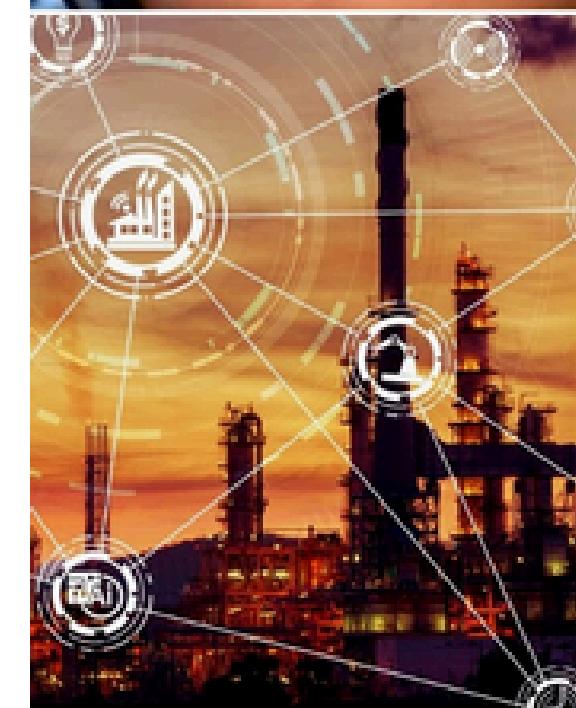


# ADJUSTABLE TIMING FLASHER CIRCUIT USING TRANSISTORS IN AN ONLINE SIMULATOR

A COMPREHENSIVE GUIDE TO LED FLASHERS USING  
TRANSISTORS AND INTERACTIVE LEARNING WITH  
TINKERCAD AND EVERYCIRCUIT SIMULATIONS



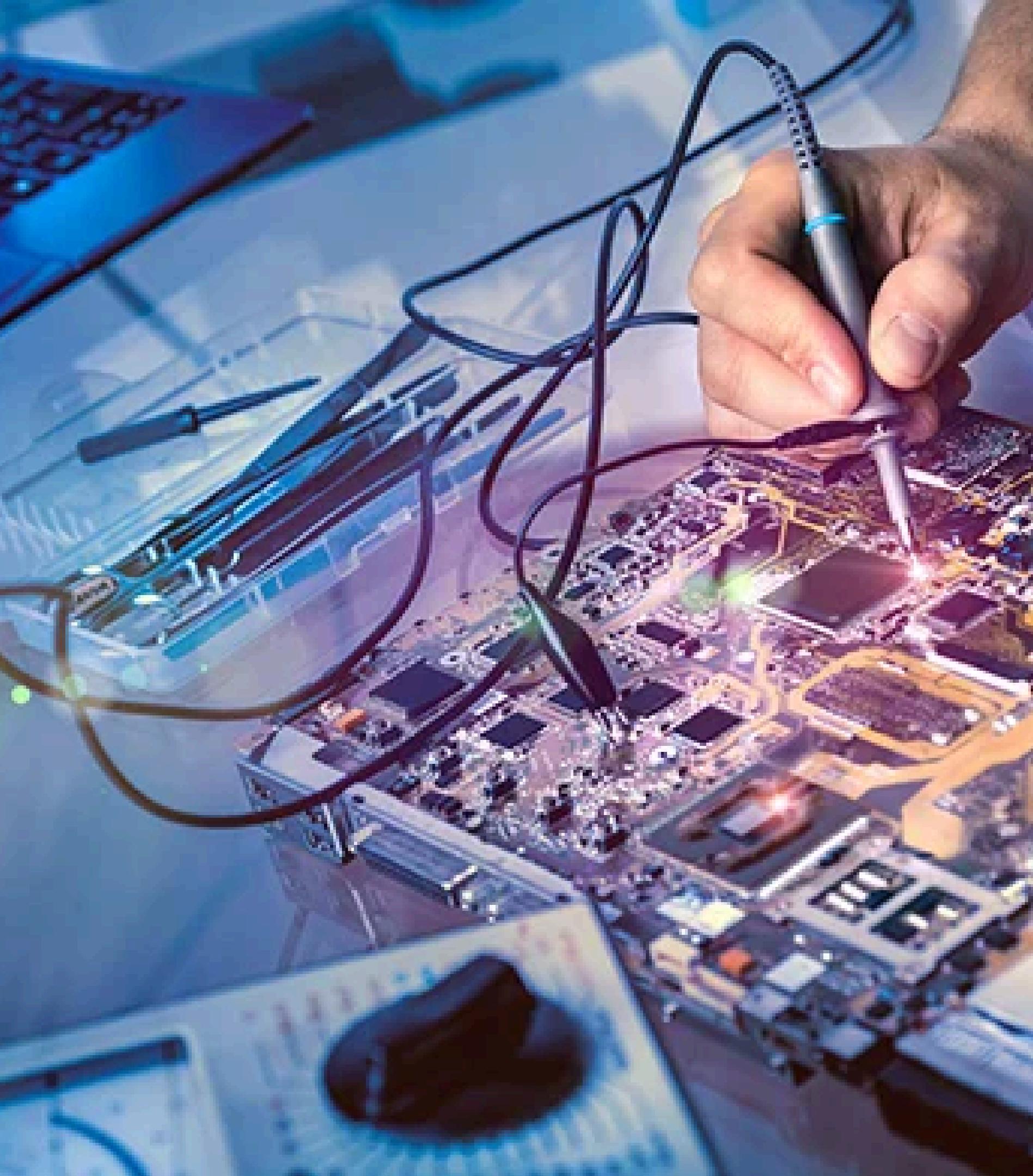
LEARN TO DESIGN AND SIMULATE AN  
ADJUSTABLE TIMING LED FLASHER CIRCUIT  
USING TRANSISTORS WITH TINKERCAD AND  
EVERYCIRCUIT, ENHANCING YOUR  
UNDERSTANDING OF ELECTRONIC CIRCUITS  
AND ONLINE RESOURCES.



