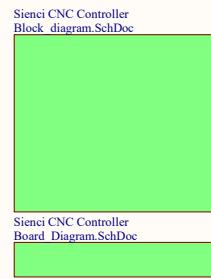


# Sienci Longboard 32-bit CNC Controller

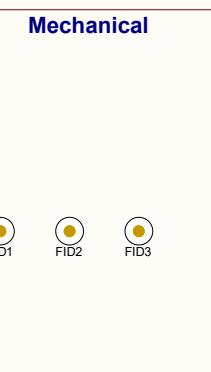
A



B



C



**ZZ1**  
Assembly Note  
These assemblies are ESD sensitive, ESD precautions shall be observed.

**ZZ2**  
Assembly Note  
These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

**ZZ3**  
Assembly Note  
These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

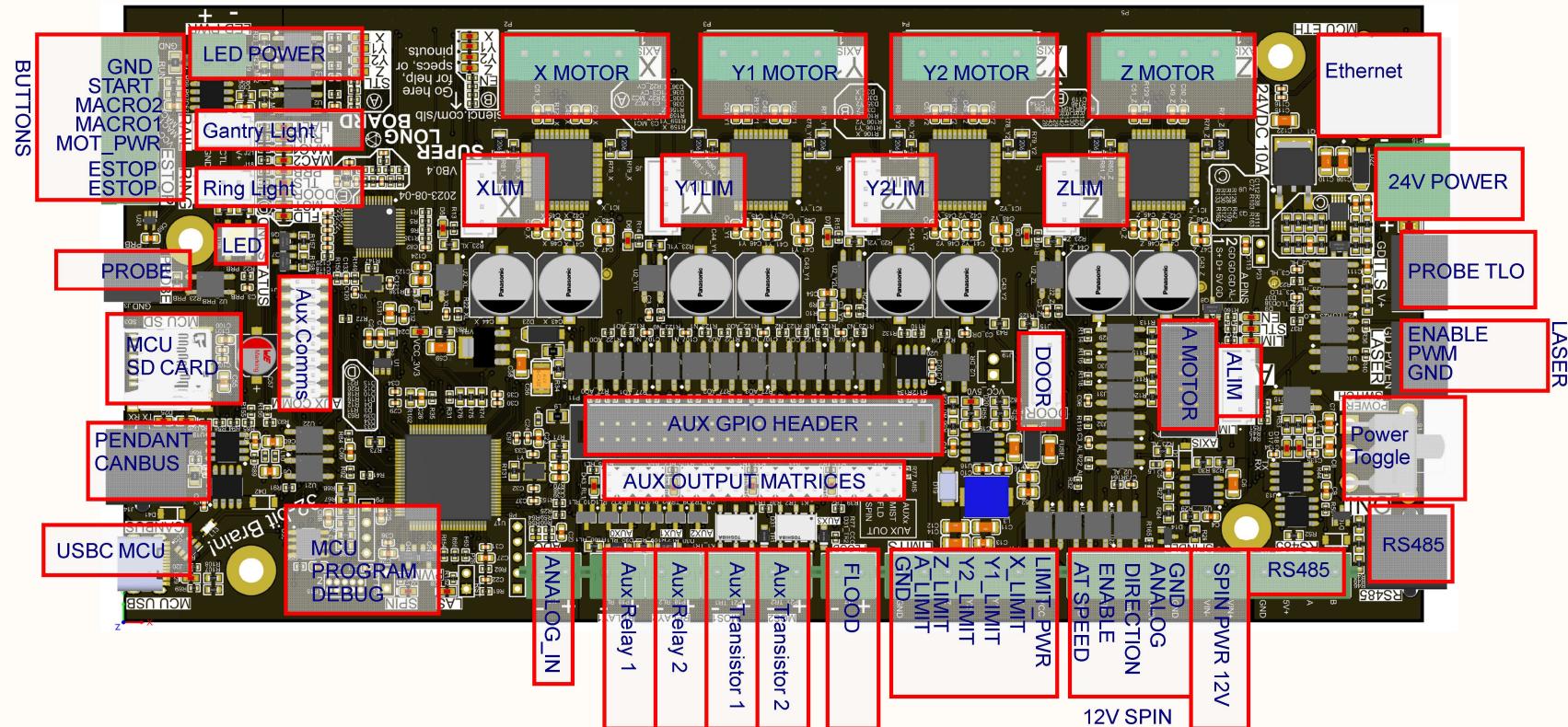
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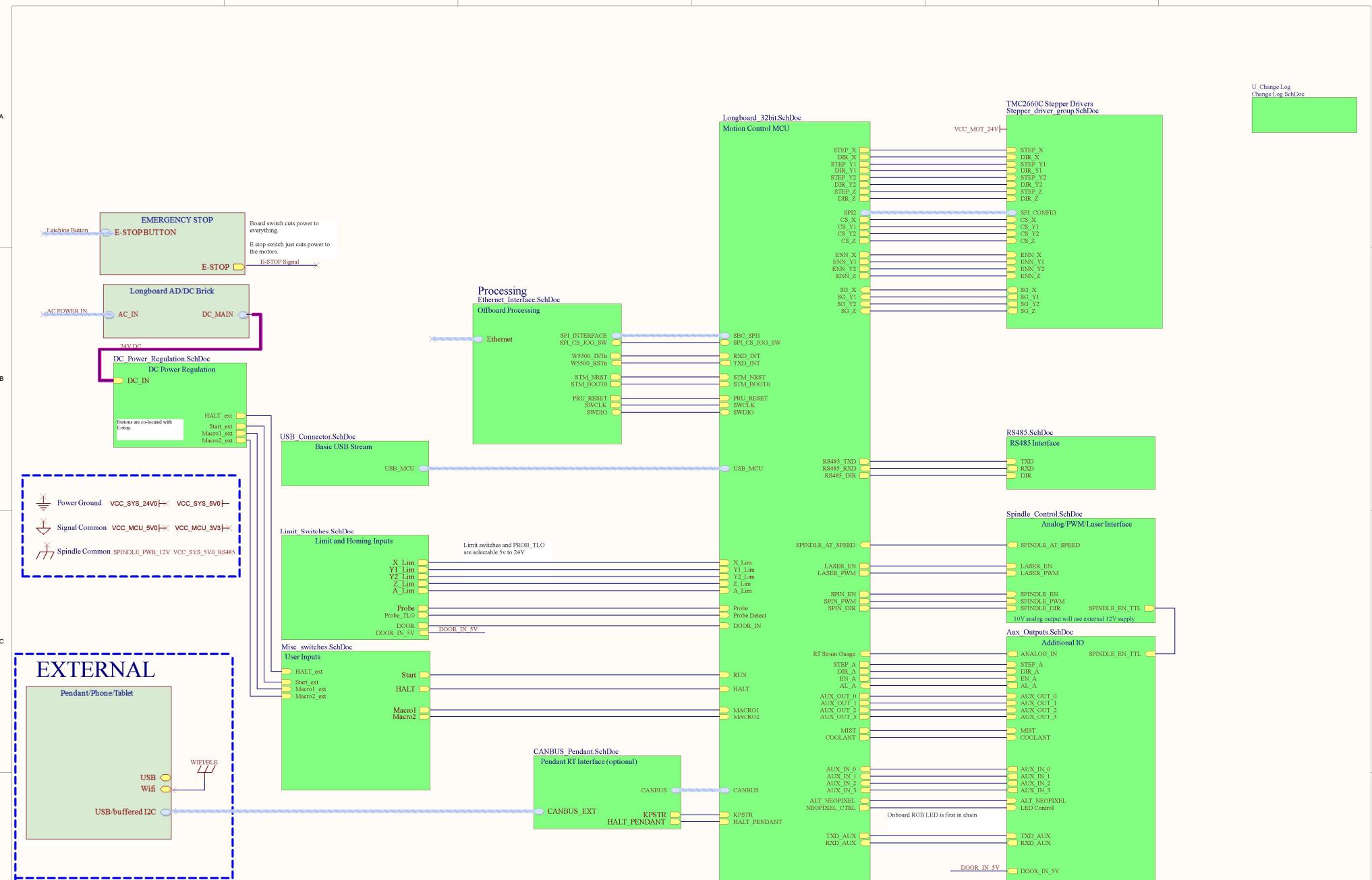


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SHEET Title Sheet		
PROJECT	REV	
Longboard_32bit.PriPCB	B6	
ENGR	DOCUMENT	
AM	Title Sheet.SchDoc	
SIZE	MODIFIED	SHEET
B	2024-01-28 5:58 PM	1 / 26

