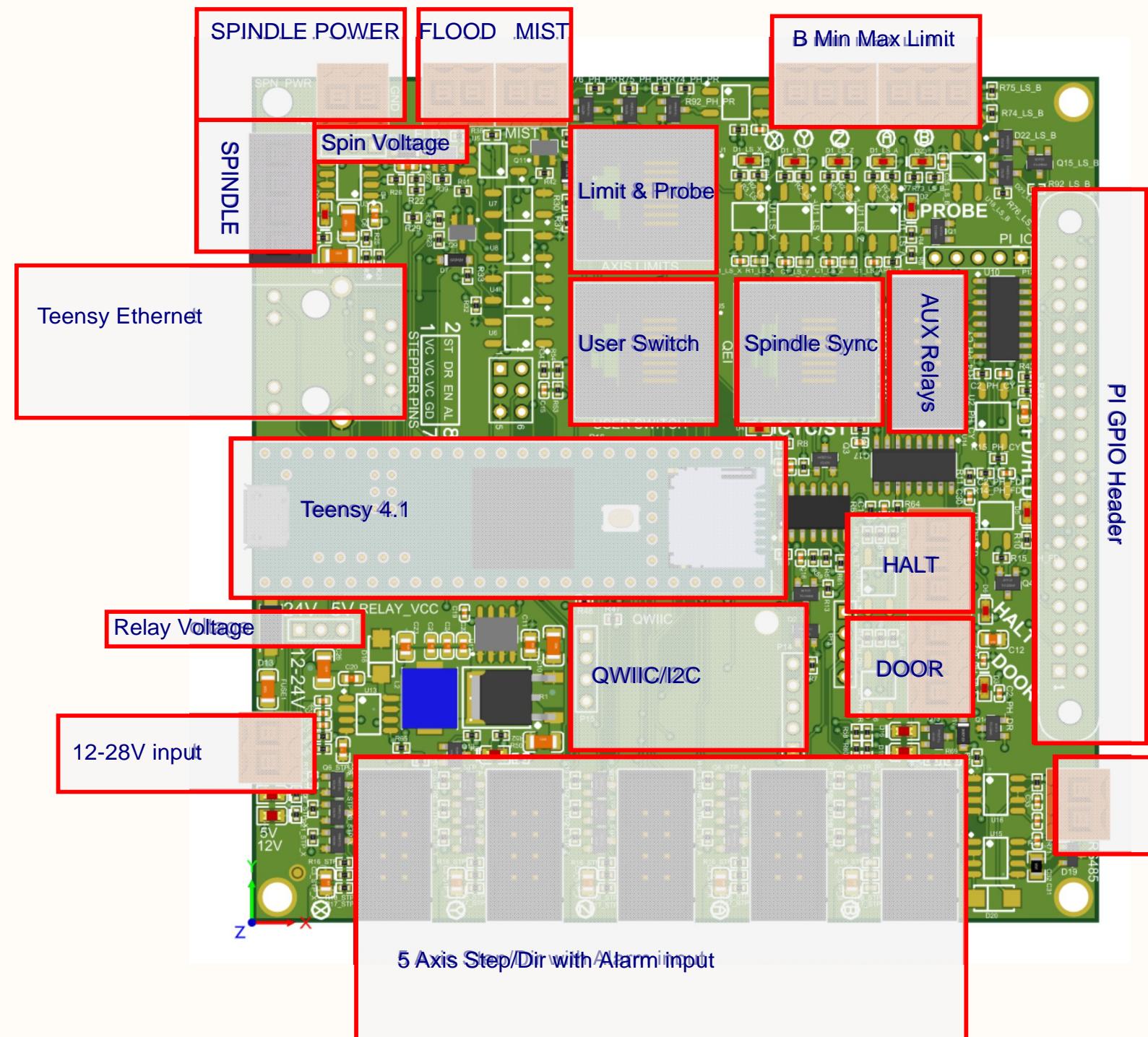


GRBLHAL2000 EST



Mechanical

PCB LOGO
Expatria Technologies

FID1 FID2 FID3

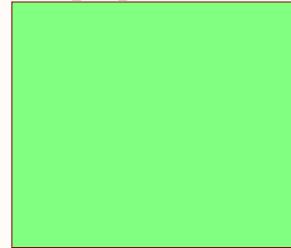
Top Level Design

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U_Title Sheet
Title Sheet.SchDoc

U_Change Log
Change Log.SchDoc

U_PrintNC_BREAKOUT
PrintNC_CNC_Breakout.SchDoc



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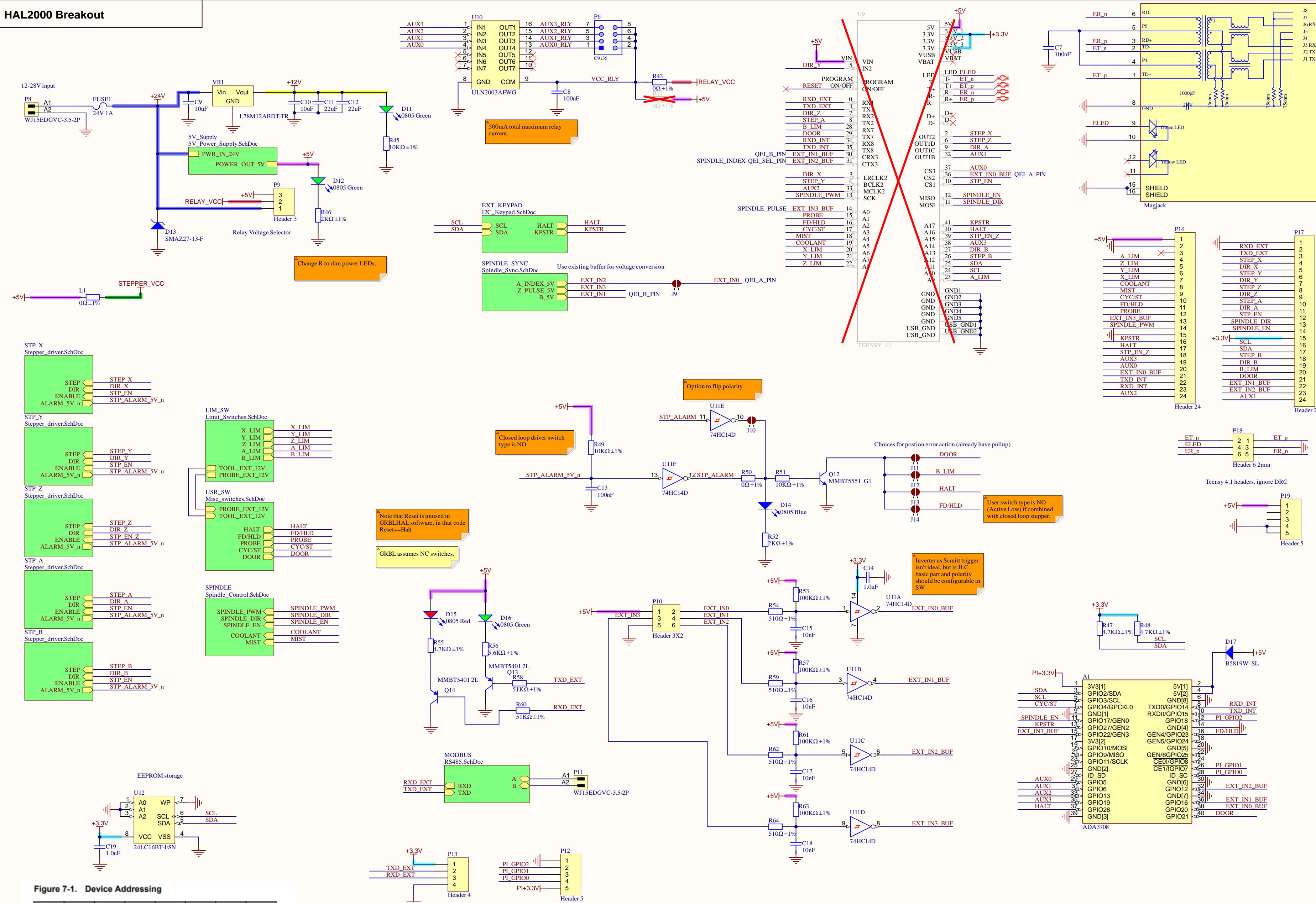