# Abstract

---

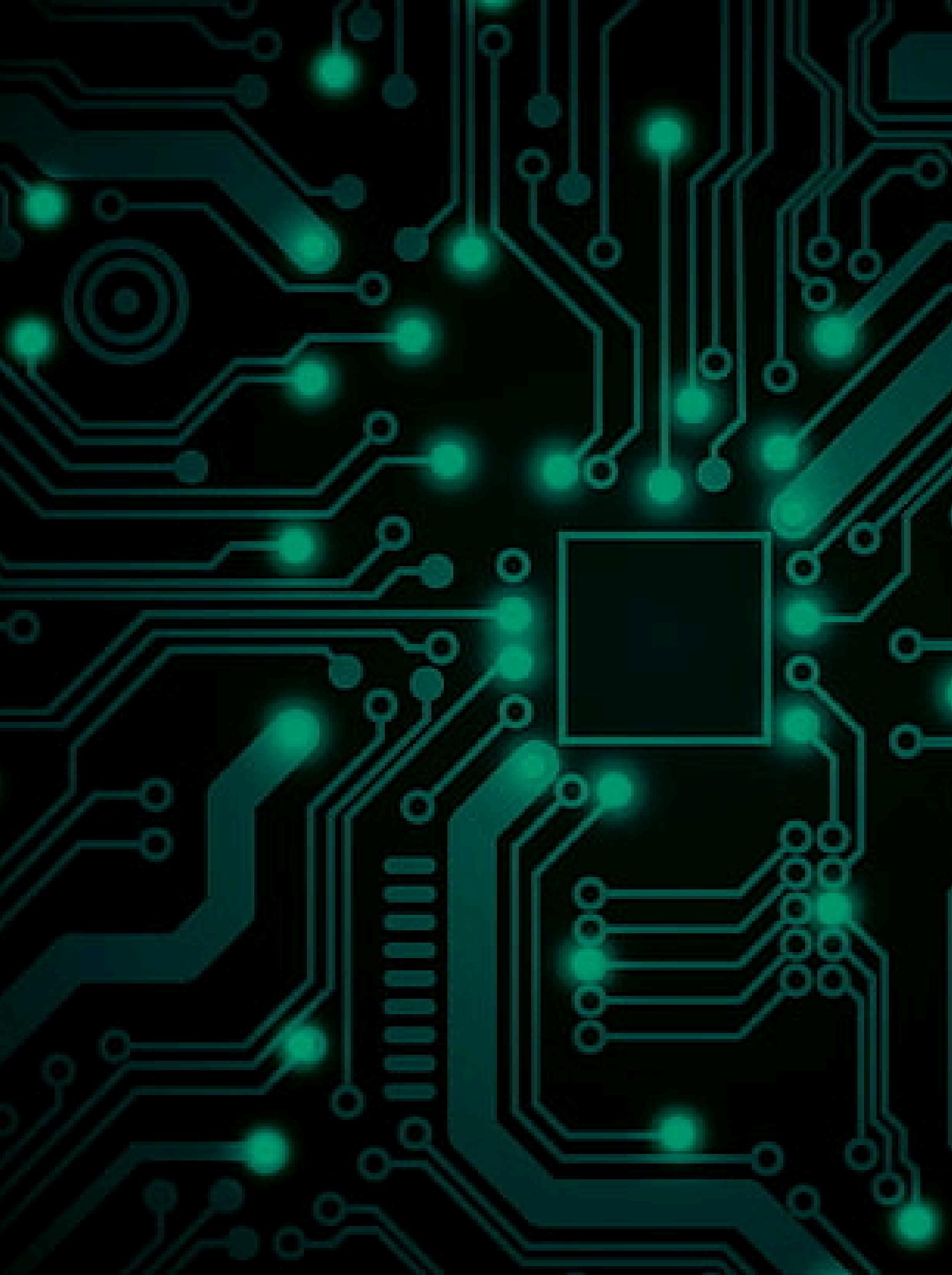
This project presents the design and implementation of an adjustable timing LED flasher circuit using BC547 transistors, resistors, and capacitors. Simulated in Tinkercad, an online platform for electronic prototyping, the project aims to provide a hands-on understanding of electronic circuits and their applications. By varying component values, the timing interval of LED flashes can be adjusted. The primary objective is to enhance knowledge of electronic design while utilizing every circuit website and online resources for practical learning and prototyping.



