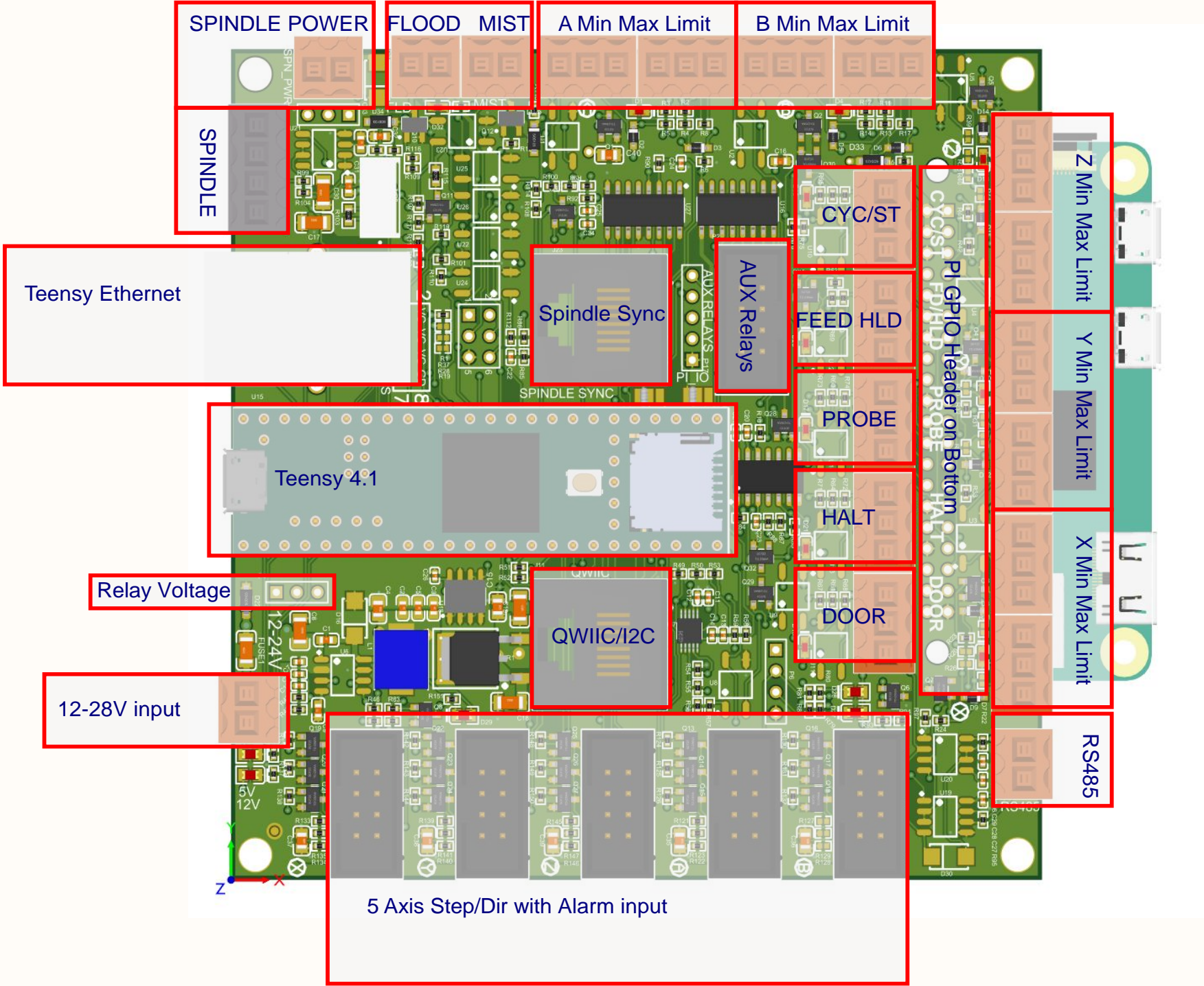


GRBLHAL2000 Breakout



Mechanical

PCB
LOGO
Expatria Technologies



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PROJECT		REV		PCB	
ENGR		DOCUMENT		Title Sheet.SchDoc	
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B		2021-07-25 1:52:53 PM		1 / 14	

Top Level Design

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U_Change Log
Change Log.SchDoc

