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]

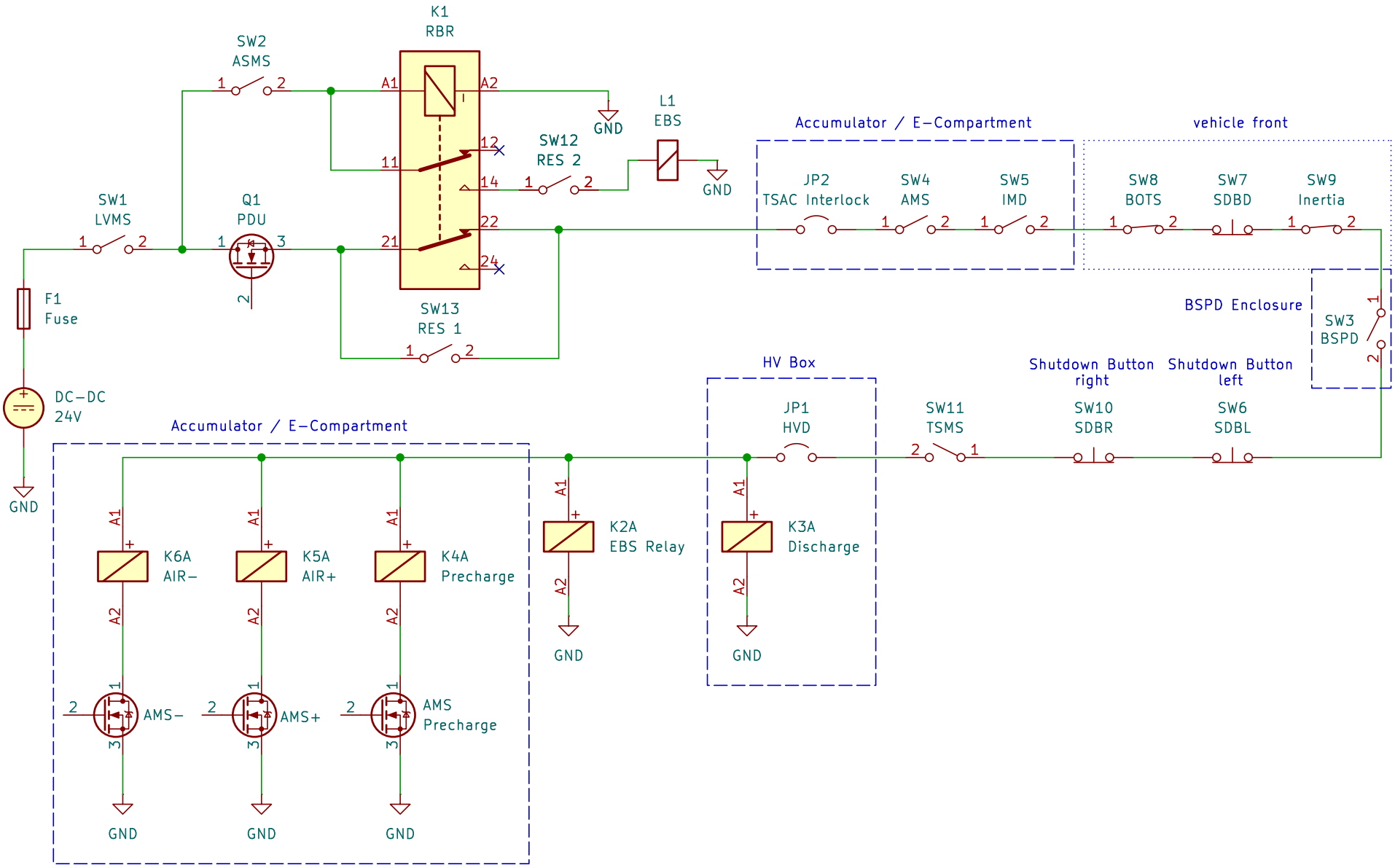
We can then find the total consumption when we add all the the load together.