# Sienci Longboard 32-bit CNC Controller





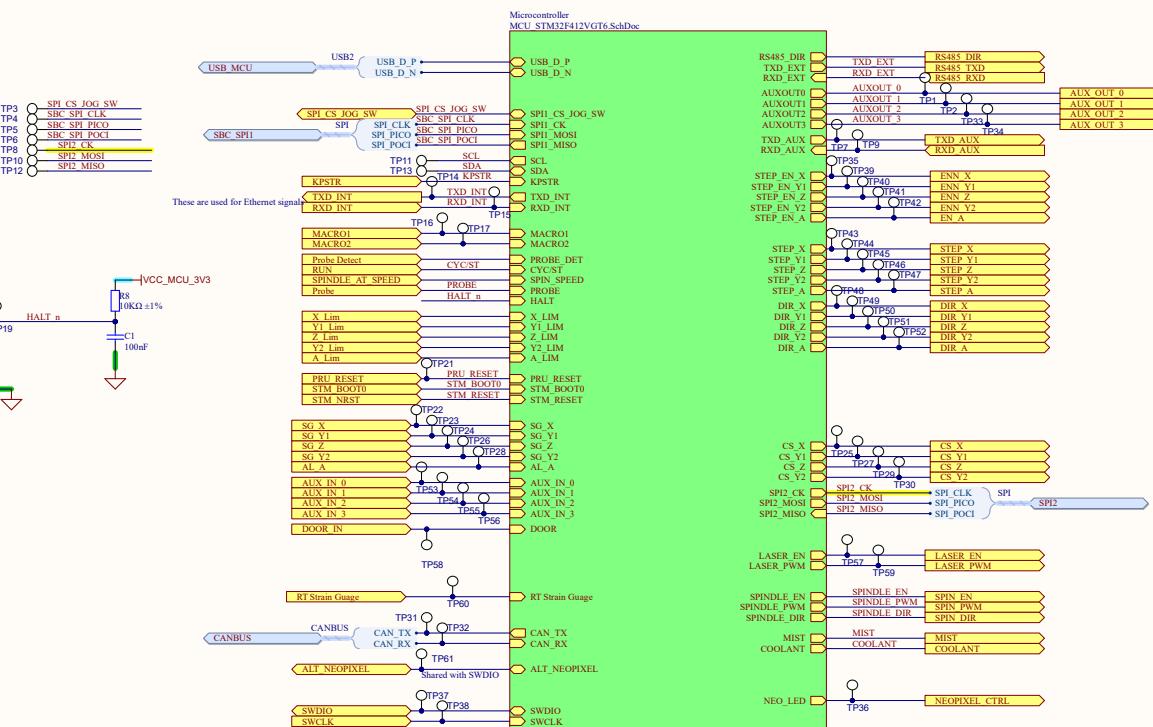
<https://resources.senci.com/view/lmk2-longboard-details/>

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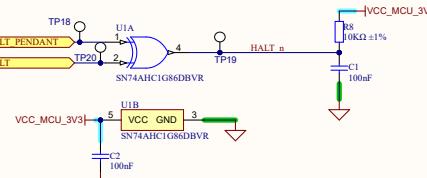
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Longboard\_32bit.PriPCB  
ENR-DOCUMENT  
AM-Block\_diagram.SchDoc  
ED-Block\_diagram.Pcb  
C-2024-01-28T22:59:PM

BLOCK DIAGRAM	
PROJECT PO Box 2000 Munich, Germany PHONE: +49 89 238-8336 EMAIL: info@expatia.eu	REV B6 ENR-DOCUMENT AM-Block_diagram.SchDoc ED-Block_diagram.Pcb C-2024-01-28T22:59:PM SHEET 3 / 26

A

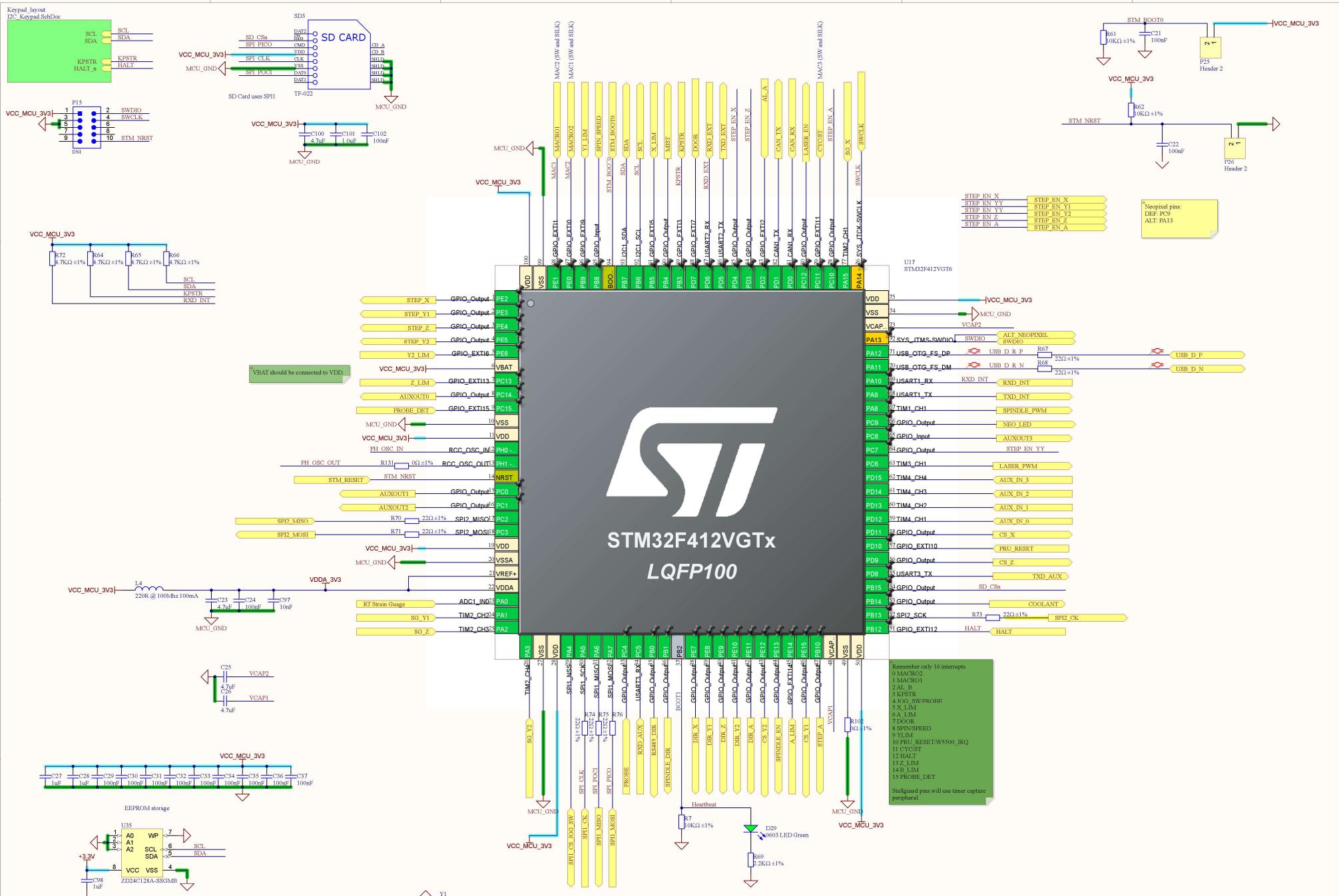


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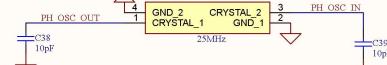