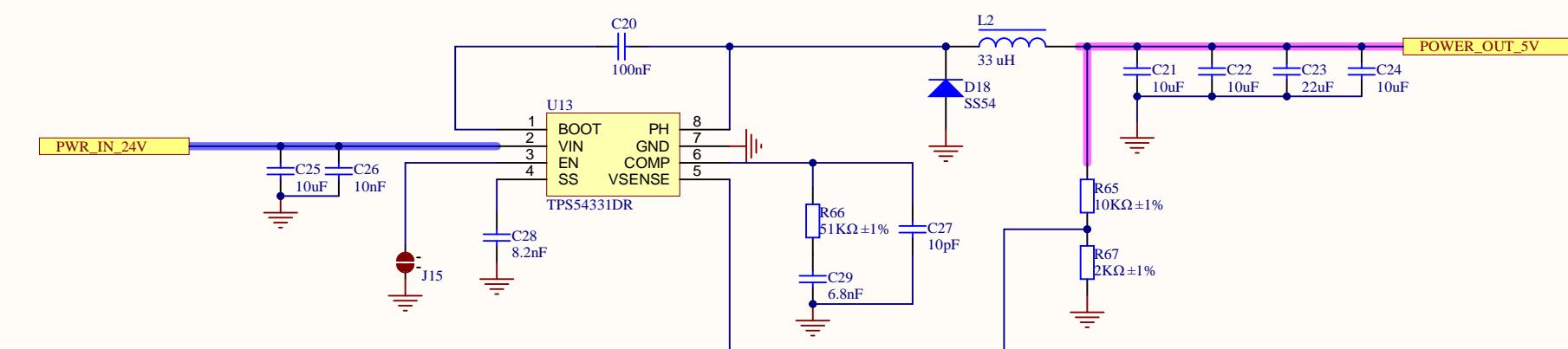
Figure 7-1. Device Addressing

1	0	1	0	A2	A1	A0	R/W
MSB					LSB		

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5V Power Supply



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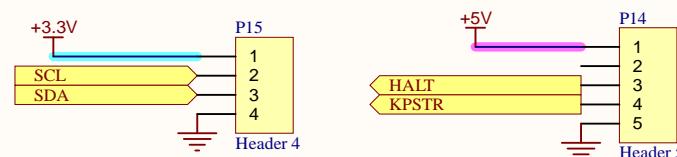


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QWIIC I2C Keypad

^A Due to supply issues, starting with revision A5 the QWIIC RJ45 connector is removed and replaced with headers. This allows alternate uses of the I2C header



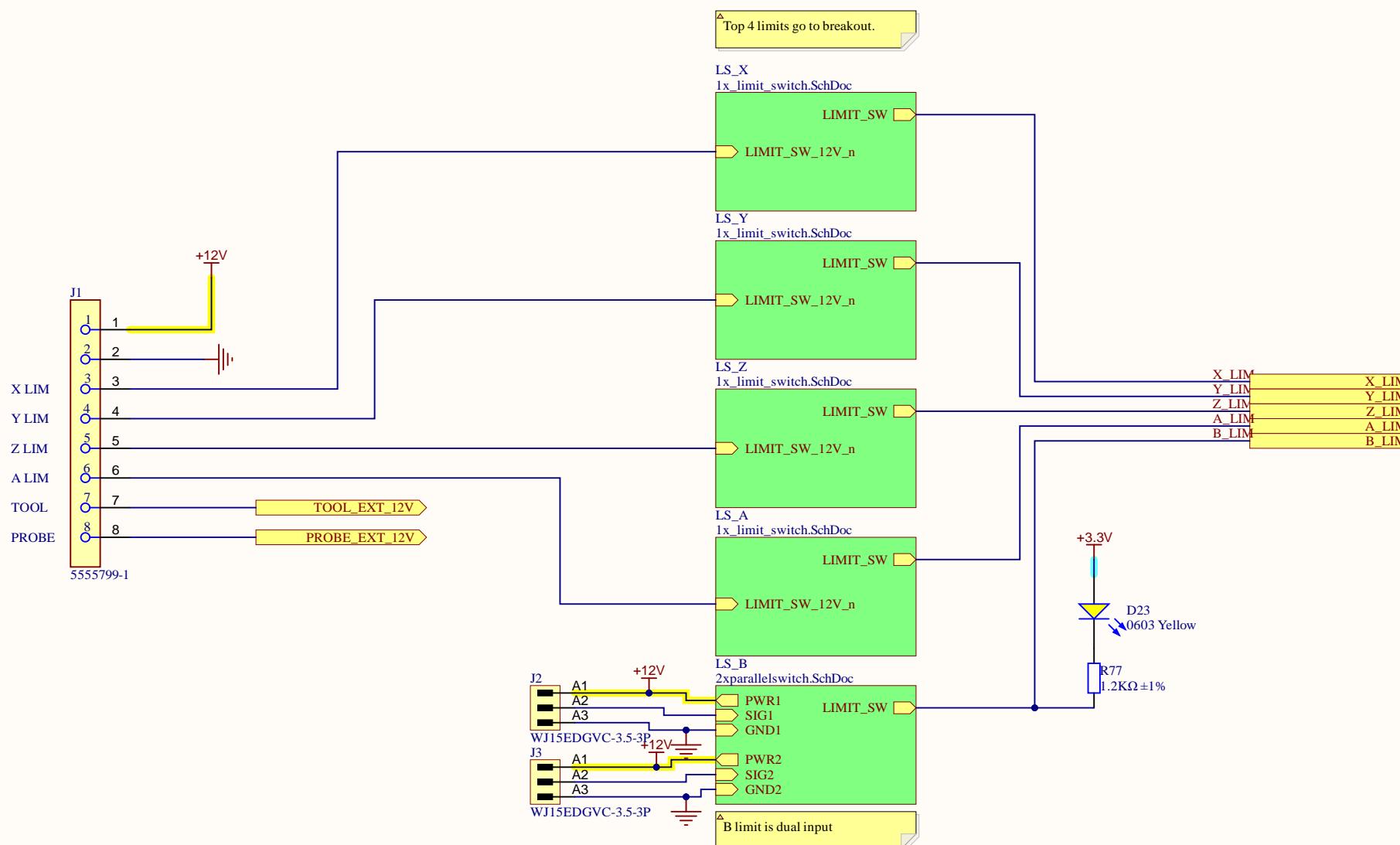
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	13/ 14