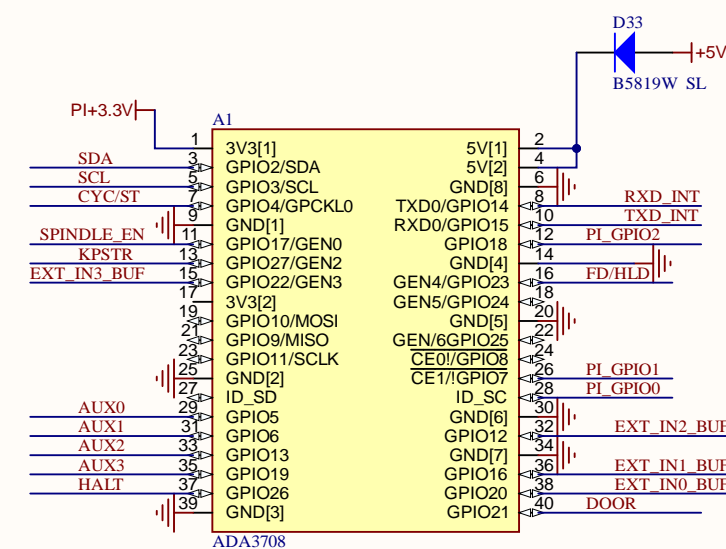
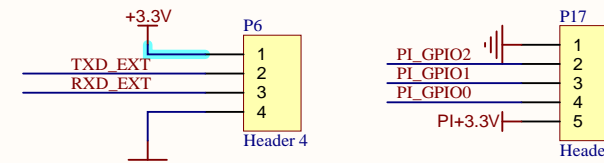
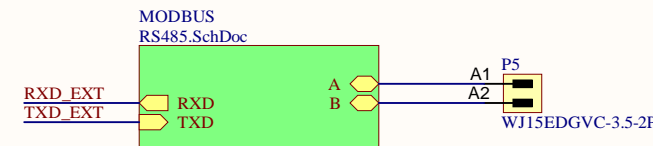
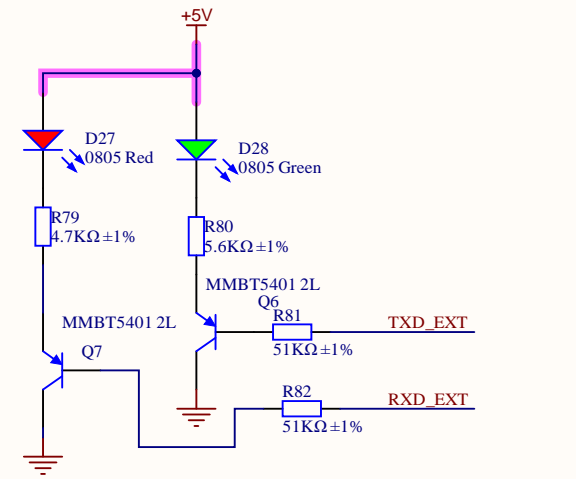
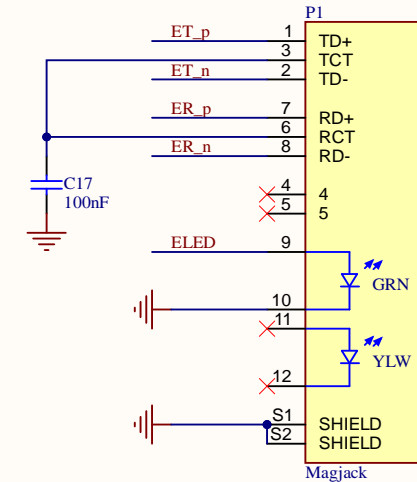
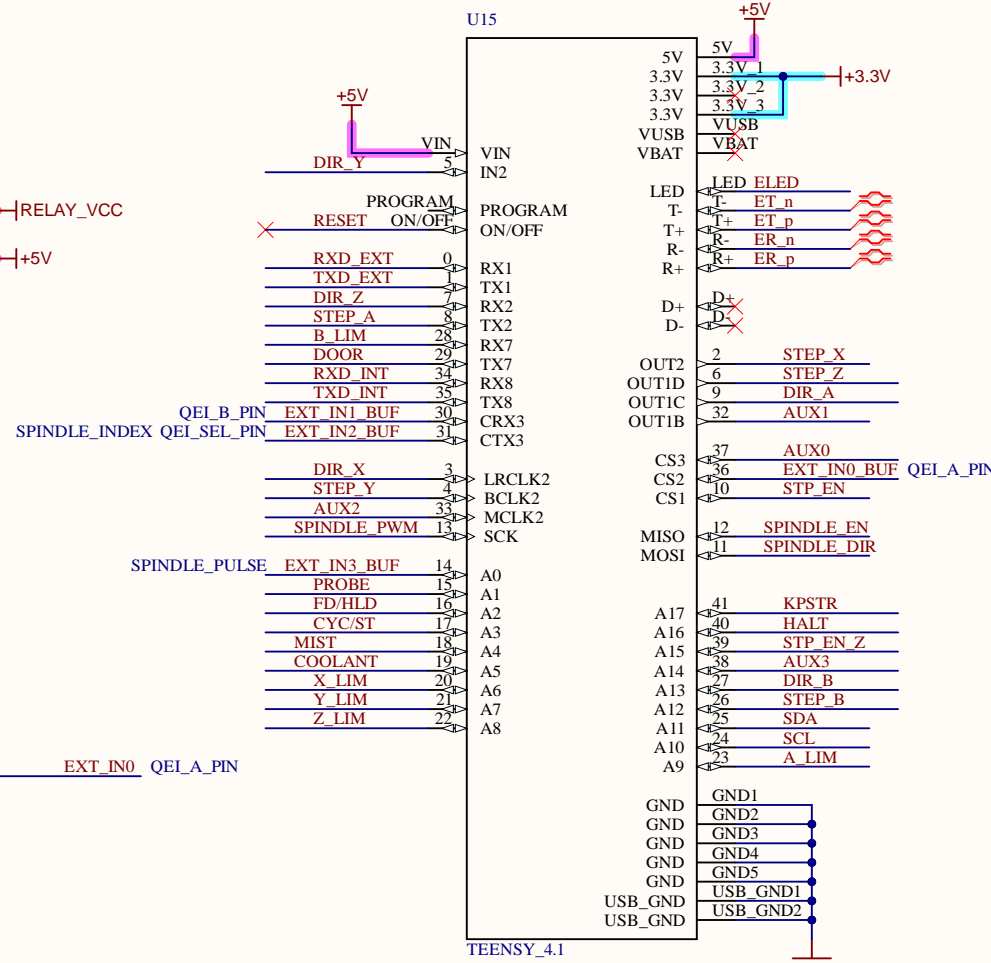
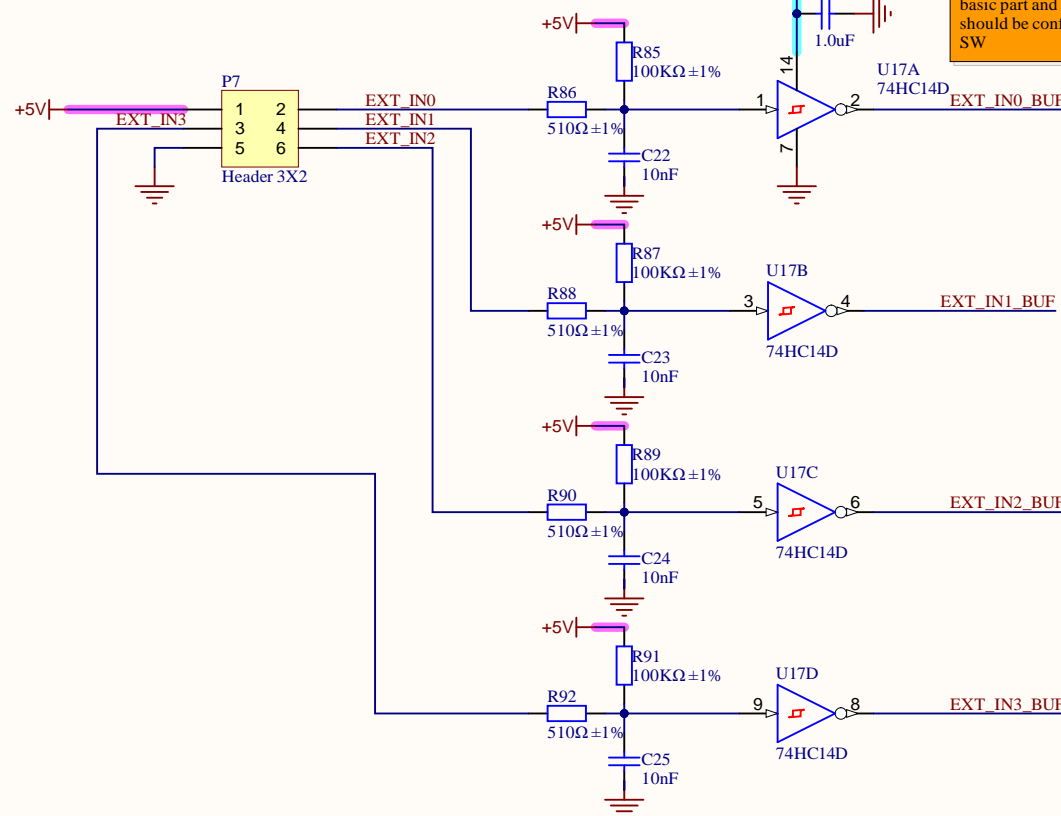
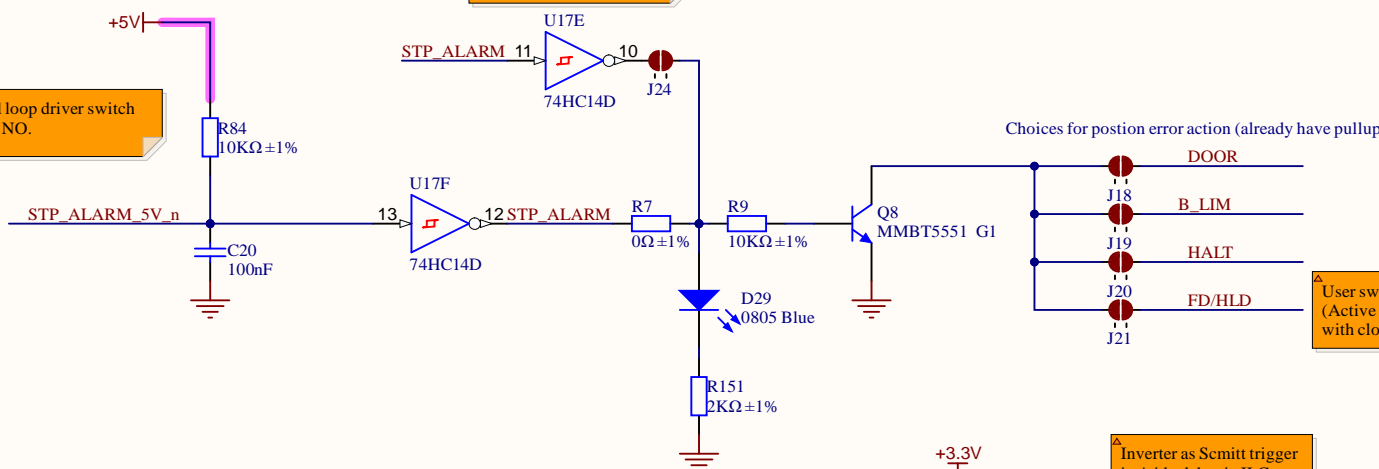
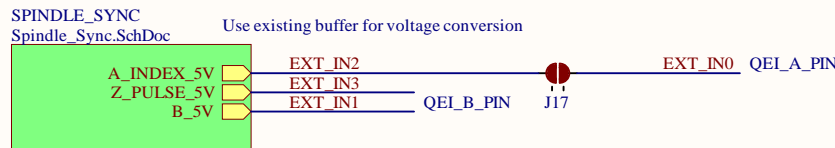
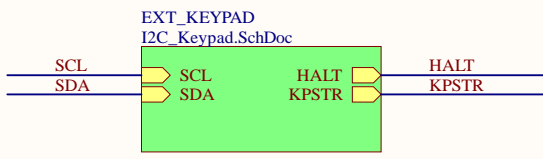
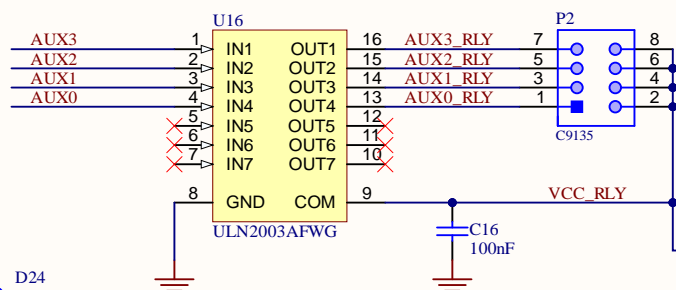
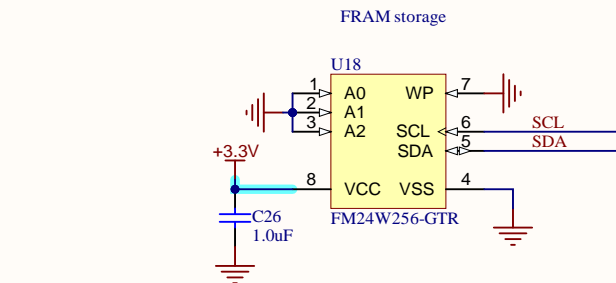
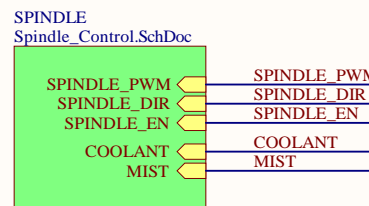
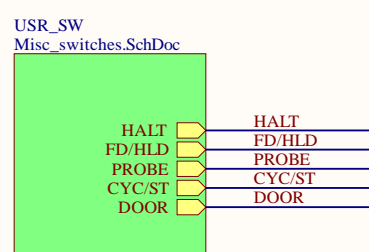
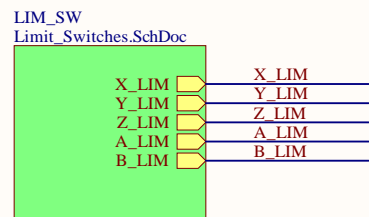
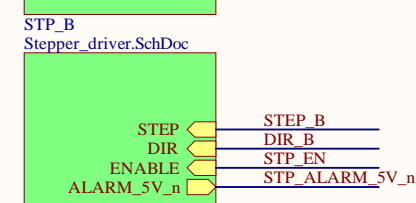
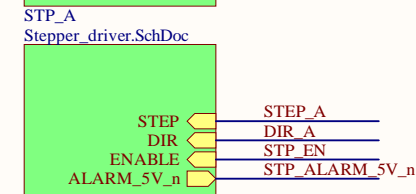
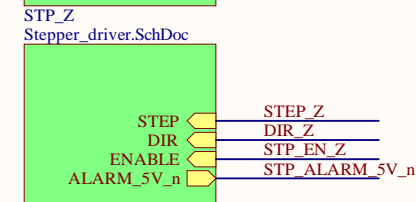
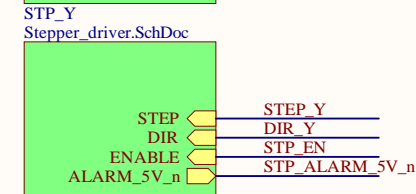
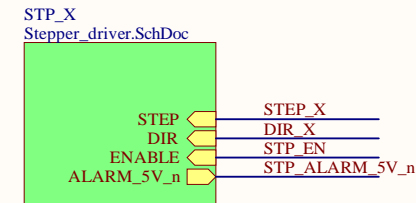
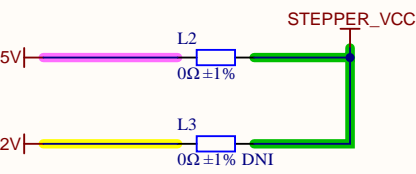
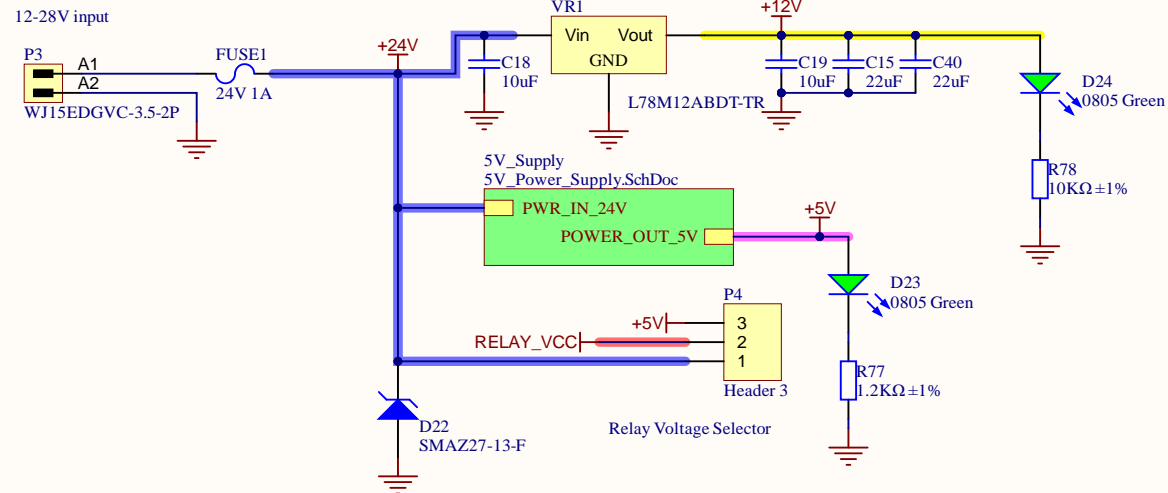
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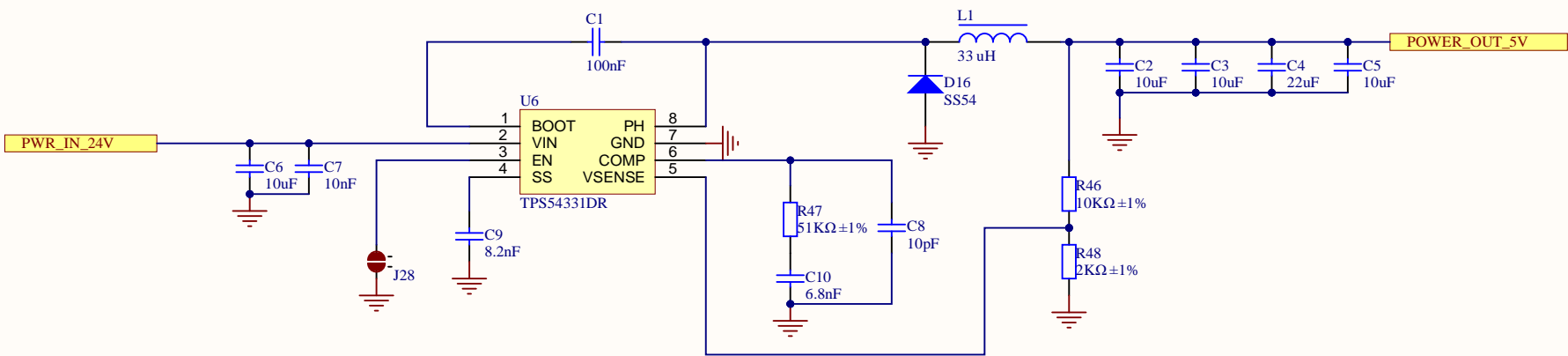
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ENGR	DOCUMENT		
AM	Top Level.SchDoc		
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HAL2000 Breakout



