

AMS & IMD latching

See: AMS Master - SDC Schematic

Latching is achieved using the MC14013BDG flip-flop. [6] The **SET** inputs of the flip-flops are pulled high by default, opening the SDC. The signals **AMS_OK** and **IMD_OK** pull the **SET** input low. The **RESET** input is the only way to reset the flip-flop state and close the SDC.

This signal is driven high in two cases:

- when the reset button on the side panel is pressed,
- when the Power-on-Reset is active (which occurs only once, when the AMS Master receives LV supply for the first time).

Which mean if SDC is opened by the AMS Master because of an error, the only way to close it is by pressing the reset button or by powercycling the LVS.

Current Consumption

See: SDC Schematic

To calculate the current consumption, the load on the shutdown circuit must first be identified. As seen in the SDC schematic, the load consists of the AIRs, Precharge Relay, EBS Relay and the Discharge Circuit. The current consumption of the components are as follows:

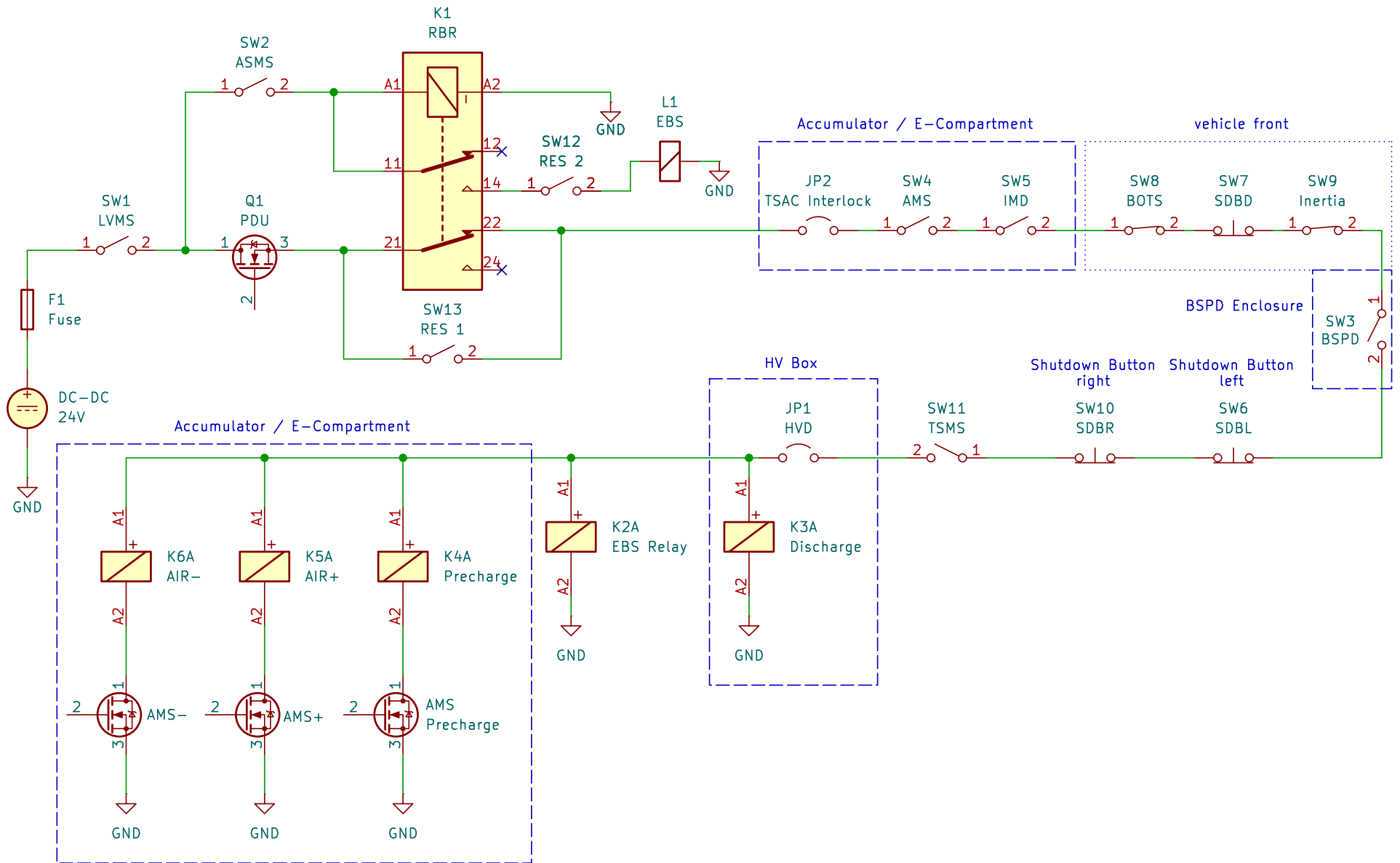
- AIRs: 249 mA [1]
- Precharge relay: 8 mA [2]
- EBS relay: 9.6 mA [3]
- Discharge circuit: 4 mA [4]

