Duet3 Mainboard

Sheet: Processor

Processor

File: Processor.sch

Sheet: Stepper Driver & Endstops

Stepper Drivers

File: Stepper_Drv.sch

Sheet: Headers

Headers

File: Headers.sch

Sheet: sheet5F4EC370

IO

File: Endstops.sch

Sheet: MOSFET outputs

MOSFET outputs

File: Htr_Fan.sch

Sheet: sheet5B64A4E5

Comms

File: Comms.sch

Sheet: Power

Power

File: Power.sch

(c) Duet3D

Duet3d

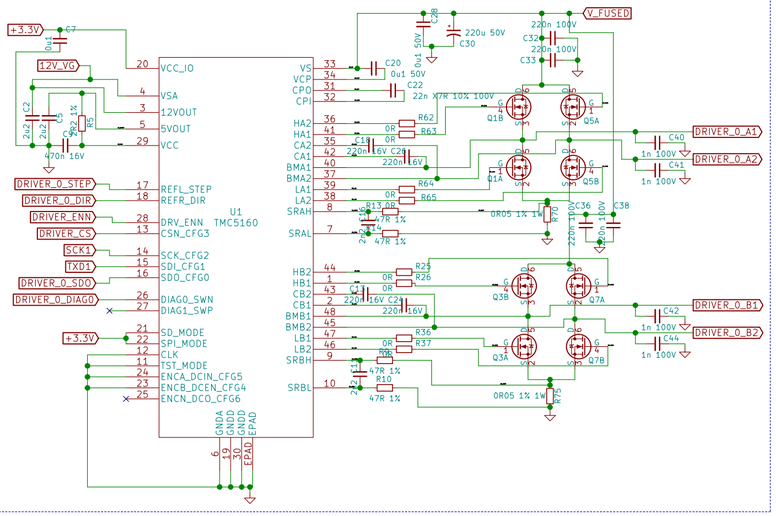
Sheet: /

File: Duet3_MB.sch

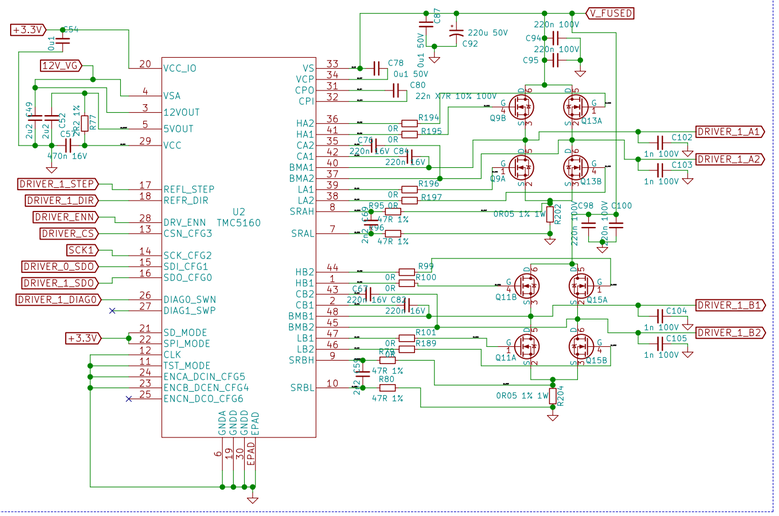
Title: Duet 3 Main Board

Size: A4	Date: 2019-10-05	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.4)-1		Id: 1/8

