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# **IC APPLICATIONS** **PROJECT REPORT**



# **PROJECT REPORT ON BUZZER GENERATOR USING IC-555**

**BY**

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# **TOUCH SENSOR BUZZER GENERATOR USING IC-555**

A PROJECT REPORT

**Bachelor of Technology**

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## **ABSTRACT**

This project presents the design and implementation of a touch sensor buzzer generator using the IC555 timer. The primary objective is to develop a touch-sensitive circuit that can trigger a buzzer, making it an ideal solution for applications requiring a simple, cost-effective, and efficient touch-based alert system.

The touch sensor circuit is based on the widely used 555 timer IC .When a touch is detected, the 555 timer generates a pulse that activates a connected buzzer, producing an audible alert. The sensitivity of the touch sensor is adjustable, allowing it to be fine-tuned for various applications.

Overall, the touch sensor buzzer generator using the IC555 timer offers an effective and economical solution for touch-activated alert systems, demonstrating the versatility and practicality of the IC555 in modern electronic design.

Key steps in this project include:

1. **Circuit Design:** Developing the schematic diagram of the buzzer generator circuit, incorporating the 555 timer IC, resistors and the buzzer.
2. **Component Selection:** Selecting appropriate resistor values to achieve the desired sound frequency and quality.
3. **Simulation and Testing:** Using simulation tools to verify the circuit design and ensure it meets the intended specifications.
4. **Prototyping :** Building the circuit on a breadboard or printed circuit board (PCB) for practical testing.
5. **Performance Analysis :** Evaluating the circuit's performance and making adjustments to optimize sound output and reliability.

This project highlights the practical application of the 555 timer IC in generating audible signals, showcasing its flexibility in electronic circuit design. The resulting buzzer generator can be effectively used in various applications, such as alarm systems, timers, and simple audio alert devices.

# **PROJECT REPORT BRIEF**

**Introduction:** Touch sensor is a type of equipment that can captures and records the physical touch. It enables a device or an object to detect touch, typically by a human or operator. It can be implemented by using IC 555 timer and operates as a monostable multivibrator. A touch sensor can also be termed as "Touch switch" or "touch detector". Unlike a button or manual control, touch sensors are more sensitive and are often able to respond differently to different kinds of touch such as swiping, pinching and tapping.

IC 555 timer contains eight pins.

Employed in my applications.

> The pin description is discussed in the following lines.

Pin 1: The first pin is connected to ground in order to protect the IC and other components connected to it,

Pin 2: The trigger signal is applied as an input since it operates as a Monostable multivibrator.

Pin 3: The output is collected from third pin. This pin is drawn from push to pull configuration formed by transistor

Pin 4: Reset is fourth pin and it should be connected to positive rail to work IC properly. When it is connected to ground the IC will stop working.

Pin 5: Control voltage is fifth pin which can be used to control the pulse width of the output waveform and also the levels of the threshold and trigger. When an external voltage is applied then the output waveform is modulated.

Pin 6: Threshold is the sixth pin when the voltage is applied to threshold pin then it contrasts with reference voltage.

Pin 7: Discharge is seventh pin when the output of the open collector discharges a capacitor between the intervals, then it toggles the output from high to low.

Pin 8: Voltage supply is eighth pin which is used to supply the voltage to the IC with respect to the ground terminal.

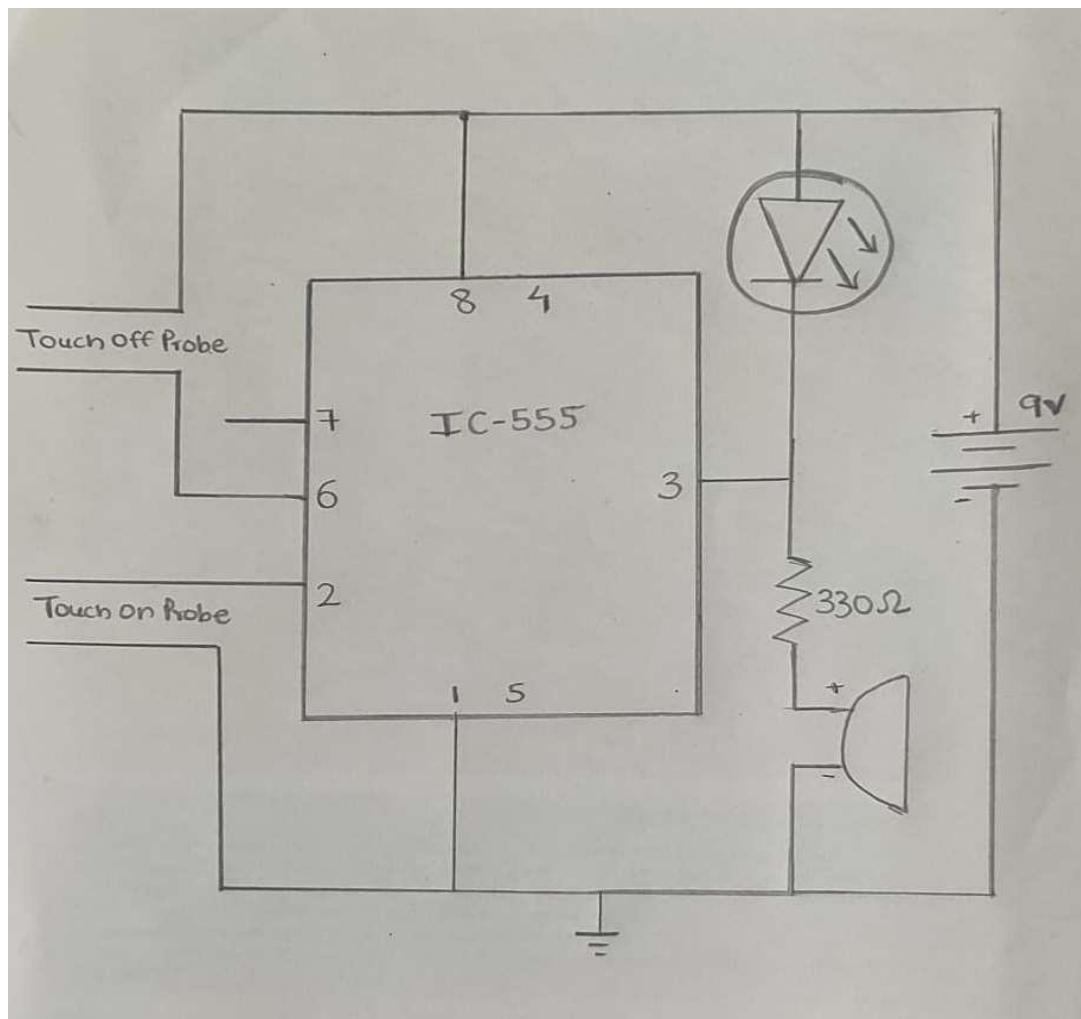
**Objective:** The core objective of this project is to design a "TOUCH SENSOR", with light emitting diodes and buzzer generator IC 555 Timer, which will employ in various applications in daily life