We can then find the total consumption when we add all the the load together. $249\text{ mA} \cdot 2 + 8\text{ mA} + 9.6\text{ mA} + 4\text{ mA} \approx 520\text{ mA}$.

Overcurrent Protection

See: PDU - SDC

The overcurrent protection is achieved with a physical fuse and a power switch on our Power Distribution Unit PCB. The fuse holder is the 3557-15[7], which holds our 1A fuse, and the powerswitch is the BTT6050-1ERA[5] from Infineon.



FASTTUBE

Title: SDC Schematic

Rev: V1

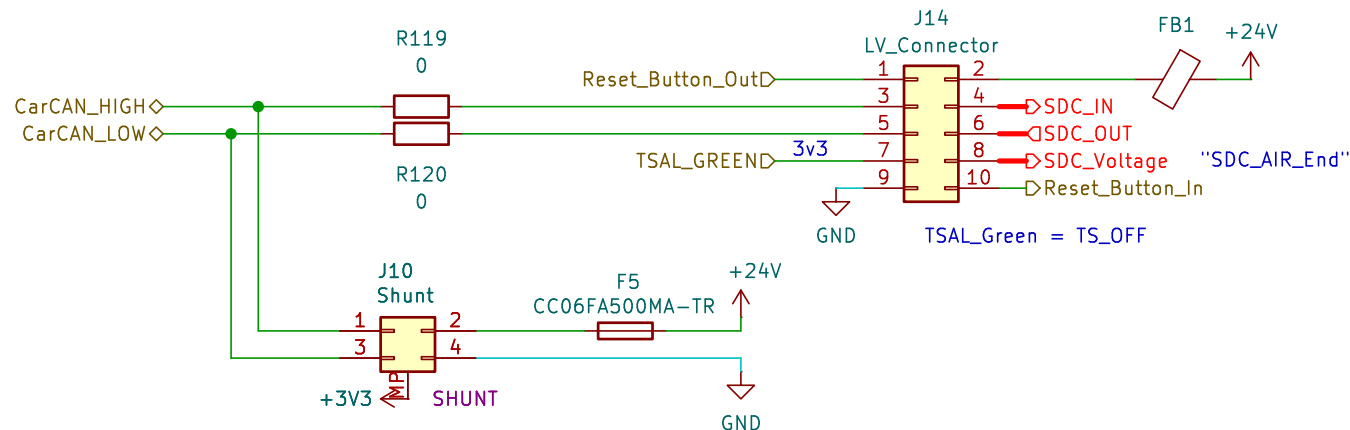
Date: 2025-04-26

Project: SDC

Exp. Date: 2025-05-01

Author: Leonard Gies