Limit Switches



Limit Switch XOR

A

A

B

B

C

C

D

D

Single Limit Switch

A

A

B

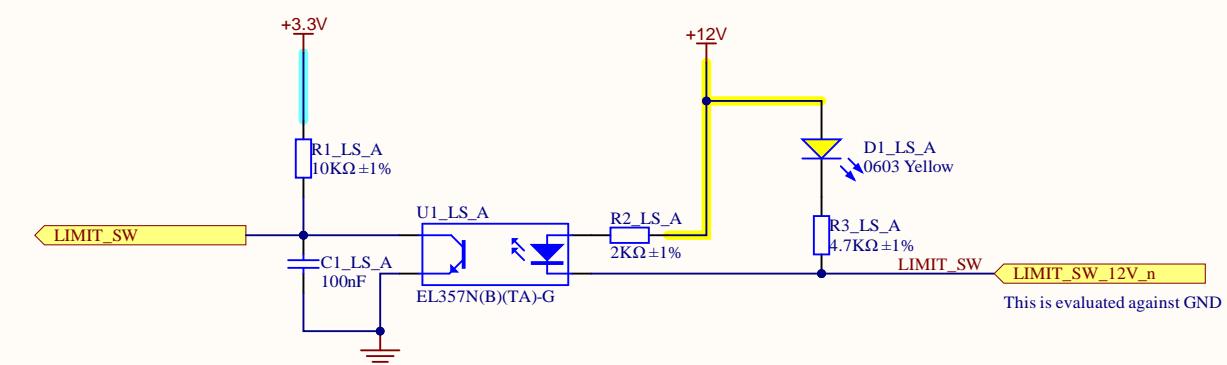
B

C

C

D

D



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Single Limit Switch

A

A

B

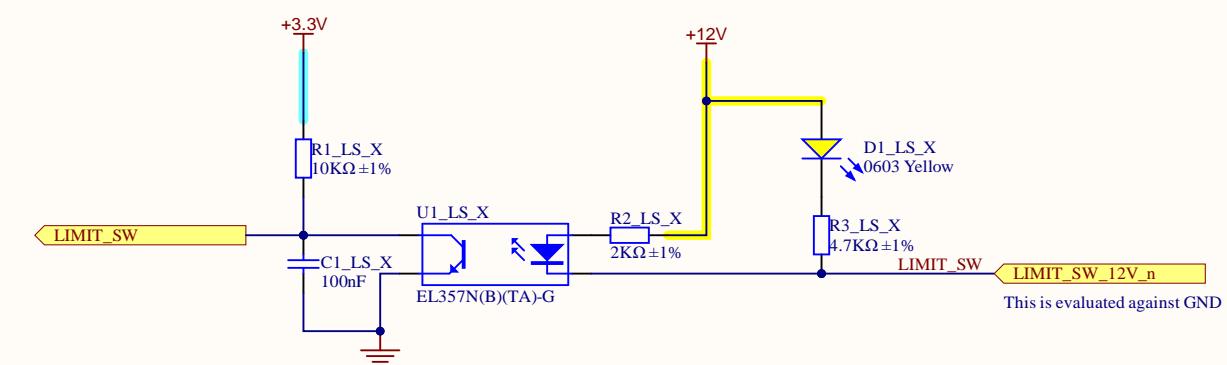
B

C

C

D

D



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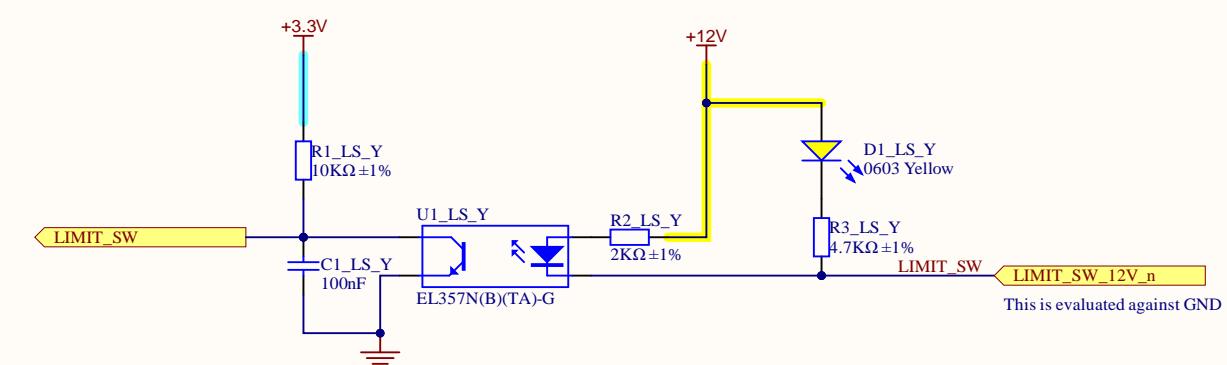
Single Limit Switch

A A

B B

C C

D D



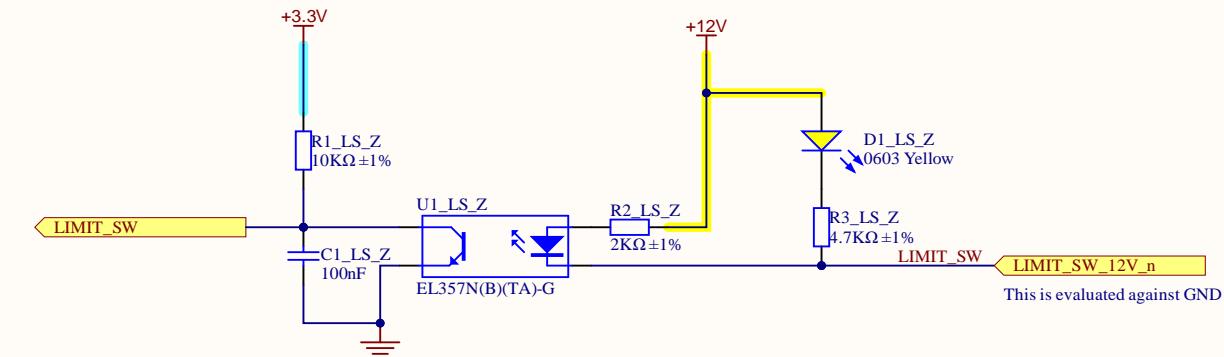
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Single Limit Switch