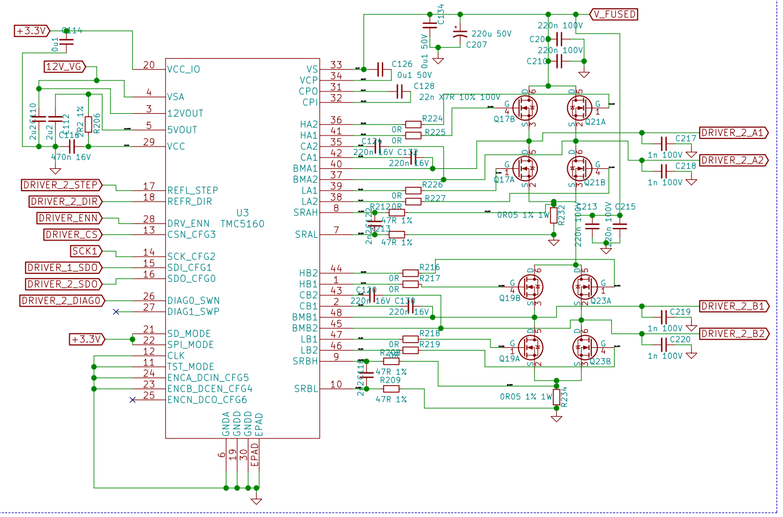
Driver 0



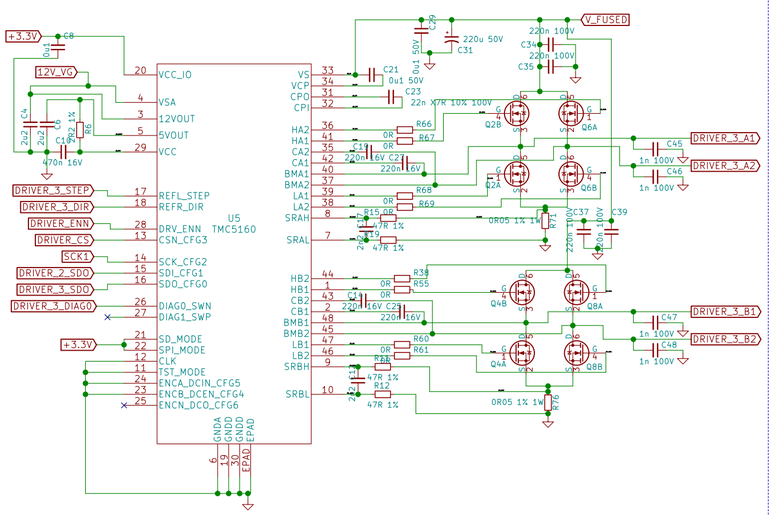
Driver 1



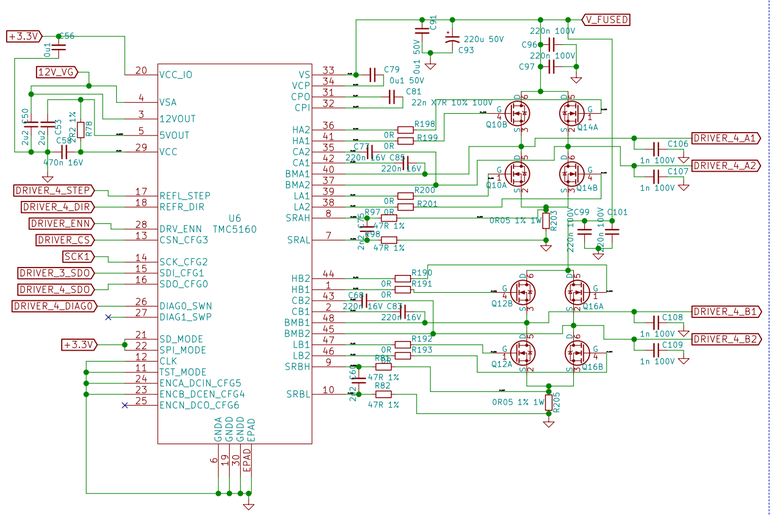
Driver 2



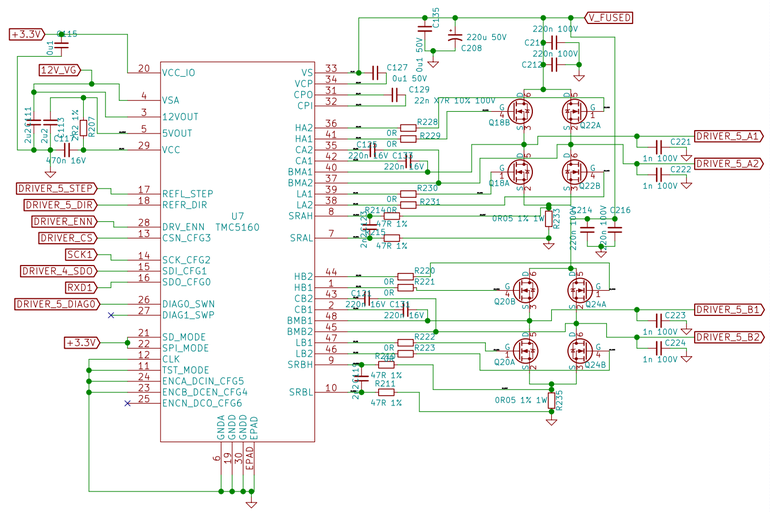
Driver 3



Driver 4



Driver 5



(c) Duet3D

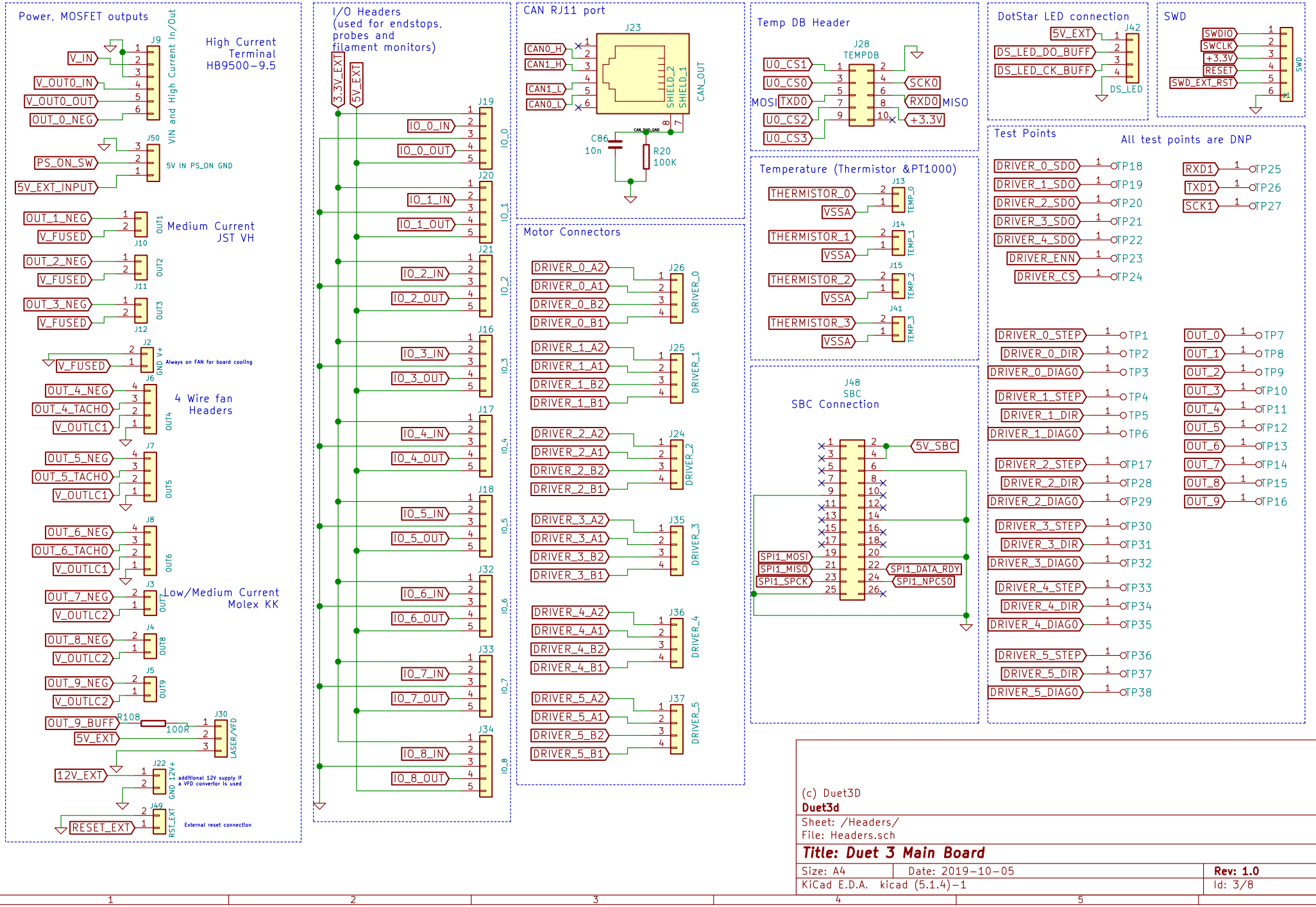
Duet3d

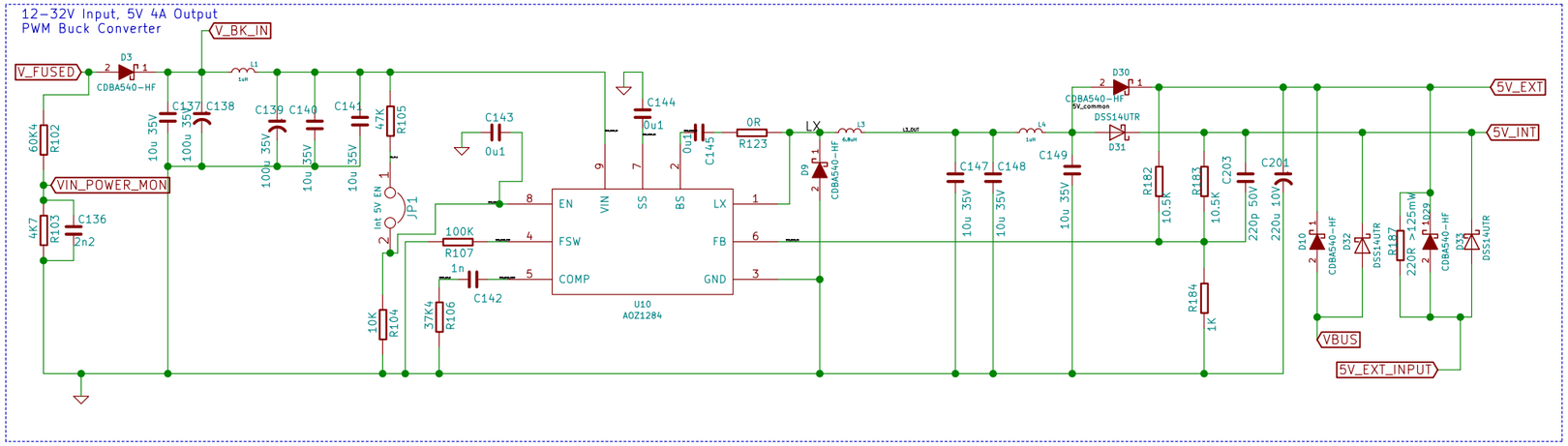