C

D



**Figure 7-1.** Device Addressing



3

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6

A

A

B

B

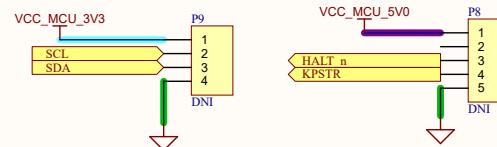
C

C

D

D

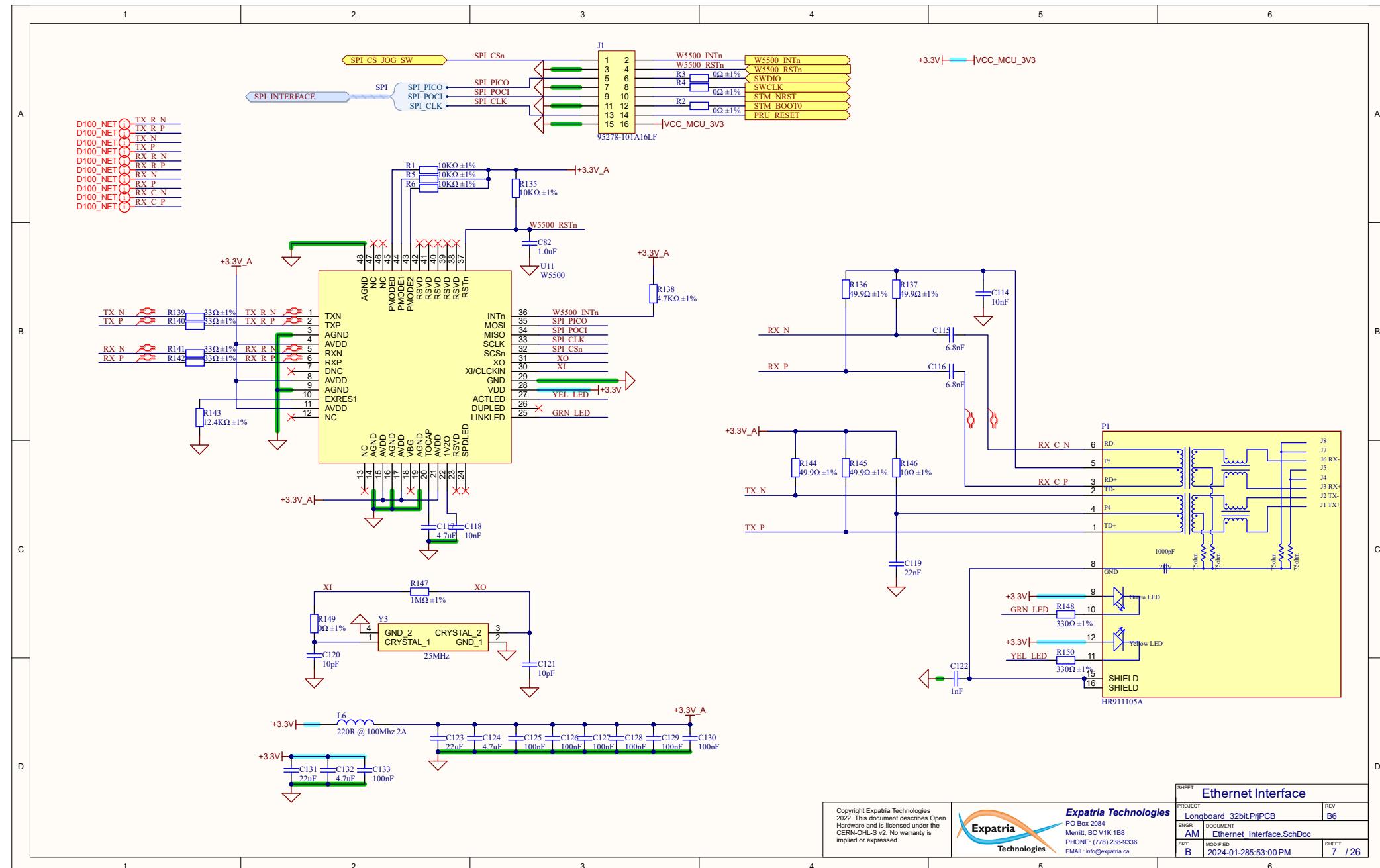
Pendant is in MCU domain  
HALT is active low.



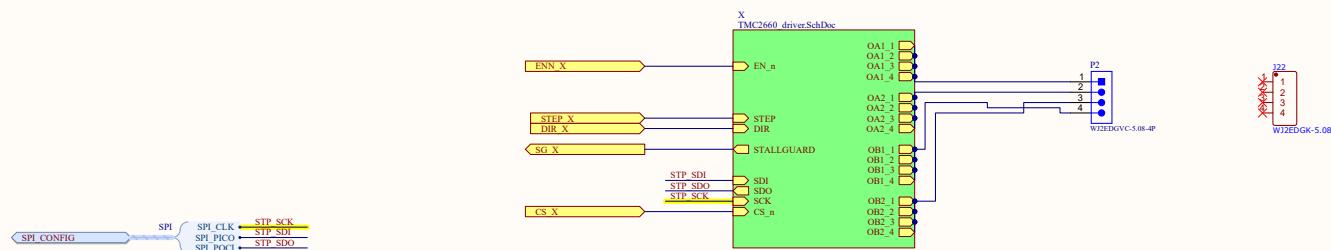
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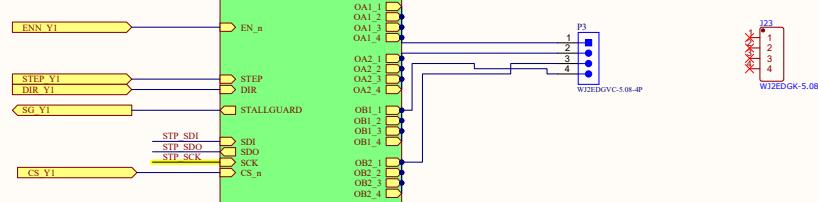
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ENGR	DOCUMENT		
AM	I2C Keypad SchDoc		
SIZE	MODIFIED		SHEET
B	2024-01-28 5:30 PM		6 / 26



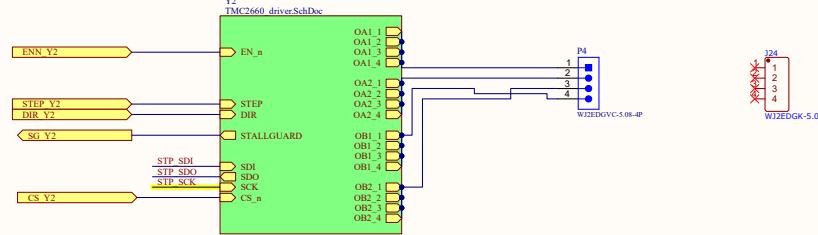
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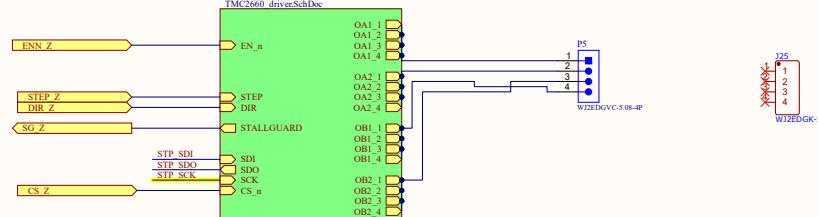
B



