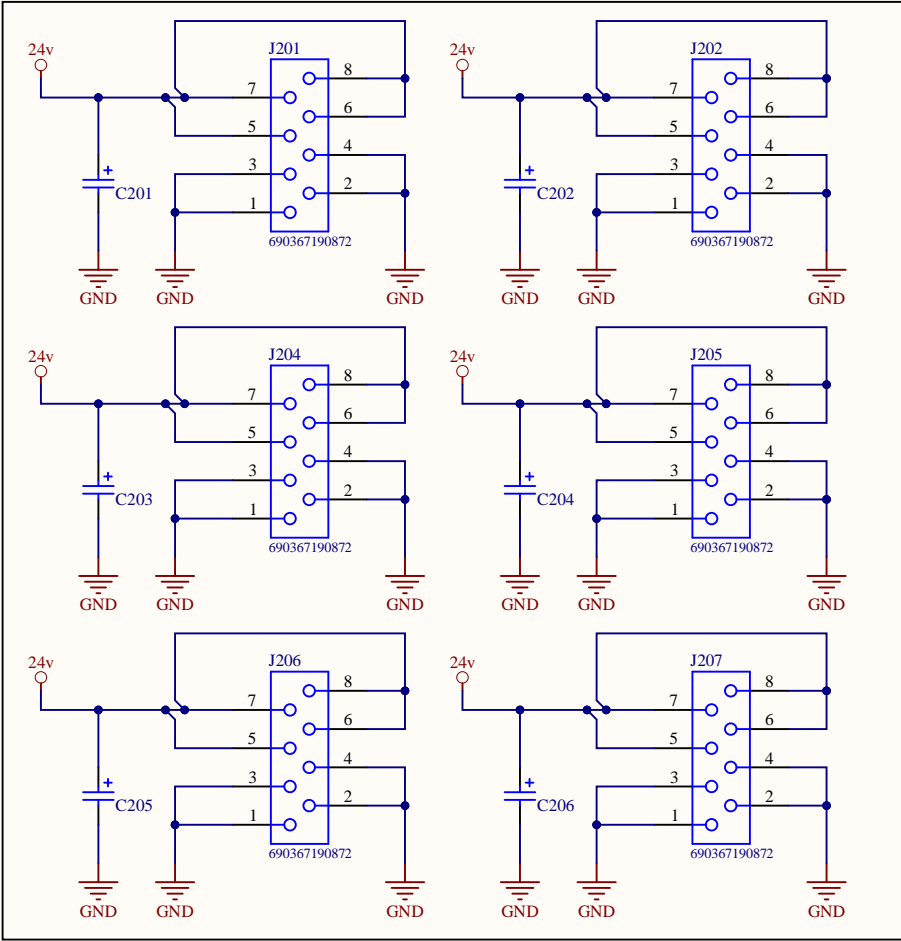
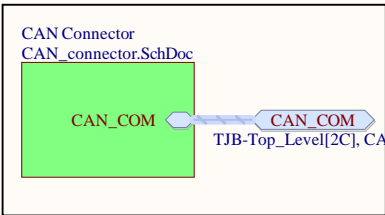


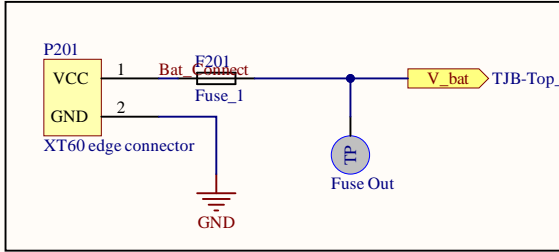
Title			Top Level		
Size	Number	Revision			
A4	1				
Date:	8/24/2024	Sheet 1 of 10			
File:	TJB-Top_Level.SchDoc	Drawn By: Greg Ward			



