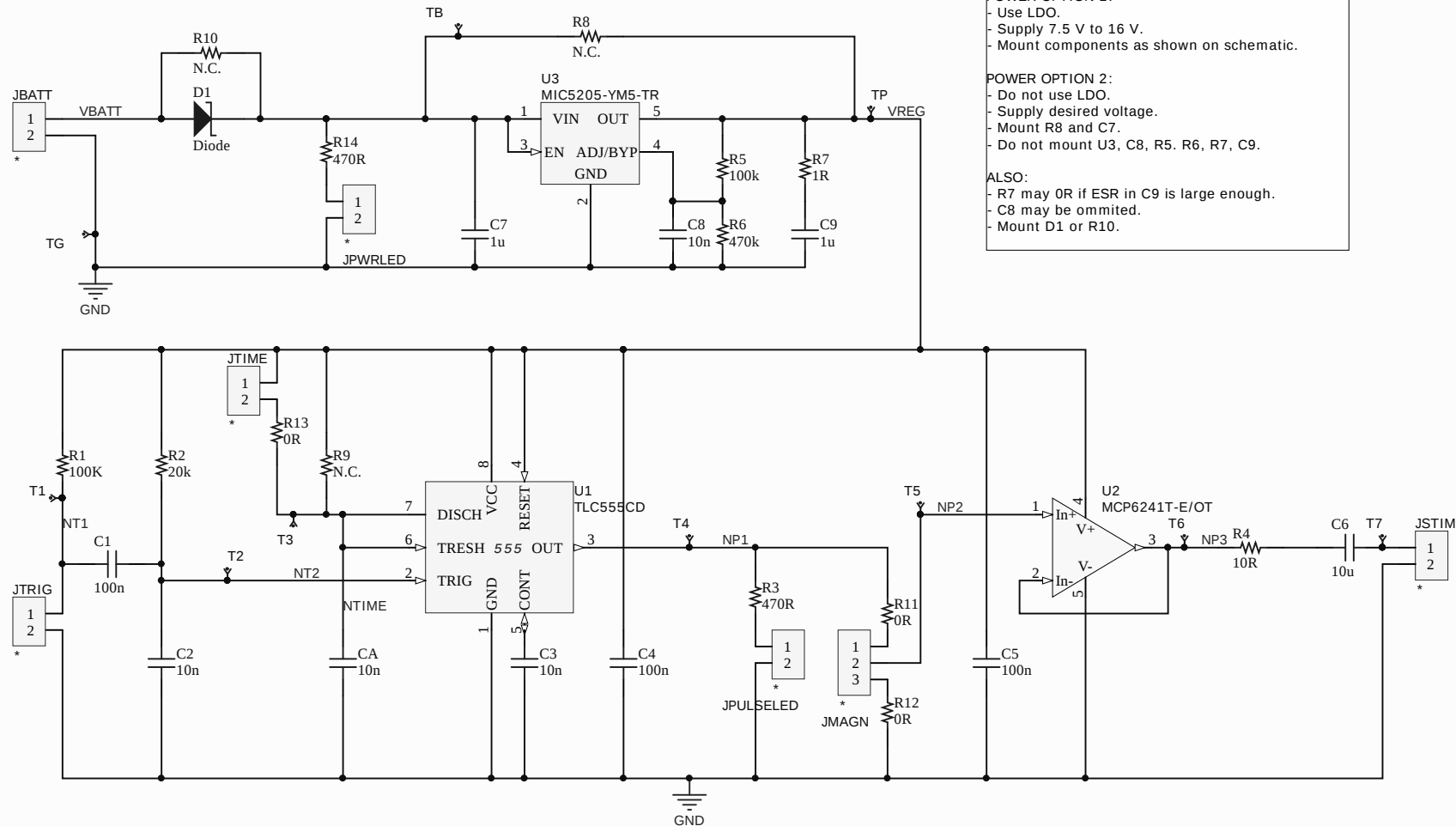




- POWER OPTION 1:**
- Use LDO.
 - Supply 7.5 V to 16 V.
 - Mount components as shown on schematic.
- POWER OPTION 2:**
- Do not use LDO.
 - Supply desired voltage.
 - Mount R8 and C7.
 - Do not mount U3, C8, R5, R6, R7, C9.
- ALSO:**
- R7 may 0R if ESR in C9 is large enough.
 - C8 may be omitted.
 - Mount D1 or R10.

HOW IT WORKS

The circuit is triggered by a rapid fall in the voltage across JTRIG, for example caused by a switch. The high-pass filter (C1, R2, C2) let an active-low pulse pass to the TRIG input of U1. This design ensures that only one pulse is generated each time the switch is closed.

The active-low pulse causes an one-shot pulse from U1 by utilizing a standard monostable '555 circuit. Duration of pulse is set using a variable resistor (potentiometer) connected to JTIME (or by soldering on a fixed resistor (R9)).

$T_{pulse} = 1.1 \cdot C_A \cdot R_{time}$
where R_{time} is the external resistance. A 47k resistor gives 0.52 ms pulse.

The pulse from U1 is optionally fed to an external LED (JLED).

The pulse is attenuated in an external potentiometer connected to JMAGN. The attenuated pulse is fed to a buffer opamp (U2). The output has a current-limiting resistor (R4) and capacitor (C6).

OTHER NOTES

- The input circuit is relatively insensitive to component values with the exception of C1 and C2: These should have a 10X ratio.
- One could consider an overvoltage protection on the TRIG input node.
- Use high-impedance potentiometer. for JMAG.
- R11, R12, R13: Can be used to set some limits to adjustable range.
- The LEDs are optional.

Title **One-shot stimulator**

Size: A4

Number:

Revision:1

Date: 27.01.2021

Time: 08:06:55

Sheet 1 of 1

File: OneShot1.SchDoc

Probably
3rd rock
Sol System
Milky Way
The Universe