C



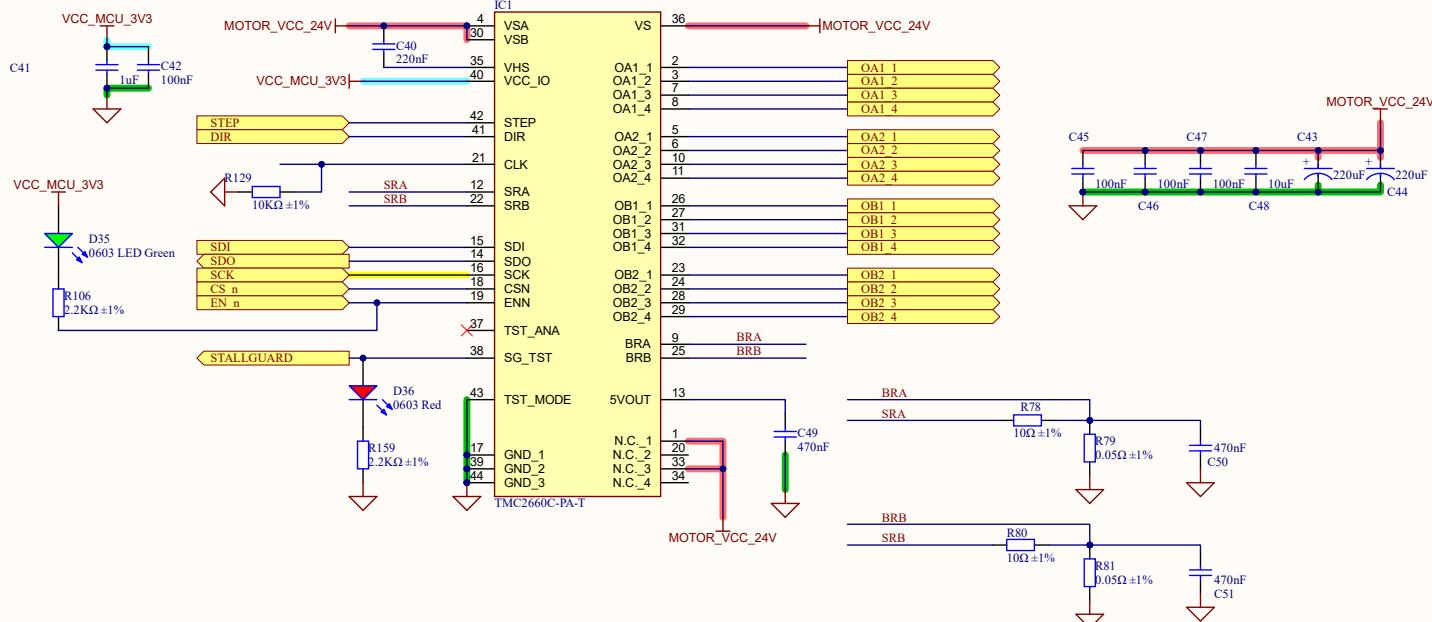
D



1 2 3 4 5 6

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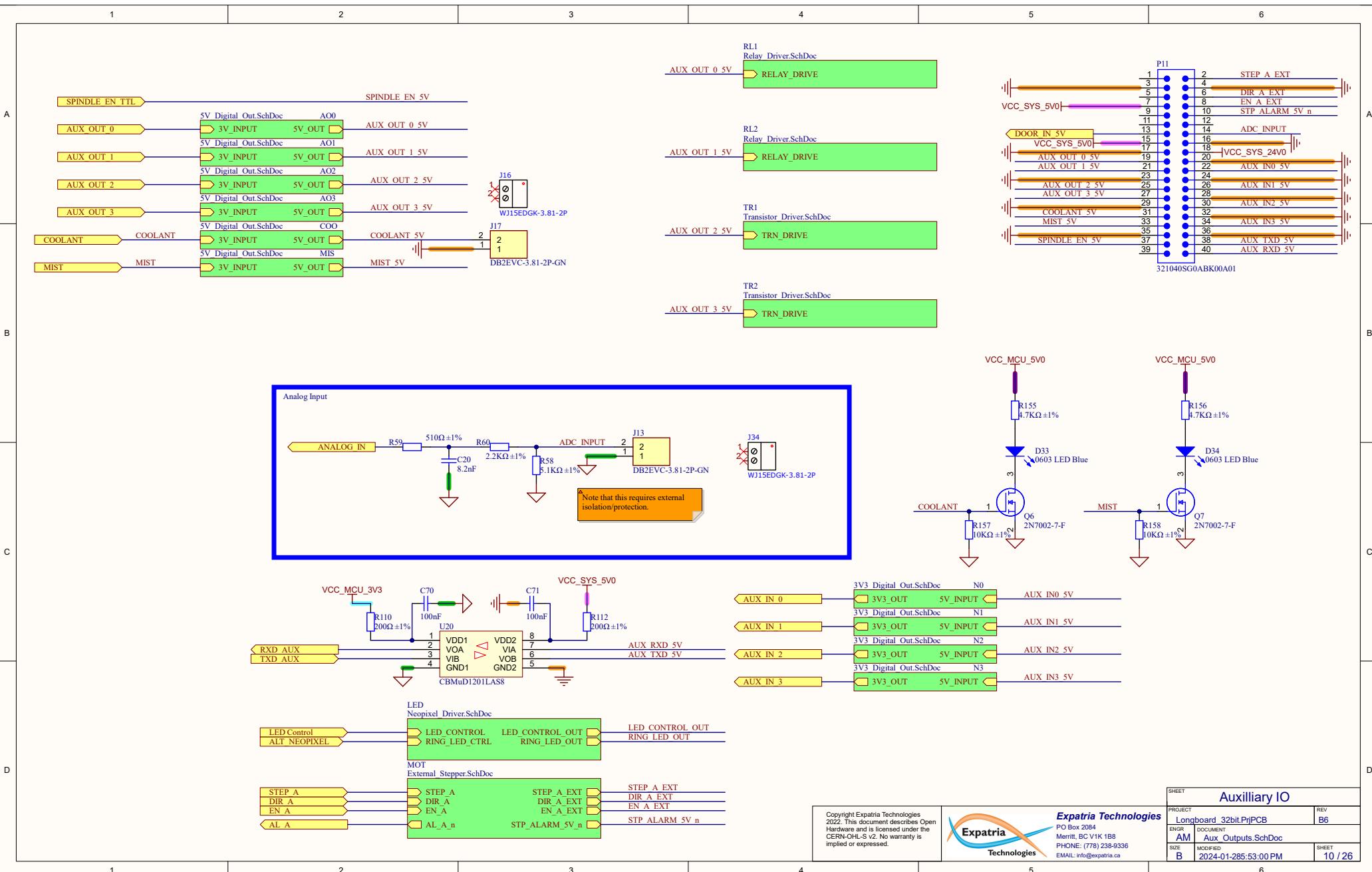
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TMC2660 Driver		
PROJECT	REV	
Longboard 32bit.PriPCB	B6	
ENGR	DOCUMENT	
AM	TMC2660_driver.SchDoc	
SIZE	MODIFIED	SHEET
B	2024-01-28 5:30:00 PM	9 / 26

1 2 3 4 5 6



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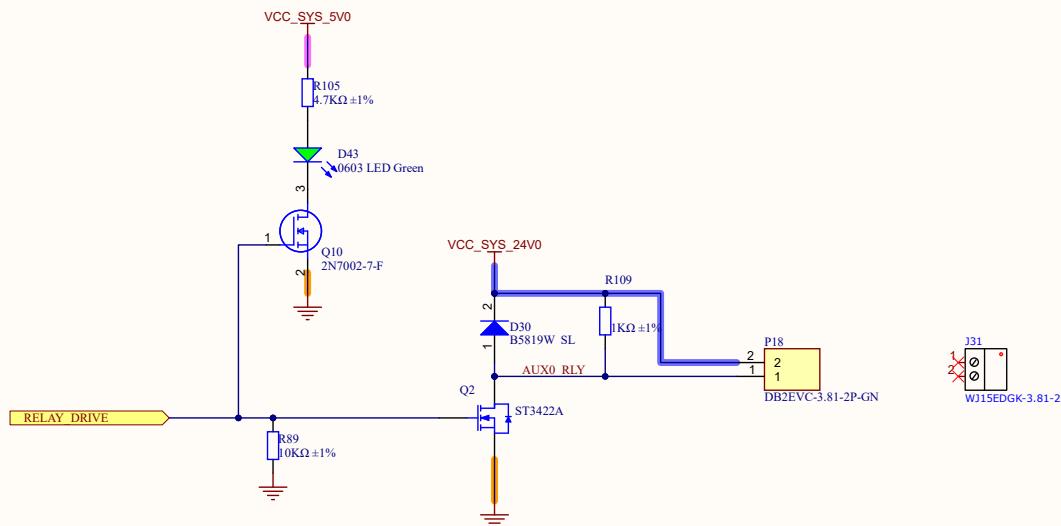
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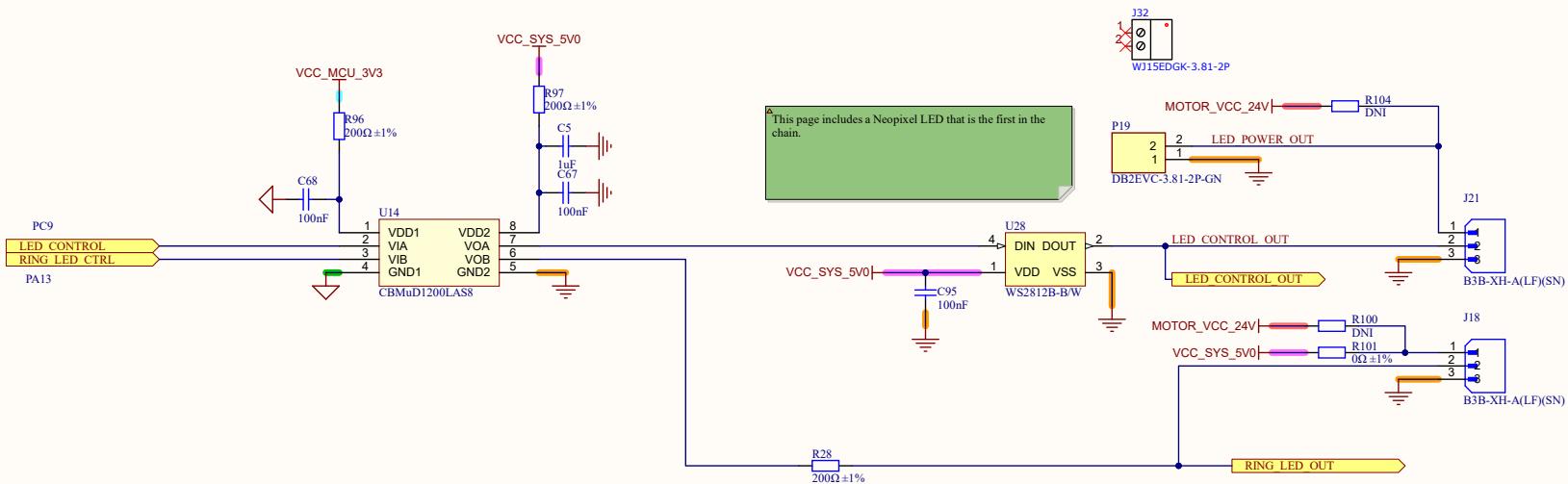


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SHEET		Relay Driver	
PROJECT	REV	Longboard 32bit.PriPCB	B6
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SIZE	MODIFIED	2024-01-28 5:30:00 PM	SHEET 11 / 26
B			