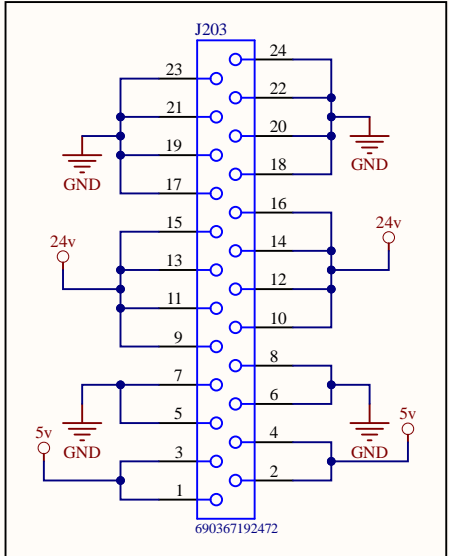
Power distribution connections



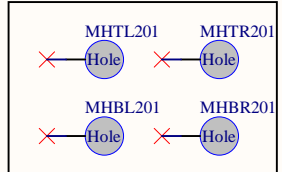
CAN Connector



Battery connection

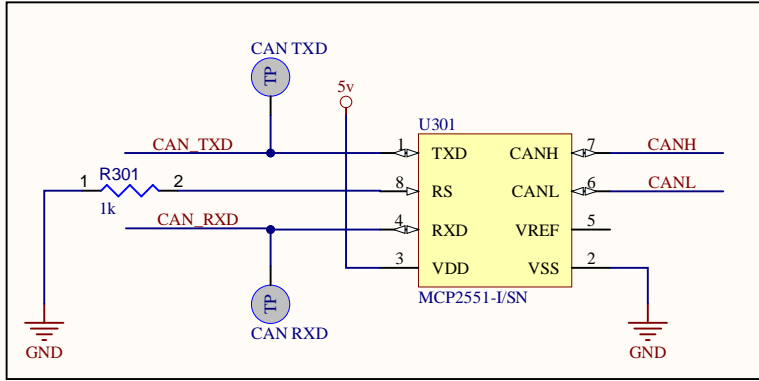


Main Board Power Connector

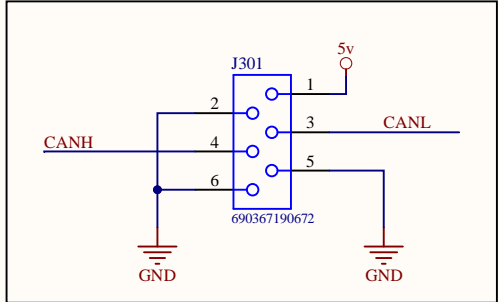


Mounting Holes

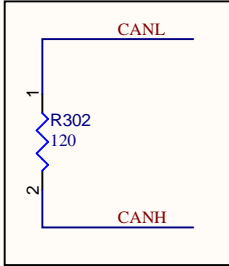
Title Connectors		
Size A4	Number 2	Revision
Date: 8/24/2024	Sheet 2 of 10	
File: Connectors.SchDoc	Drawn By: Greg Ward	