# Introduction

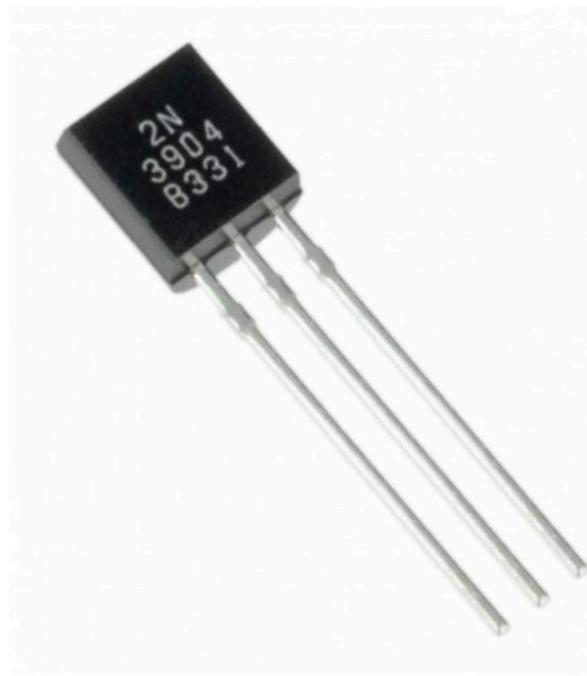
---

Welcome to our presentation on creating an adjustable timing LED flasher circuit using transistors in Tinkercad and EveryCircuit. This project explores how to design and simulate a circuit that controls the timing of LED flashes by adjusting capacitor and resistor values. We'll guide you through the construction process and demonstrate how different components interact to produce varying flash intervals. By the end, you'll have a solid understanding of basic electronic components and their practical application in creating customizable lighting effects using both Tinkercad and EveryCircuit.

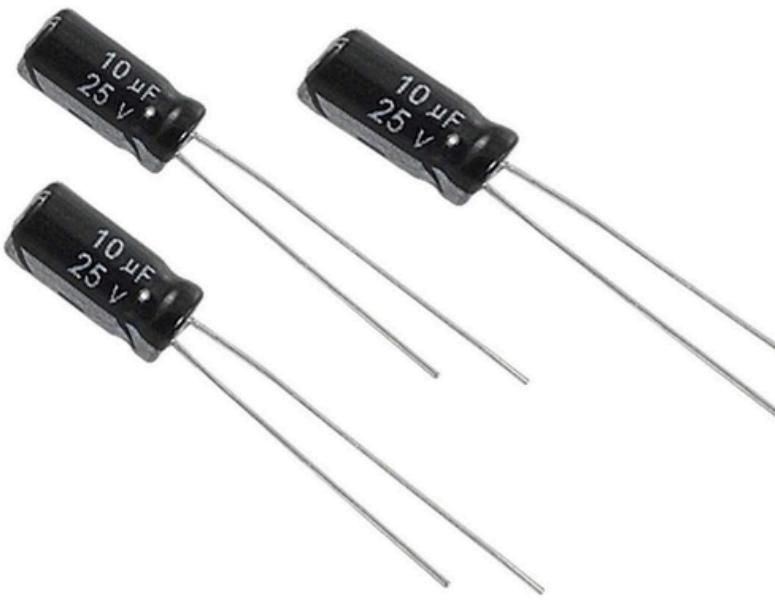


# Components

---



2N3904 or BC547  
Transistors (2)



electrolytic  
capacitor(2\*10 $\mu$ F)



Resistors (2 x 100k $\Omega$   
and 2 x 470 $\Omega$ )



LEDs (2)