$$249\,\text{mA} \cdot 2 + 8\,\text{mA} + 9.6\,\text{mA} + 4\,\text{mA} \approx 520\,\text{mA} \tag{1}$$

Overcurrent Protection

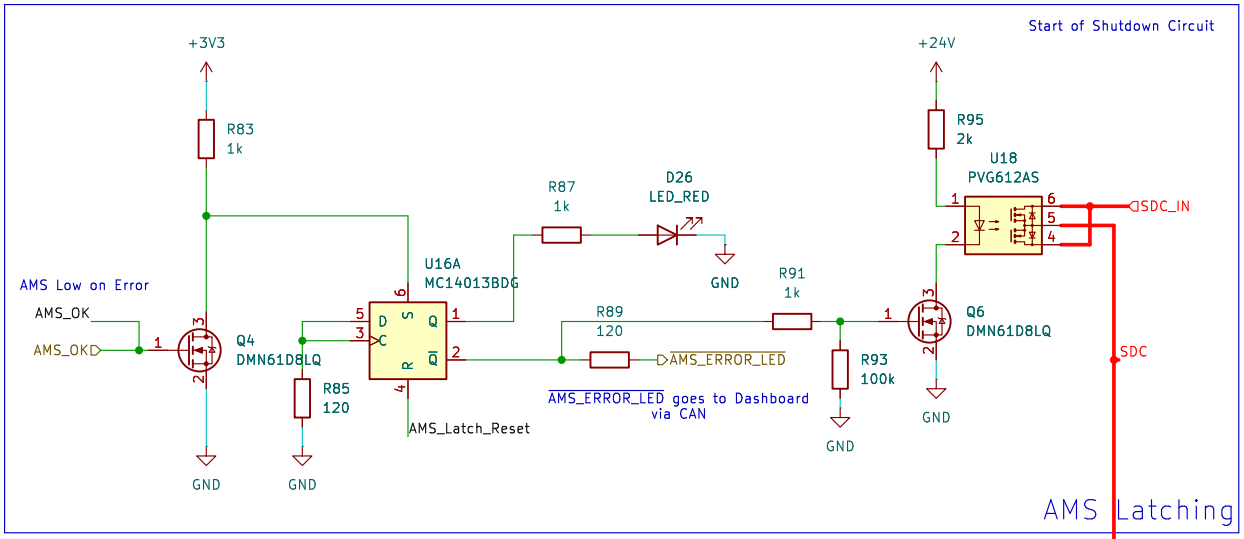
See: PDU - SDC Schematic

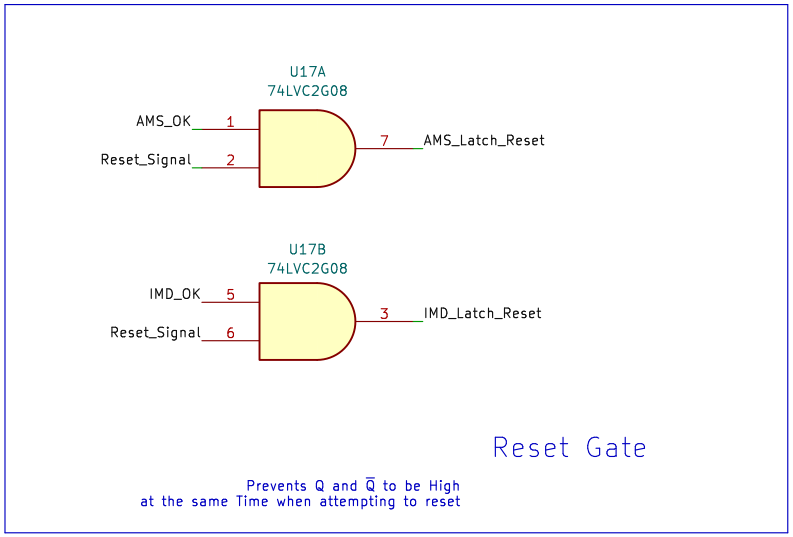
The overcurrent protection is achieved with a physical fuse and a power switch on our Power Distribution Unit (PDU) PCB. The fuse holder is the 3557-15, which holds our 1A fuse, and the powerswitch is the BTT6050-1ERA from Infineon.[7][5]