CAN Transceiver

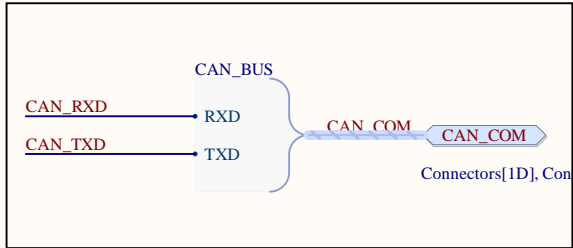


CAN Connector



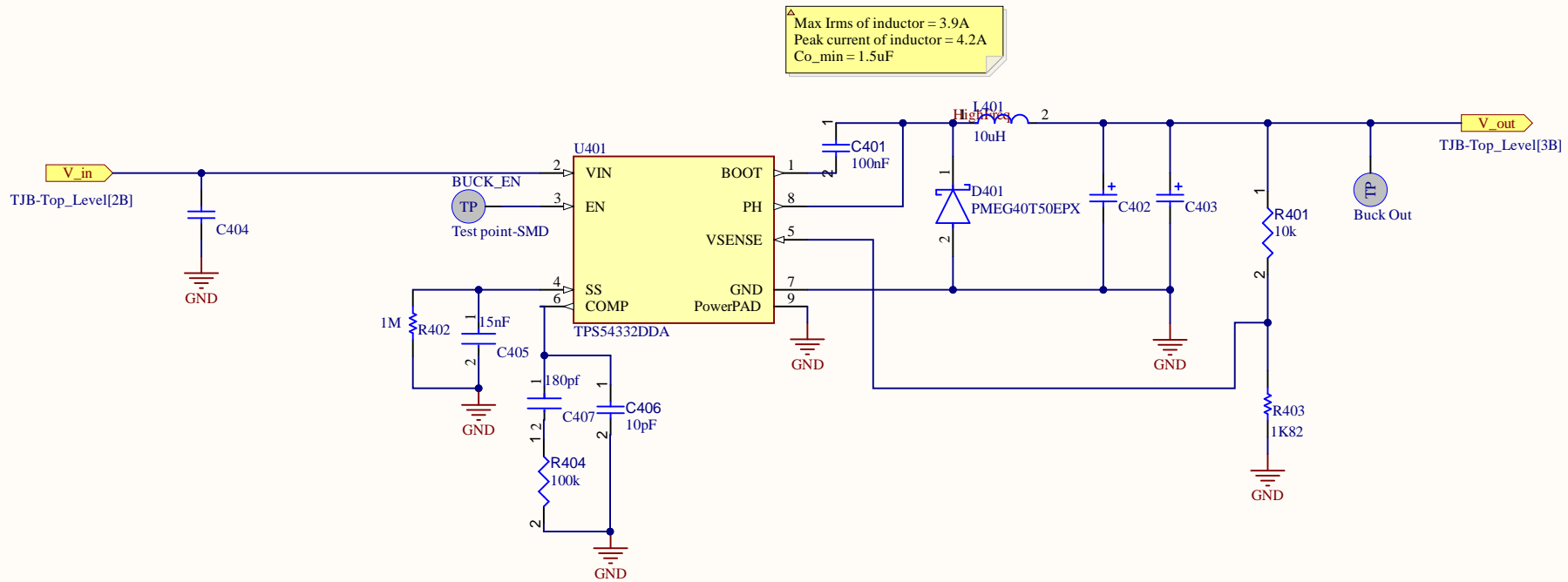
Termination Resistor

Parallel termination is used here.



CAN Bus

Title		
CAN Connector		
Size	Number	Revision
A4	3	
Date:	8/24/2024	Sheet 3 of 10
File:	CAN_connector.SchDoc	Drawn By: Greg Ward



8.2 Typical Application

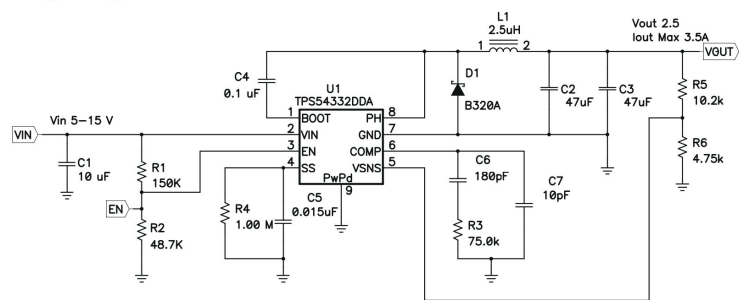
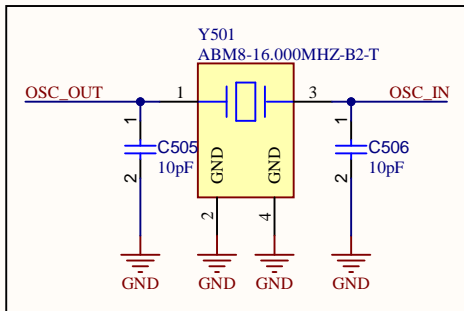


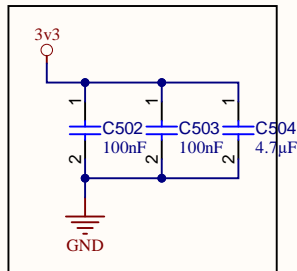
Figure 8-1. Typical Application Schematic

8.2.1 Design Requirements

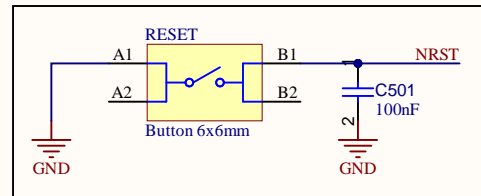
Title Buck Converter		
Size A4	Number 4	Revision
Date: 8/24/2024	Sheet4 of 10	
File: Buck_Converter.SchDoc	Drawn By: Greg Ward	