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Limit Switch XOR

A

A

B

B

C

C

D

D

1

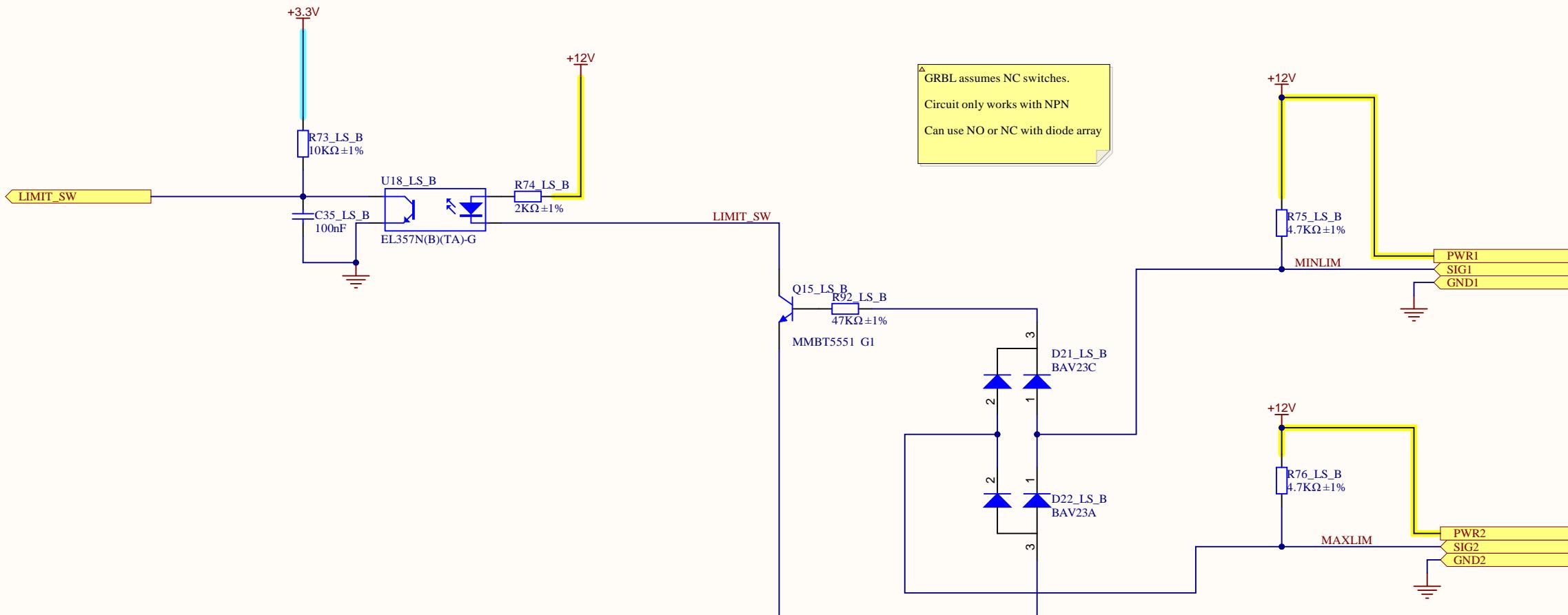
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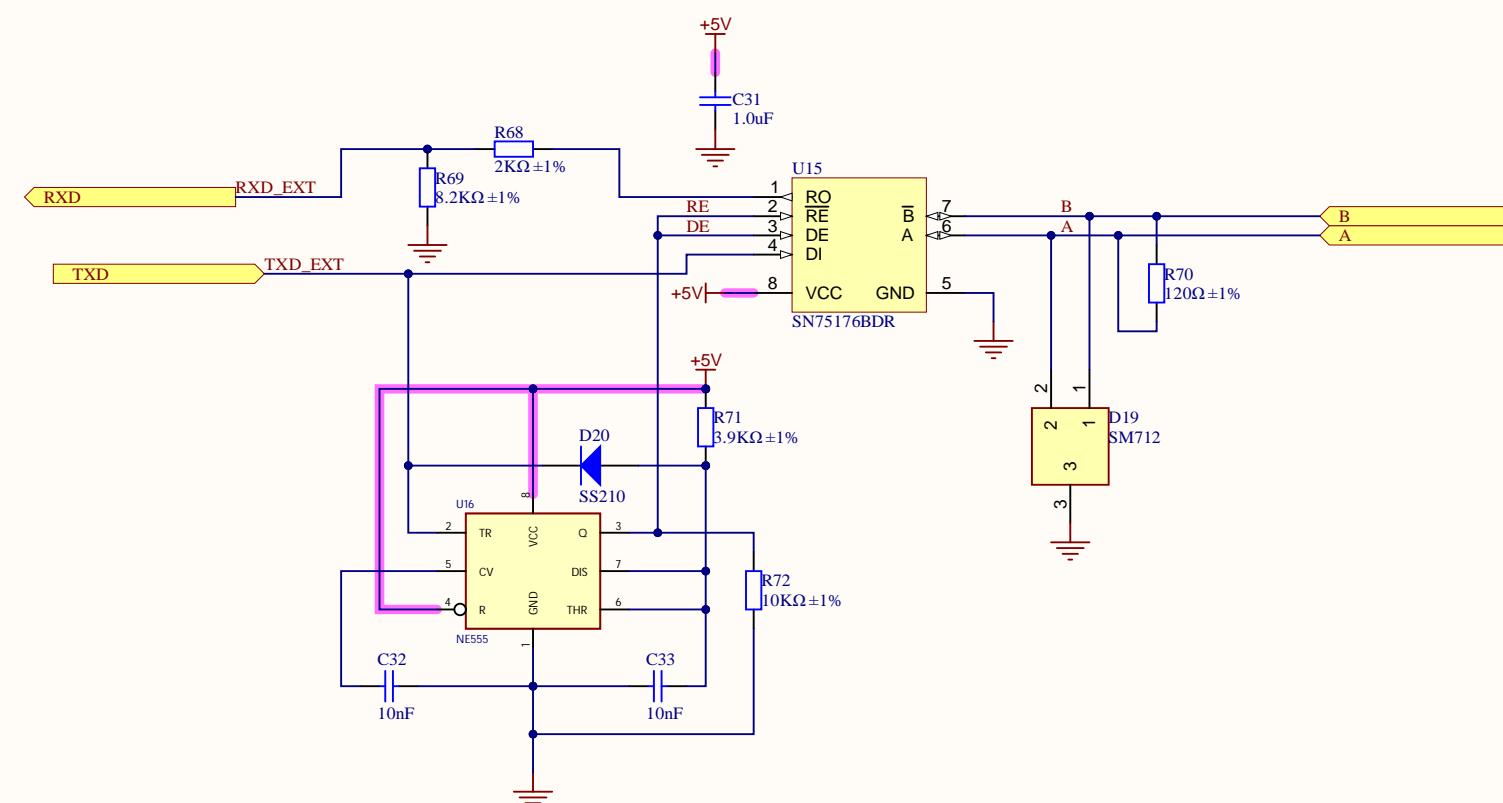


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6 / 14			

A

A



Auto direction circuit from Bryan Varner pi485 project used under MIT license. Thank you!

<https://github.com/bvarner/pi485>

B

B

C

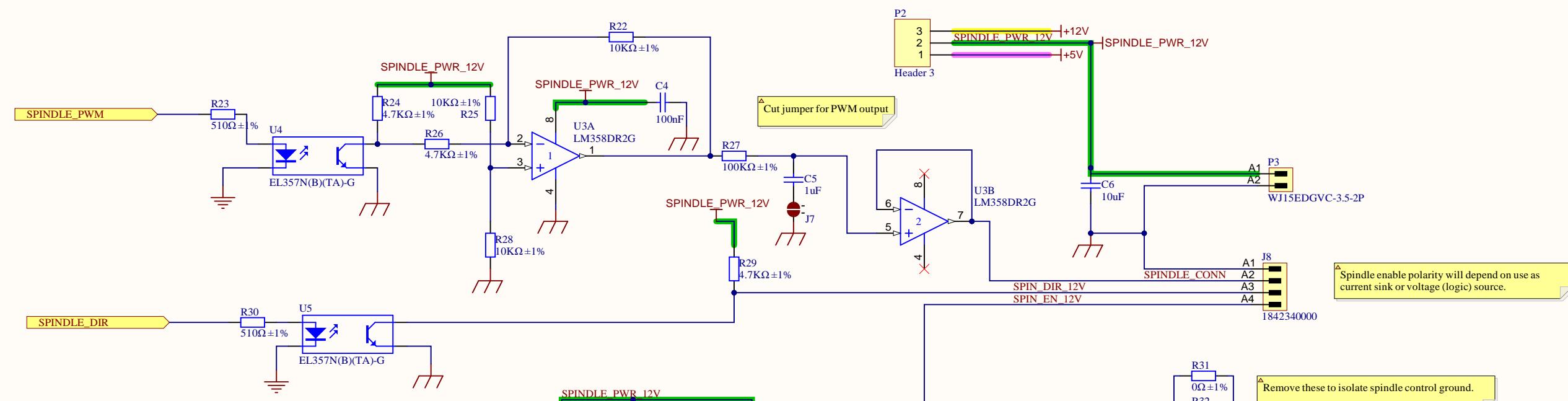
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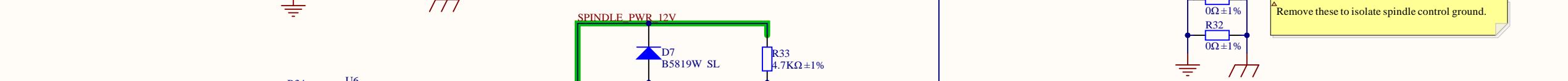
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Spindle Controls

