

TSAL System

Members:

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Rules:

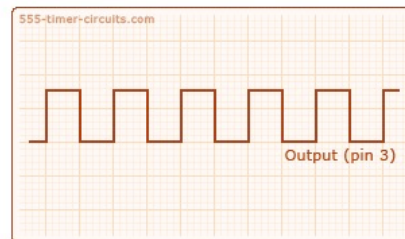
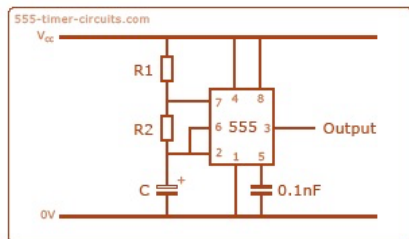
EV8.1.3 The TSAL must flash continuously with a frequency between 2 Hz and 5 Hz.

EV8.1.9 The TSAL system must be powered entirely by the tractive system and must be directly controlled by voltage being present at the output of the accumulator (no software control is permitted).

* More rules details can be found on Terrier Motorsport's shared google drive, or there are updated Formula Hybrid Rules on the Formula Hybrid+Electric website.

555-Timer:

<http://www.555-timer-circuits.com/operating-modes.html#>



<https://www.circuitbasics.com/555-timer-basics-astable-mode/>

$$t_{on} = 0.69 \times C1 \times (R1 + R2)$$

$$t_{off} = 0.69 \times C1 \times R2$$

t_{on} : Length of high output pulse in seconds

t_{off} : Length of low output pulse in seconds

$R1$: Resistance of $R1$ in Ohms

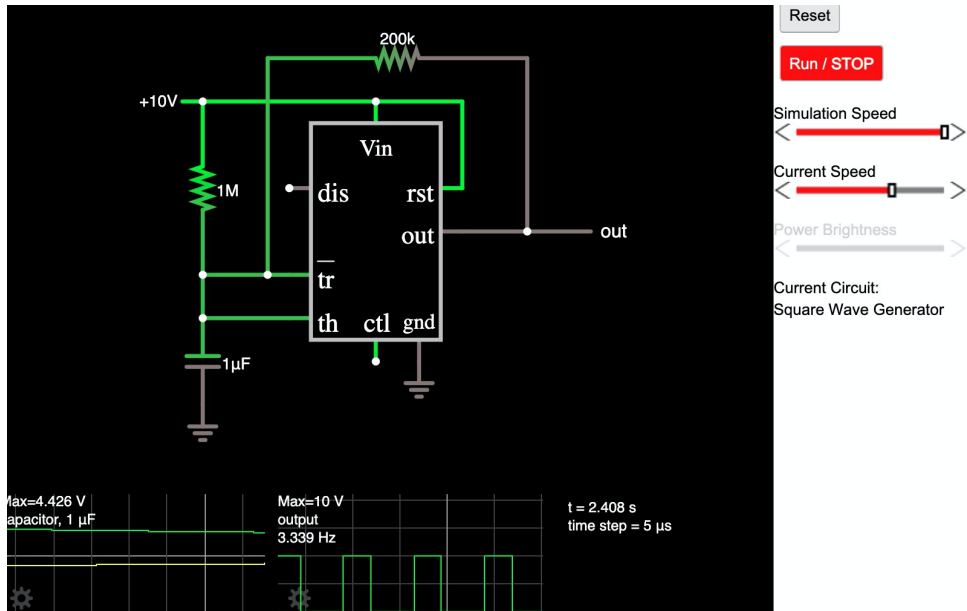
$R2$: Resistance of $R2$ in Ohms

$C1$: Capacitance of $C1$ in Farads

Circuit Simulator:

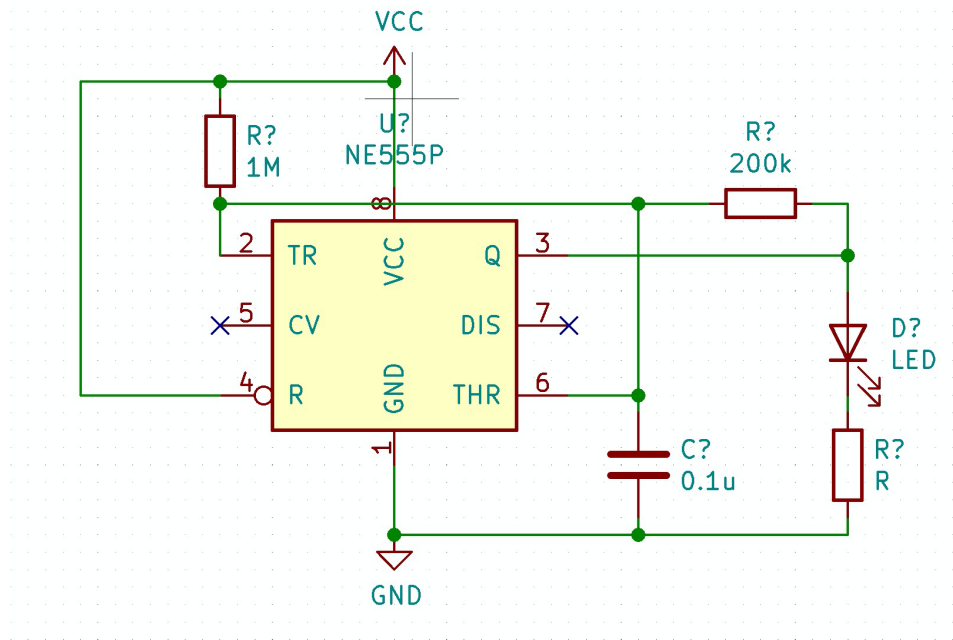
Abstable multivibrator

Circuit simulator website(Spencer's favorite website): <http://www.falstad.com/circuit/>

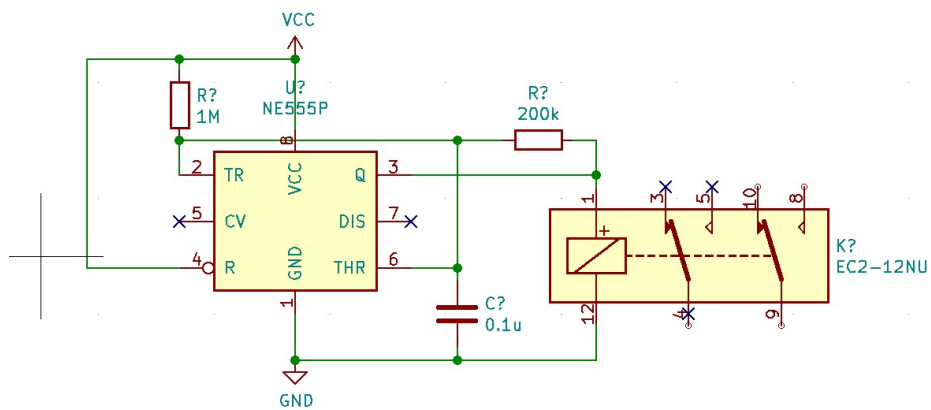


This is a 555-timer square wave generator. Changed the component values, so the frequency was within the proper range.

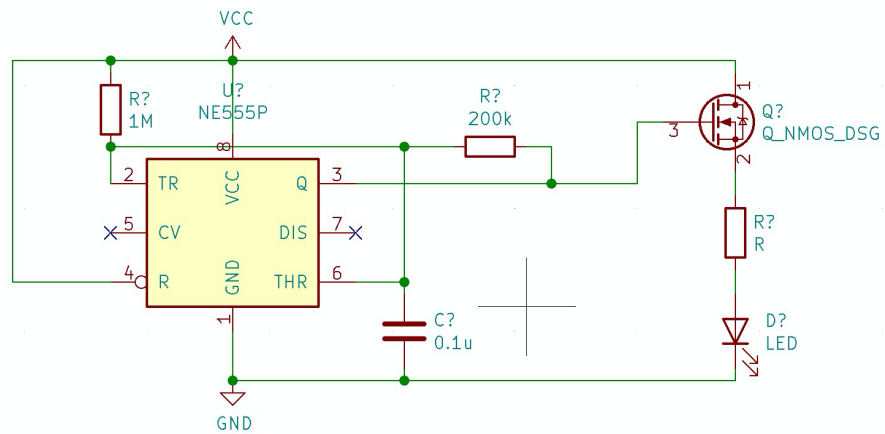
Question: How much current does a 555 timer output?