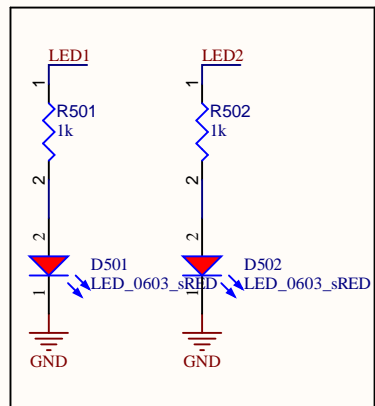
Crystal [^]16 MHz



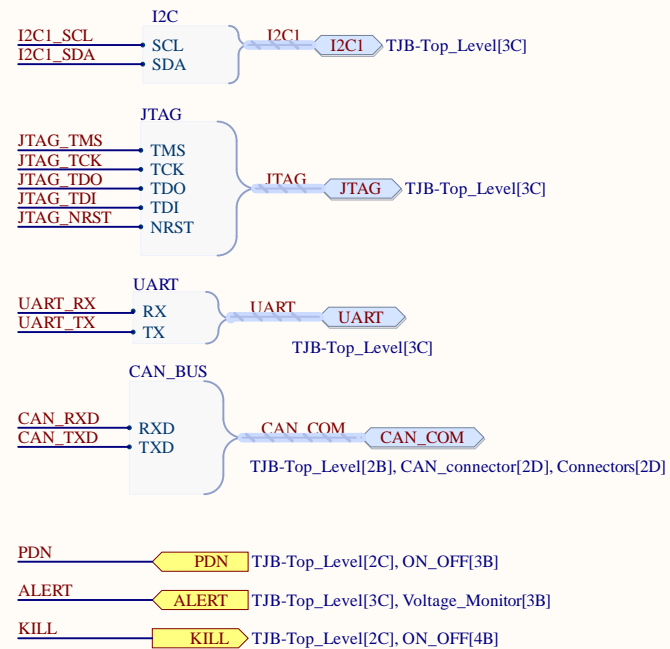
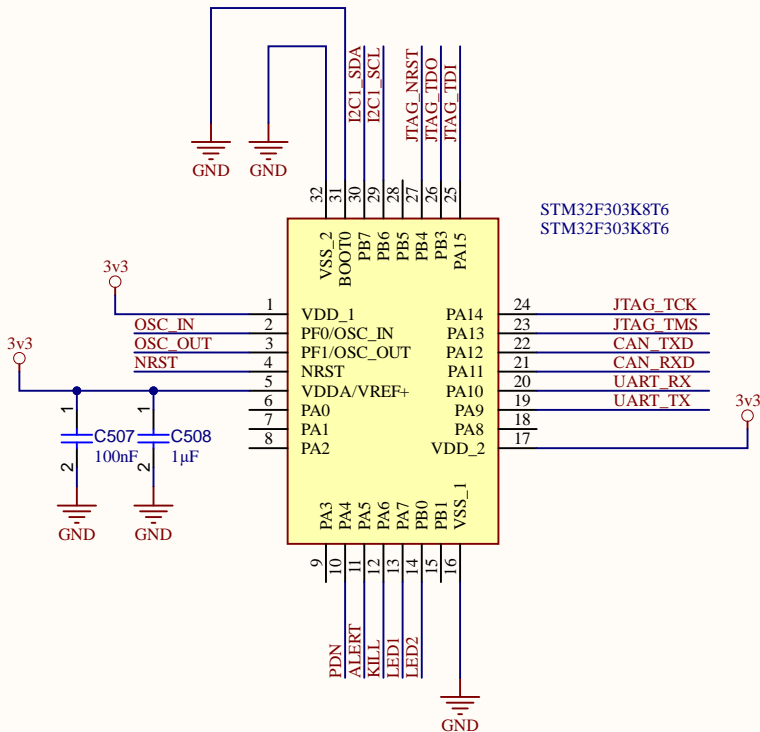
Power Supply Decoupling



Reset Button



Debug LED's



Title MCU		
Size A4	Number 5	Revision
Date: 8/24/2024	Sheet 5 of 10	
File: MCU.SchDoc	Drawn By: Greg Ward	