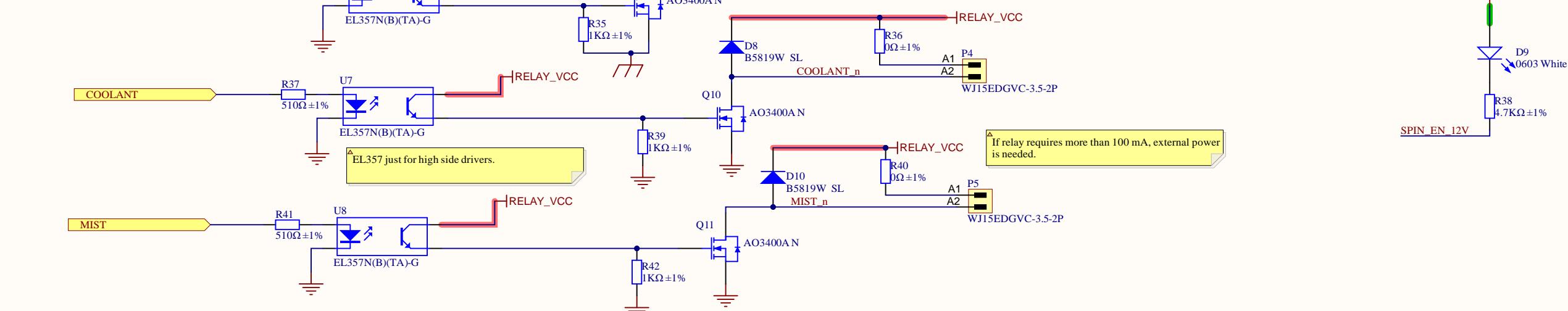
A



B



C



D

A

A

B

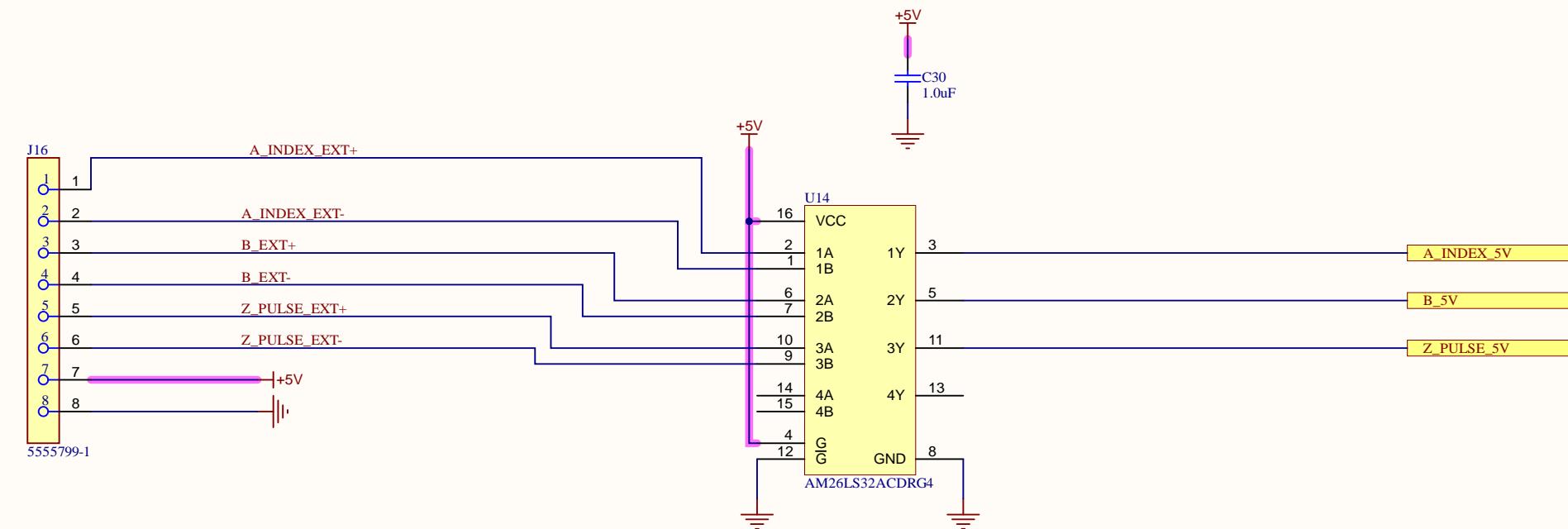
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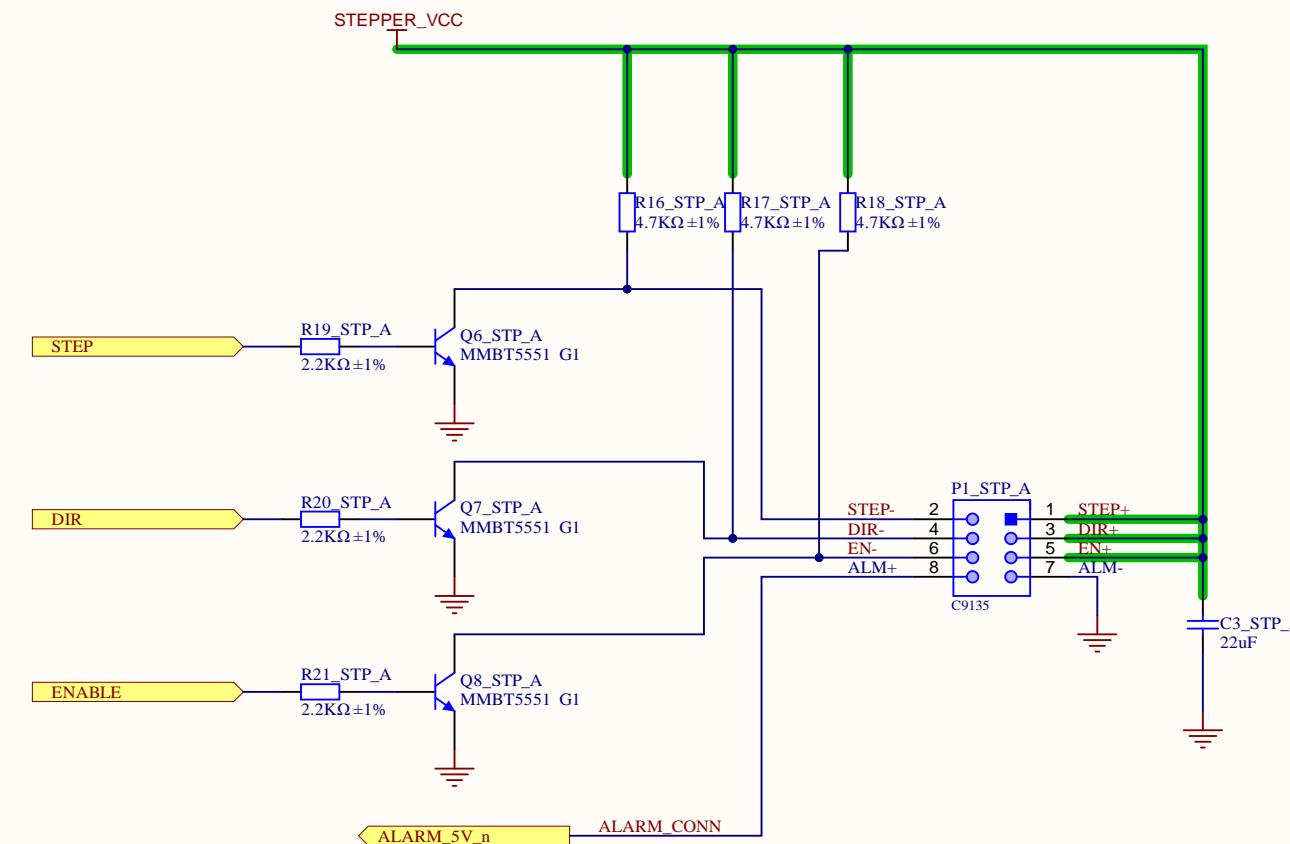
C

