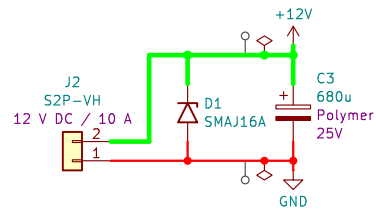
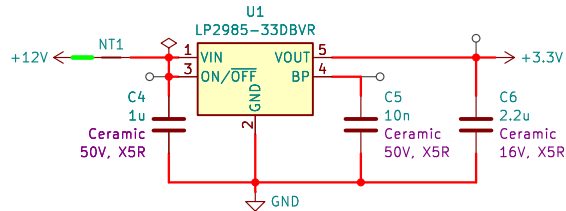


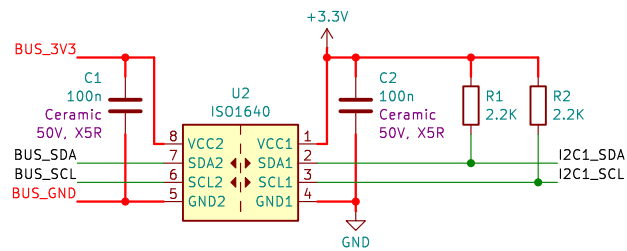
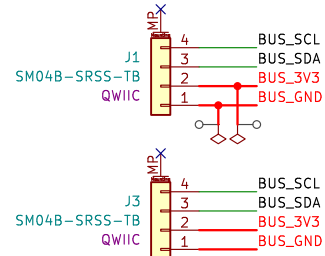
POWER INPUT
Input must be 9 to 16 V
Circuit protection
– External: 10 A fuse required, 16 AWG wire
– Internal: reverse polarity, overvoltage



3.3 V POWER SUPPLY
Supplies 150 mA, ultra low quiescent current (microamps)

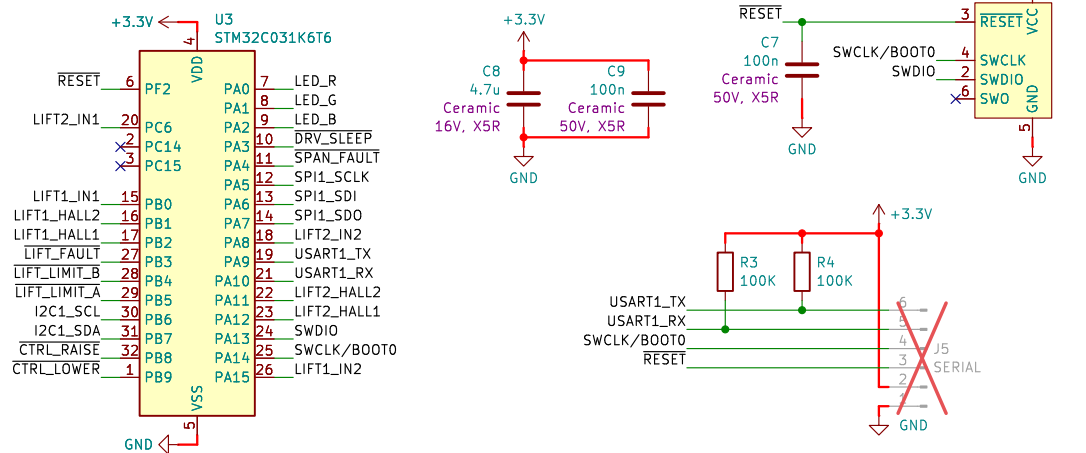


QWIIIC INTERFACE
ISO1640 provides bidirectional isolation, hot swap, and ESD protection
– Side 1 drives the internal bus, intended for a low-capacitance node
– Side 2 drives the external bus, can withstand stronger ESD and short circuit events