1 2 3 4 5 6

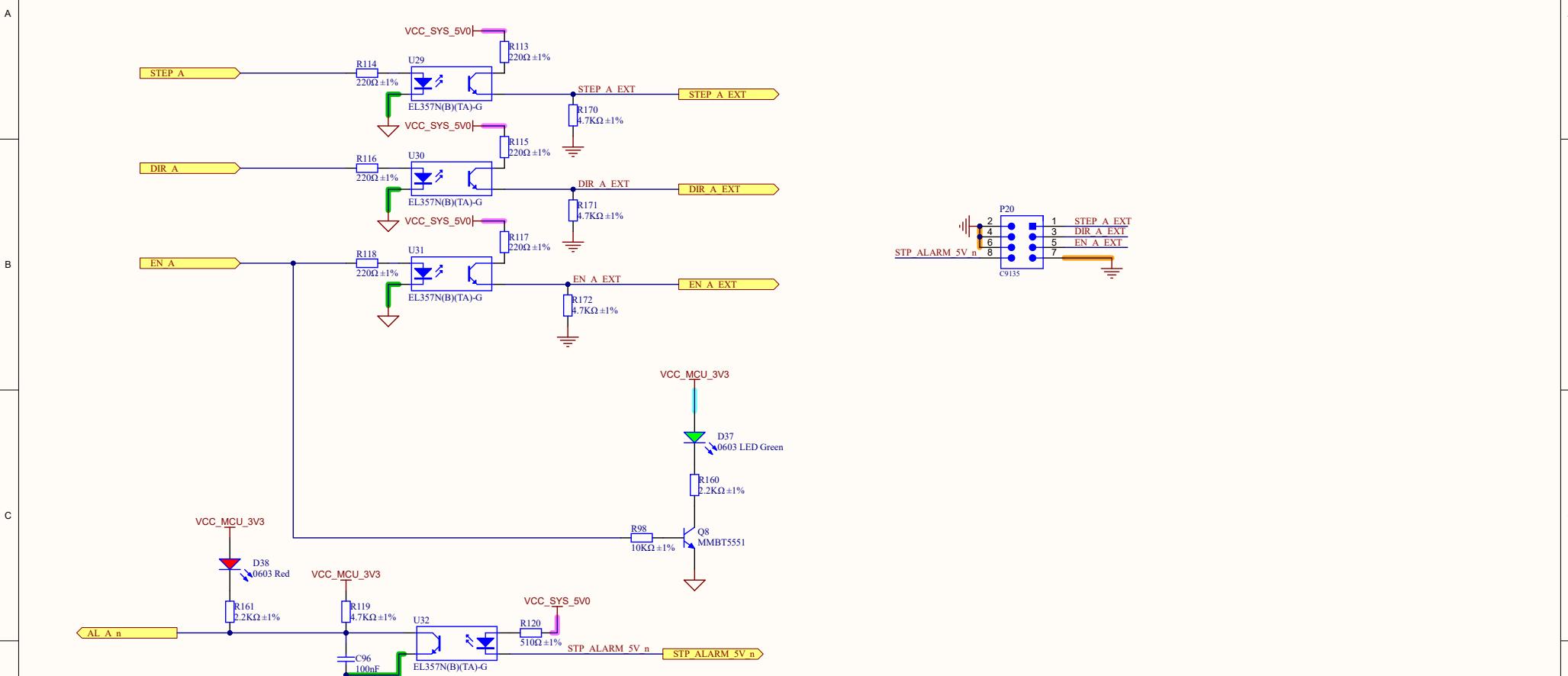


1 2 3 4 5 6

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SHEET Neopixel Driver		REV B6
PROJECT	Longboard 32bit.PriPCB	REV B6
ENGR	DOCUMENT	
AM	Neopixel_Driver.SchDoc	
SIZE B	MODIFIED 2024-01-28 5:01 PM	SHEET 12 / 26



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SHEET External Stepper		REV B6
PROJECT	Longboard 32bit.PriPCB	REV B6
ENGR	DOCUMENT External Stepper.SchDoc	
SIZE B	MODIFIED 2024-01-28T15:01:01 PM	SHEET 13 / 26

1 2 3 4 5 6

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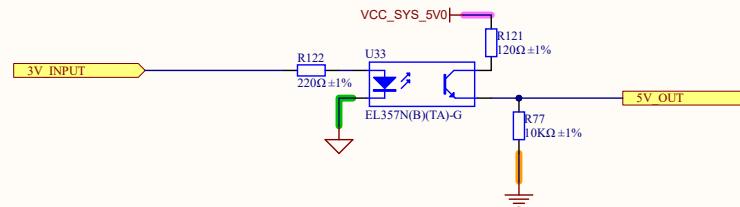
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SHEET 5V Isolated Output		
PROJECT	REV	
ENGR	DOCUMENT	
Longboard 32bit.PriPCB	B6	
AM	5V_Digital_Out.SchDoc	
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1 2 3 4 5 6

1 2 3 4 5 6

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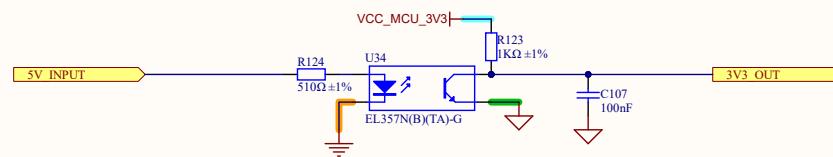
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SHEET 3.3V Isolated Output		REV B6
PROJECT	Longboard 32bit.PriPCB	REV B6
ENGR	DOCUMENT	DOC
AM	3V3_Digital_Out.SchDoc	
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1 2 3 4 5 6

A

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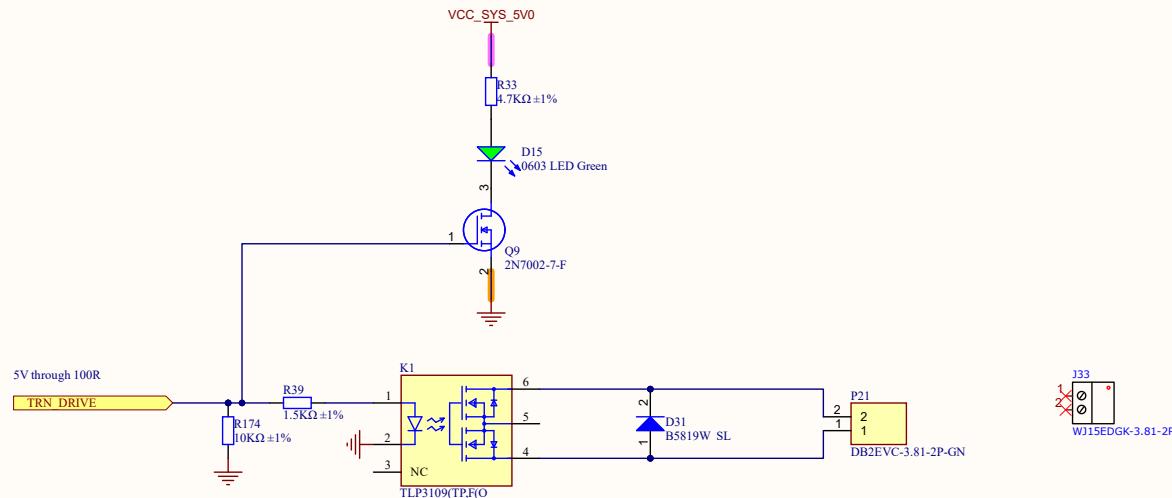
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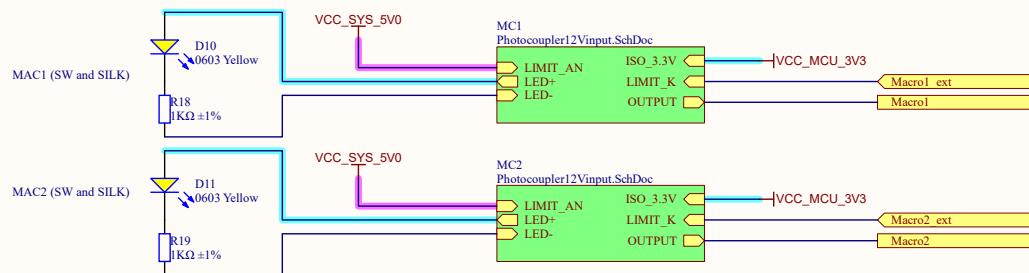
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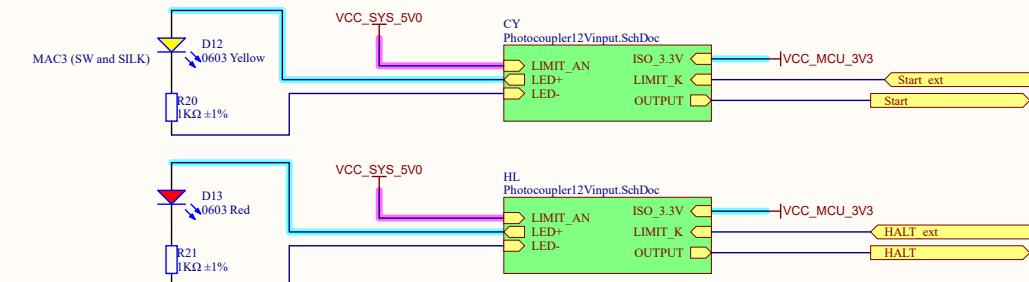


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ENGR	DOCUMENT		
AM	Transistor_Driver.SchDoc		
SIZE	MODIFIED		SHEET
B	2024-01-28 53:01 PM		16 / 26

A



B



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D

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SHEET Misc Switches		
PROJECT	REV	
Longboard 32bit.PriPCB	B6	
ENGR	DOCUMENT	
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SIZE	MODIFIED	SHEET
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A