## Proposed work:

### LIST OF COMPONENTS :

COMPONENTS USED	RANGE	QUANTITY
Resistor	330 ohms	[only 1]
LED and Buzzer	---	[only 2]
9 volts battery	---	[only 1]
IC 555 TIMER	---	[only 1]
Connecting wires	---	Required number
Pins	---	[only 4]
Breadboard /PCB	---	[only 1]

### CIRCUIT DIAGRAM FOR TOUCH SENSOR BUZZER GENERATOR USING IC-555



## Implementation:

1. Place IC 555 timer on the bread board.
2. Connect a wire from pin of IC to ground or negative side of the breadboard.
3. Connect another wire from pins to the positive side of the breadboard
4. Connect the touch pin to pin 1 and pin2 of the IC and also another pair of touch. Pins at pin6 and pin8 of the IC.
5. Connect the anode of led to the positive rail of breadboard and cathode of led to pin3 of IC.
6. Connect 330ohm resistor to pin3 and route another terminal at any point on breadboard.
7. Connect the anode of led to 330ohm resistor and cathode of led to negative side of breadboard.
8. Finally connect the anode of battery to positive rail of breadboard and cathode to negative rail of breadboard.

### KEY LEARNINGS :

Touch sensor can also be term as tactile sensors and they are sensitive to touch, force, or pressure.

The working of touch sensor is similar to that of simple switch.

The principle behind working of touch sensor is, it can operate under monostable vibrator. Because by applying pressure over collecting places one buzzer turn on and LED turn off..

When there is contact with the surface of touch sensor, the circuit is closed inside the sensor and path is established for the flow of current and hence the LED's glows.

When the contact is released, circuit is opened and no current flows..

The 555 timer switches its output on pin 3 to VCC when the "threshold" voltage goes over 2/3rds of VCC and switches the output to GND when the voltage goes below 1/3rd of VCC.

The circuit uses the stray capacitance of the wires, pins and breadboard.

Touching one set of contacts puts the tiny resistance of your skin between VCC and the capacitor, instantly charging it to almost full voltage since it's such a tiny capacitance. This turns the 555 circuit on. Touching the other set of contacts discharges that tiny amount of capacitance through your skin, turning the 555 circuit off.

One LED is connected from VCC to pin 3 and the other is connected from GND to pin 3. When pin 3 is low (GND), current flows from VCC through one LED and to pin 3. When pin 3 is high (VCC), current flows from pin 3 through the buzzer to GND. The resistor helps prevent both LED and buzzer from lighting at the same time and also limits current flow.

## APPLICATIONS:

- **Home Automation Systems:** Touch sensors integrated with buzzers can control lights, fans, and other appliances, providing audible feedback when activated.
- **Security Systems:** Touch-activated buzzers are used in keypads for alarm systems, safes, and secure access points, providing feedback when a code is entered.
- **Consumer Electronics:** Devices like touch lamps, touch-activated kitchen appliances, and personal gadgets use touch sensors with buzzers for user interaction feedback.
- • **Medical Devices:** In medical settings, touch sensors with buzzers are used in equipment like patient monitoring systems and diagnostic tools to provide audible alerts upon touch interaction.
- **Automotive Controls:** Touch-sensitive buttons in cars, such as those for infotainment systems, climate control, and other dashboard functions, use buzzers to provide feedback.
- **Industrial Control Panels:** Touch sensors with buzzers in industrial environments allow operators to control machinery and receive immediate feedback, improving safety and efficiency.
- **Public Utilities:** Touch-activated buzzers are used in public information systems, such as ticket machines and public transport kiosks, providing feedback when users make selections.
- **Assistive Technology:** Devices designed for people with disabilities use touch sensors with buzzers to provide feedback, making devices more accessible.

## RESULT:

Hence, By touching the pair of pins connected to the IC 555 (ie pin 1,2 and pin 6,8 ) the LED had glowed , buzzer sound had generated successfully.

## FUTURE SCOPE:

Future progress of this work can be identified in the areas summarized below.

1. We will try to upgrade this system to an advanced level with usage of technology with low cost and high efficiency.
2. Future touch sensor buzzer systems can be designed to be more energy-efficient and sustainable, utilizing low-power technologies and eco-friendly materials to reduce environmental impact.



**\*\*\*THANK YOU\*\*\***