Sheet: /Stepper Driver & Endstops/

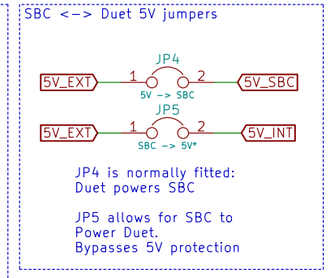
File: Stepper_Drv.sch

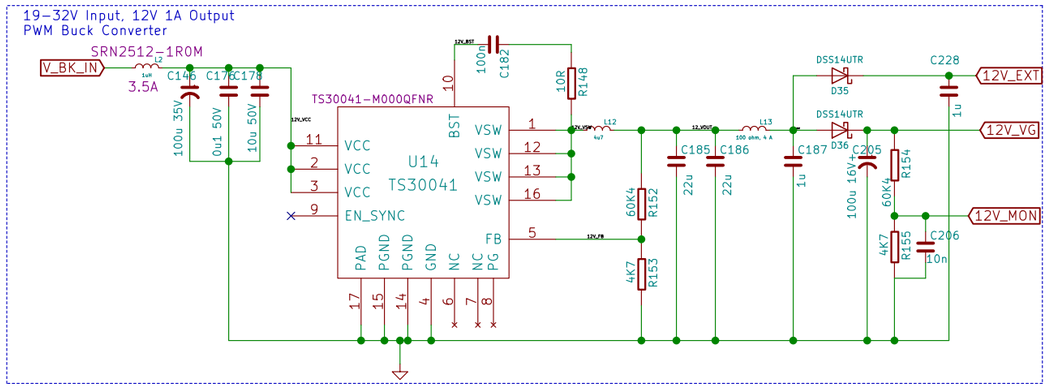
Title: Duet 3 Main Board

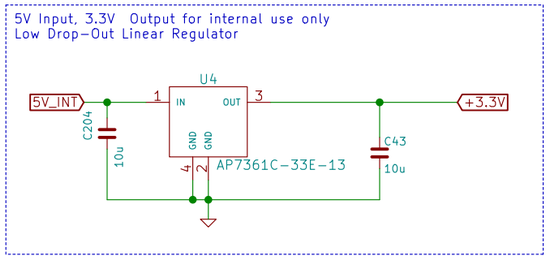
Size: A2	Date: 2019-10-05	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.4)-1		Id: 2/8