A

A

B

B

C

C

D

D

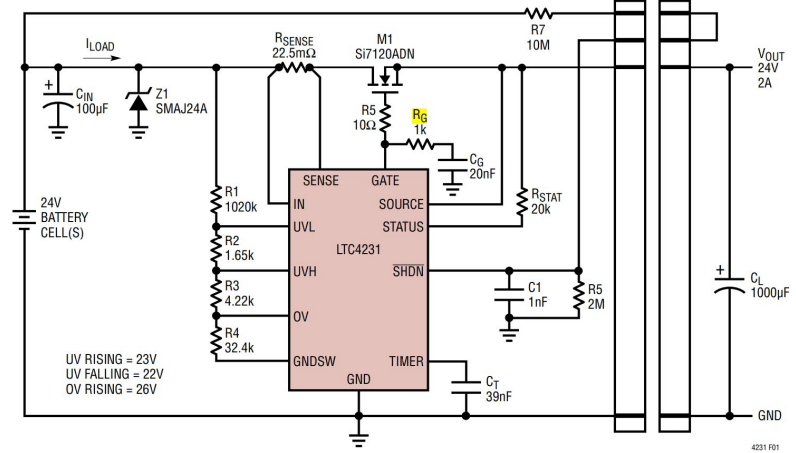
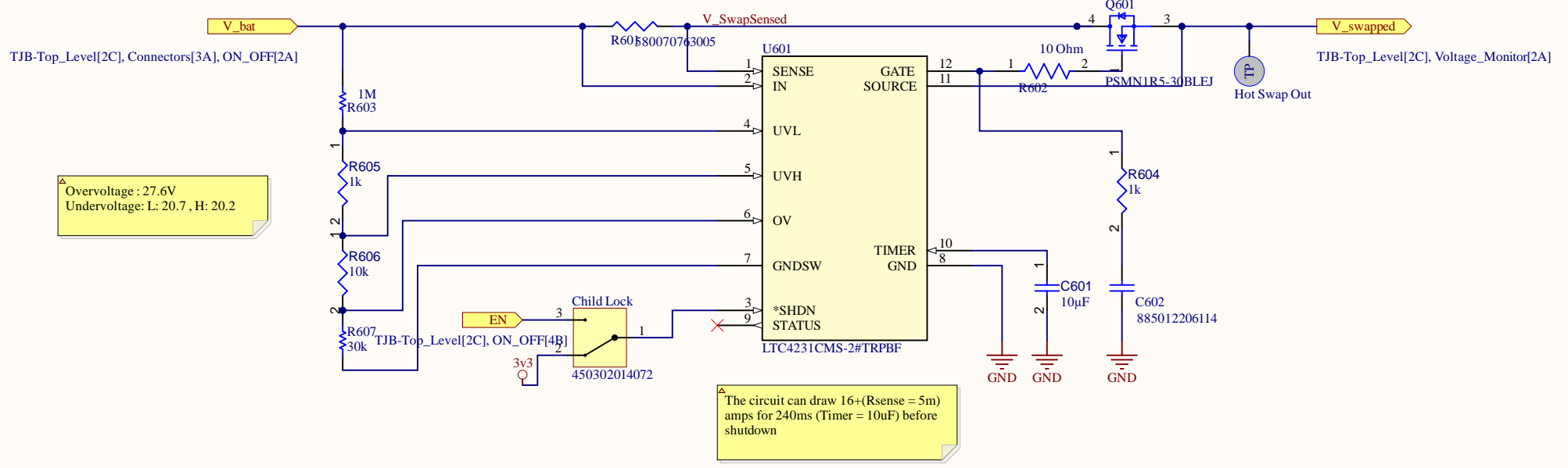
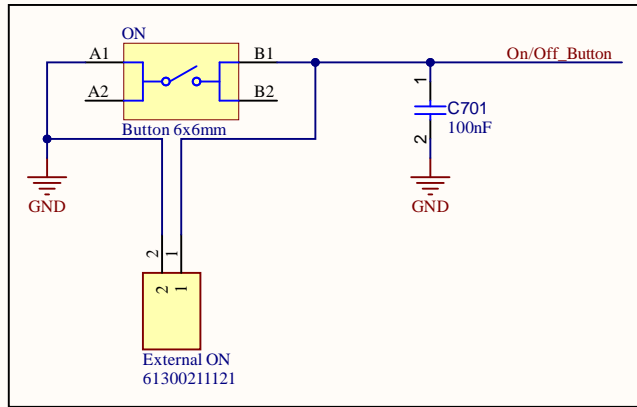
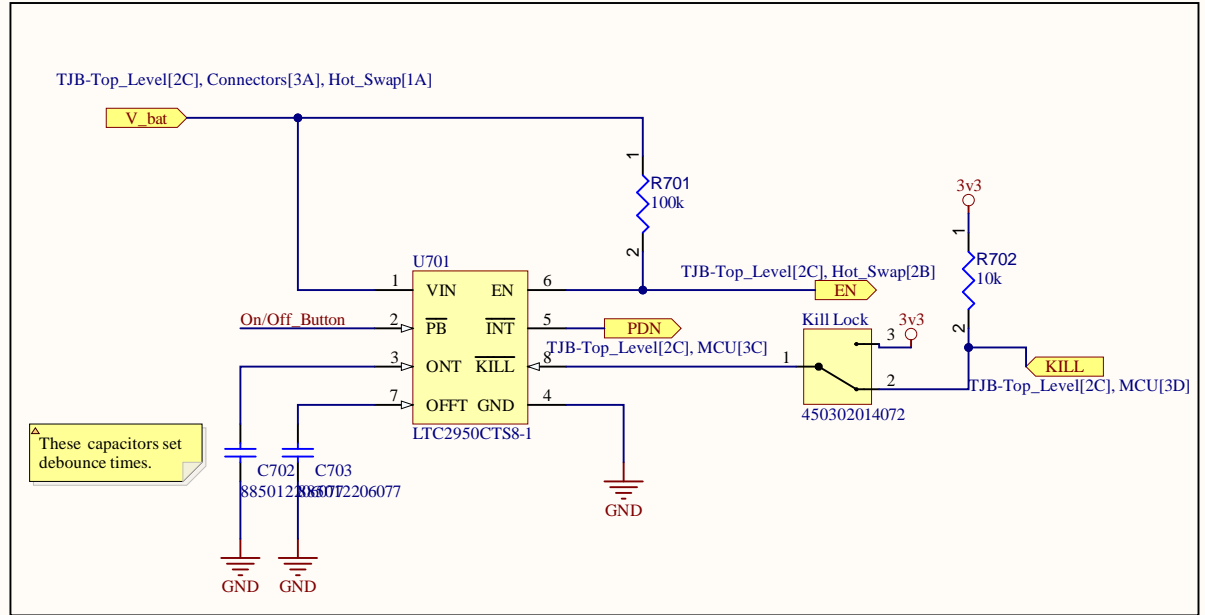