5V Power Supply



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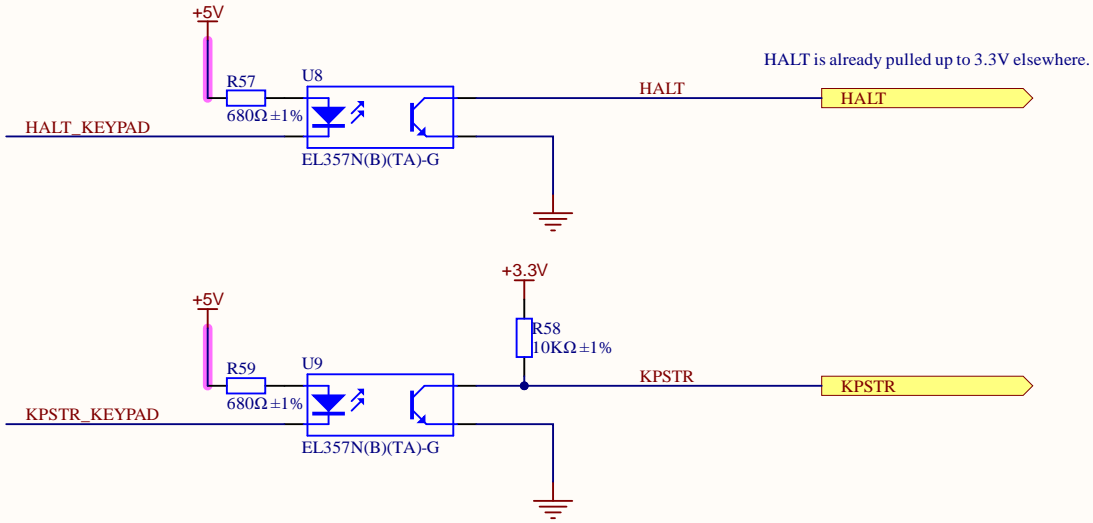
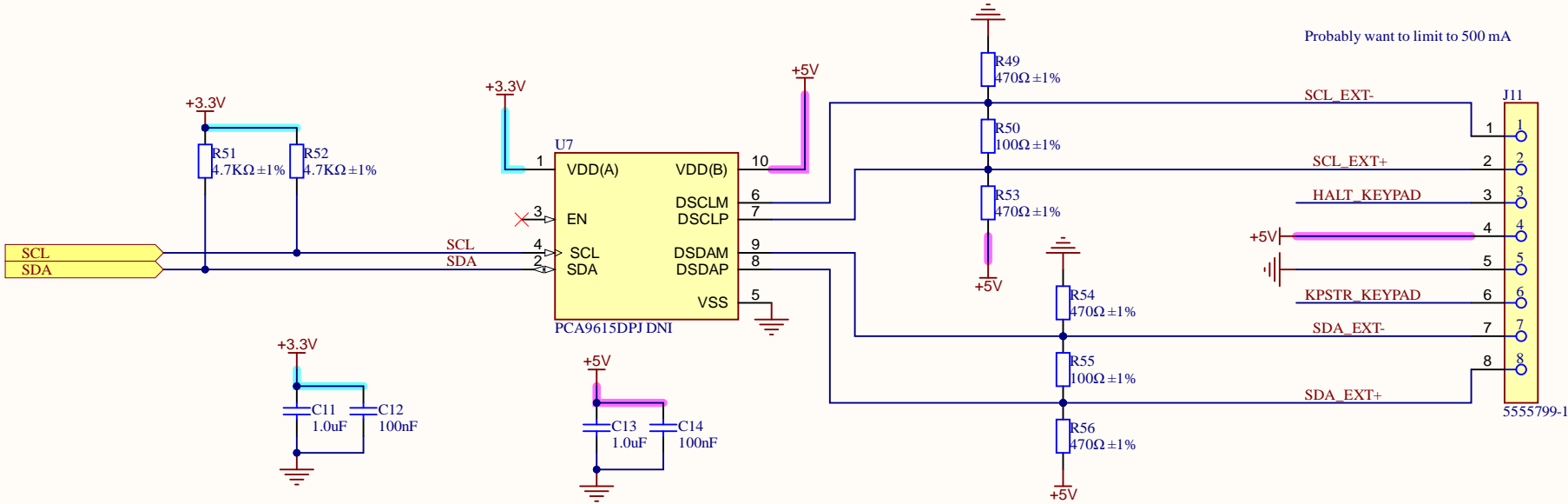
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QWIIC I2C Keypad



This should be a QWIIC compatible endpoint but adds KPSTR and HALT to the RJ45. All appropriate credit to Sparkfun for QWIIC.