Breadboard

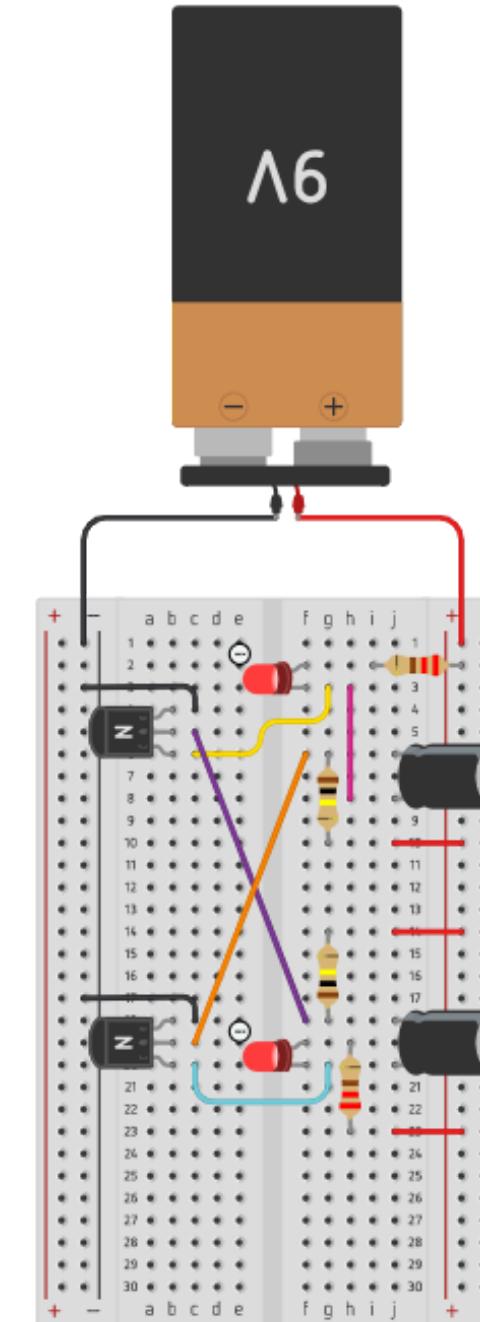
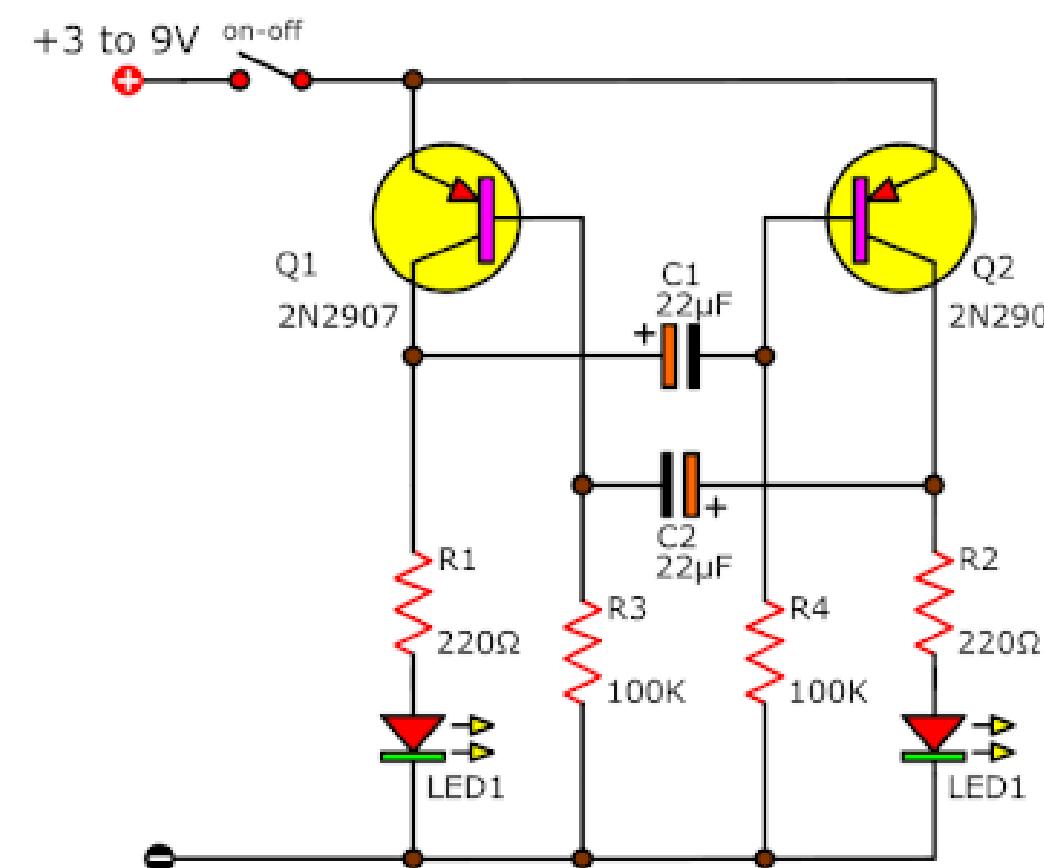
