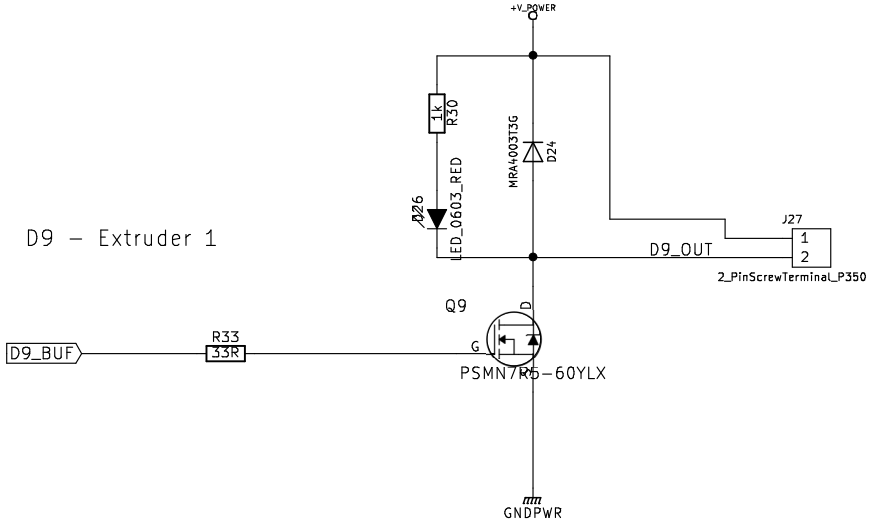
Size: A4	Date: 2020-06-13	**Rev: v3.0**
KiCad E.D.A. kicad 5.1.6		Id: 6/10

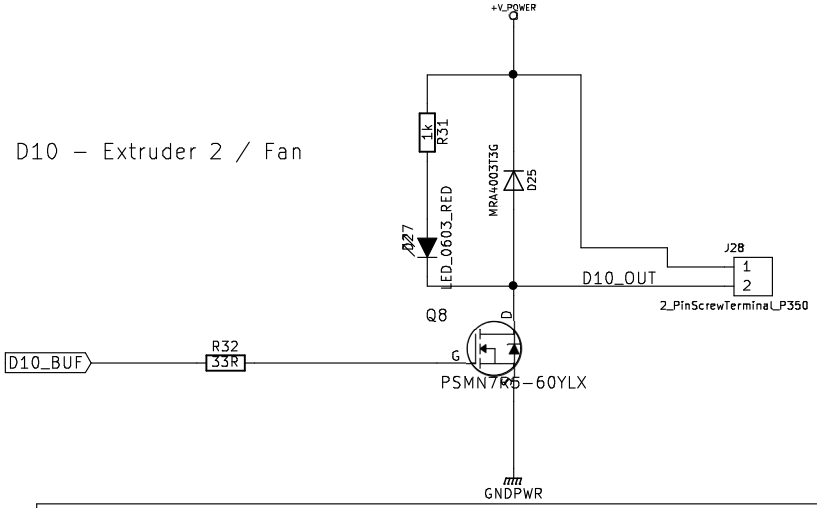
MOSFET Outputs

Non-inverting drivers









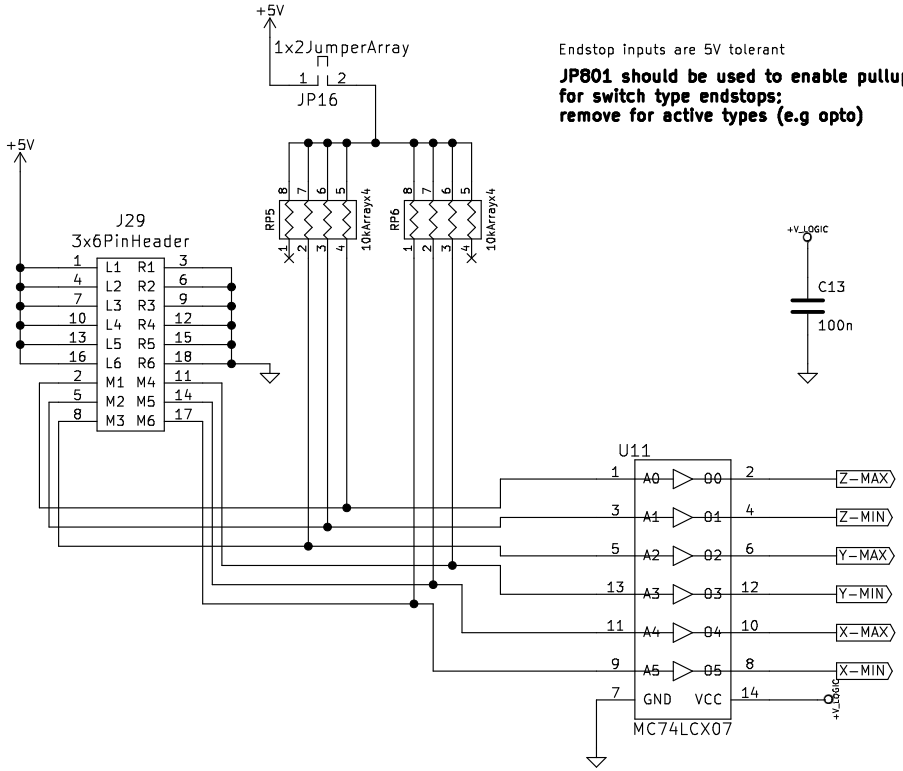
Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/