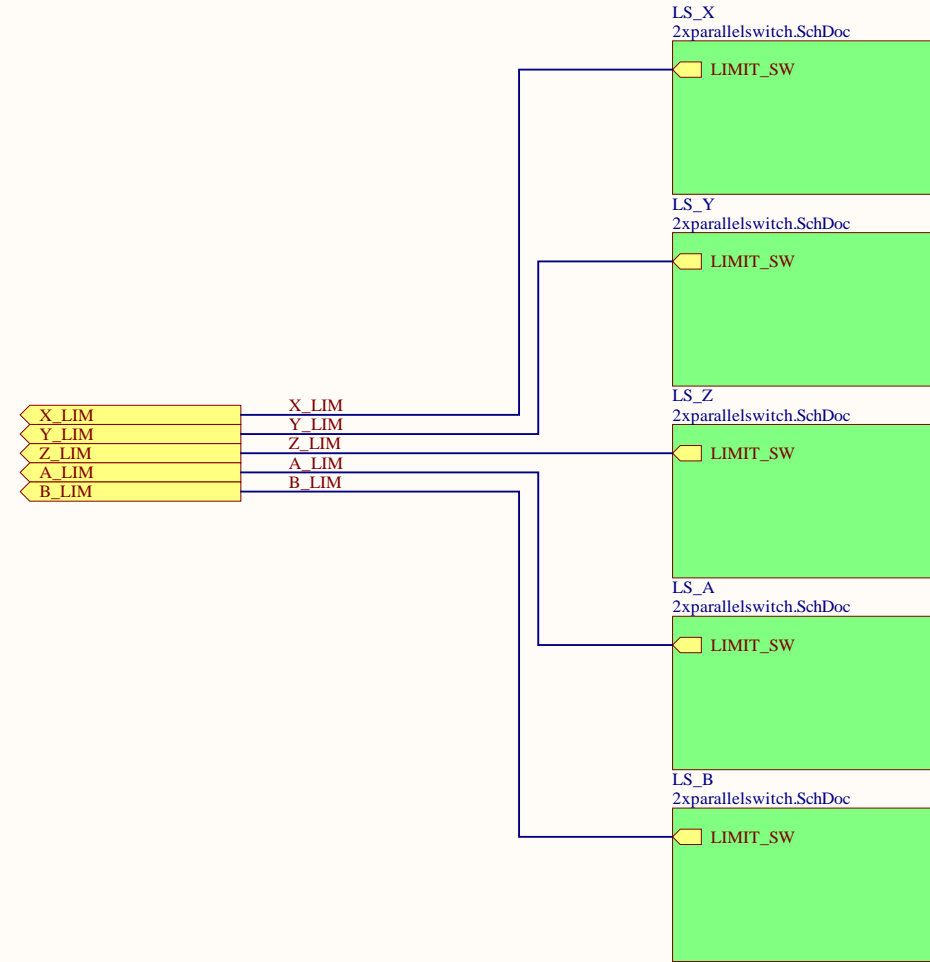
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Limit Switches



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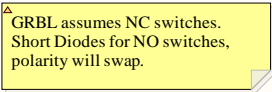


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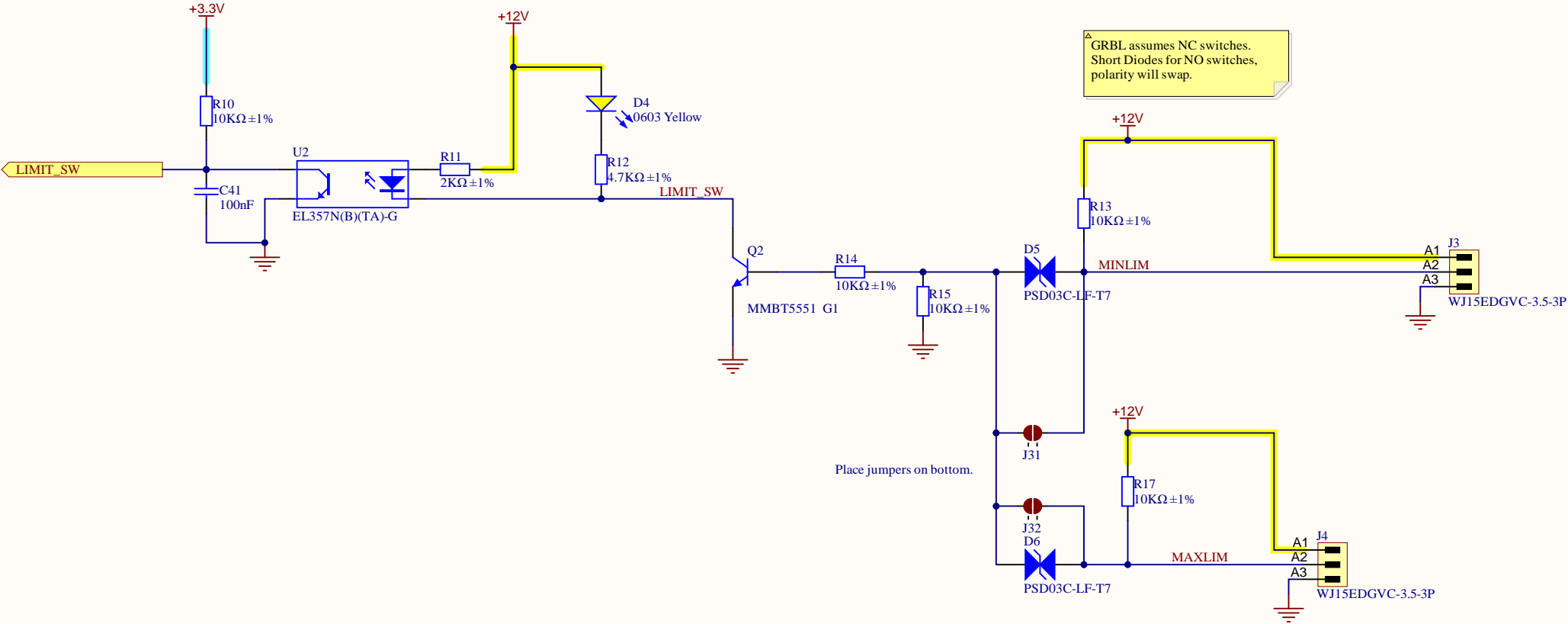
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Limit Switch OR



Place jumpers on bottom.

Limit Switch OR



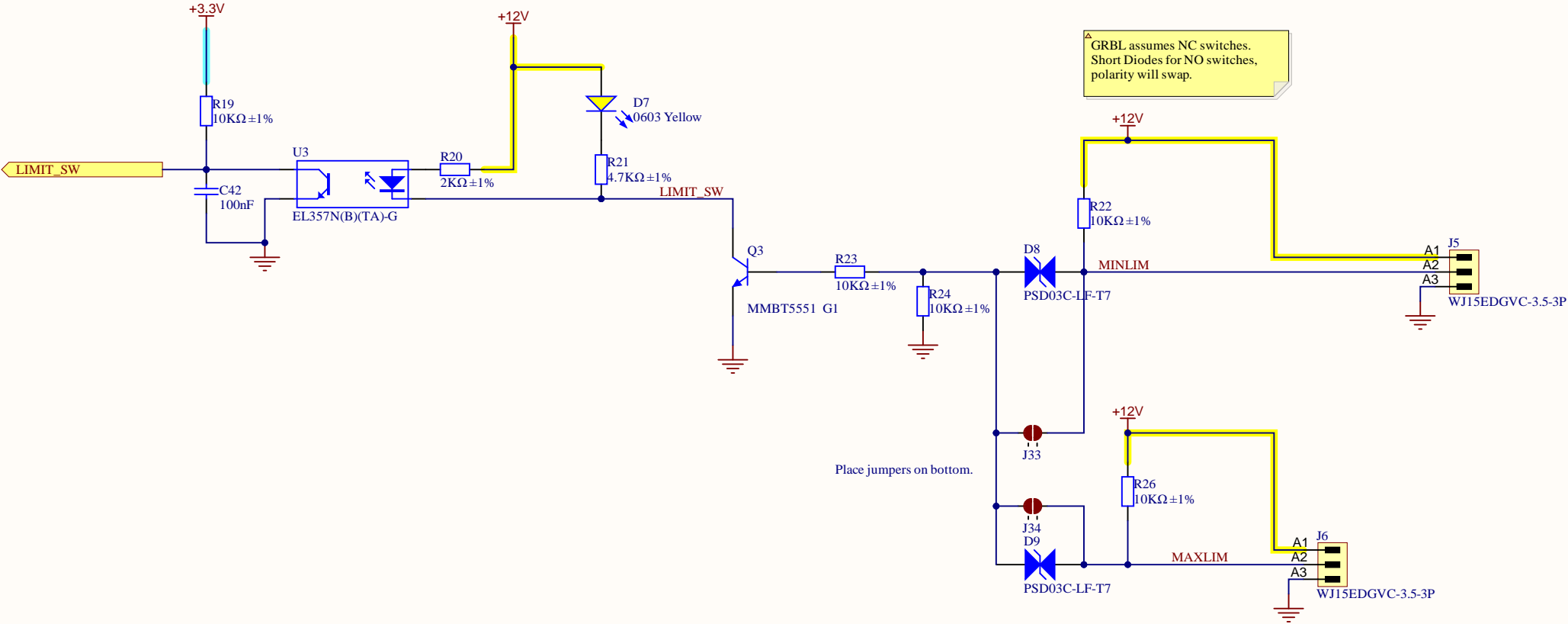
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PROJECT PrintNC_GRBLHAL_BreakoutPCB		REV A1
ENGR AM	DOCUMENT 2xparallelsch.SchDoc	
SIZE B	MODIFIED 2021-07-25 1:52:53 PM	SHEET 6 / 14

Limit Switch OR



Place jumpers on bottom.

GRBL assumes NC switches.
Short Diodes for NO switches,
polarity will swap.