Figure 1. Channel Controller with Connector Enable

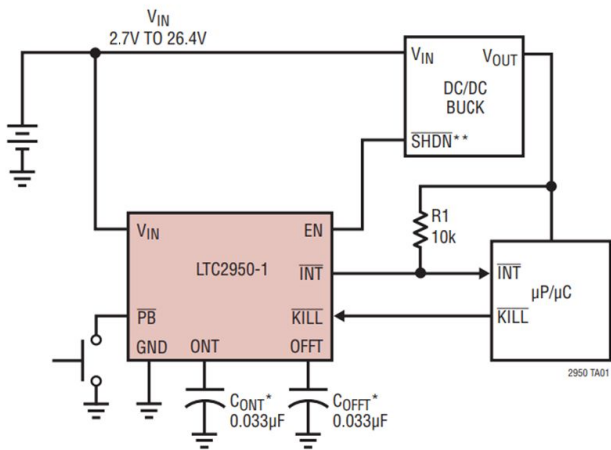
Title Hot Swap Controller		
Size A4	Number 6	Revision
Date: 8/24/2024	Sheet6 of 10	
File: Hot_Swap.SchDoc	Drawn By: Greg Ward	



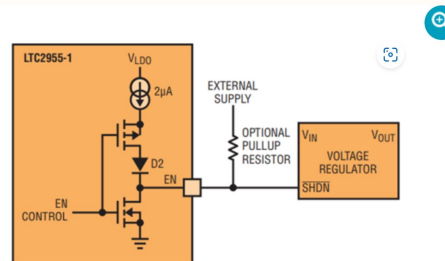
On/Off Buttons



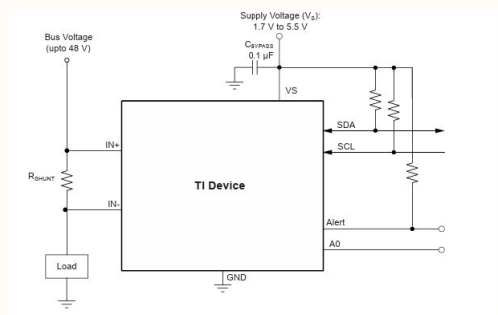
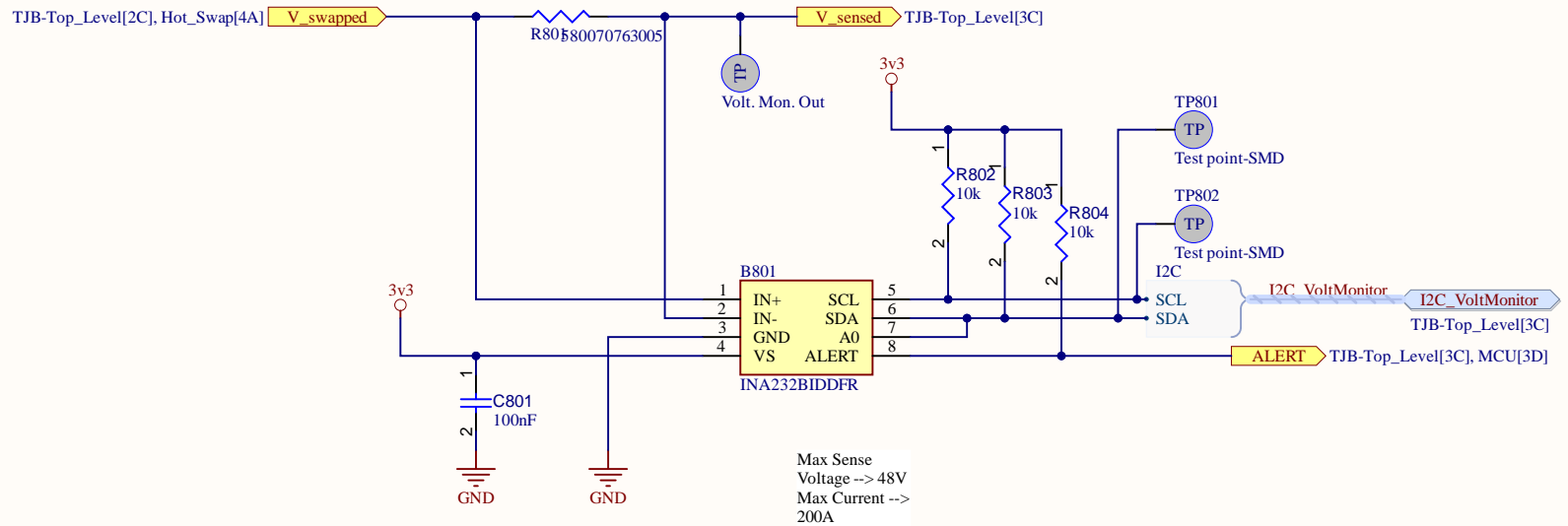
On/Off Controller