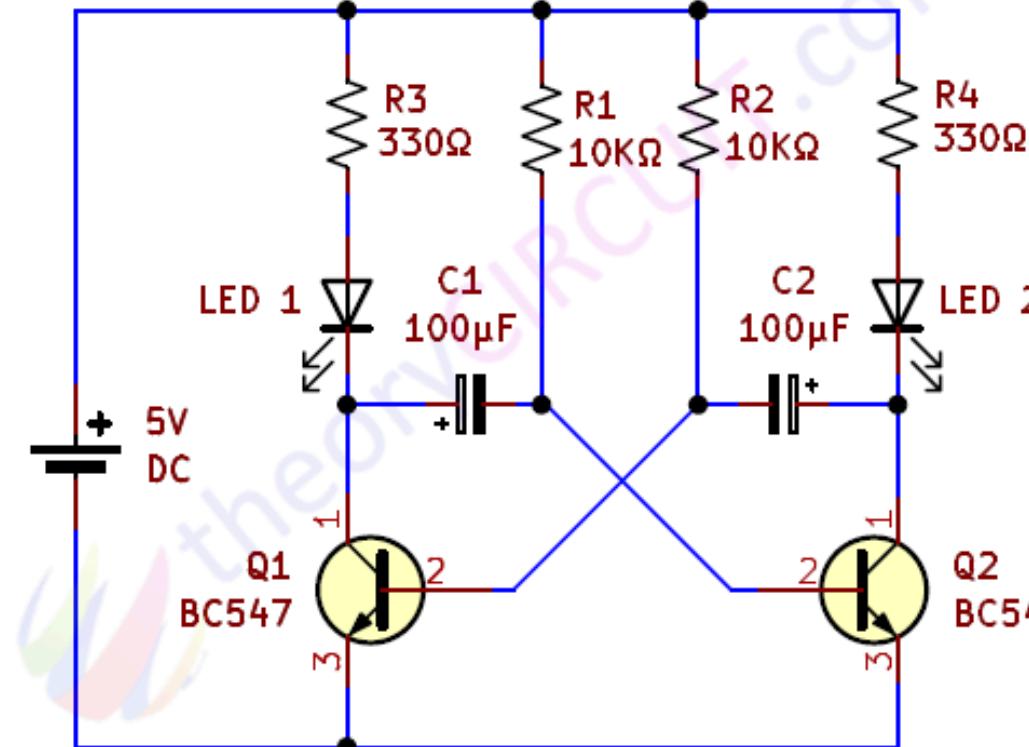
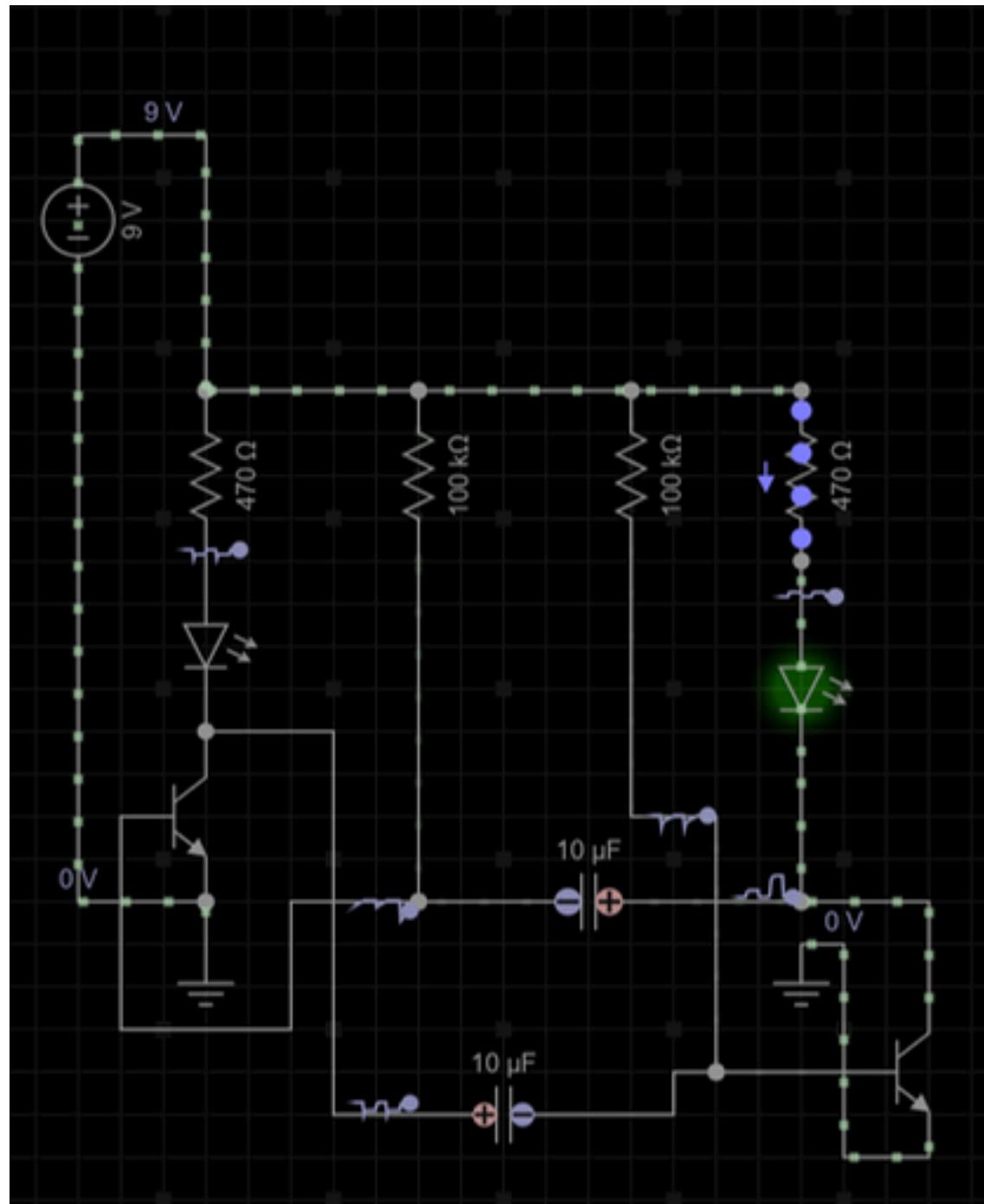