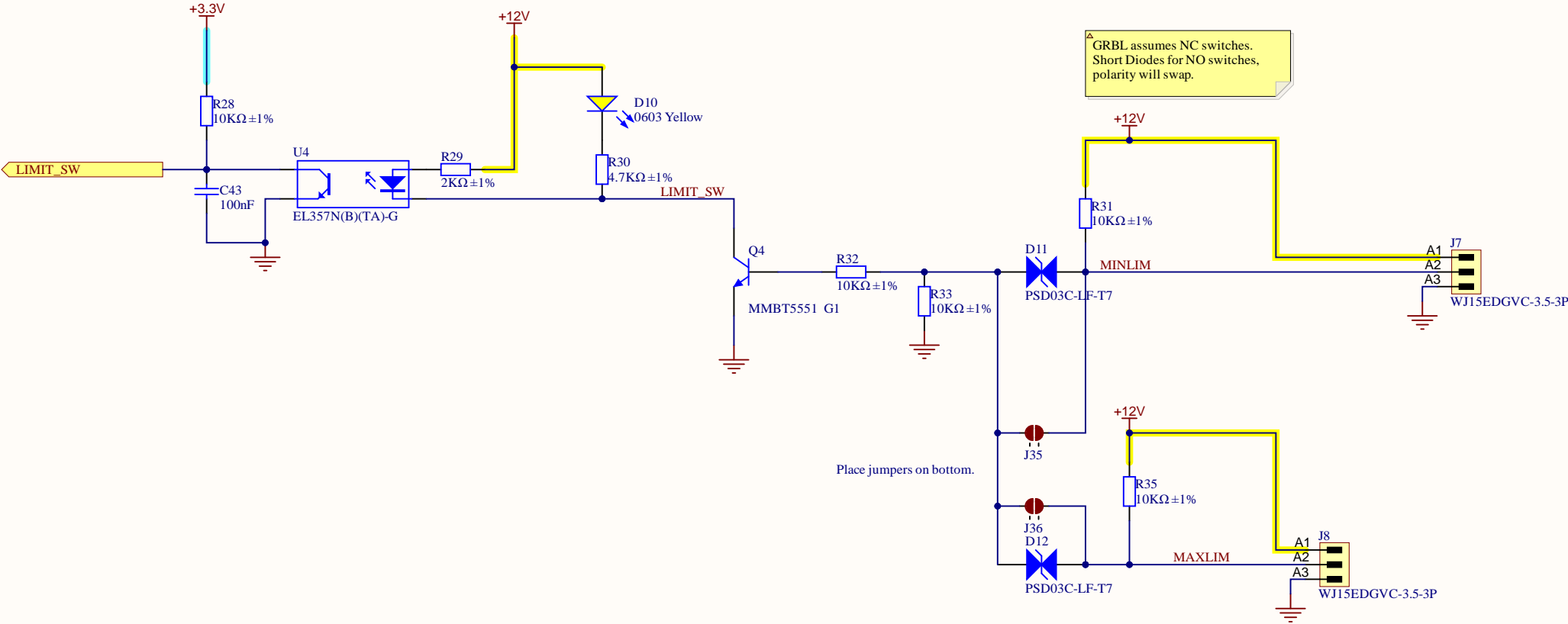
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PROJECT			REV		
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Limit Switch OR



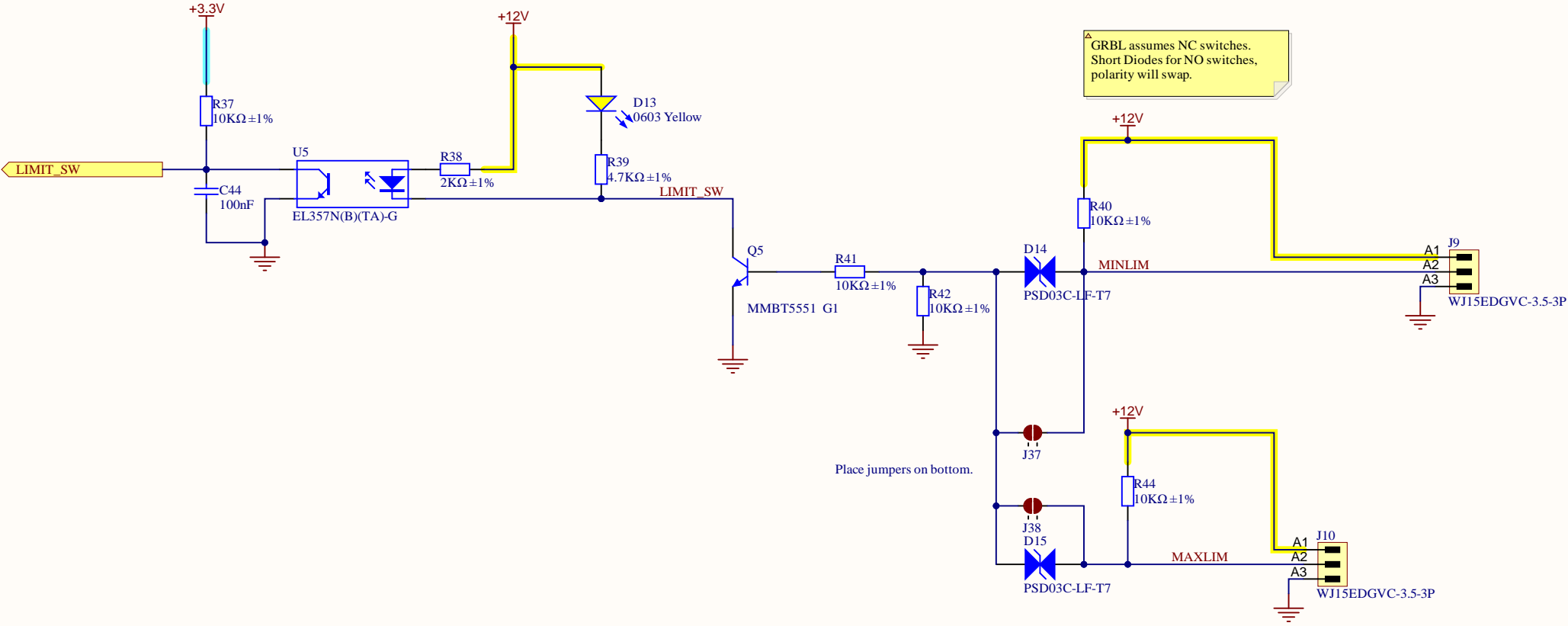
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Limit Switch OR

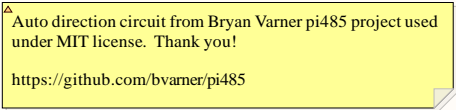


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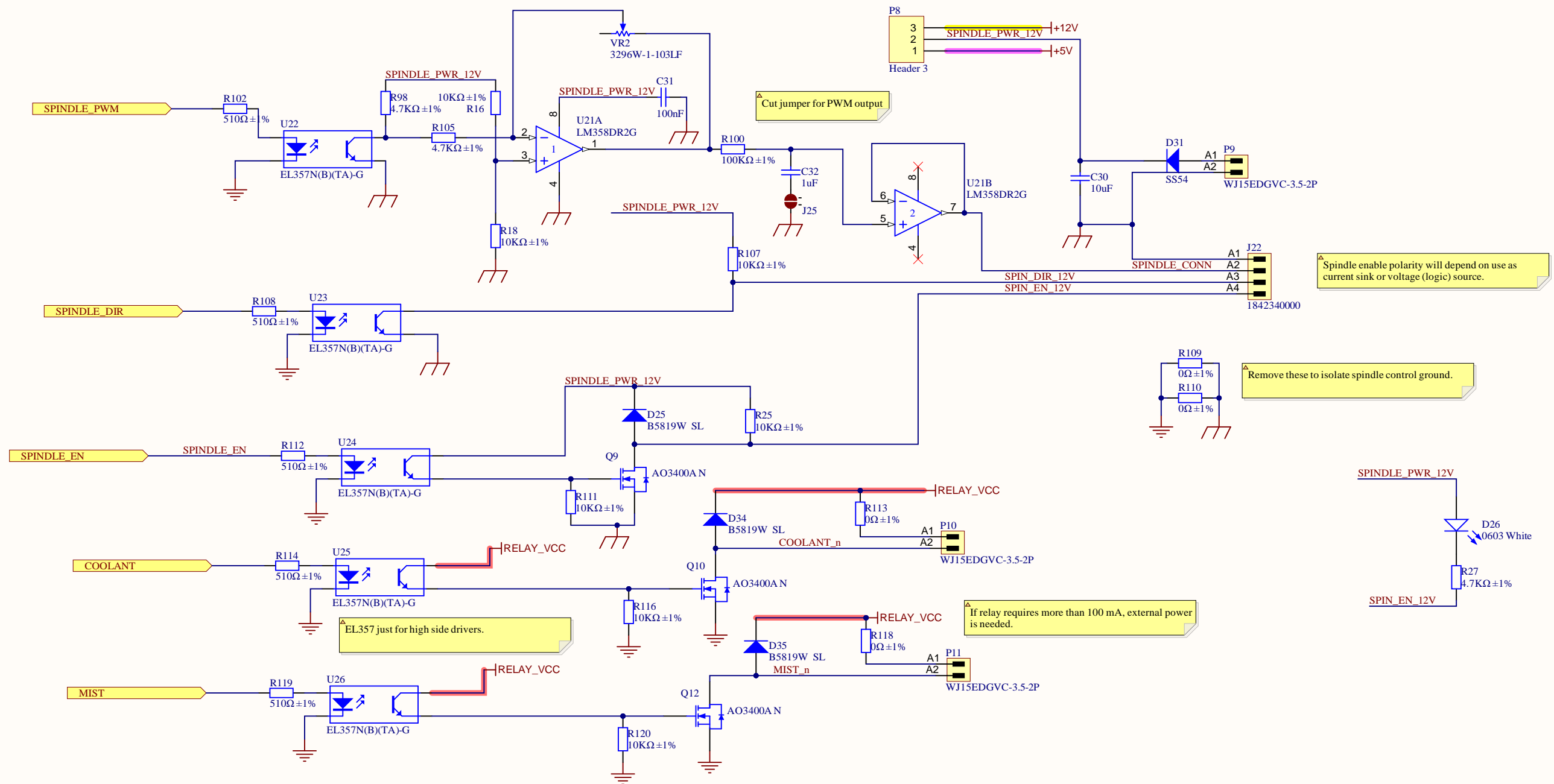