Sheet: /Mosfet Outputs/
File: con_outputs.sch

Title: RAMPS-FD (RAMPS for Arduino Due)

Size: A4	Date: 2020-06-13	**Rev: v3.0**
KiCad E.D.A. kicad 5.1.6		Id: 7/10

Endstops



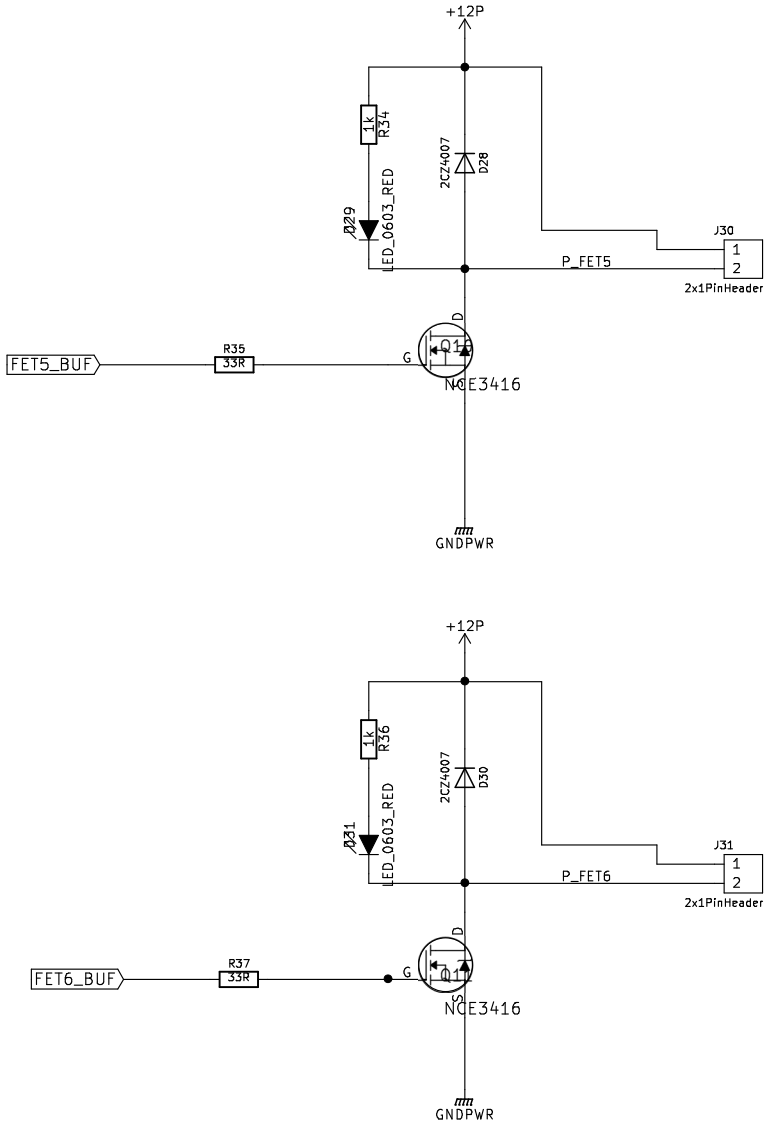
Marius Krause 2020

Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/

Sheet: /Endstop Inputs/
File: con_inputs.sch

Title: RAMPS-FD (RAMPS for Arduino Due)