Connecting Wires



Power Supply (5V DC)

# Circuit Diagram



Everycircuit

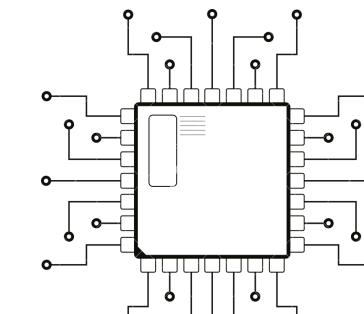
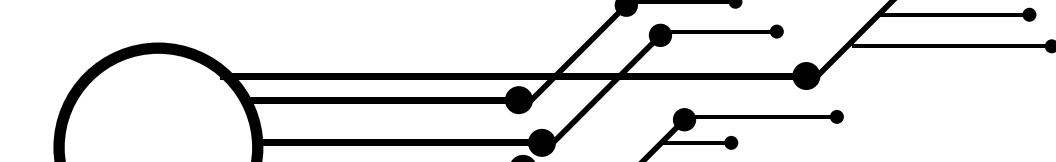
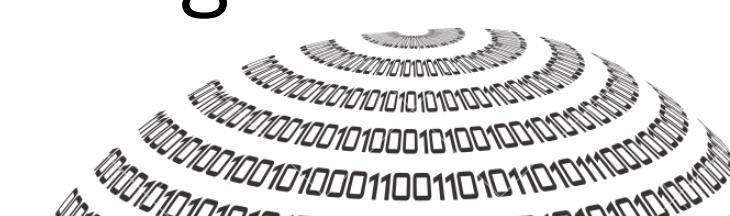
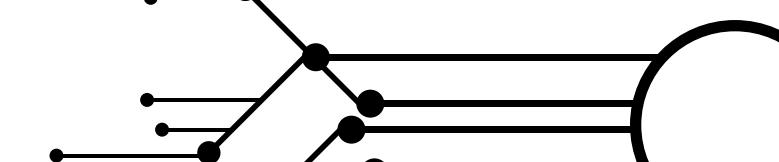
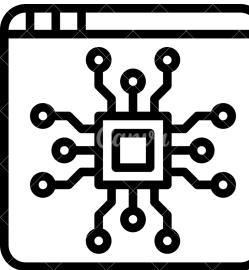
Tinkercad