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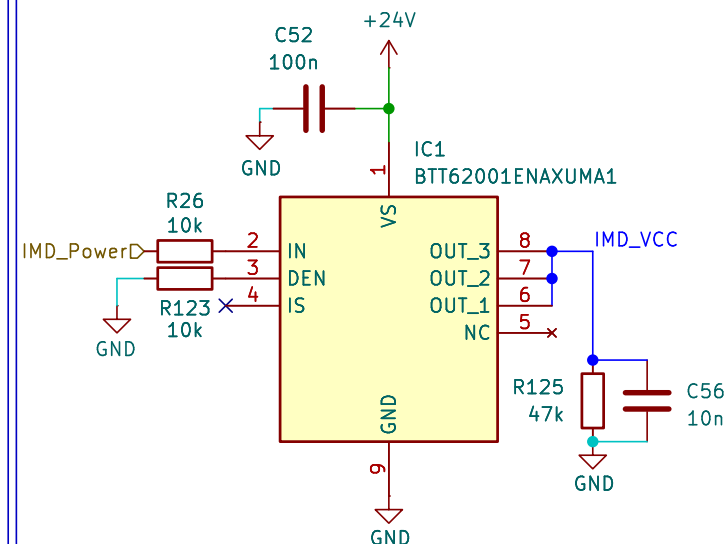


SHUNT:
IVT-S-300-U3-I-CAN1-12/24
max. 80mA

Datasheet
<https://www.isabellenhuettenusa.com/wp-content/uploads/2022/07/Datasheet-IVT-S-V1.03.pdf>

Main Connector

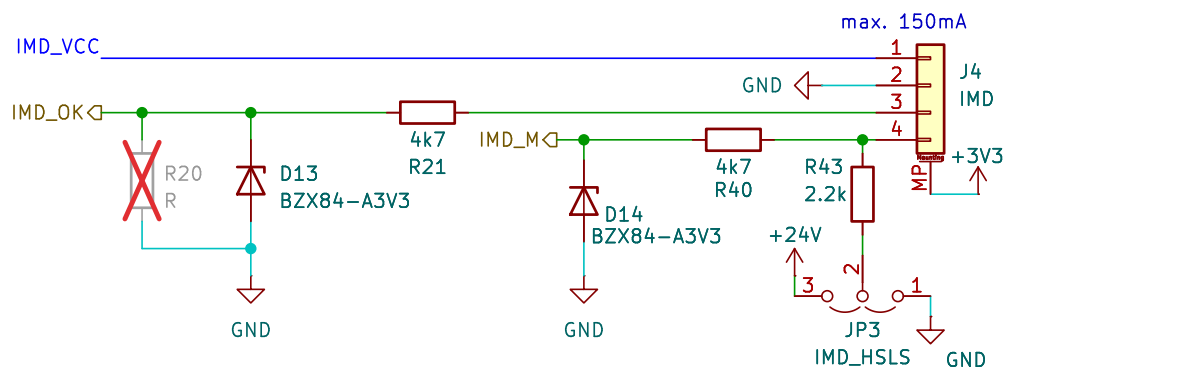
IMD Supply



IMD Connector

IMD - Datasheet

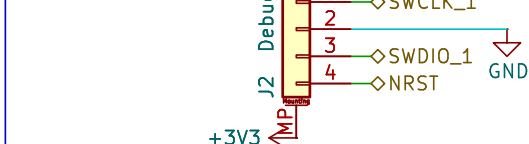
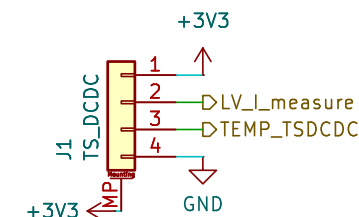
https://www.bender.de/fileadmin/content/Products/d/e/IR155-32xx-V004_D00115_D_XXEN.pdf



With VBAT = 10..14V, we get $I_R = 1.4..2.3mA$.
This should™ put the Zener at ~3V.