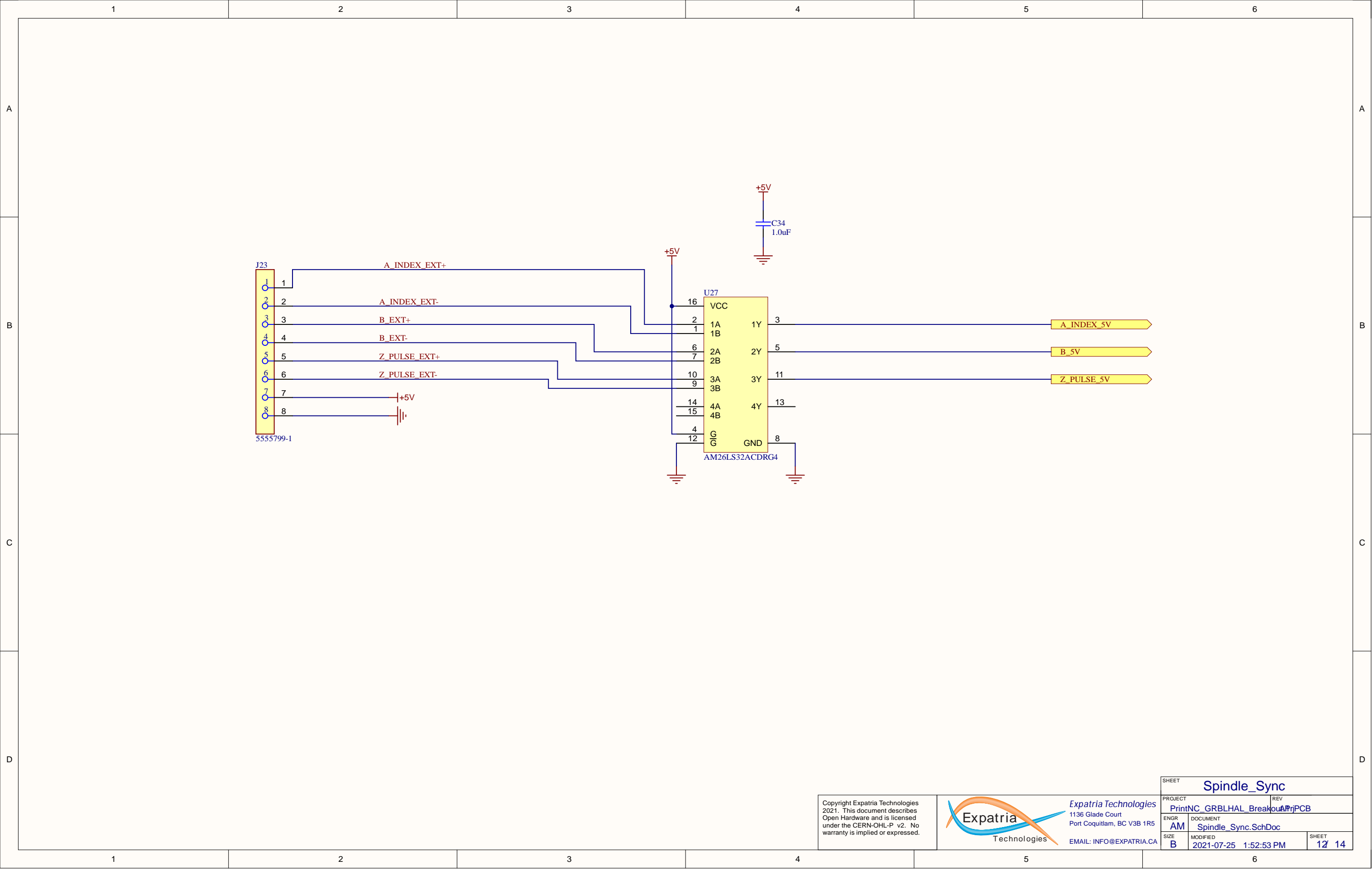
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Spindle Controls





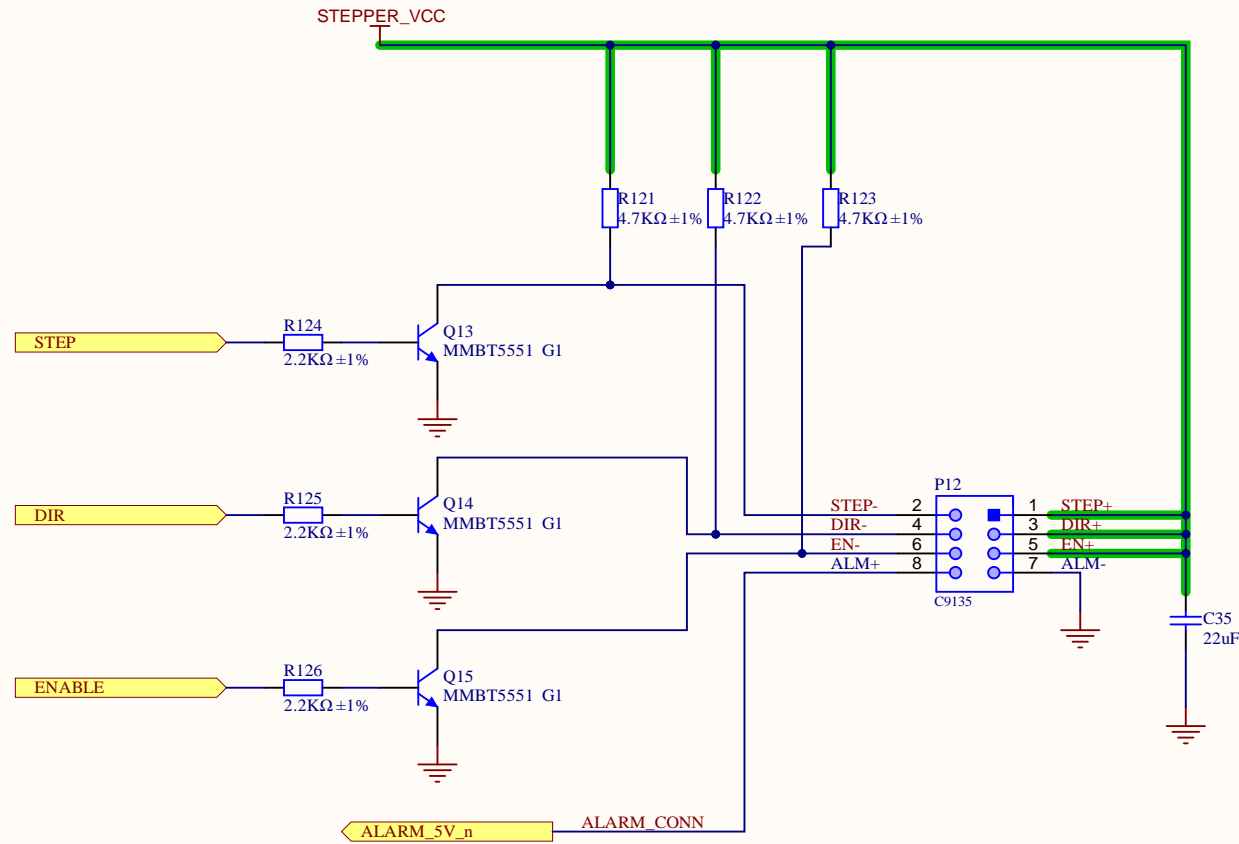
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Stepper Driver



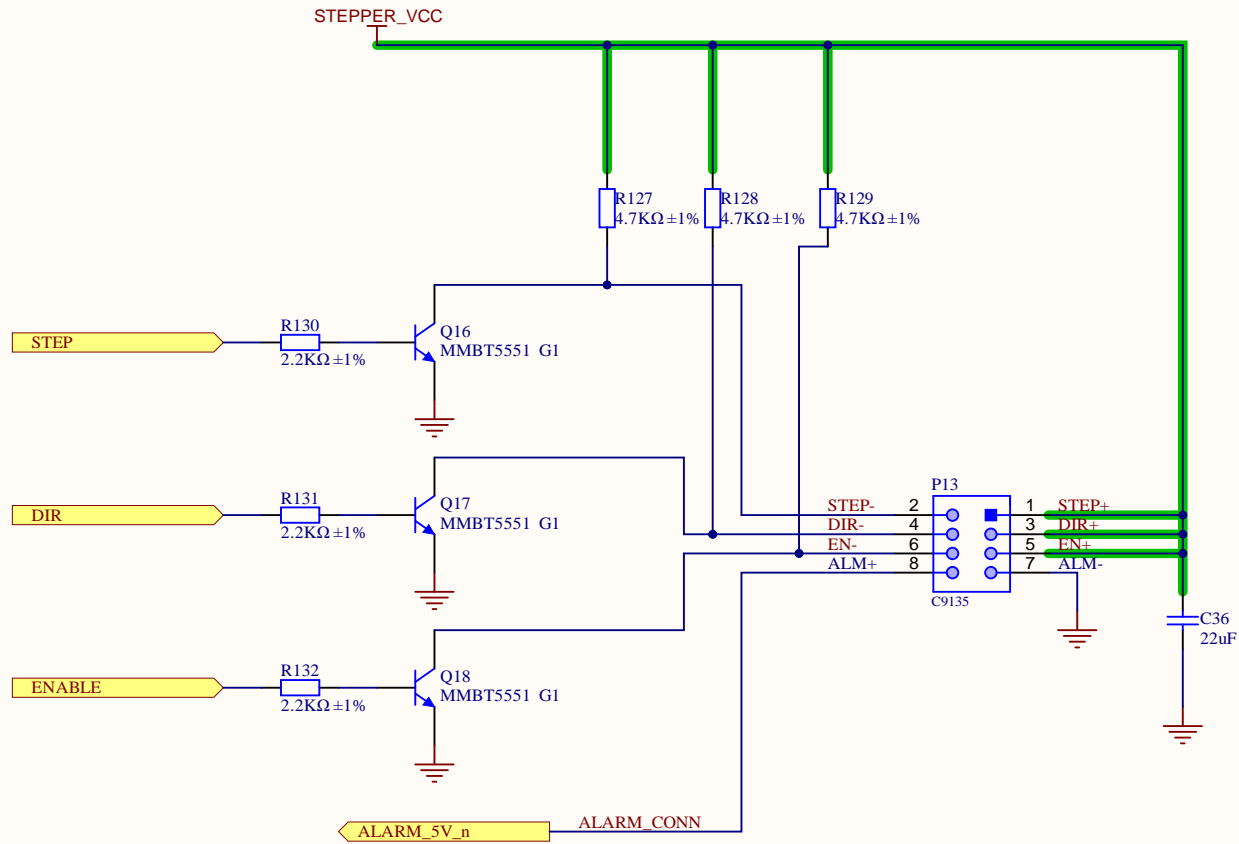
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Stepper Driver