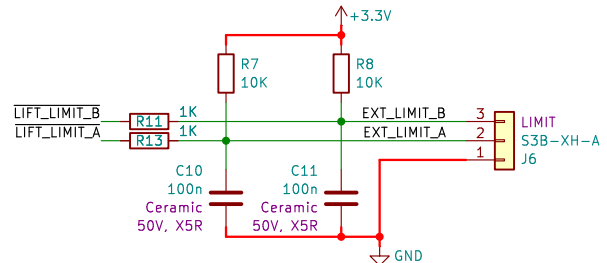


STM32C031 MICROCONTROLLER

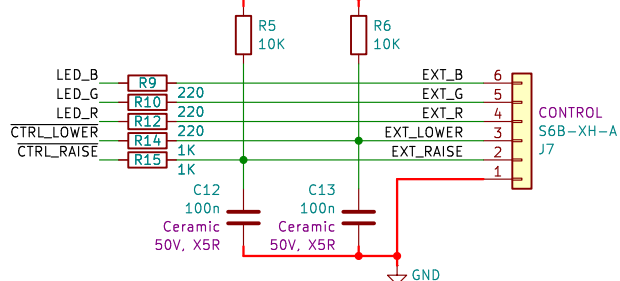
Programmed via SWD with STLINK-V3 and the Tag-Connect TC2030-CTX-NL-STDC14 cable
Header provided for serial debugging
Can also be programmed over I2C with the system bootloader



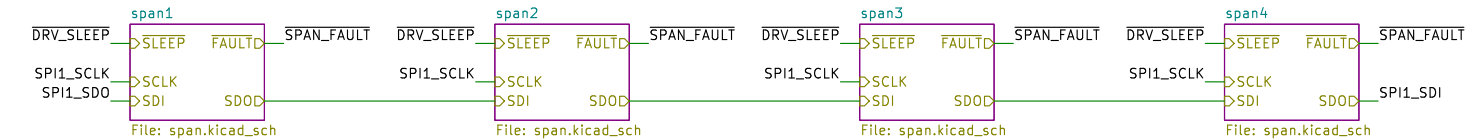
LIMIT SWITCHES



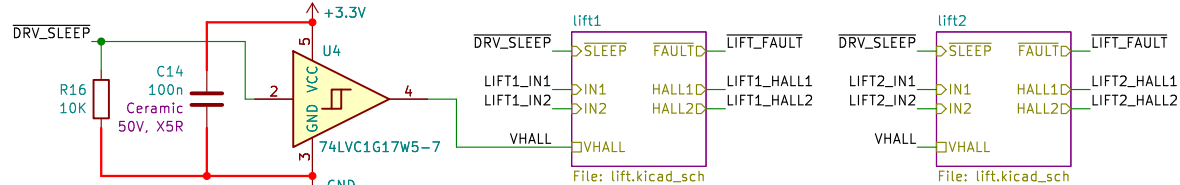
CONTROL INPUTS AND INDICATORS



BED WING SPAN MOTOR DRIVERS



BED PLATFORM LIFT MOTOR DRIVERS



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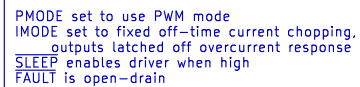
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Title: Bed Lift Controller

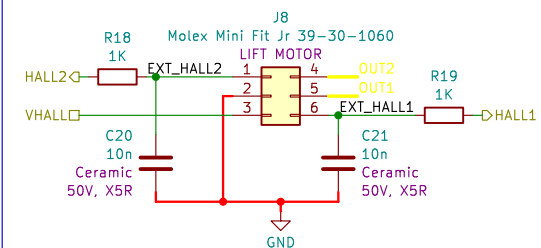
Size: A3 Date: 2025-10
KiCad E.D.A. 9.0.5

Rev: v0.2
Id: 1/7

Designed for 12 V DC motor load up to 3 A (6 A peak)

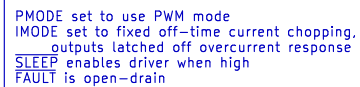


Set overcurrent protection trip current
 $I_{trip} (A) = 450 \cdot V_{ref} (V) / R_{ipropi} (\Omega)$
 Given $V_{ref} = 3.3 \text{ V}$, $R_{ipropi} = 470 \Omega$, $I_{trip} = 3.16 \text{ A}$



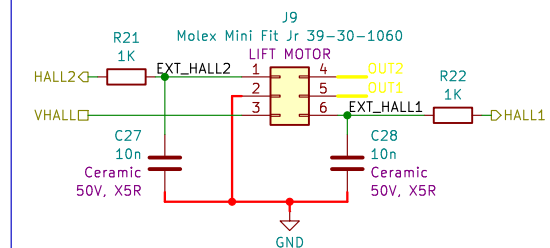
Id: 2/7

Designed for 12 V DC motor load up to 3 A (6 A peak)



