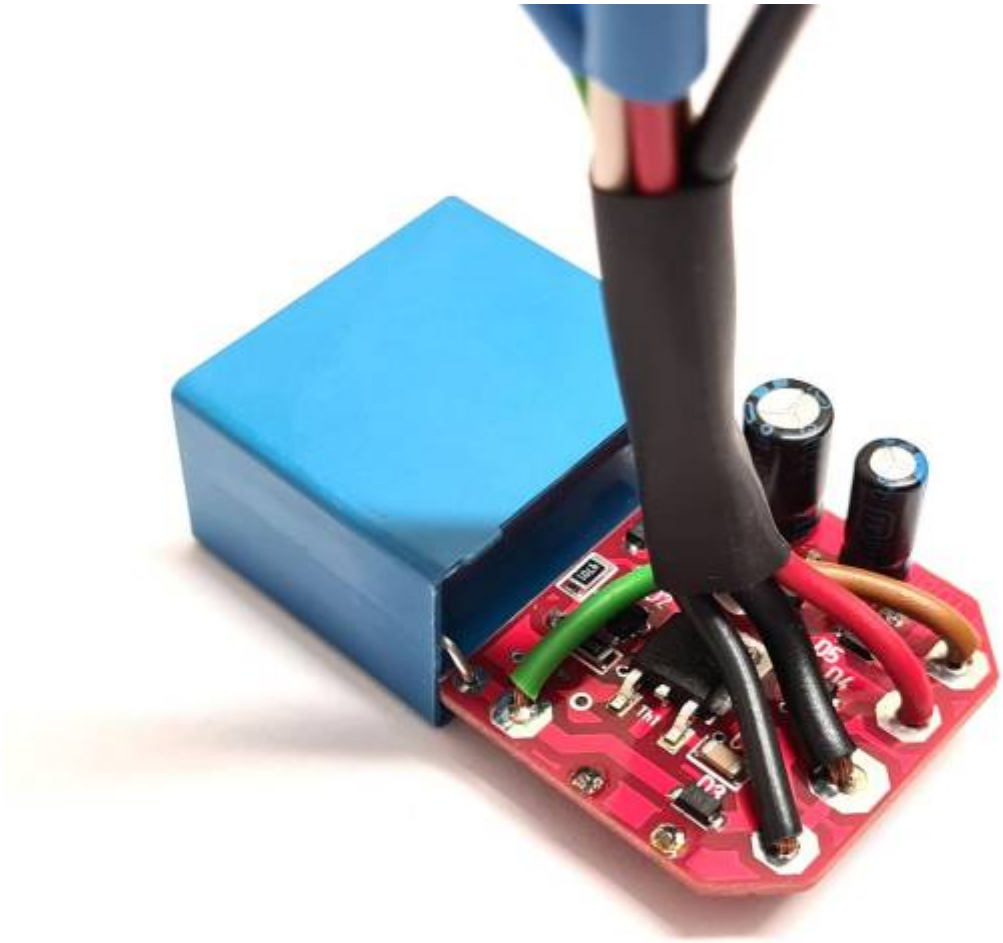