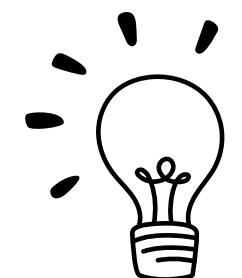
# Steps to Build the Circuit

---

## Steps to Build the Circuit in Tinkercad:

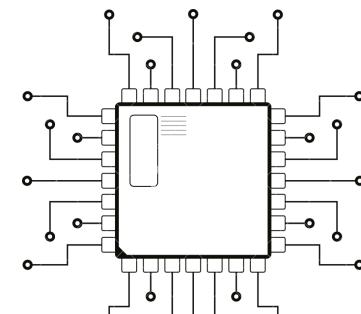
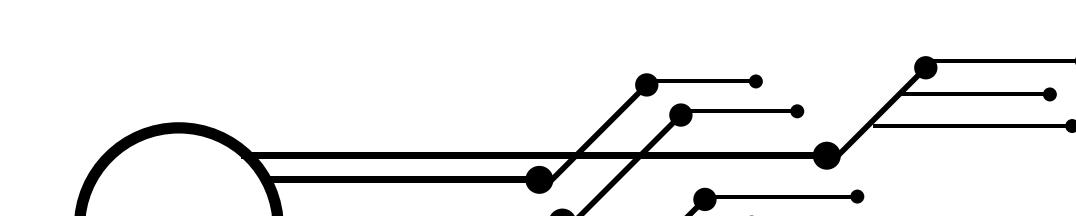
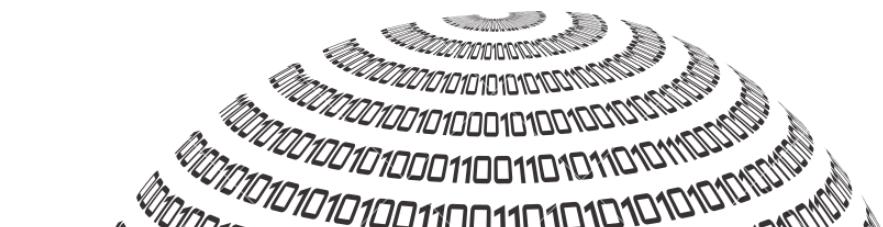
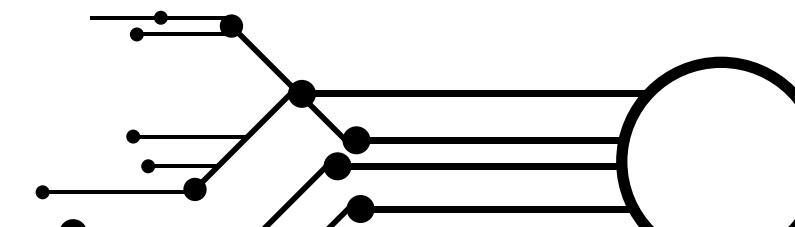
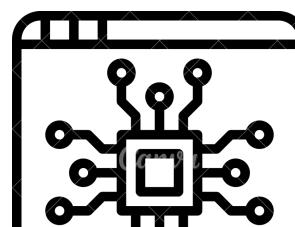
- Set Up Components: Place two BC547 or 2N3904 transistors ensuring proper orientation. Add capacitors, resistors, and LEDs according to circuit diagram.
- Connect the Transistors: Connect emitter pin of each transistor to ground rail. Connect base to collector through appropriate value resistors.
- Add Capacitors: Place capacitors with positive lead connected to the collector pin of each transistor. Ensure negative lead is connected to the base pin.
- Connect LEDs: Insert LEDs in series with resistors, ensuring correct polarity (longer lead to resistor). Connect the other lead of resistors to ground rail.
- Power the Circuit: Connect the positive terminal of the 5V DC power supply to the power rail, and the negative terminal to the ground rail.





# Steps to Build the Circuit in Everycircuit:

- Set Up Components: Place BC547 or 2N3904 transistors, capacitors, resistors, and LEDs on the workspace.
- Connect Transistors: Connect emitter to ground and base to collector through resistors.
- Add Capacitors: Connect positive terminals to the collector of each transistor and negative terminals to the base.
- Connect LEDs: Insert LEDs with resistors in series, ensuring correct polarity, and connect to ground.
- Power the Circuit: Connect a 5V DC power supply, ensuring positive to power rail and negative to ground. Position components according to the circuit diagram for efficient layout and connectivity.