Internal pull-down on $\overline{\text{SLEEP}}$, IN1, and IN2 keeps motor off until MCU is initialized

Set overcurrent protection trip current
 $I_{trip} (A) = 450 \cdot V_{ref} (V) / R_{ipropi} (\Omega)$
 Given $V_{ref} = 3.3 \text{ V}$, $R_{ipropi} = 470 \Omega$, $I_{trip} = 3.16 \text{ A}$



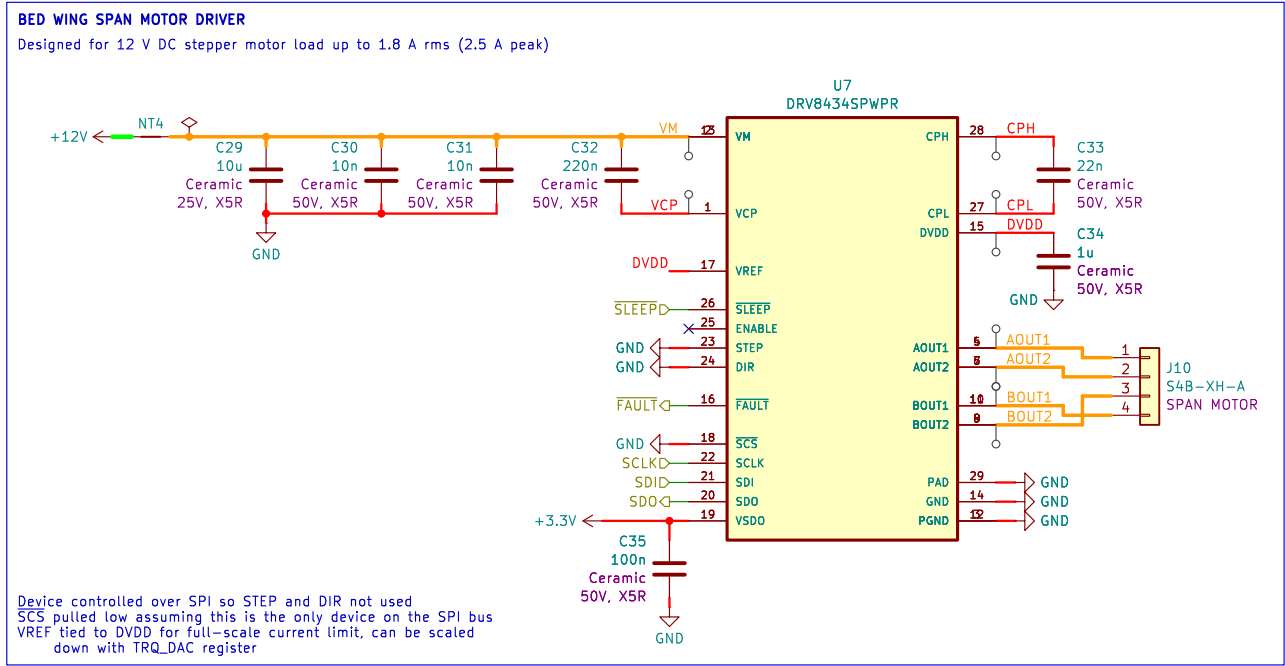
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Size: A4	Date: 2025-10
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KiCad E.D.A. 9.0.5