D

D



Stepper Driver



Stepper Driver

A

A

B

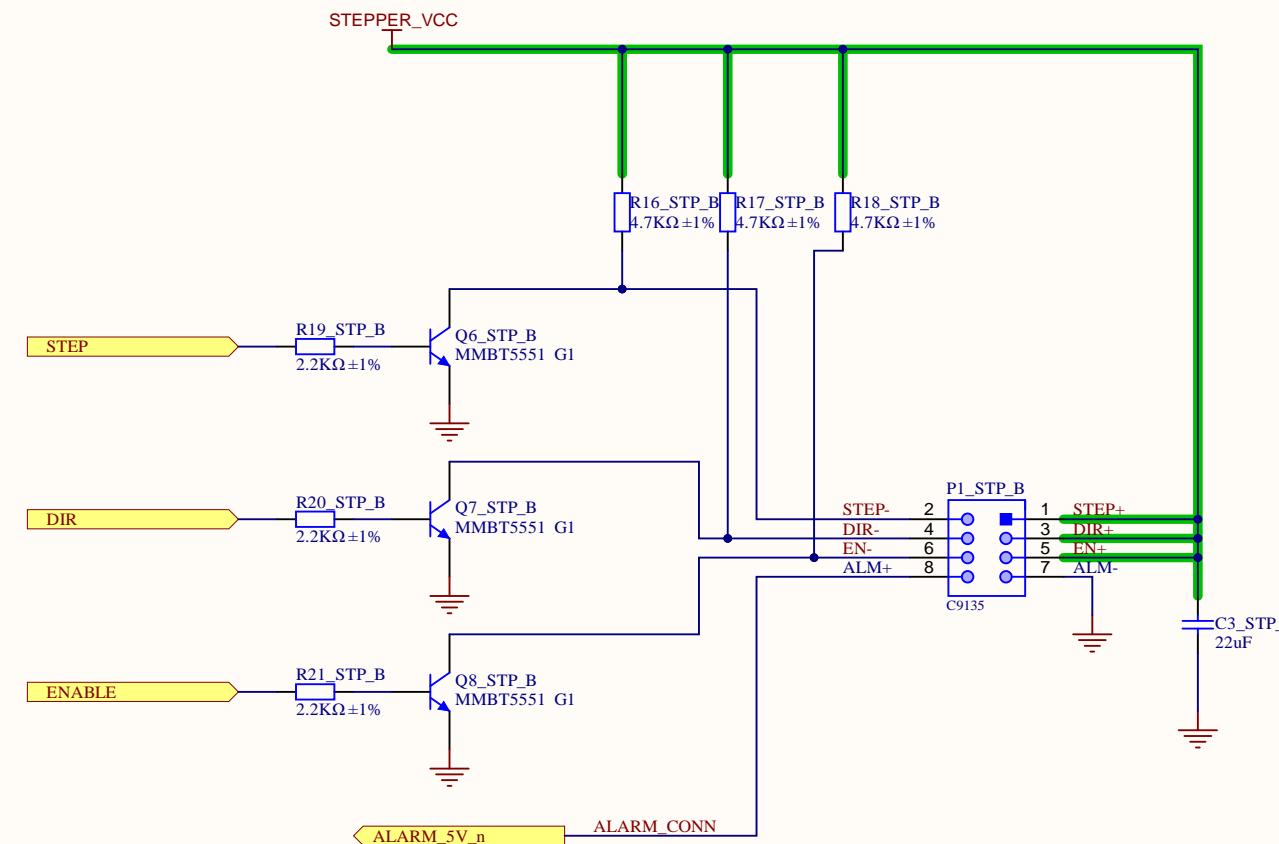
B

C

C

D

D



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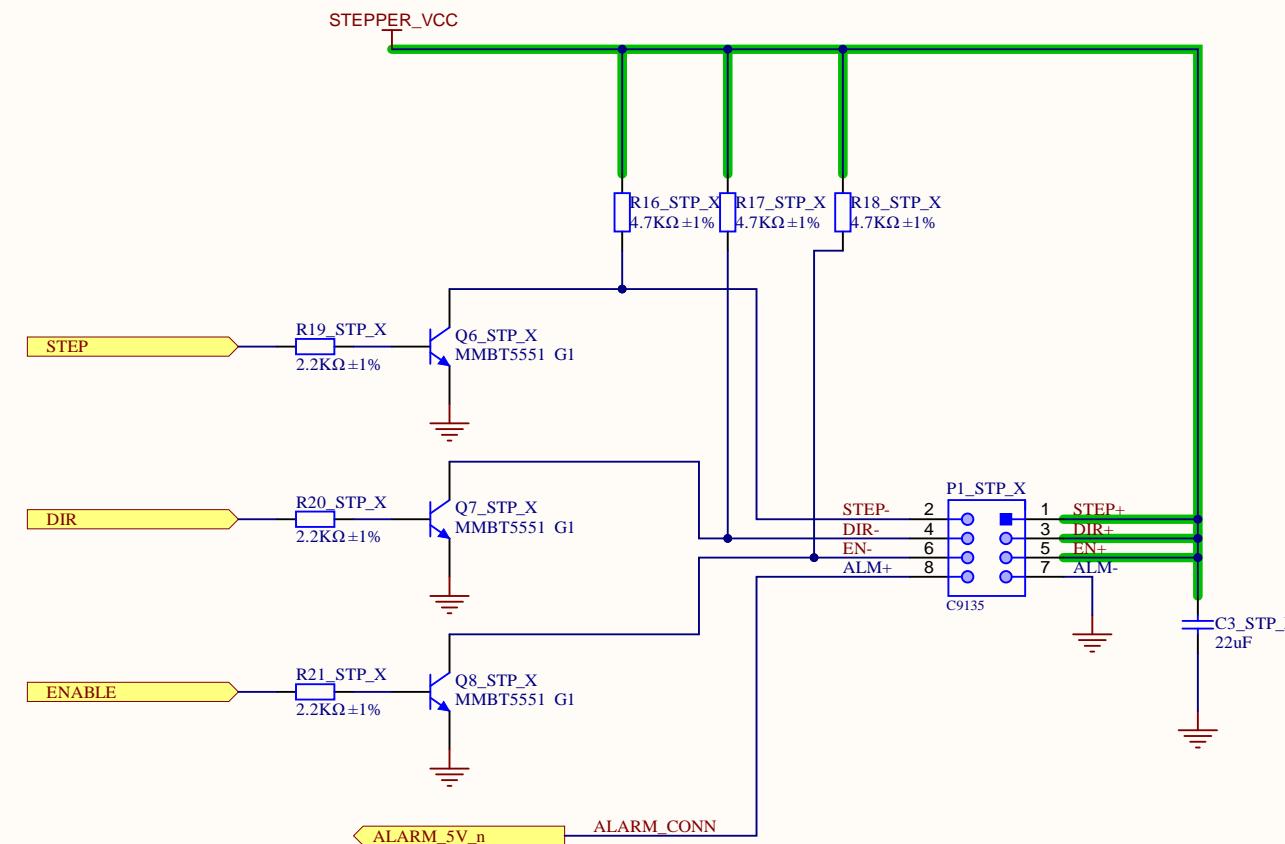
Stepper Driver