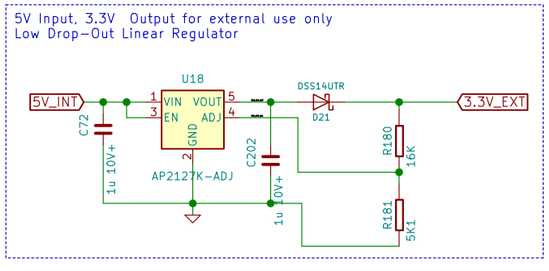

Power, MOSFET outputs
High Current Terminal HB9500-9.5
VIN and High Current In/Out
V_IN
V_OUT0_IN
V_OUT0_OUT
OUT_0_NEG
J9
J50
PS_ON_SW
5V_EXT_INPUT
5V IN PS_ON GND
OUT_1_NEG
V_FUSED
J10
OUT_2_NEG
J11
OUT_3_NEG
J12
Medium Current JST VH
J2
Always on FAN for board cooling
4 Wire fan Headers
OUT_4_NEG
OUT_4_TACHO
V_OUTLC1
J6
OUT_5_NEG
OUT_5_TACHO
J7
OUT_6_NEG
OUT_6_TACHO
J8
Low/Medium Current Molex KK
OUT_7_NEG
V_OUTLC2
J3
OUT_8_NEG
J4
OUT_9_NEG
J5
OUT_9_BUFF
R108
100R
5V_EXT
J30
LASER/VFD
12V_EXT
J22
additional 12V supply if a VFD convertor is used
RESET_EXT
J49
External reset connection
I/O Headers (used for endstops, probes and filament monitors)
3.3V_EXT
5V_EXT
IO_0_IN
IO_0_OUT
J19
IO_1_IN
IO_1_OUT
J20
IO_2_IN
IO_2_OUT
J21
IO_3_IN
IO_3_OUT
J16
IO_4_IN
IO_4_OUT
J17
IO_5_IN
IO_5_OUT
J18
IO_6_IN
IO_6_OUT
J32
IO_7_IN
IO_7_OUT
J33
IO_8_IN
IO_8_OUT
J34
CAN RJ11 port
J23
CAN0_H
CAN1_H
CAN1_L
CAN0_L
SHIELD_2
SHIELD_1
CAN_OUT
C86
10n
R20
100K
Motor Connectors
DRIVER_0_A2
DRIVER_0_A1
DRIVER_0_B2
DRIVER_0_B1
J26
DRIVER_0
DRIVER_1_A2
DRIVER_1_A1
DRIVER_1_B2
DRIVER_1_B1
J25
DRIVER_1
DRIVER_2_A2
DRIVER_2_A1
DRIVER_2_B2
DRIVER_2_B1
J24
DRIVER_2
DRIVER_3_A2
DRIVER_3_A1
DRIVER_3_B2
DRIVER_3_B1
J35
DRIVER_3
DRIVER_4_A2
DRIVER_4_A1
DRIVER_4_B2
DRIVER_4_B1
J36
DRIVER_4
DRIVER_5_A2
DRIVER_5_A1
DRIVER_5_B2
DRIVER_5_B1
J37
DRIVER_5
Temp DB Header
J28
TEMPDB
U0_CS1
U0_CS0
MOSI
TXD0
U0_CS2
U0_CS3
SCK0
RXD0
MISO
+3.3V
Temperature (Thermistor &PT1000)
THERMISTOR_0
VSSA
J13
TEMP_0
THERMISTOR_1
J14
TEMP_1
THERMISTOR_2
J15
TEMP_2
THERMISTOR_3
J41
TEMP_3
J48
SBC
SBC Connection
5V_SBC
SPI1_MOSI
SPI1_MISO
SPI1_SPCK
SPI1_DATA_RDY
SPI1_NPCS0
DotStar LED connection
5V_EXT
DS_LED_DO_BUFF
DS_LED_CK_BUFF
J42
DS_LED
SWD
SWDIO
SWCLK
+3.3V
RESET
SWD_EXT_RST
Test Points
All test points are DNP
DRIVER_0_SDO
DRIVER_1_SDO
DRIVER_2_SDO
DRIVER_3_SDO
DRIVER_4_SDO
DRIVER_ENN
DRIVER_CS
TP18
TP19
TP20
TP21
TP22
TP23
TP24
RXD1
TXD1
SCK1
TP25
TP26
TP27
DRIVER_0_STEP
DRIVER_0_DIR
DRIVER_0_DIAG0
DRIVER_1_STEP
DRIVER_1_DIR
DRIVER_1_DIAG0
DRIVER_2_STEP
DRIVER_2_DIR
DRIVER_2_DIAG0
DRIVER_3_STEP
DRIVER_3_DIR
DRIVER_3_DIAG0
DRIVER_4_STEP
DRIVER_4_DIR
DRIVER_4_DIAG0
DRIVER_5_STEP
DRIVER_5_DIR
DRIVER_5_DIAG0
TP1
TP2
TP3
TP4
TP5
TP6
TP17
TP28
TP29
TP30
TP31
TP32
TP33
TP34
TP35
TP36
TP37
TP38
OUT_0
OUT_1
OUT_2
OUT_3
OUT_4
OUT_5
OUT_6
OUT_7
OUT_8
OUT_9
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
(c) Duet3D
Duet3d
Sheet: /Headers/
File: Headers.sch
Title: Duet 3 Main Board
Size: A4
Date: 2019-10-05
Rev: 1.0
KiCad E.D.A. kicad (5.1.4)-1
Id: 3/8