Rev: v0.2.1

Id: 3/7



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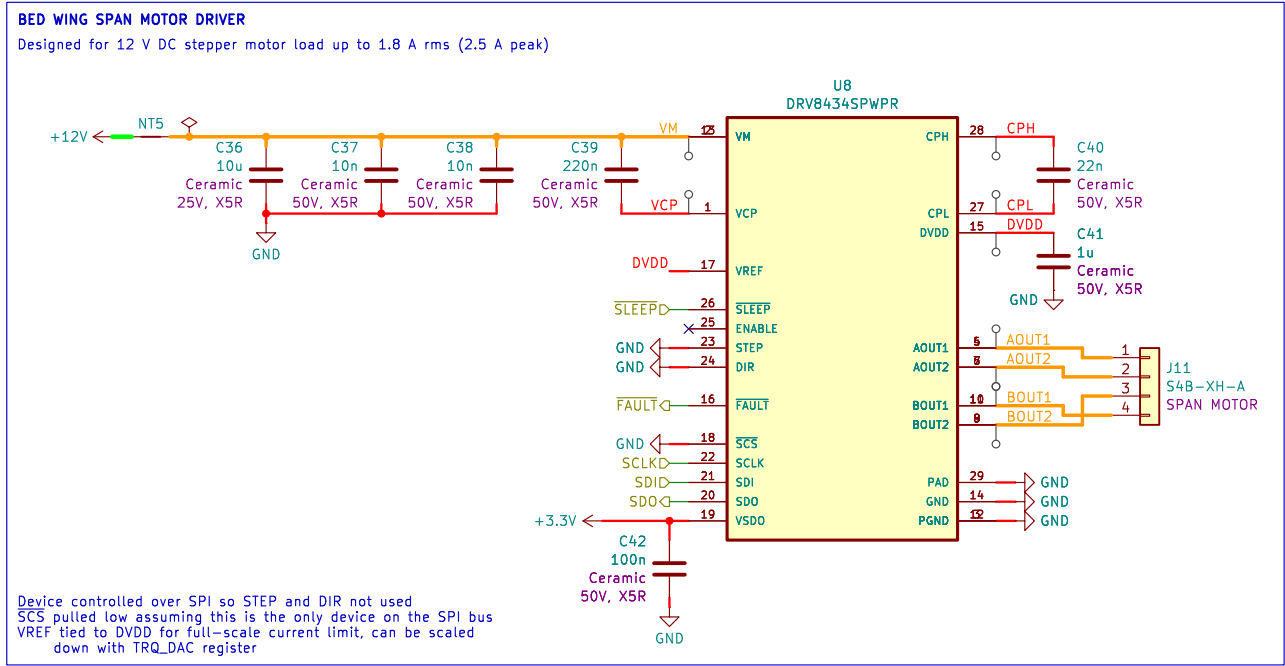
Title: Bed Lift Controller

Size: A4 Date: 2025-10

KiCad E.D.A. 9.0.5

Rev: v0.2

Id: 4/7



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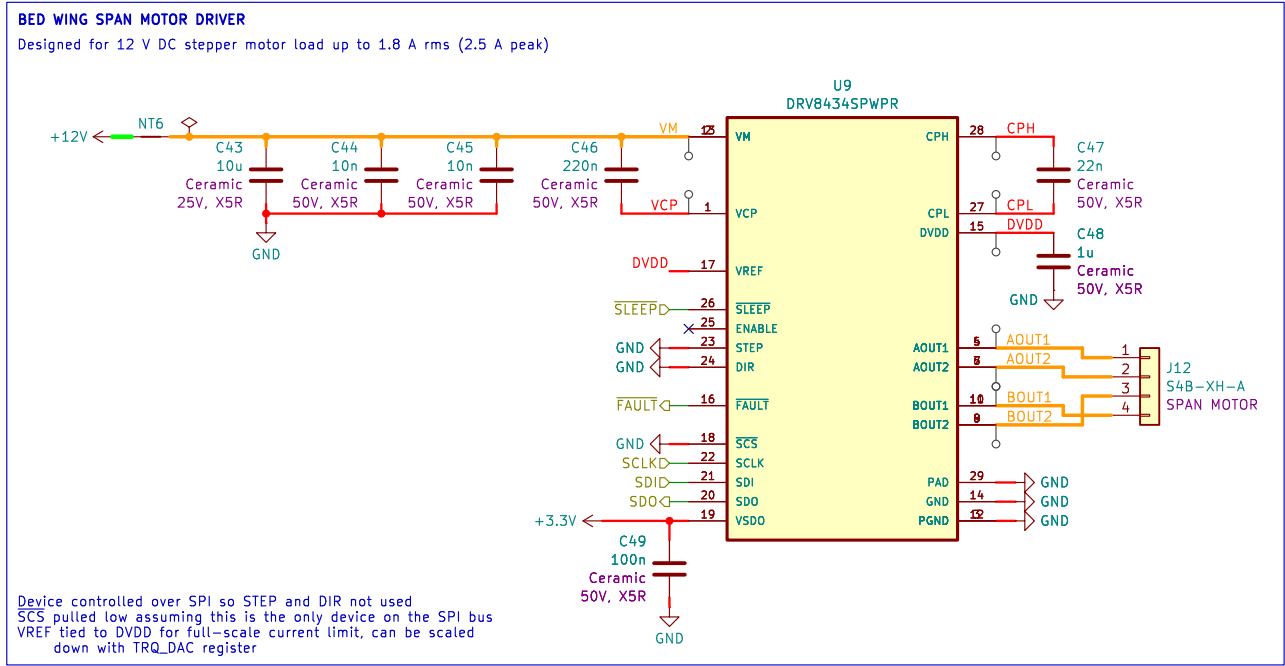
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Size: A4
KiCad E.D.A. 9.0.5