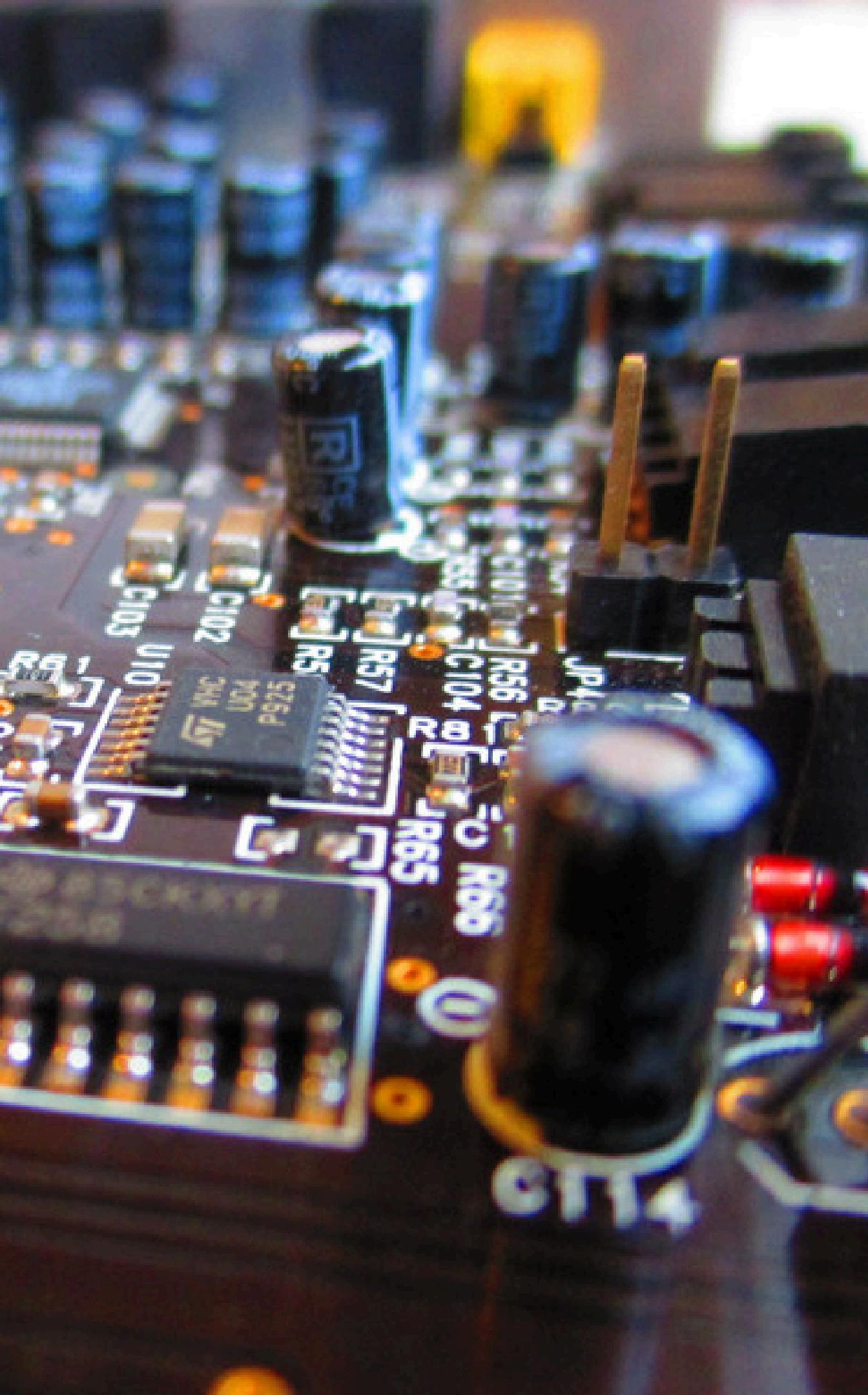
# Working rule:

- Transistor Switching: BC547 or 2N3904 transistors are used to control current flow based on input signals.
- Base Resistor Configuration: Resistors connect the base of each transistor to control current flow from collector to emitter.
- Capacitor Stabilization: Capacitors stabilize voltage levels at key points in the circuit for consistent operation.
- LED Indicators: LEDs are connected in series with resistors to indicate circuit activity by lighting up when current passes through.
- Power Supply: A 5V DC power source provides necessary voltage for transistor operation and LED illumination

# Applications

- Simple Switching Circuits: The circuit can be used as a basic switch or relay driver in various electronic projects.
- LED Flashers: It can function as an LED flasher or blinker circuit, where LEDs blink on and off at a controlled rate.
- Signal Modulation: Useful for amplitude modulation (AM) or pulse-width modulation (PWM) applications where controlling transistor switching is essential.
- Timer Circuits: Can be part of timer circuits where precise control over switching times is needed.
- Learning and Education: Ideal for educational purposes to demonstrate transistor behavior, circuit design, and component interaction.





# Conclusion

---

This project highlights basic transistor switching using BC547 transistors, capacitors, resistors, LEDs, and a 5V DC power supply. It demonstrates controlled current flow and LED indication, serving applications like electronic switches, LED flashers, and educational demonstrations. The circuit underscores fundamental principles of transistor operation and component interaction in electronic design and experimentation.

It emphasizes the importance of component selection, circuit layout, and understanding transistor behavior in electronic design and experimentation.

# THANK YOU

Thank you for being here today.  
We appreciate your time and participation.  
Share your thoughts and suggestions  
and your feedback helps us improve.

Thank  
you !