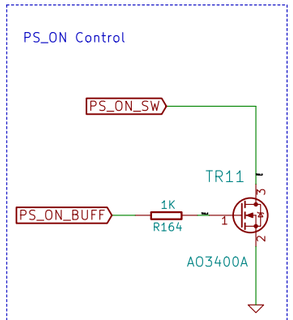


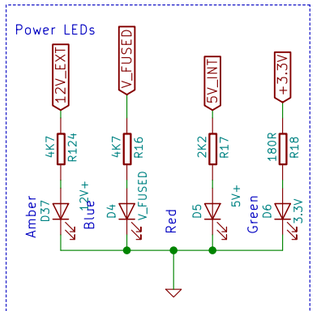


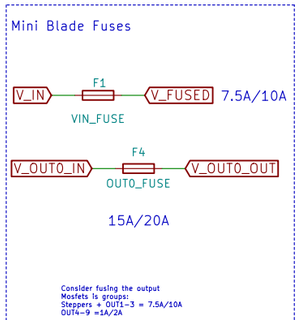












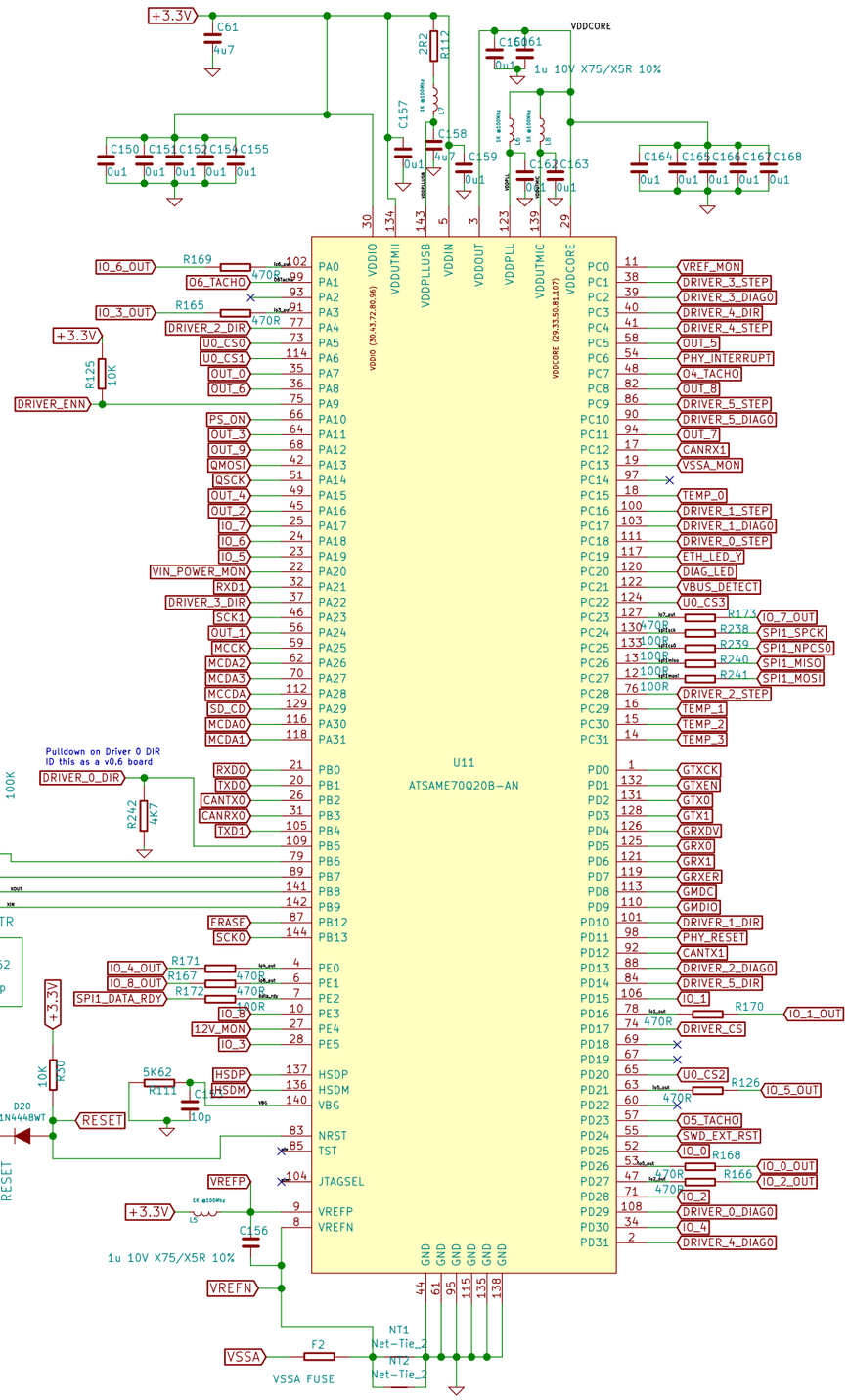
(c) Duet3D

Duet3d

Sheet: /Power/
File: Power.sch

Title: Duet 3 Main Board

Size: A3	Date: 2019-10-05	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.4)-1		Id: 4/8