A A

B B

C C

D D



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Stepper Driver

A

A

B

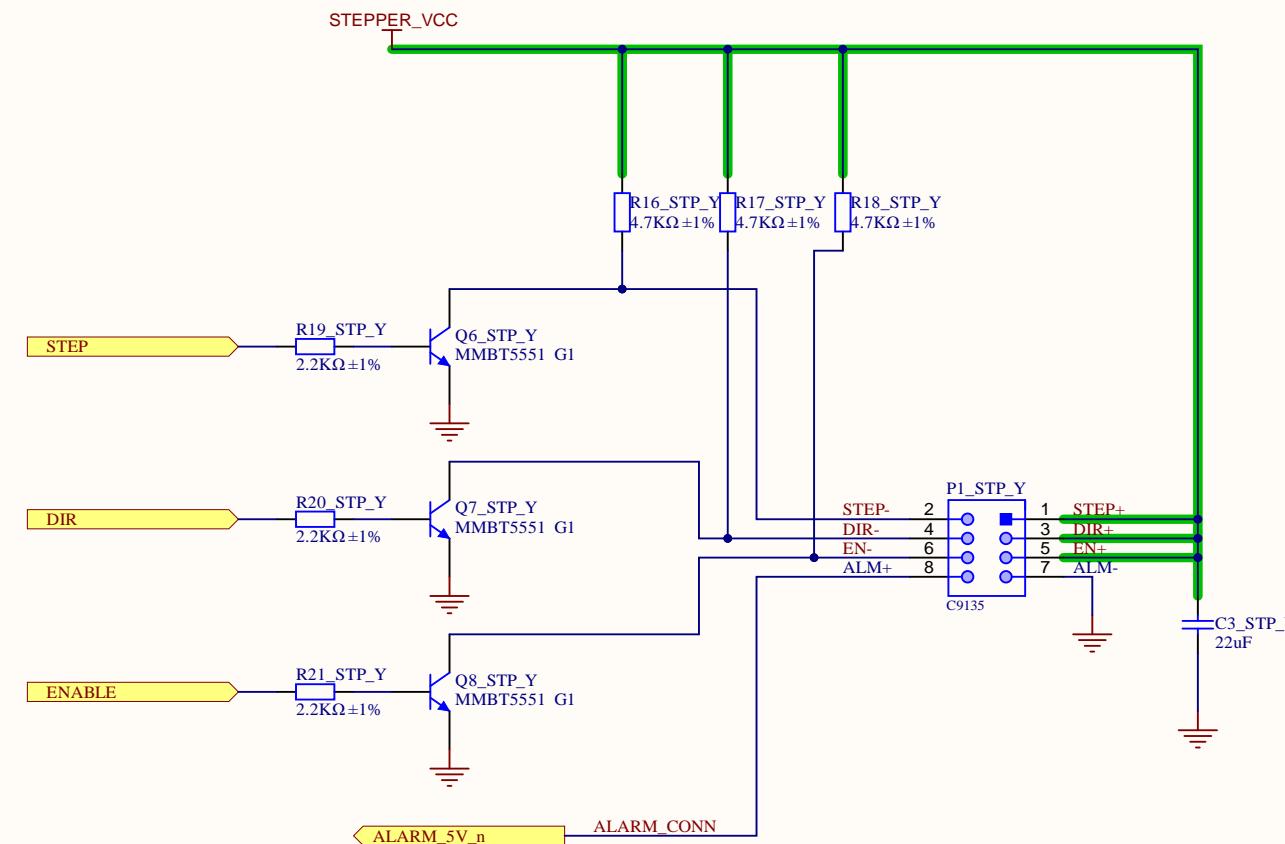
B

C

C

D

D



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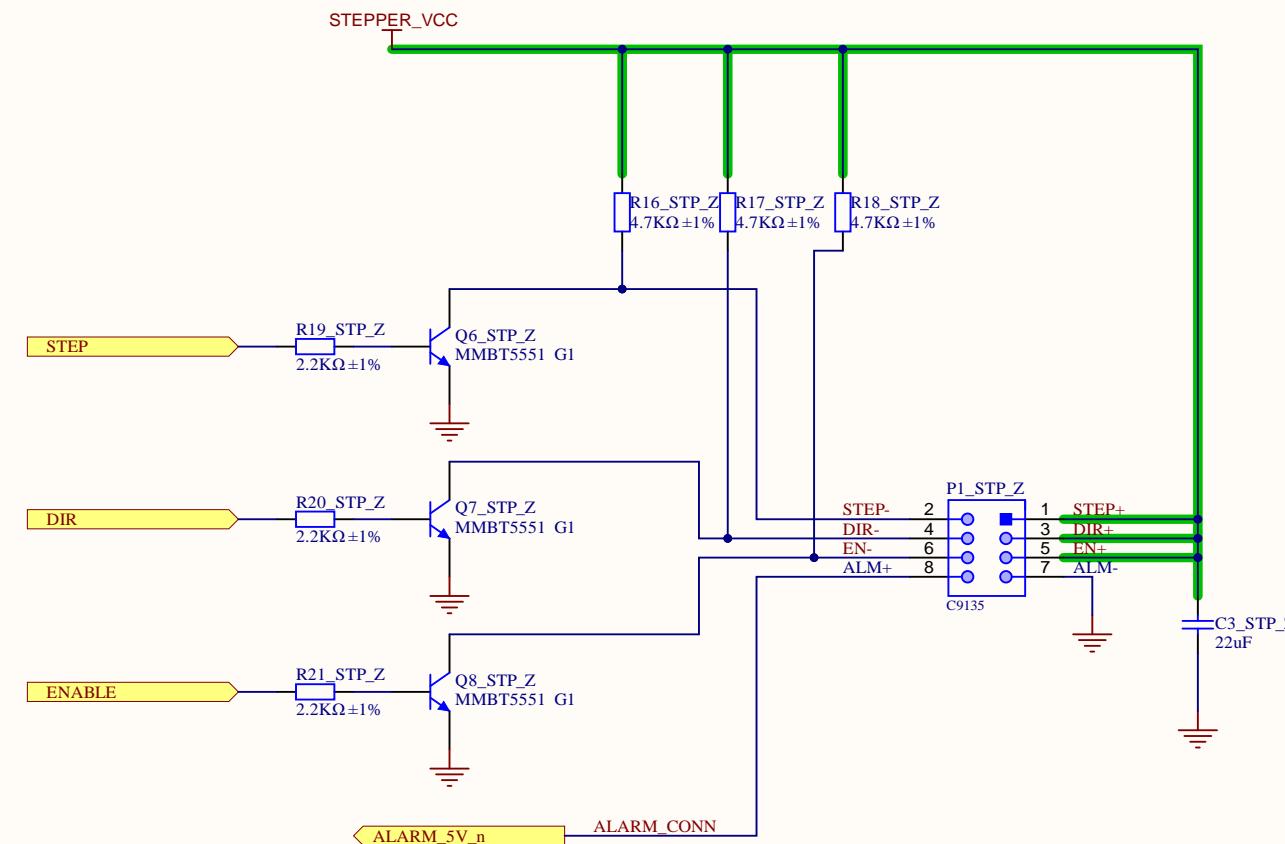
Stepper Driver