Connect to GND for -3204
Connect to +24V for -3203

TSDCDC Connector



Debug Connector

FASTTUBE

Title: Input/Output

Project: Master_FT25

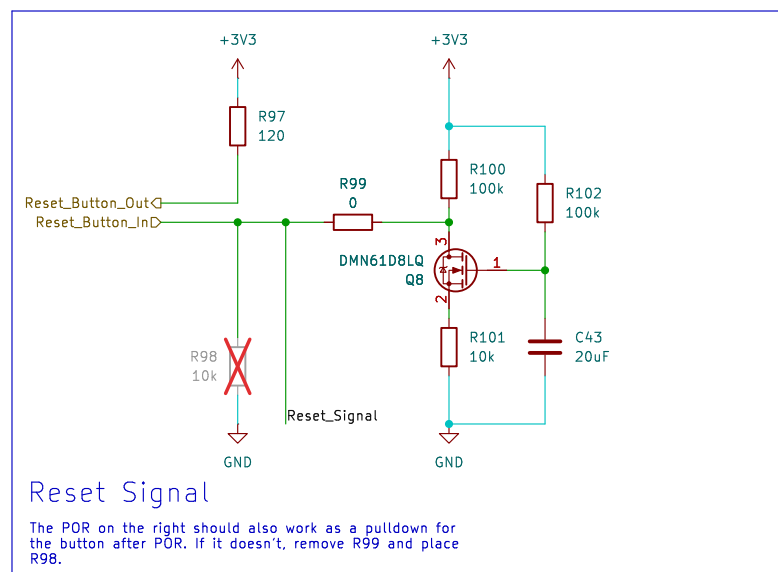
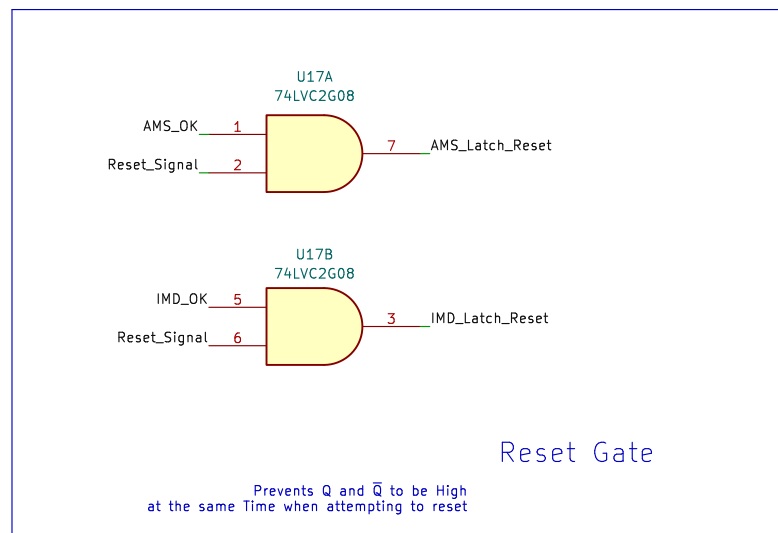
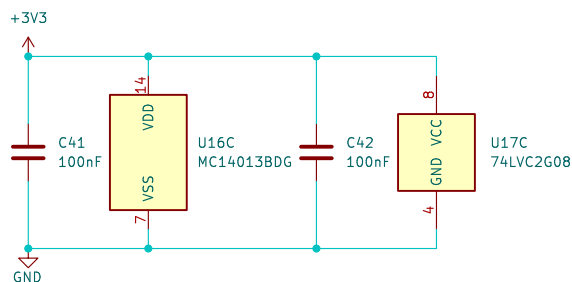
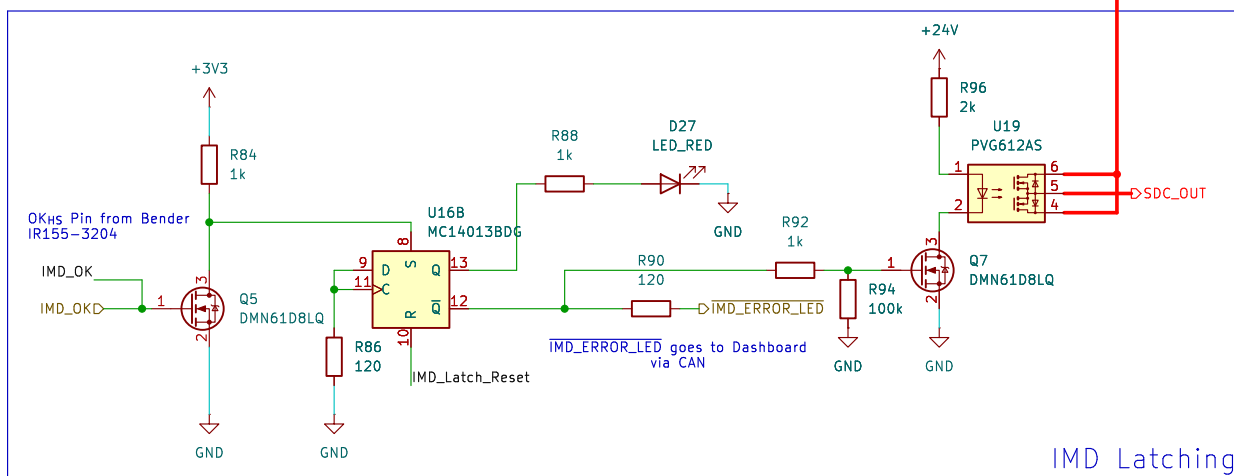
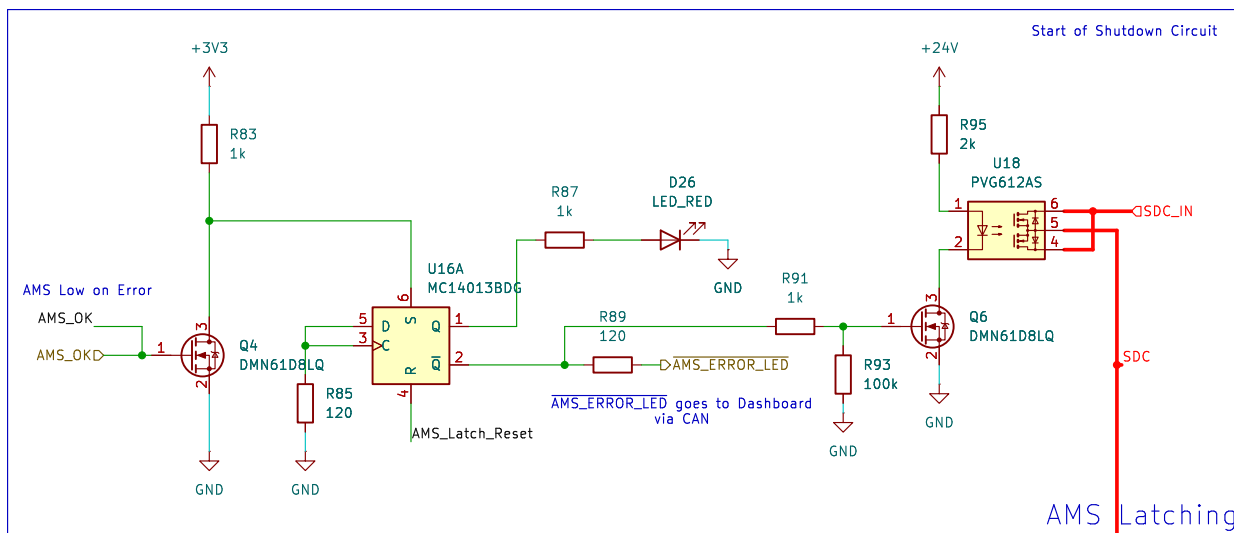
Author: Lene Marquardt

Rev: V1

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Exp. Date: 2025-05-01

Size: A5 Page: 13/15





Reference

- [1] *TE ECK100BH5AAA Datasheet.* www.te.com, 11.2024
- [2] *Pickering 104-1-A-24/5D Datasheet.* www.pickeringrelay.com, 07.2024
- [3] *Omron G6L1PDC24 Datasheet.* media.digikey.comf
- [4] *WE 140356145200 Datasheet.* www.we-online.com, 08.2023
- [5] *Infineon PROFETTM Datasheet.* www.infineon.com, 03.2019
- [6] *MC14013BDG Datasheet.* www.onsemi.com, 07.2014
- [7] *3557-15 Fuseholder Datasheet.* www.mouder.de, 07.2014