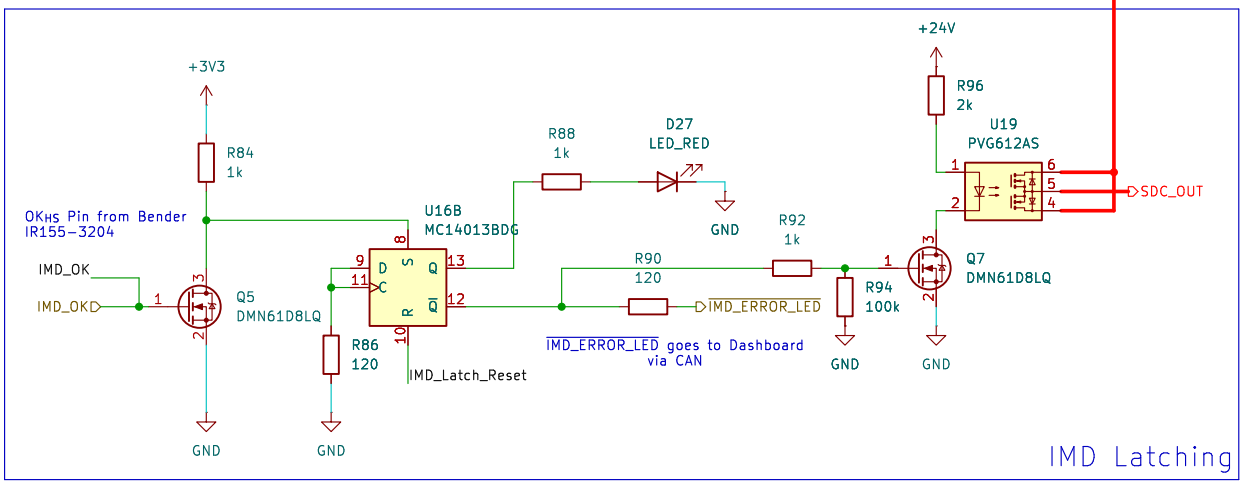


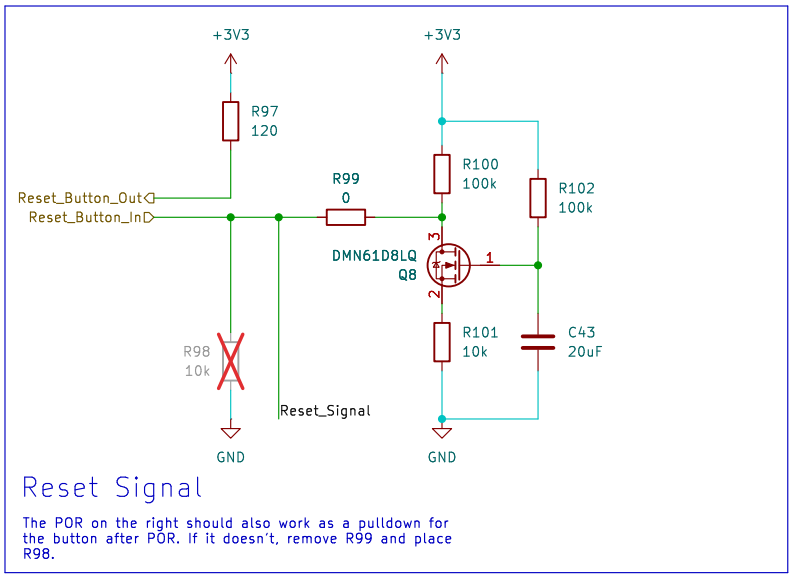
FASTTUBE

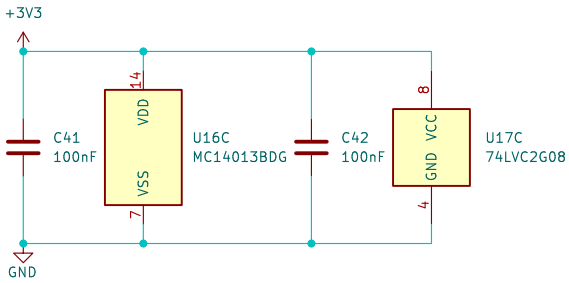
Title: SDC Schematic	**Rev: V1**
	Date: 2025–04–26
Project: SDC	Exp. Date: 2025–05–01
Author: Leonard Gies	Size: A5 | Page: 1/1