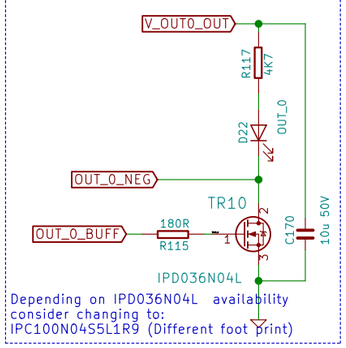


(c) Duet3D

Duet3d		
Sheet: /Processor/		
File: Processor.sch		
Title: Duet 3 Main Board		
Size: A3	Date: 2019-10-05	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.4)-1		Id: 5/8

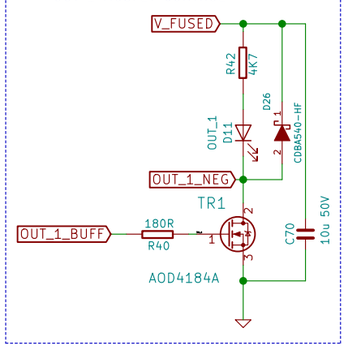
OUT0 – OUT3 – High current MOSFETs

OUT 0 MOSFET CONTROL

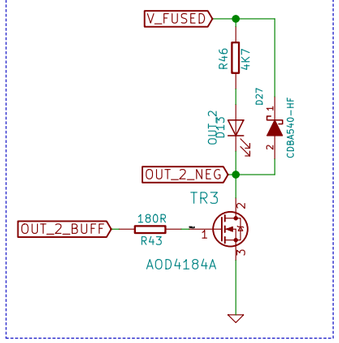


Depending on IPD036N04L availability
consider changing to:
IPC100N04S5L1R9 (Different foot print)