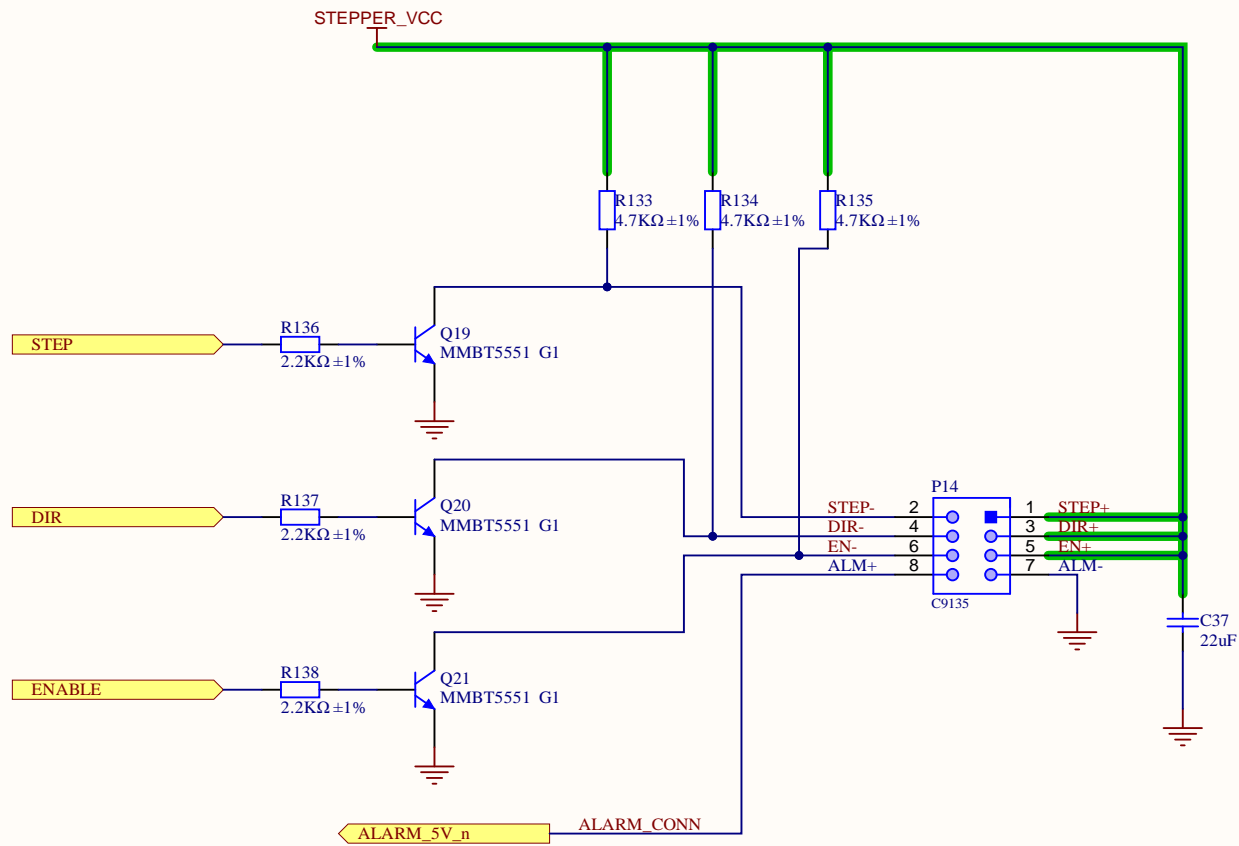
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Stepper Driver



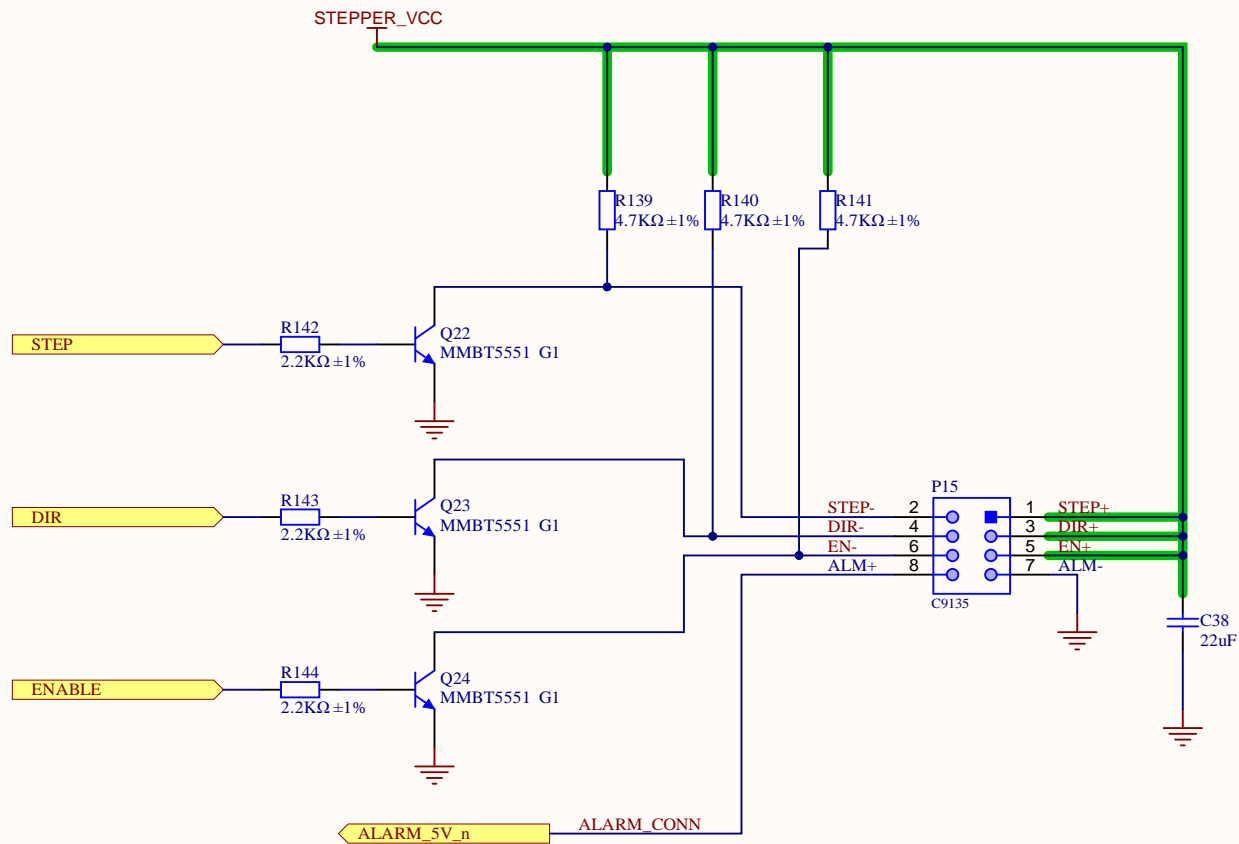
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Stepper Driver



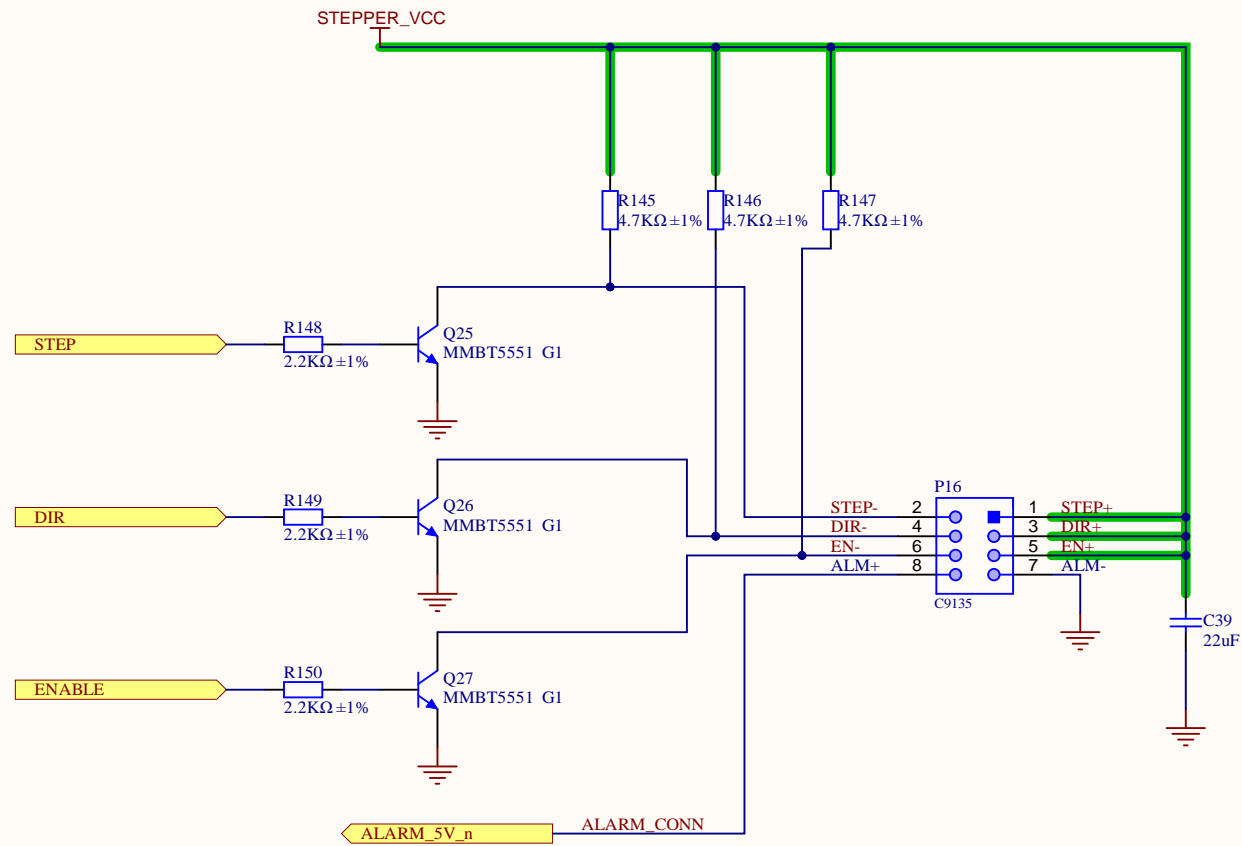
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Stepper Driver