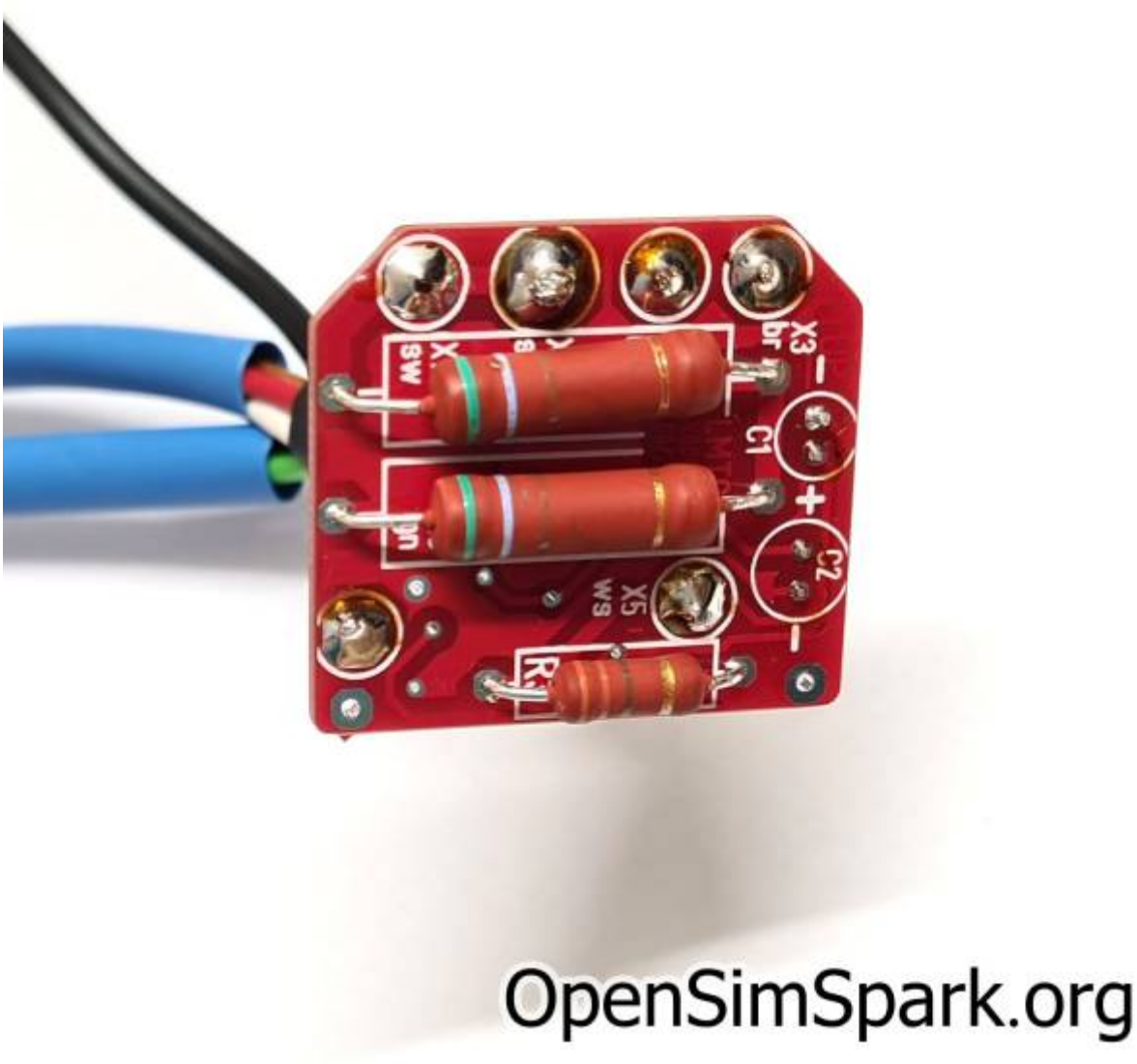
# VSCDI3