A A

B B

C C

D D



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User Switches

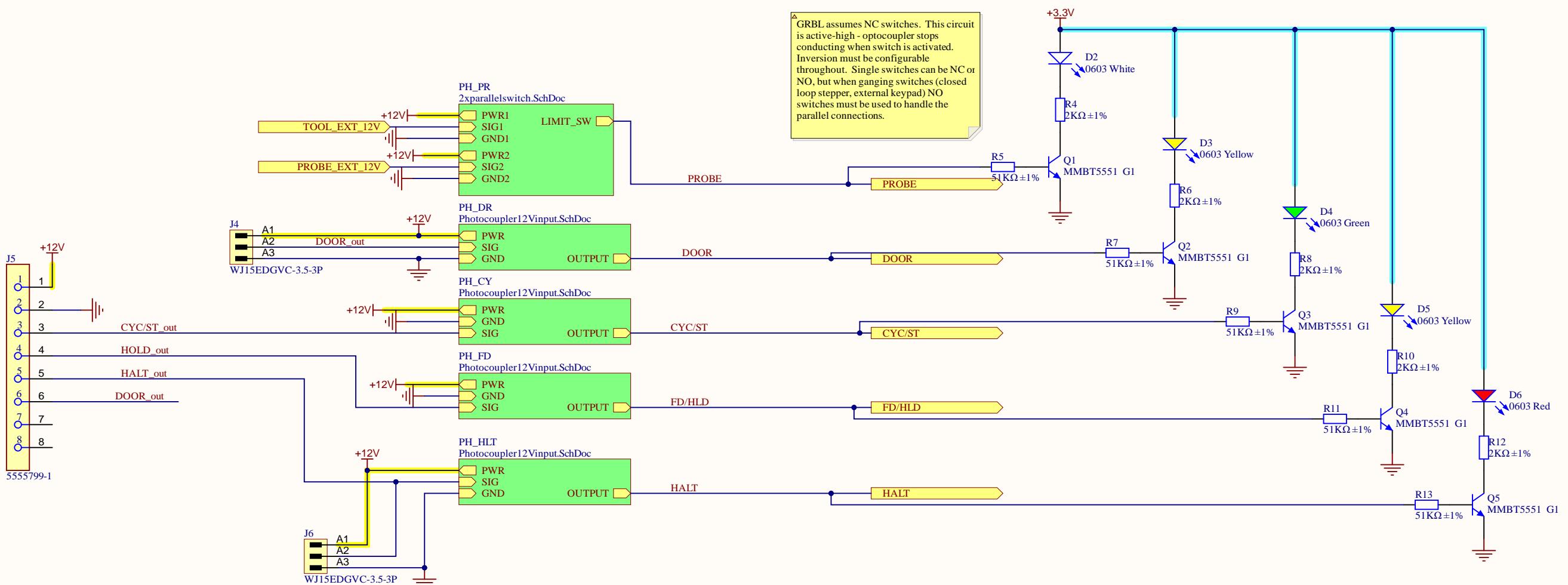


Photo Coupler 12V input

A

A

B

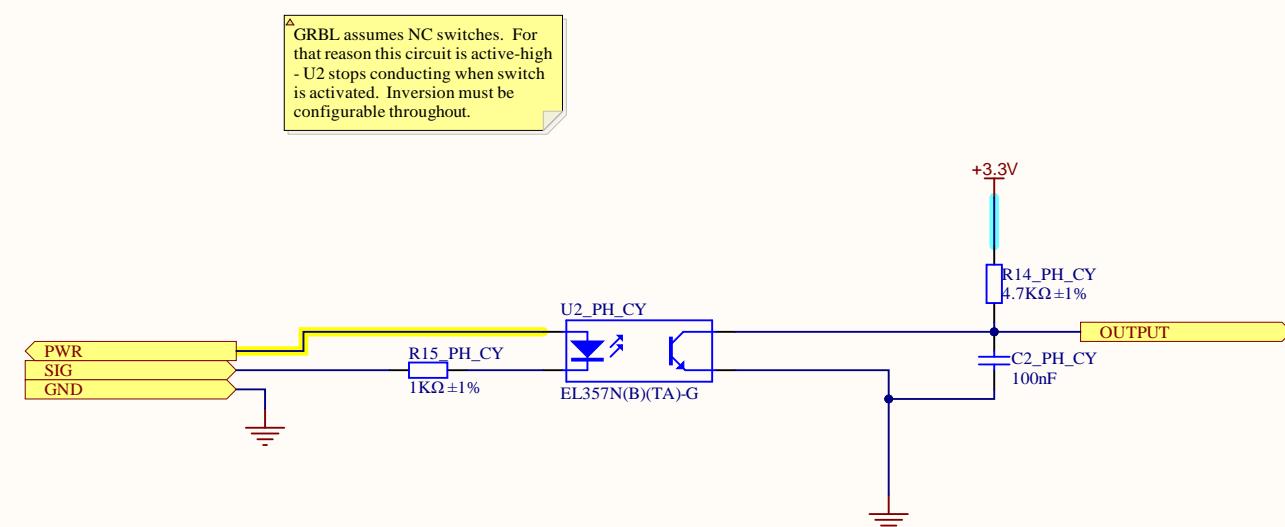
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C

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D

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Photo Coupler 12V input

A

A

B

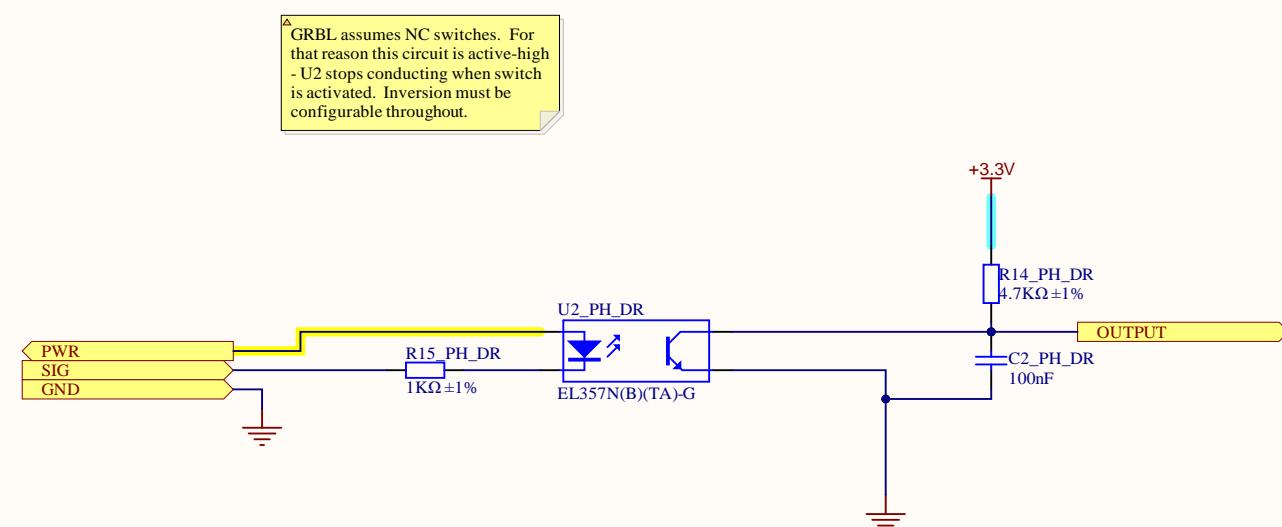
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D

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Photo Coupler 12V input

A

A

B

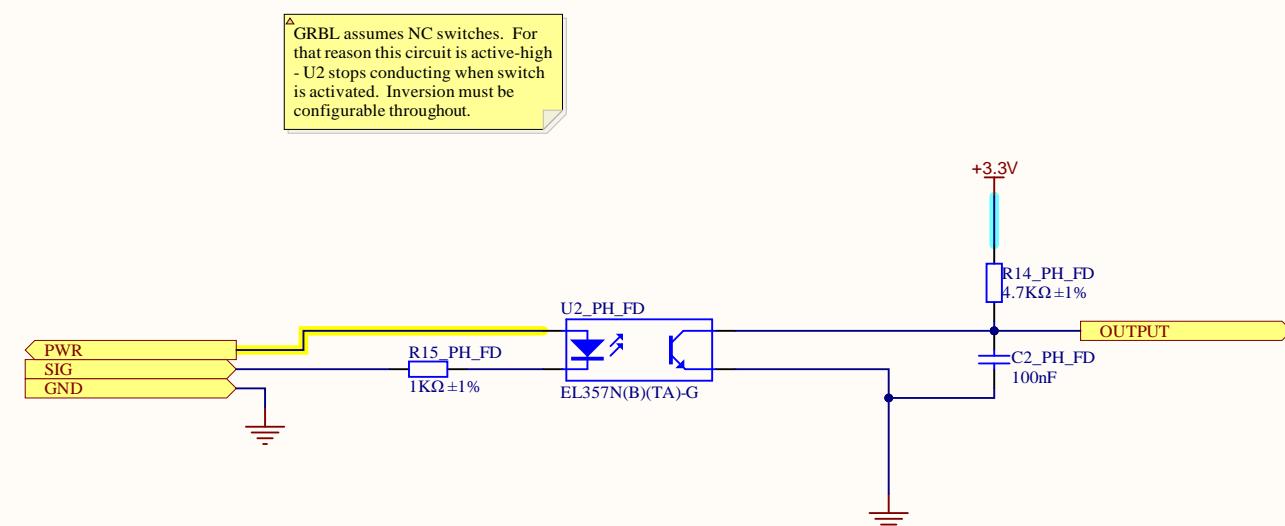
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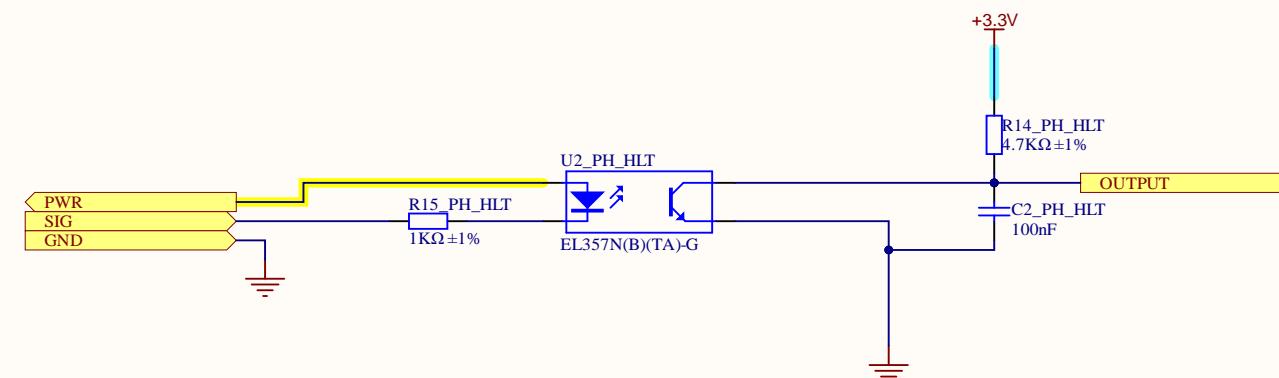


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Photo Coupler 12V input

GRBL assumes NC switches. For that reason this circuit is active-high - U2 stops conducting when switch is activated. Inversion must be configurable throughout.



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Change Log

Date	Revision	Description
6/08/2021	A1	Initial release of schematic.
6/16/2021	A2	Isolated 12V from relays. Added option to power relays from main input. Removed redundant 12V input Removed redundant LED Added additional 12V capacitance Replaced reverse diode with fuse and OV diode. Replaced switch diode resistors with jumpers. Updated component values Simplified closed loop controls Updated spindle control 0-10V. Removed spindle PWM for dual-amp DAC.
6/27/2021	A3	Layout updates.

Date	Revision	Description

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