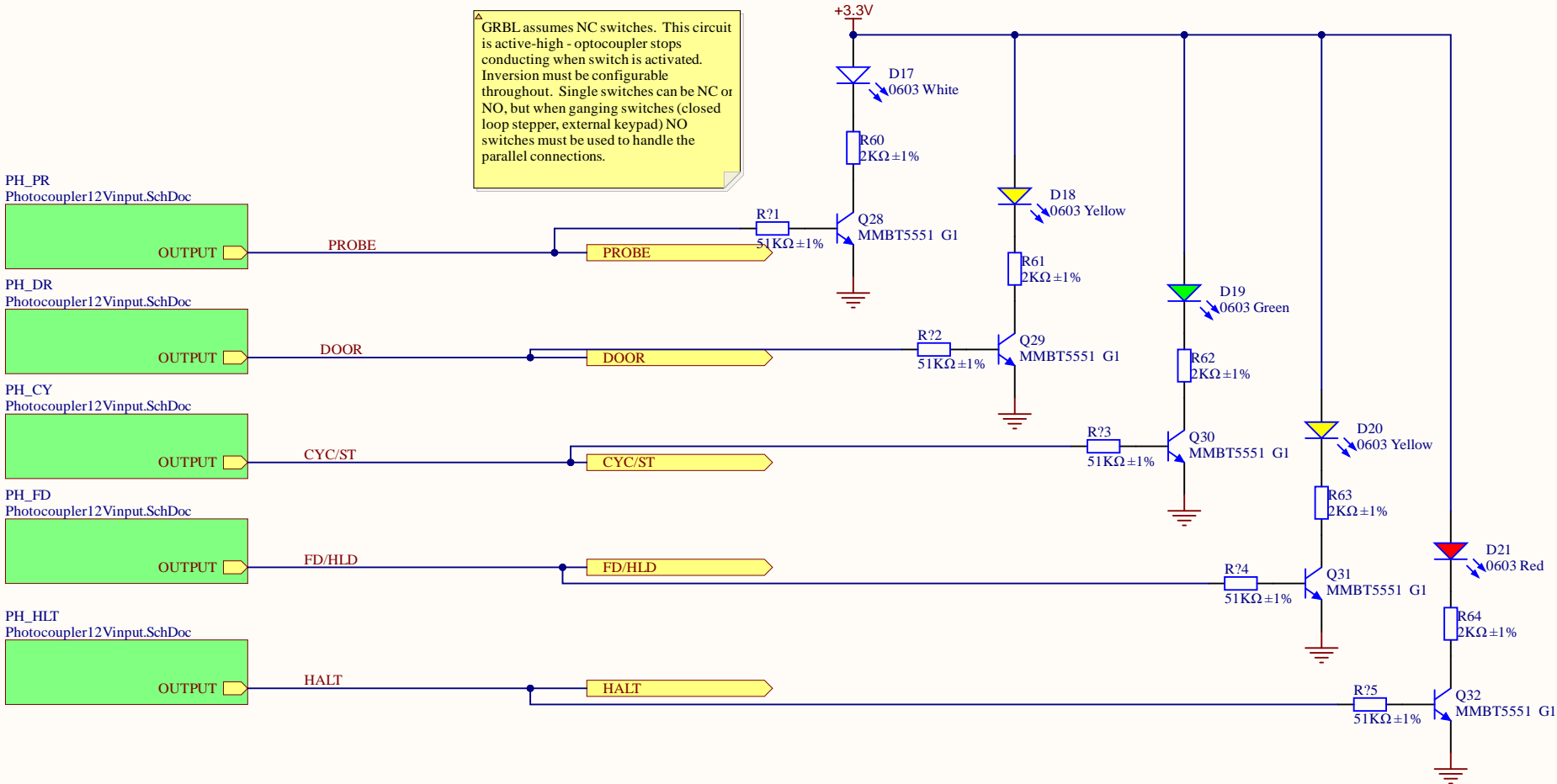
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SHEET		Stepper Driver	
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		9 / 14	

User Switches



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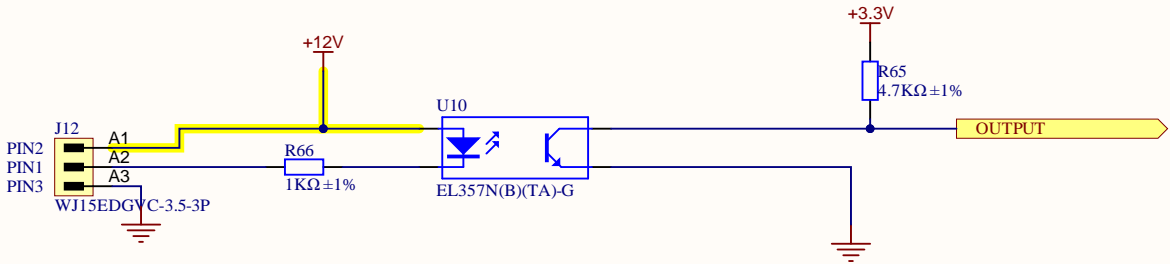


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Photo Coupler 12V input

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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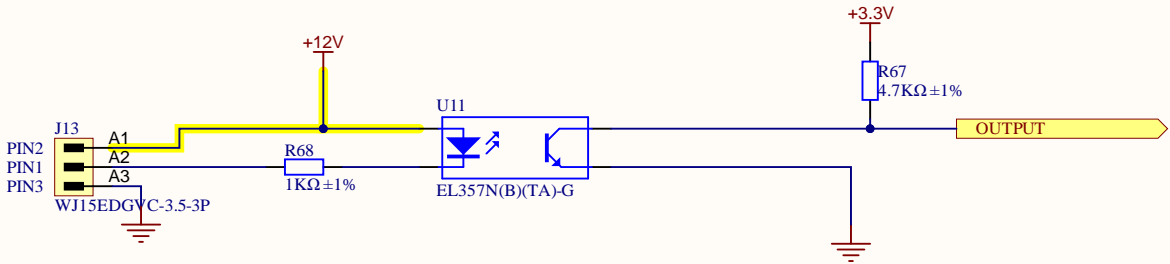


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Photo Coupler 12V input

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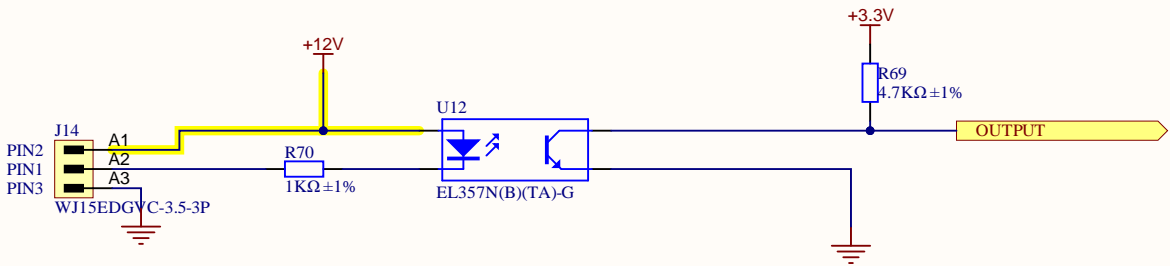
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B		2021-07-25 1:52:54 PM	
8 / 14			

Photo Coupler 12V input

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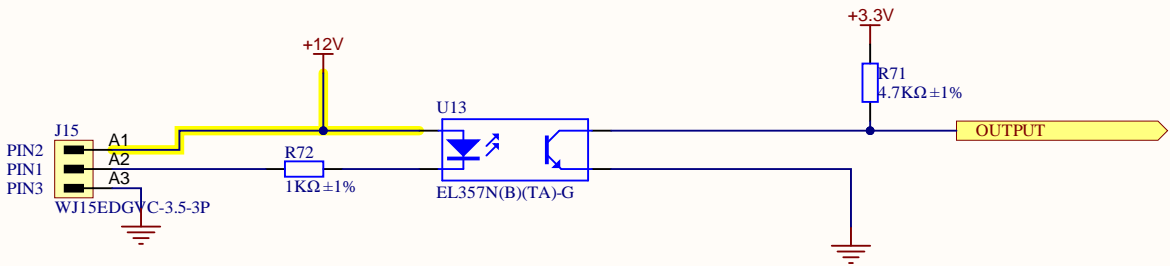


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SIZE	MODIFIED	SHEET	
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Photo Coupler 12V input

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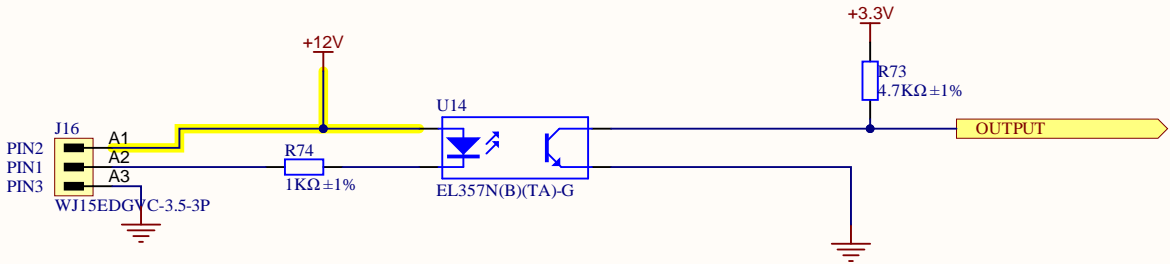


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Photo Coupler 12V input

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8 / 14			

1	2	3	4	5	6
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.			