A

B

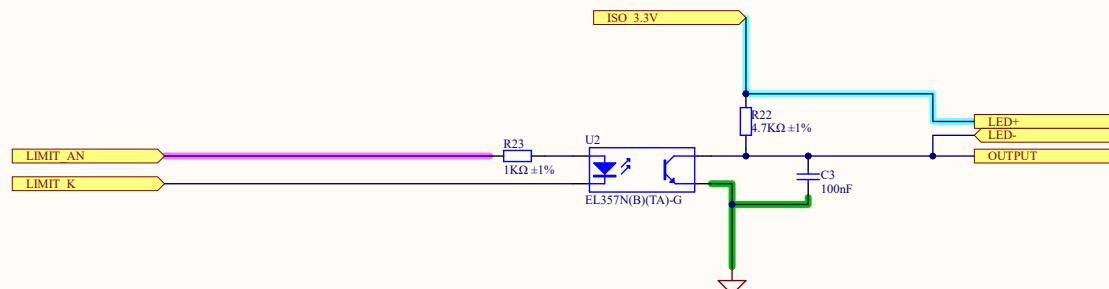
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C

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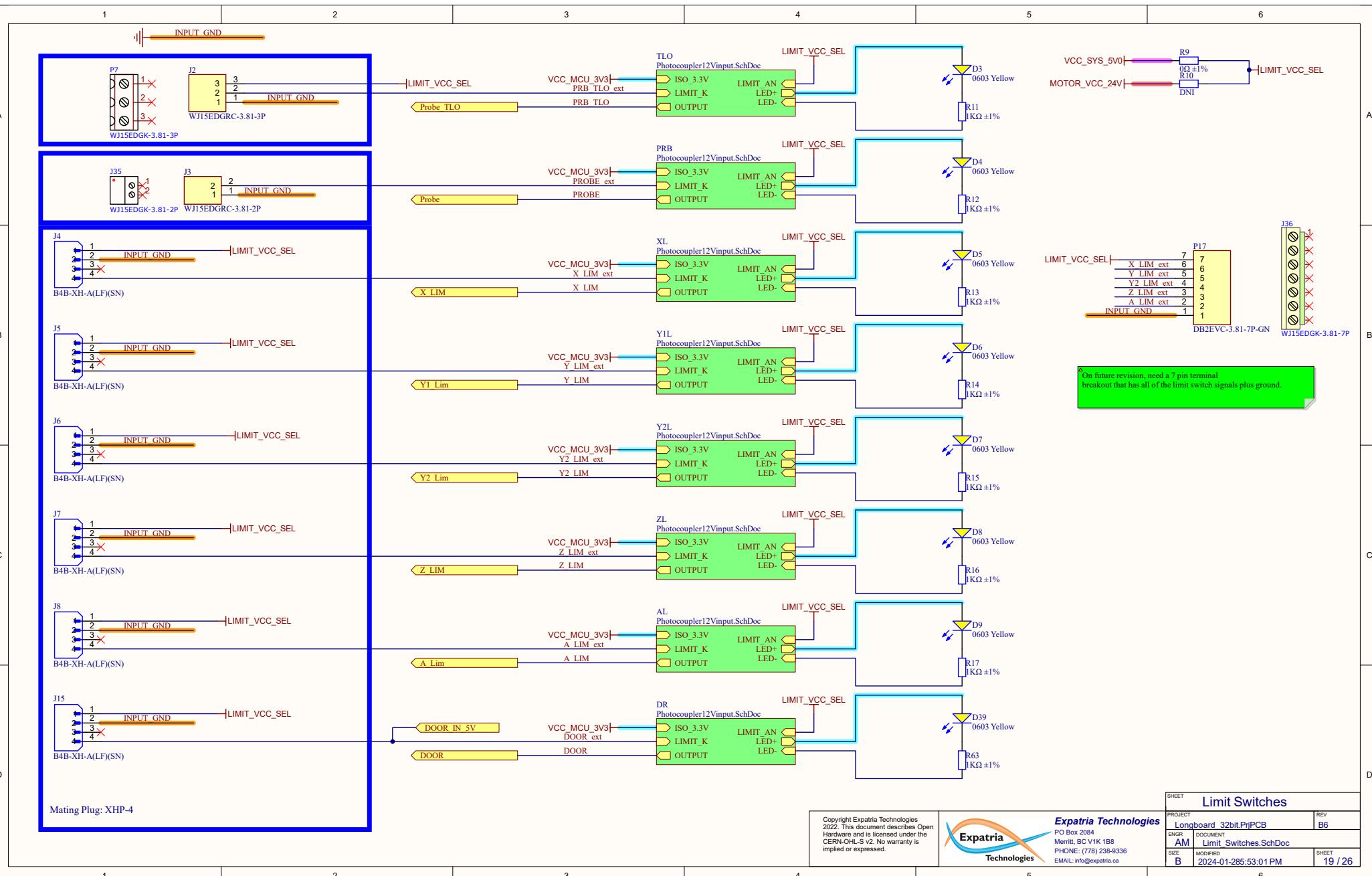
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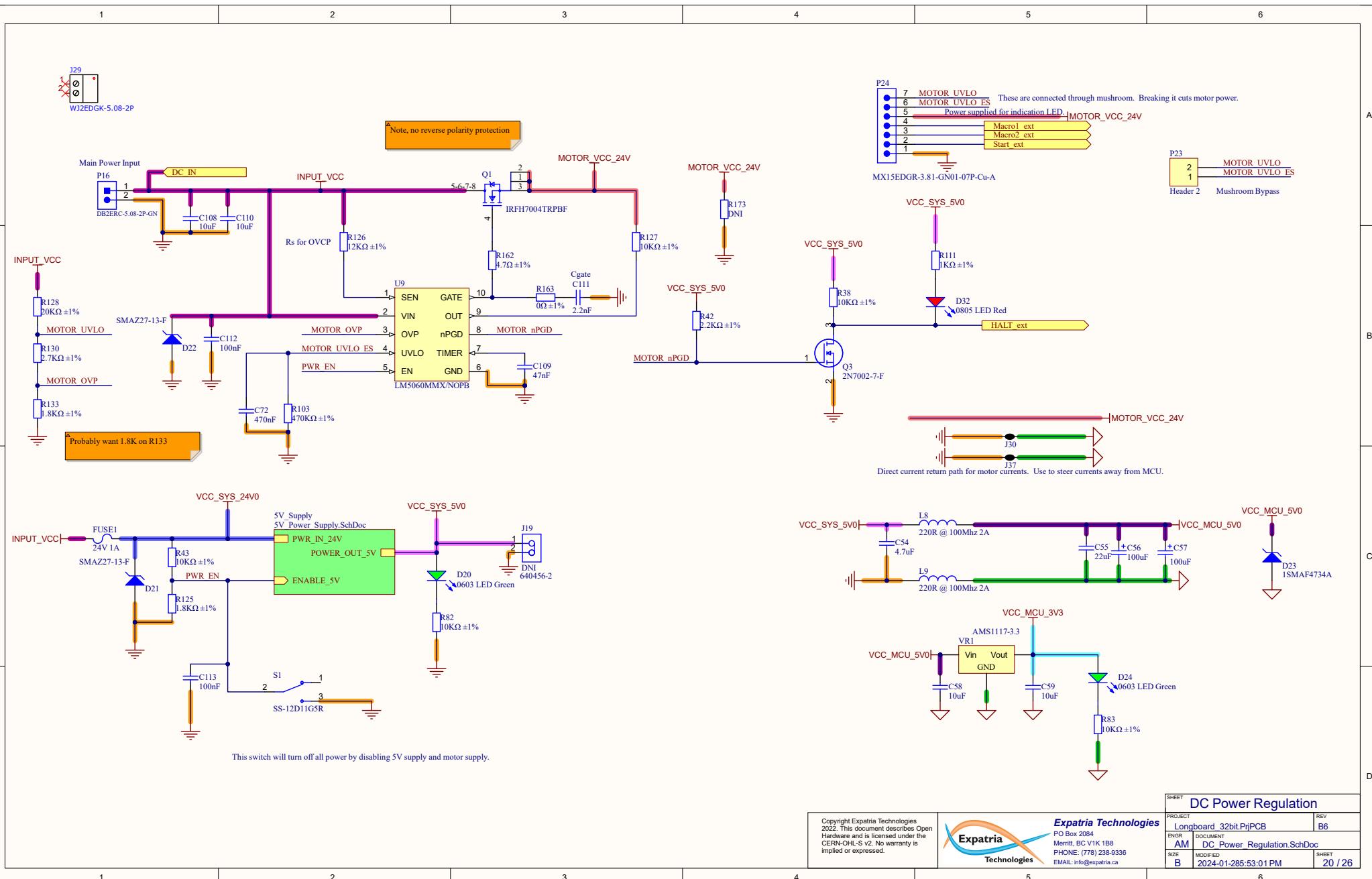