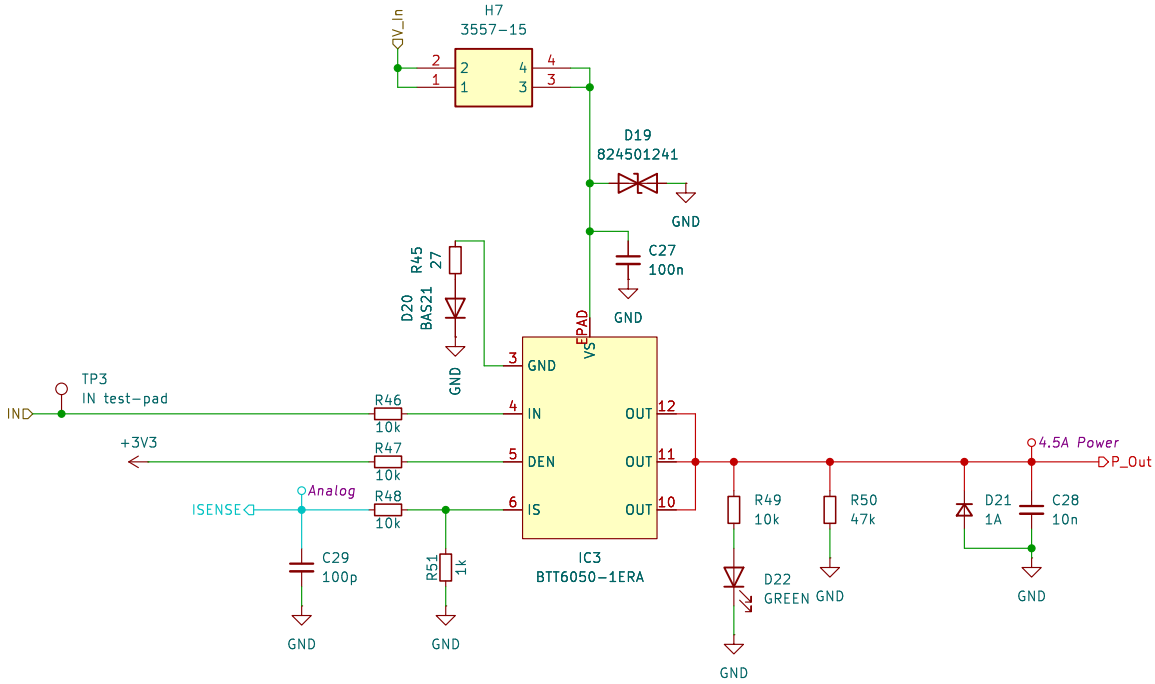






FASTTUBE

Title: SDC Latching	**Rev: V1**
	Date: 2025-03-09
Project: Master_FT25	Exp. Date: 2025-05-01
Author: Lene Marquardt	Size: A4 | Page: 12/15



FASTTUBE

Title: SDC	**Rev: V1.2**
	Date: 2025-01-15
Project: FT25_PDU	Exp. Date: 2025-05-01
Author: Janek Herm	Size: A4 | Page: 7/23

Reference

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[2] *Pickering 104-1-A-24/5D Datasheet*. www.pickeringrelay.com, 07.2024

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[4] *WE 140356145200 Datasheet*. www.we-online.com, 08.2023

[5] *Infineon PROFET^{TM} Datasheet*. www.infineon.com, 03.2019

[6] *MC14013BDG Datasheet*. www.onsemi.com, 07.2014

[7] *3557-15 Fuseholder Datasheet*. www.mouder.de, 07.2014