Size: A4	Date: 2020-06-13	**Rev: v3.0**
KiCad E.D.A. kicad 5.1.6		Id: 8/10



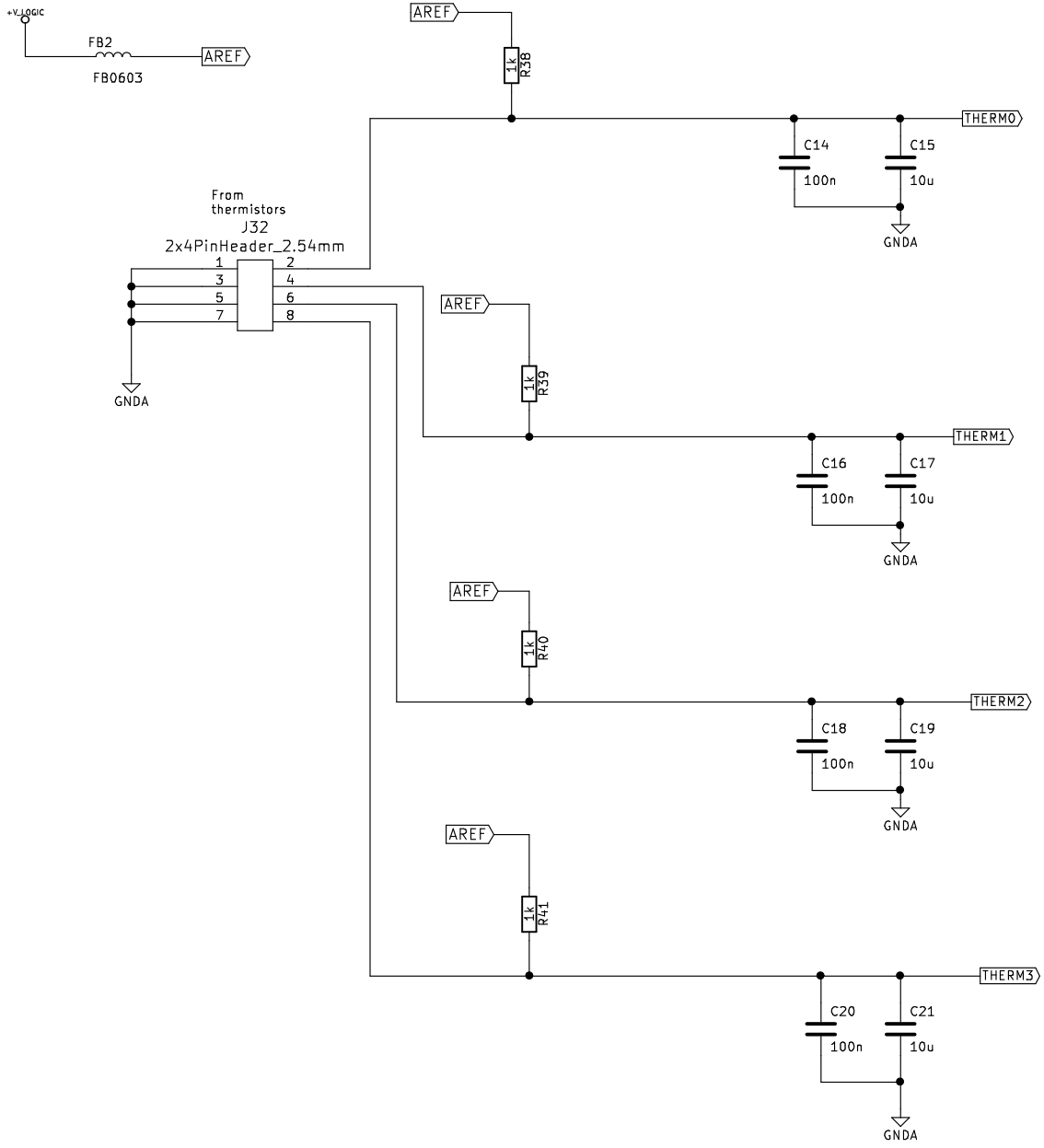
Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/

Sheet: /Extra MOSFETs/
File: Extra_Mosfets.sch

Title: RAMPS-FD (RAMPS for Arduino Due)

Size: A4	Date: 2020-06-13	**Rev: v3.0**
KiCad E.D.A. kicad 5.1.6		Id: 9/10

Thermistor Inputs



Marius Krause 2020
GPL v3
Derived from RAMPS FD 2.2 by Bob Cousins github.com/bobc/bobc_hardware/

Sheet: /Thermistor inputs/
File: thermistor_inputs.sch

Title: RAMPS-FD (RAMPS for Arduino Due)

Size: A4	Date: 2020-06-13	**Rev: v3.0**
KiCad E.D.A. kicad 5.1.6		Id: 10/10