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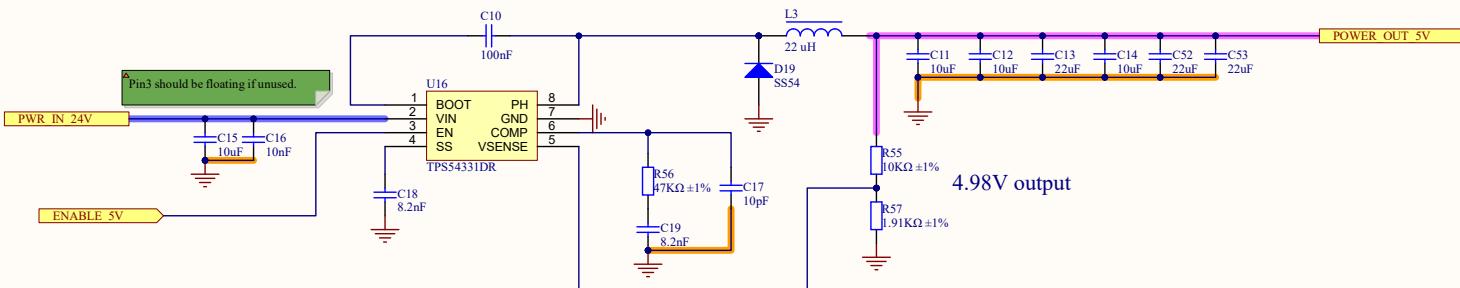
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PROJECT	Longboard 32bit.PriPCB	REV B6
ENGR	DOCUMENT Photocoupler12Vinput.SchDoc	
SIZE B	MODIFIED 2024-01-28T15:53:01 PM	SHEET 18 / 26





1 2 3 4 5 6

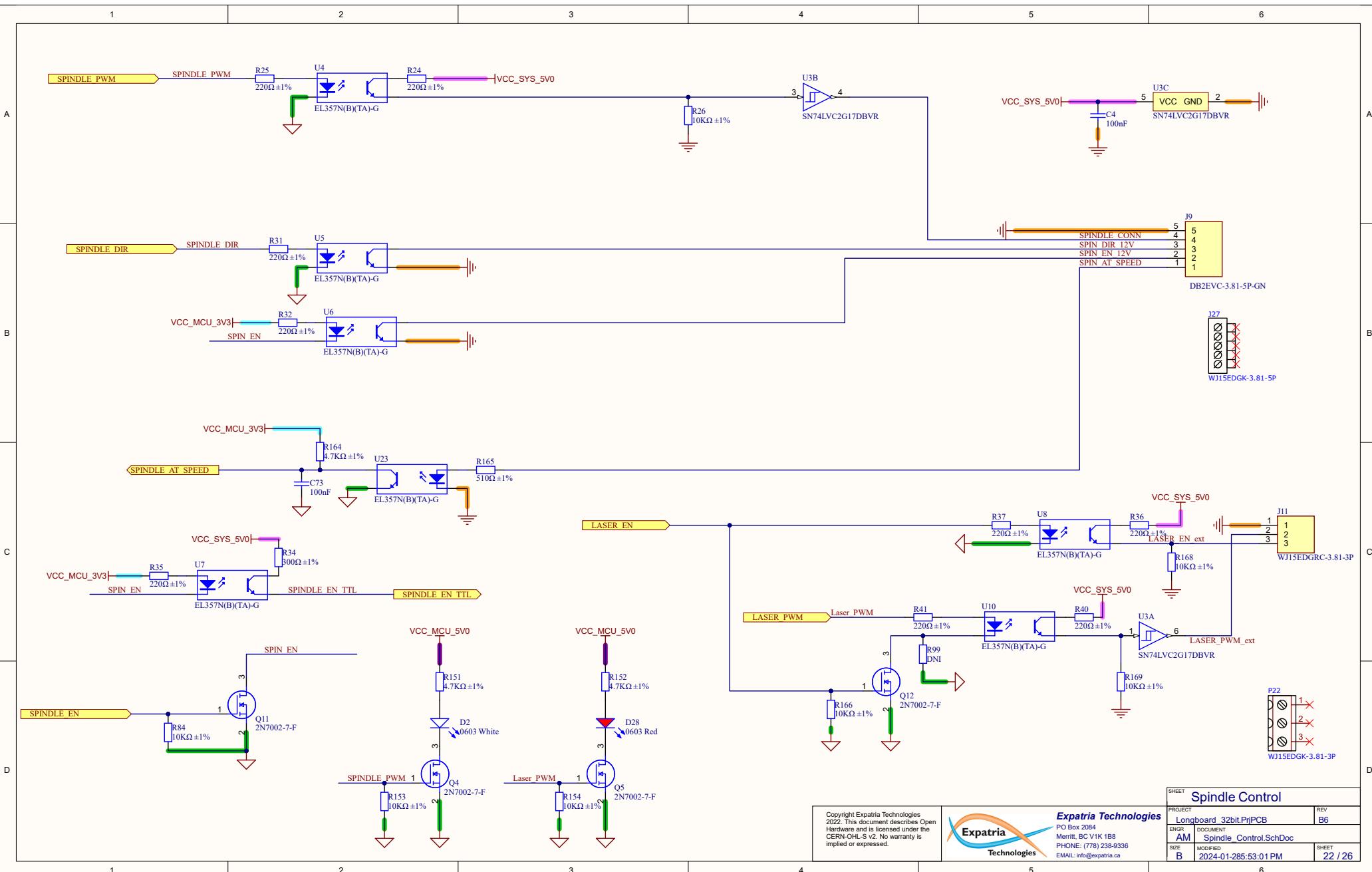


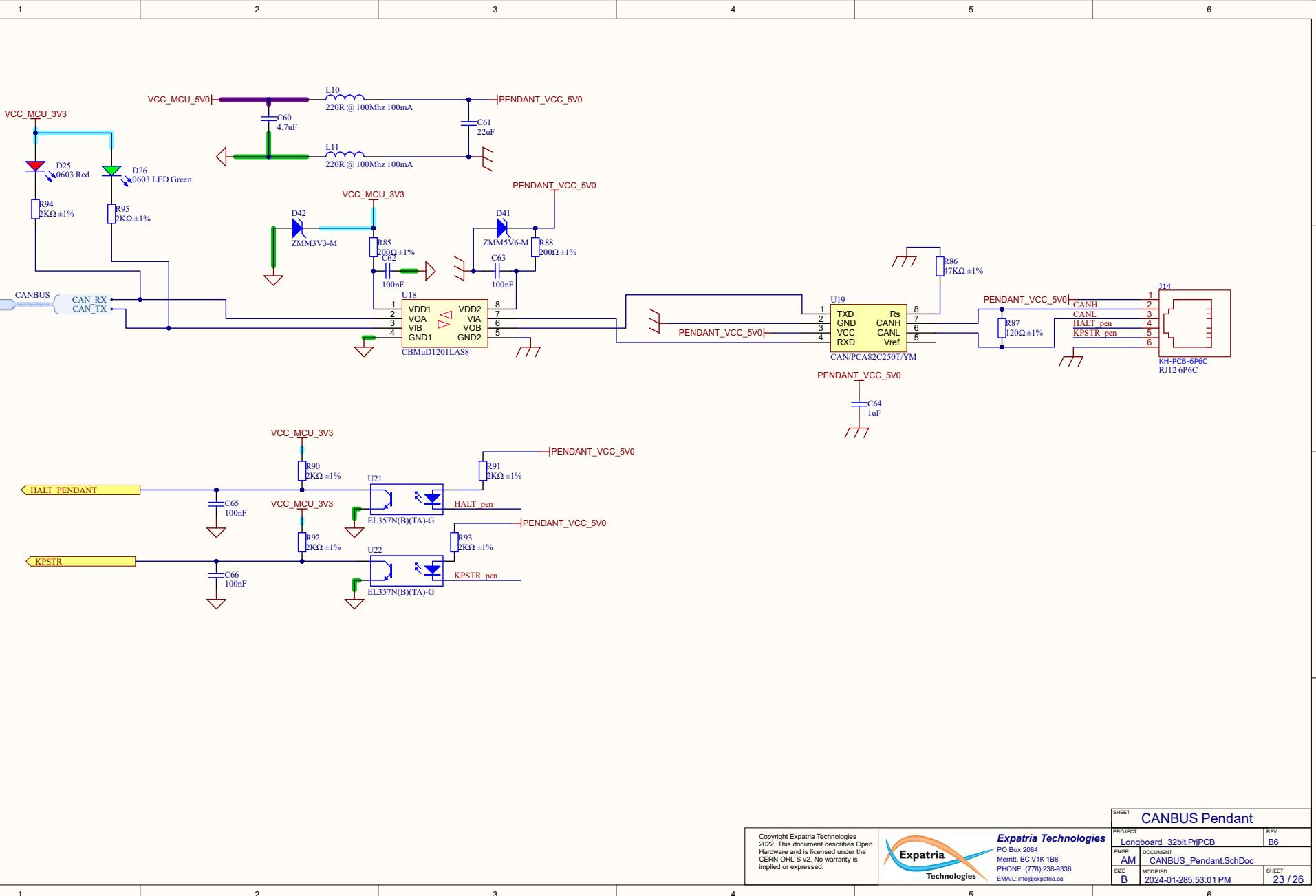
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<b>5V Power Supply</b>	
PROJECT	REV
Longboard 32bit.PriPCB	B6
ENGR	DOCUMENT
AM	5V Power Supply.SchDoc
SIZE	MODIFIED
B	2024-01-28T15:01:01 PM
	SHEET
	21 / 26