Power on time --> 33ms
 Power down time -->
 1024ms

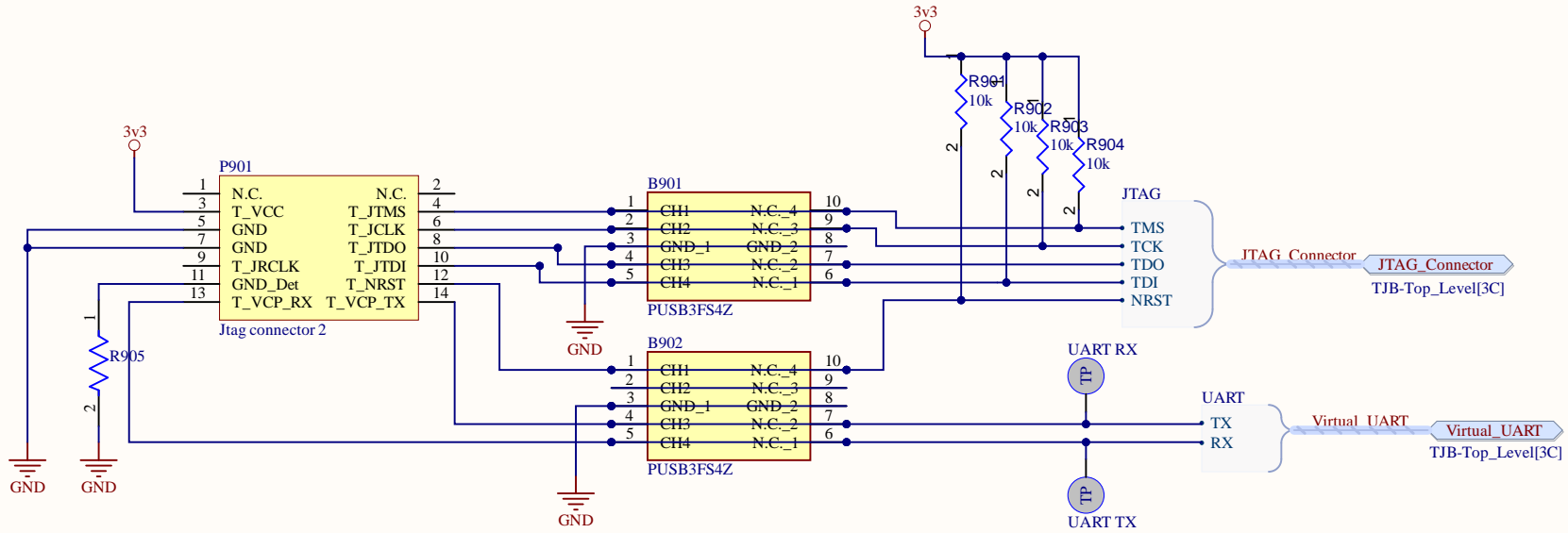


Title		
On/Off Controller		
Size	Number	Revision
A4	7	
Date:	8/24/2024	Sheet 7 of 10
File:	ON_OFF.SchDoc	Drawn By: Greg Ward



<https://nl.mouser.com/ProductDetail/Texas-Instruments/INA232BIDDFR?qs=17ckDYBRdelmwH1njZdaQw%3D%3D>

Title Voltage Monitor		
Size A4	Number 8	Revision
Date: 8/24/2024	Sheet 8 of 10	
File: Voltage_Monitor.SchDoc	Drawn By: Greg Ward	



8.1.2 STDC14 (STM32 JTAG/SWD and VCP)

The STDC14 CN1 connector allows the connection to an STM32 target using the JTAG or SWD protocol, respecting (from pin 3 to pin 12) the ARM10 pinout (Arm Cortex debug connector). But it also advantageously provides two UART signals for the Virtual COM port. The related pinout for the STDC14 connector is listed in [Table 6](#).