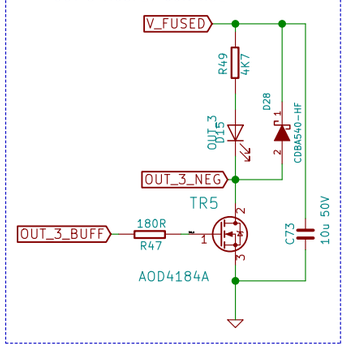
OUT 1 MOSFET CONTROL



OUT 2 MOSFET CONTROL

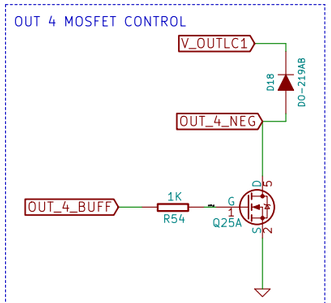


OUT 3 MOSFET CONTROL

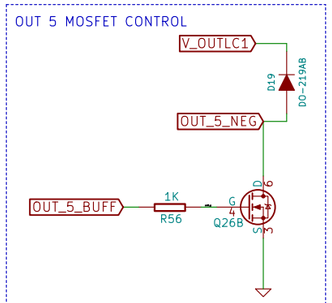


2 10u caps should be fine
for the three medium power FETs

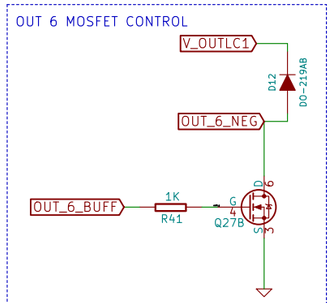
OUT 4 MOSFET CONTROL



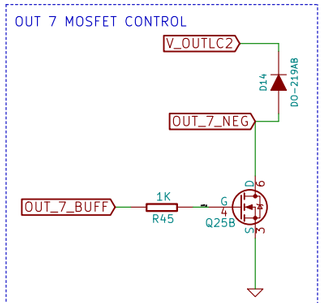
OUT 5 MOSFET CONTROL



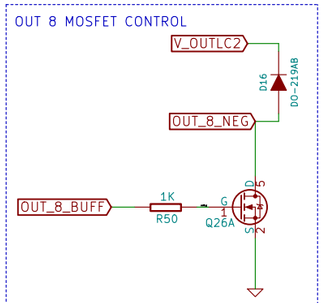
OUT 6 MOSFET CONTROL



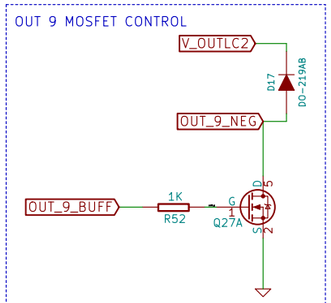
OUT 7 MOSFET CONTROL



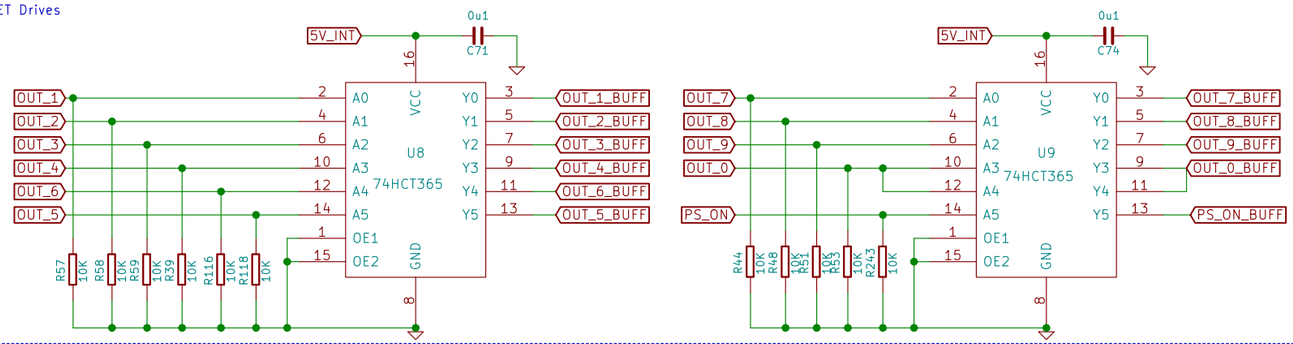
OUT 8 MOSFET CONTROL



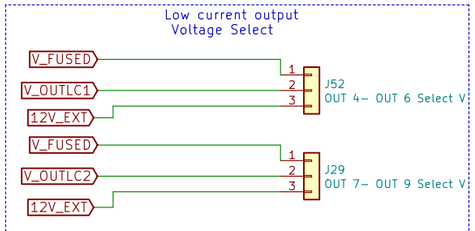
OUT 9 MOSFET CONTROL



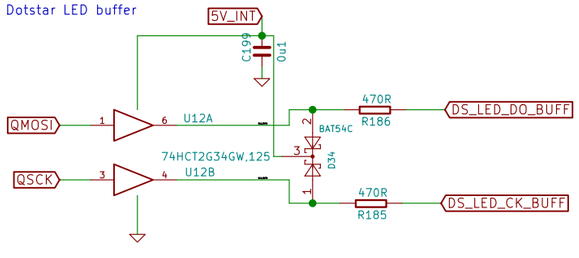
FET Drives



Low current output Voltage Select



Dotstar LED buffer



(c) Duet3D

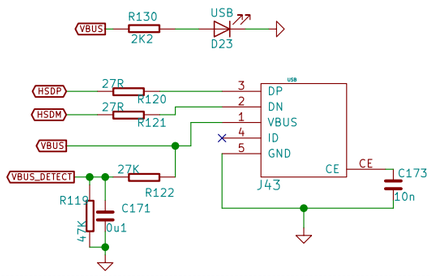
Duet3d

Sheet: /MOSFET outputs/
File: Htr_Fan.sch

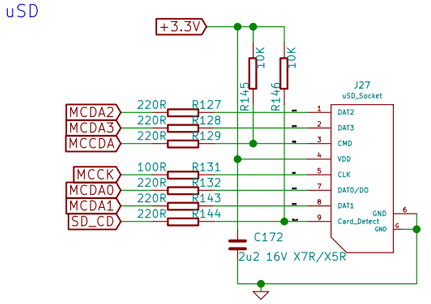
Title: Duet 3 Main Board

Size: A3	Date: 2019-10-05	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.4)-1		Id: 6/8