1 2 3 4 5 6



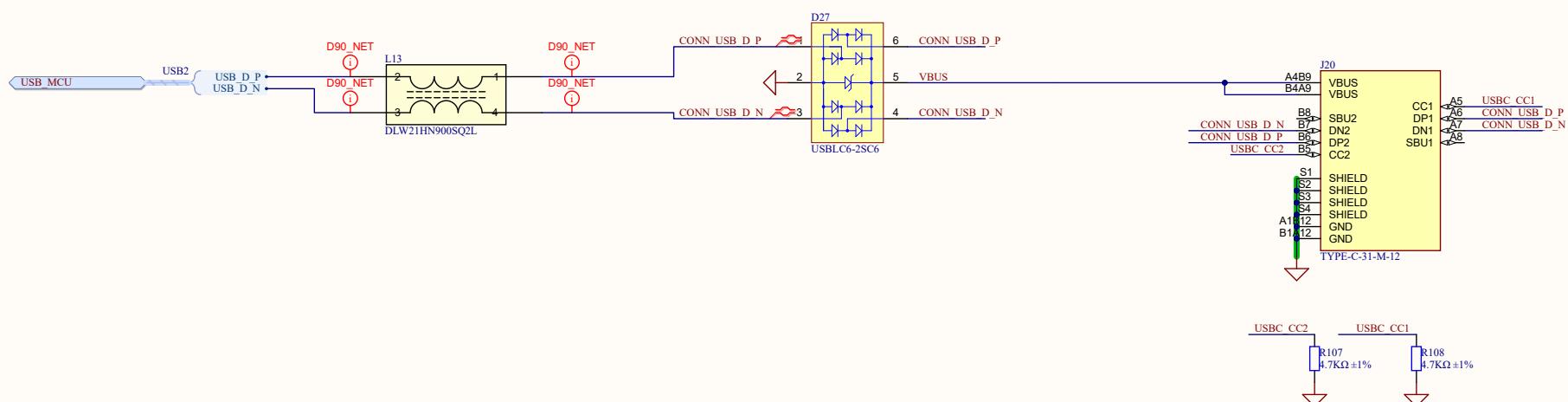


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CANBUS Pendant	
PROJECT Longboard 32bit.PriPCB	REV B6
ENGR AM	DOCUMENT CANBUS Pendant.SchDoc
SIZE B	MODIFIED 2024-01-28 5:30:01 PM
	SHEET 23 / 26

1 2 3 4 5 6

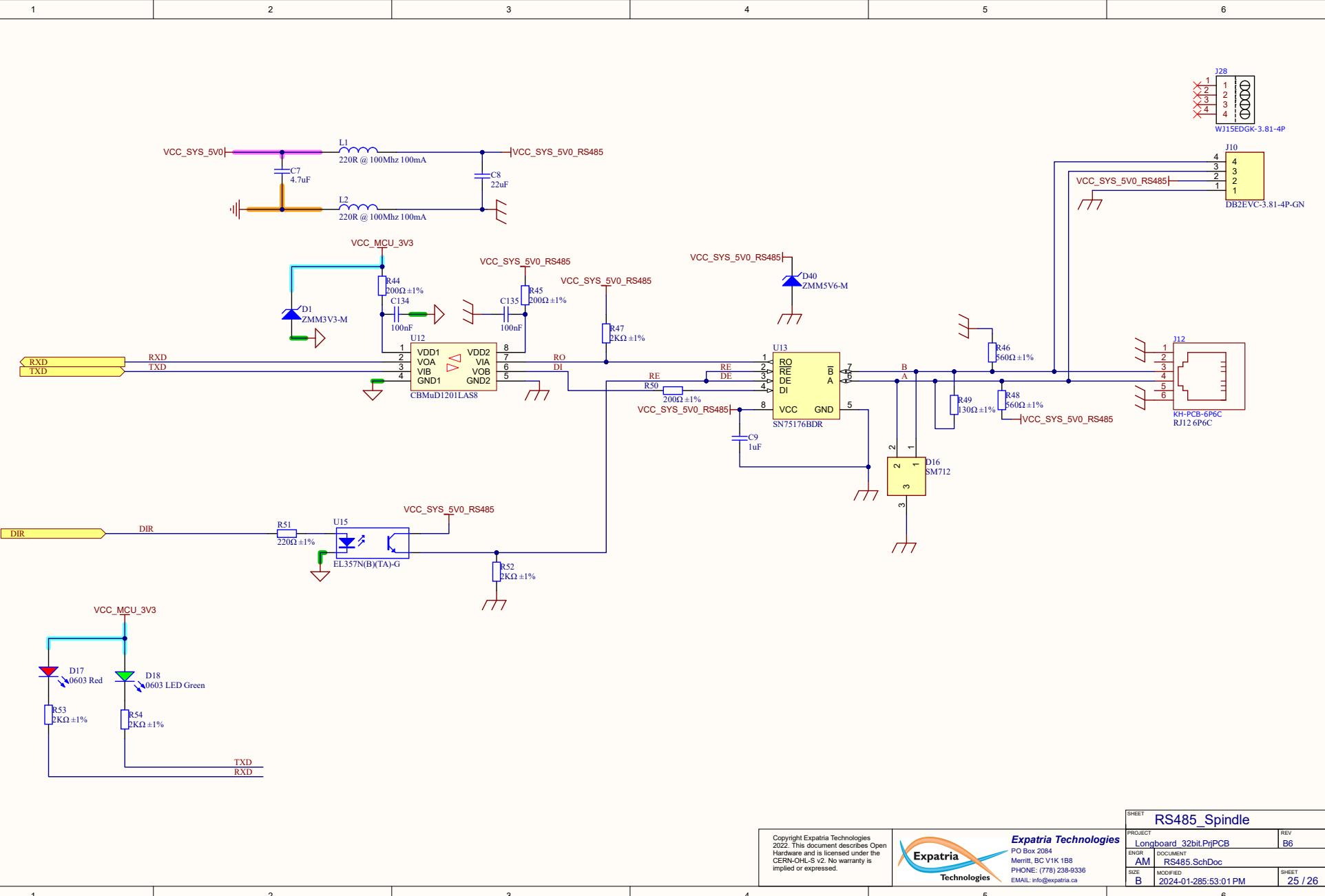


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SHEET 1 USBC MCU Connector	
PROJECT	REV
Longboard 32bit.PriPCB	B6
ENGR	DOCUMENT
AM	USB_Connector.SchDoc
SIZE	MODIFIED
B	2024-01-28 5:30 PM
	SHEET 24 / 26

1 2 3 4 5 6



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RS485_Spindle	
PROJECT	REV
Longboard 32bit.PriPCB	B6
ENGR	DOCUMENT
AM	RS485.SchDoc
SIZE	MODIFIED
B	2024-01-28 53:01 PM
SHEET	
25 / 26	

**Change Log**

Date	Revision	Description
11/13/22	A1	Update connectors for 3.81mm and 5.08mm Update parts for BOM availability
12/10/22	A2	Update parts for BOM availability Swapped connectors Replaced CM4 module with two connectors for BOM inclusion
1/2/23	A3	Added A axis to aux breakout connector Connected VREF on MCU. Added test points Cleaned up block diagram Added buffer to CM4 power indicator.
1/4/23	A4	Update parts for availability Add L6 filter for USB Replaced J18 with ARJM11D7-502-AB-EW2 for magnetics Changed vertical DB2EVC-2.54-2P-GN to right angle DB2ERC-2.54-2P-GN Changed vertical DB2EVC-2.54-3P-GN to right angle DB2ERC-2.54-3P-GN Added matching 2.54mm plugs Change R9 to FITTED Change R10 to NOT_FITTED Changed B3B-XH-A(LF)(SN) to B4B-XH-A(LF)(SN)
07/18/23	B1	Removed Compute module Fixed 5V Regulator Enable pin SL1 Fixed BOOT1 pin location SL3 Removed D22 SL4 Revised MCU Pinout SL8 Added Toggle switch Added Aux limits terminal Swapped Laser Pinout Revised spindle terminal to be RS485 Updated header pinout Changed transistor drivers to photoMOS Added 5V 2 pin flood output Added additional Neopixel drive Added net tie for motor current return path Updated EL357 resistor values
07/18/23	B2	Updated LED and RS485 drive to use digital isolators Added LEDs to more I/O SL28 Added additional test points SL31 Connected Ring light LED to 5V onboard supply SL32

Date	Revision	Description
07/21/23	B3	Changed programming buttons to unpopulated headers Connected BOOT0 to macro buttons so that DFU can be initiated by users Added nuclear DNI Fan header Updated rocker switch to right angle part
07/28/23	B4	Updated parts for availability
10/02/23	B4.1	Replaced Q4-Q7 with 2N7002-7-F
10/13/23	B5	Removed neopixel buffer Changed polarity of spindle and laser outputs Added pull-down to relay driver. Made spindle output 5V TTL. Added buffer to TTL outputs Updated DC power section values
11/7/23	B6	Updated parts for availability Changed R126 to 12K as per SL-61

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Change Log	
PROJECT	REV
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	26 / 26