Table 6. STDC14 connector pinout CN1

Pin No.	Description	Pin No.	Description
1	Reserved ⁽¹⁾	2	Reserved ⁽¹⁾
3	T_VCC ⁽²⁾	4	T_JTMS/T_SWDIO
5	GND	6	T_JCLK/T_SWCLK
7	GND	8	T_JTDO/T_SWO ⁽³⁾
9	T_JRCLK ⁽⁴⁾ /NC ⁽⁵⁾	10	T_JTDI/NC ⁽⁵⁾
11	GNDDetect ⁽⁶⁾	12	T_Nrst
13	T_VCP_RX ⁽⁷⁾	14	T_VCP_TX ⁽²⁾

- Do not connect to the target.
- Input for STLINK-V3SET.
- SWO is optional, required only for Serial Wire Viewer (SWV) trace.
- Optional loopback of T_JCLK on the target side, required if loopback is removed on the STLINK-V3SET side.
- NC means not required for the SWD connection.
- Tied to GND by STLINK-V3SET firmware; may be used by the target for detection of the tool.
- Output for STLINK-V3SET

The used connector is SAMTEC FTSH-107-01-L-DV-K-A.

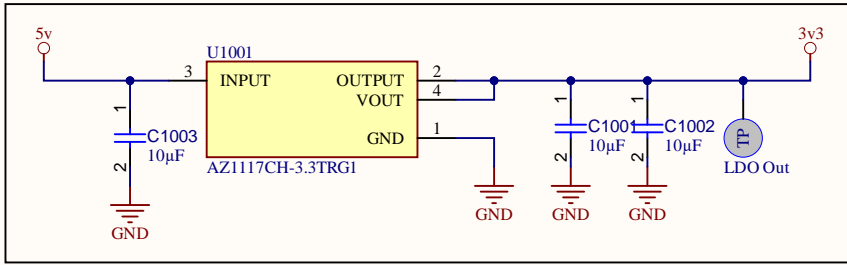
Virtual COM port (VCP)

The serial interface VCP is directly available as a Virtual COM port of the PC, connected to STLINK-V3SET USB connector CN5. This function can be used for STM32 and STM8 microcontrollers. The signals are 3.3 V compatible and can perform from 732 bps to 16 Mbps. This function is available on MB1440 CN1 and CN3, and MB1441 CN1. T_VCP_RX (or RX) signal is the Rx for the target (Tx for the STLINK-V3SET), T_VCP_TX (or TX) signal is the Tx for the target (Rx for the STLINK-V3SET).

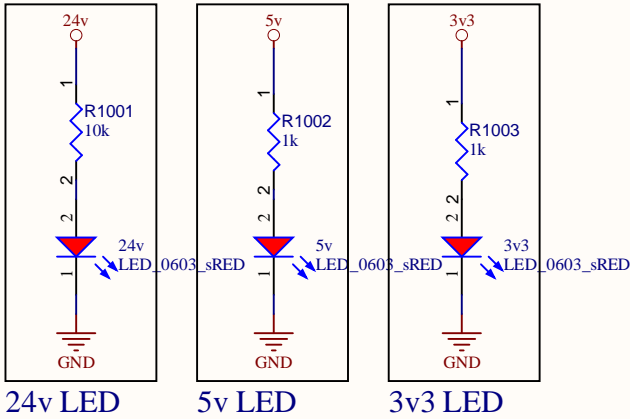
A second Virtual COM port may be activated, as detailed later in [Section 7.3.5](#) (Bridge UART).

For details regarding baud rates, refer to [Section 14.2](#).

Title		
JTAG Connector		
Size	Number	Revision
A4	9	
Date:	8/24/2024	Sheet 9 of 10
File:	JTAG_Connector.SchDoc	Drawn By: Greg Ward



LDO



Title		
LDO and LED Indicators		
Size	Number	Revision
A4	10	
Date:	8/24/2024	Sheet 1 of 10
File:	LDOandLEDs.SchDoc	Drawn By: Greg Ward