Replace LED with a relay



Rather than a relay, use a (1M42AA - FQP - 30N06L)



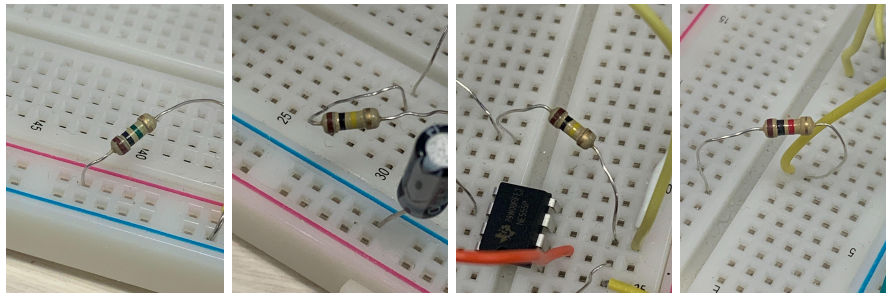
Details on TSAL:

Calculation Fixed:

- Capacitor is 1uF not 0.1u

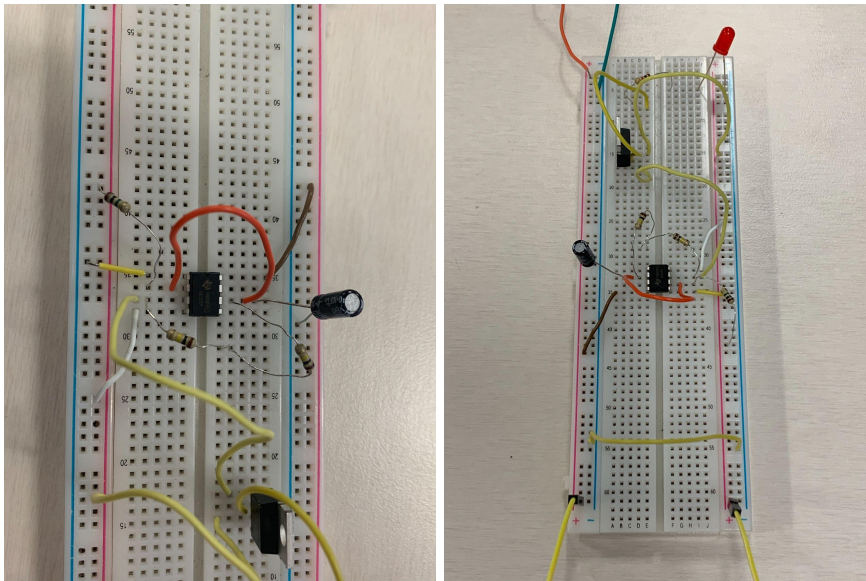
Resistor:

- 1M Ohms .05% (Color: brown, black, green, gray)
- two 100k Ohms .05% (Color: brown, black, yellow, gray) combined => 200k
- 1k Ohms .05% (Color: brown, black, red, gray)

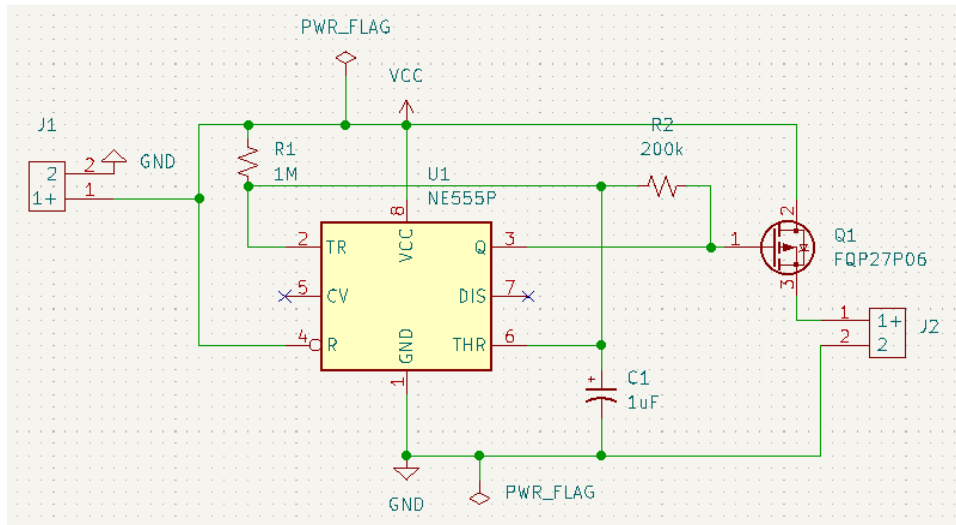


MOSFET:

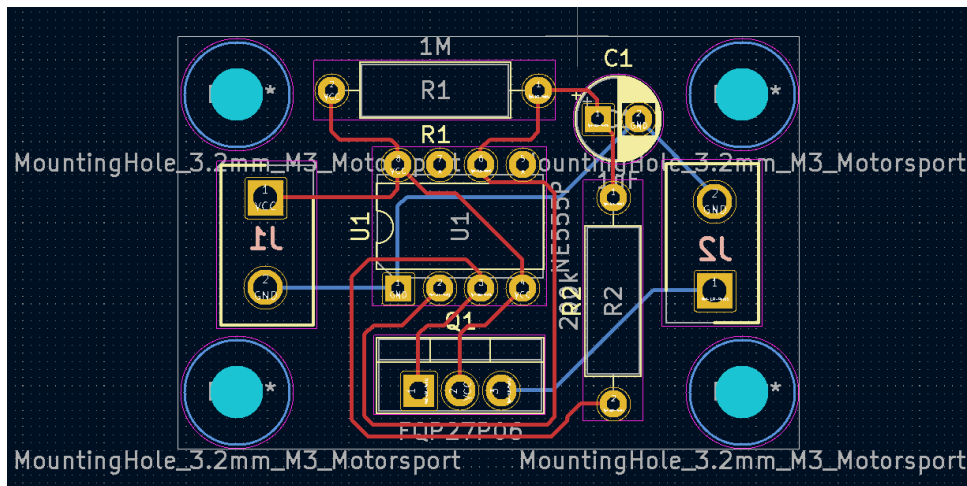
- **Number:** 1G10AU FQP 27P06
- MOSFET Spec sheet:
<https://www.sparkfun.com/datasheets/Components/General/FQP27P06.pdf>

Final TSAL Breadboard:

If you wish to watch the video, feel free to contact [Jungjae](#).

TSAL Board:**Schematic Edit:****PCB Edit:**

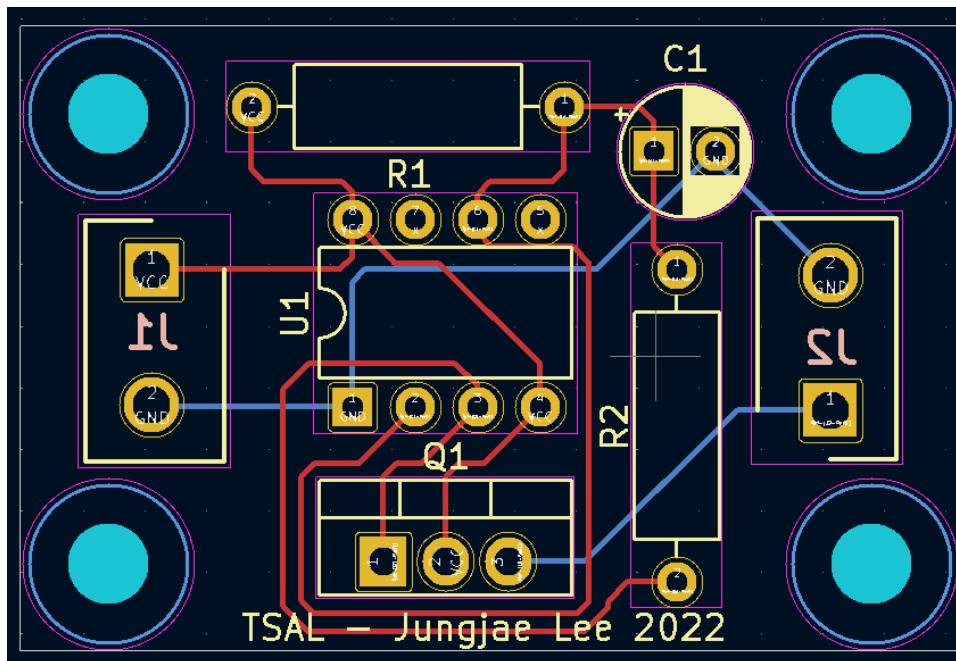
01/01/2022



Notes: As of right now, there are four warnings as you can see the yellow pointer.

- Track has unconnected

Update (02/05/2022)



3D:

02/05/2022



* All files are in Motorsport shared Google Drive. This is just a short summarized note, NOT a report for the competition. If you have a question, please reach out to [Jungjae](#).