Date: 2025-10

Rev: v0.2

Id: 5/7



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File: span.kicad_sch

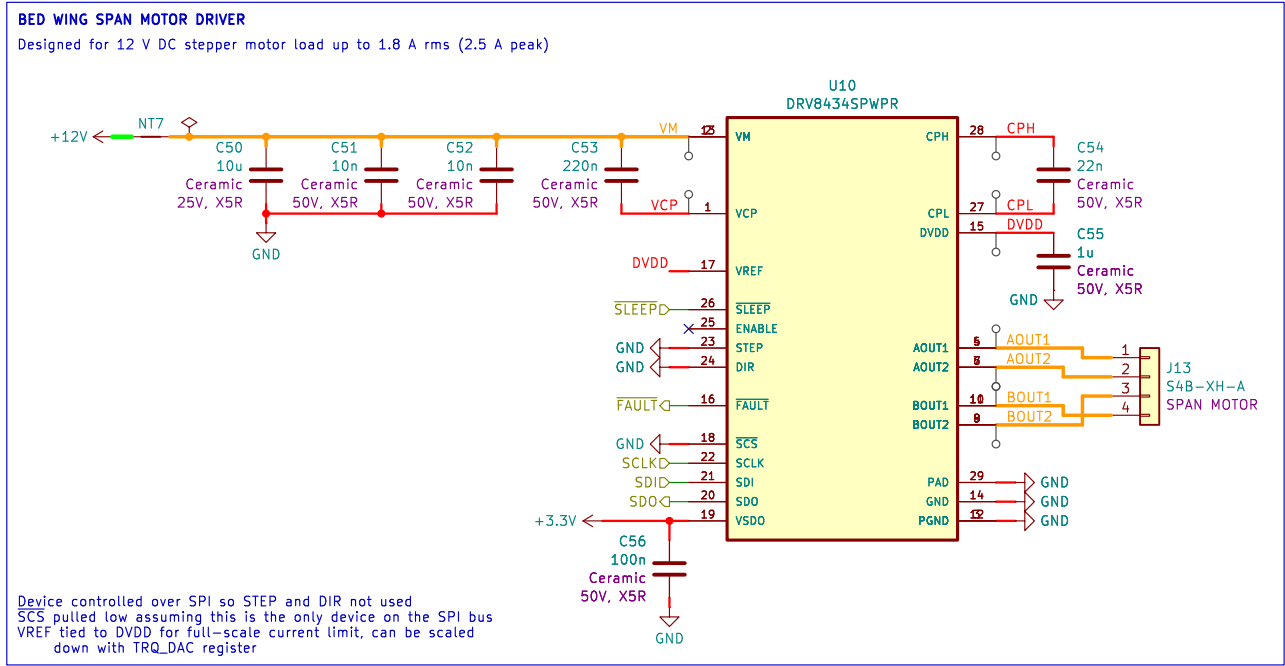
Title: Bed Lift Controller

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KiCad E.D.A. 9.0.5

Date: 2025-10

Rev: v0.2

Id: 6/7



Brown Studios LLC

Sheet: /span4/
File: span.kicad_sch

Title: Bed Lift Controller

Size: A4
KiCad E.D.A. 9.0.5

Date: 2025-10

Rev: v0.2

Id: 7/7