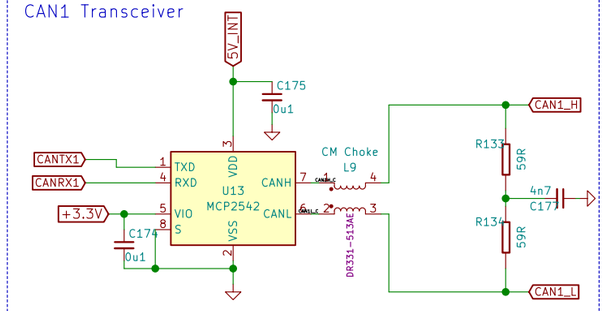
USB



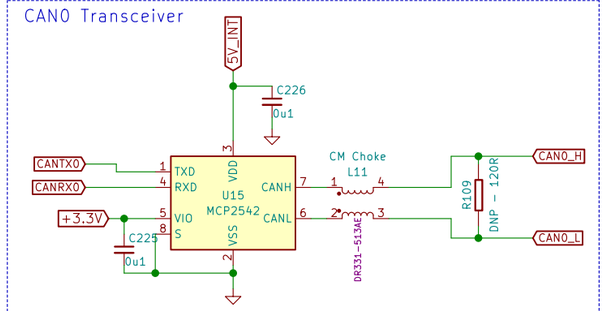
uSD



CAN1 Transceiver



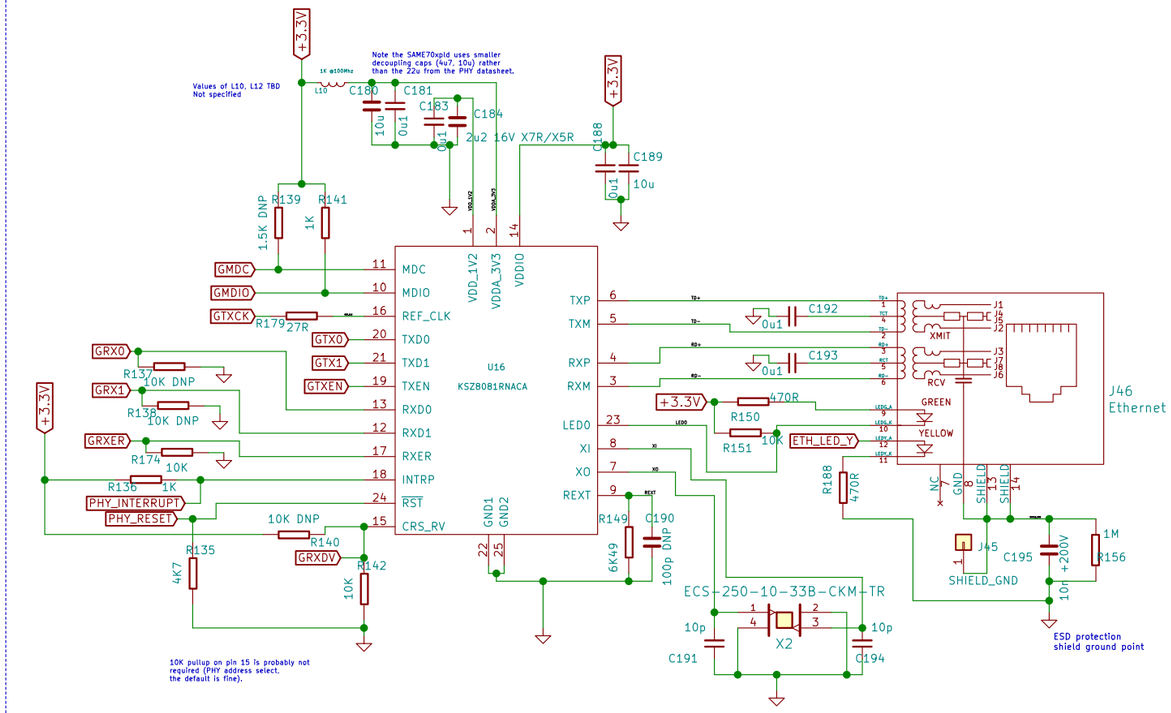
CAN0 Transceiver



Off board termination
resistors required for CAN0 bus.
Alternative solder 120 Ohm
1206 resistor to the DNP pads
at the bottom of the board

Off board CM choke also required
In some applications

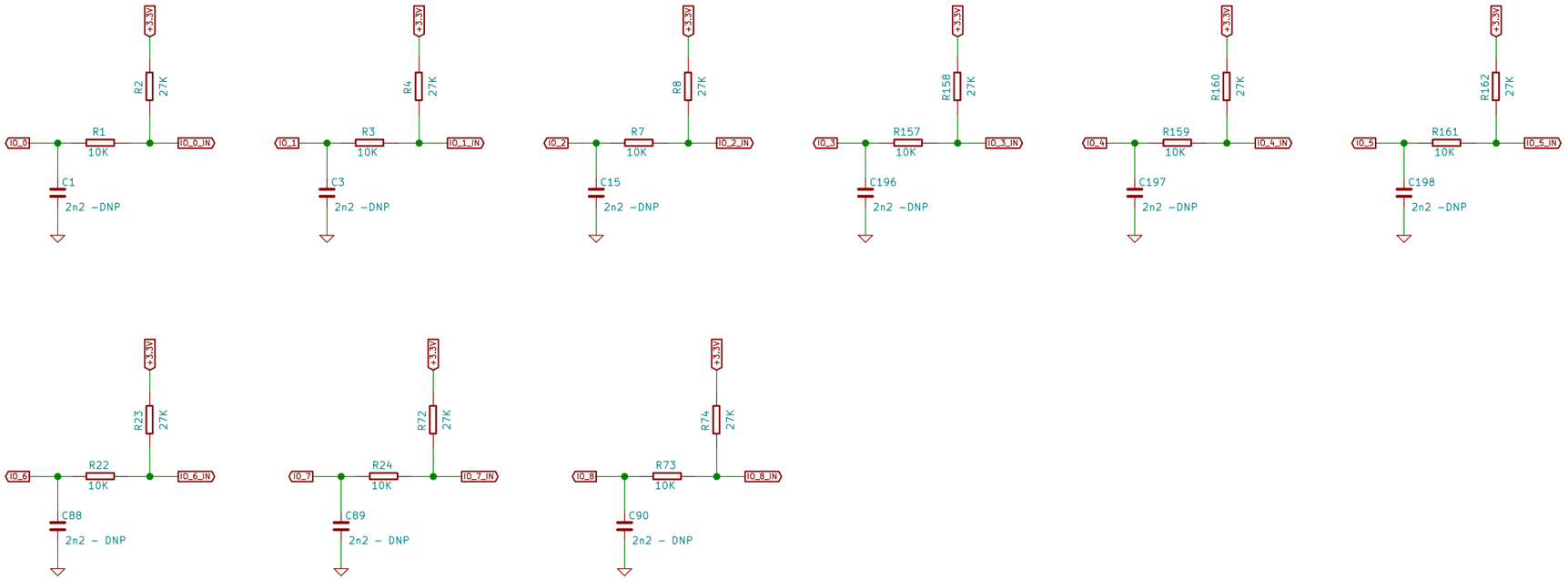
Ethernet/Ethercat Master



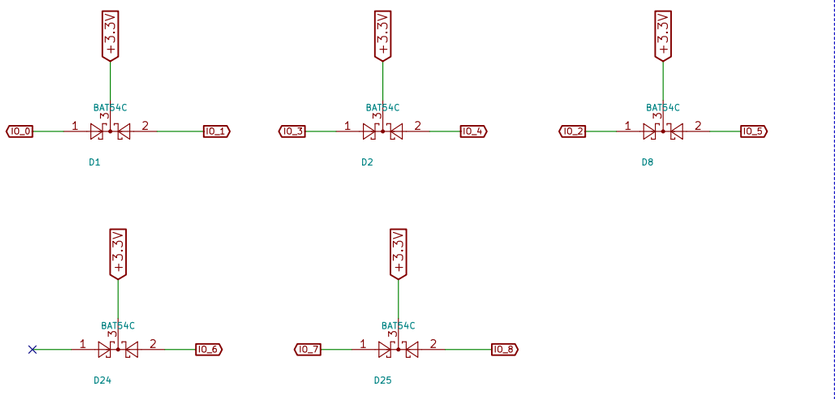
(c) Duet3D

Duet3d		
Sheet: /sheet5B64A4E5/ File: Comms.sch		
Title: Duet 3 Main Board		
Size: A3	Date: 2019-10-05	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.4)-1		Id: 7/8

IO inputs (Used for endstops, probes, filament monitors and other low speed IO)



Input Protection



(c) Duet3D

Duet3d		
Sheet: /sheet5F4EC370/ File: Endstops.sch		
Title: Duet 3 Main Board		
Size: A3	Date: 2019-10-05	**Rev: 1.0**
KiCad E.D.A. kicad (5.1.4)-1		Id: 8/8