I want to introduce how a CDI can be developed. The following CDI was developed in 2016. But it's just a BETA-Version and has never reached a final status. So please read and enjoy. It is not recommended for recreation.

Its project name was VSCDI3.



OpenSimSpark.org

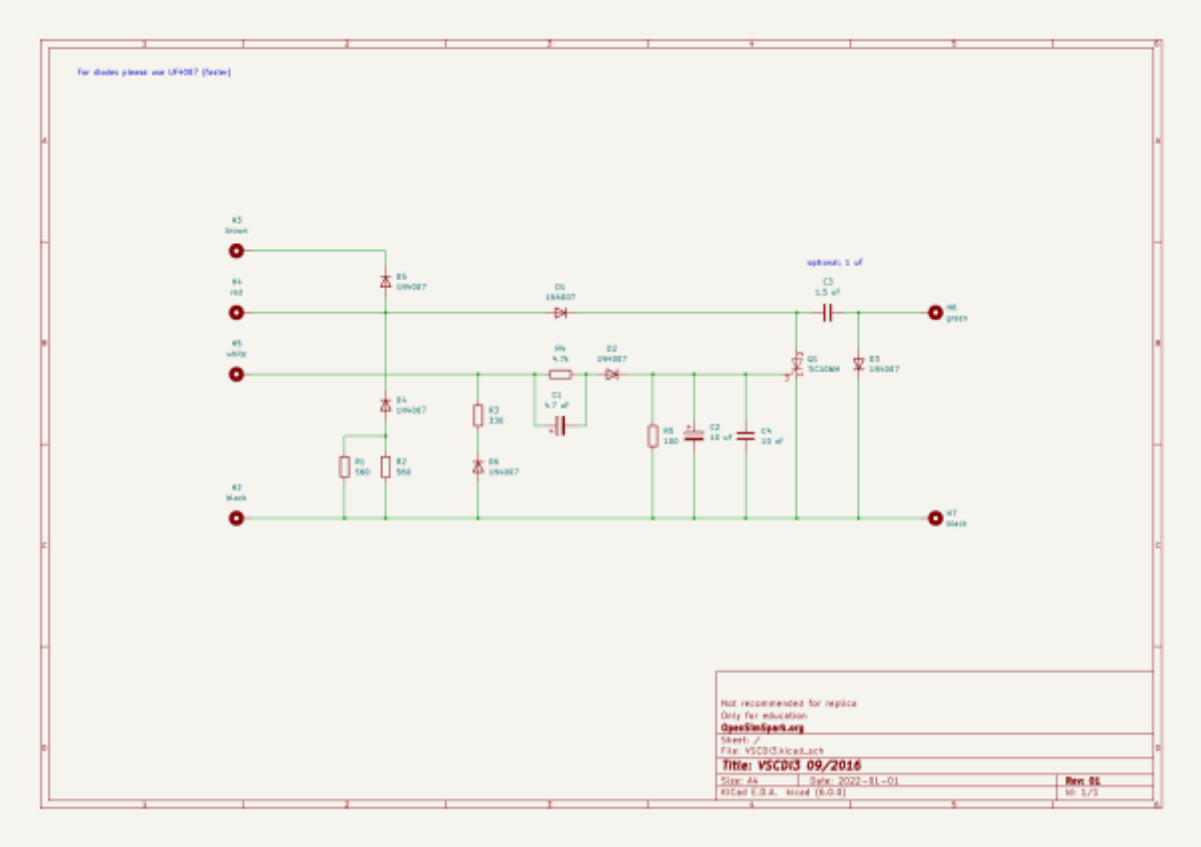



## motivation

The VSCDI3 was created to work with Vape A70-3 and A70-5. It should have an easy structure with not to much components. The adjustment timing should be soft to work with nearly every engine with a moderate rev level.

## circuit diagram

The basic design is close to the ST reference design, but with an added negative wave handling and a modified signal shaping.




## Negative wave handling

The branch with R1, R2 and D4 is limiting the negative waves. A first Version had R1 = 10 k (and R2 empty), but this created to much heat dissipation and the SCR get out.

The following values were obtained after measurement:

- U_Peak = 800 V
- I_Peak = 0,08 A

A current of 0,08 A does not sounds much. But the Heat power loss is be calculated with:

$$P = I^2 \times R = (0{,}08\ A)^2 \times 10\,000\ \Omega = 64\ W$$

And 64 W are a huge heat load! So next time do the math and the measurement first. After a few more test R1 and R2 was dimensioned to 560 W each.

## Signal shaping

Again a branch with D6 and R3 is handling the negative signal waves.

The positive signal waves are shaped with „the rest“ between H5/white and the SCR gate. With vary C1 and C2 the signal timing can be customized.

## Capazitor

A standard size of the Capazitor C3 is 1 uF. But to get more energy at low revs it was contemplated to use 1,5 uF. By the way this are just thoretical approaches, no driving test have been made.

## SMD elements

This elements were used for the SMD version with the pictures above.

| Element | Value | Comment |
|---|---|---|
| R1 | 560 | 3 W |
| R2 | 560 | 2 W |
| R3 | 330 | - |
| R4 | 4,7 k | - |
| R5 | 100 | - |
| D1...6 | SL1M | - |
| Q1 | STM TS820 | - |
| C1 | 4,7 uF | Elko |
| C2 | 10 uF | Elko |
| C3 | 1 / 1,5 uF | - |
| C4 | 10 nF | - |

Note: The SCR ON CR708AG does not work with this scheme.

For a THT version the should be used UF4007 for the diodes and a TIC106M for the SCR