Feature	Active Buzzer	Passive Buzzer
Oscillating Source	Has a built-in oscillating circuit.	Requires an external oscillating signal.
Ease of Use	Very easy to use; just supply DC power.	Requires a microcontroller or signal generator to work.
Input Signal	Works with a constant DC signal.	Needs a PWM (Pulse Width Modulation) or AC signal.
Sound Control	Limited control over tone or frequency.	Can produce a wide range of tones and frequencies depending on the input signal.
Design	Enclosed with a plastic casing for sound amplification and directionality.	Often open or partially exposed as it needs external oscillation.

Why is One Enclosed and the Other is Not?

- **Active Buzzer**:
  - The enclosure focuses the sound waves and amplifies them, making the buzzer louder and more directional.
  - Since the active buzzer operates with a simple ON/OFF signal, it doesn't need direct access to its internal components.
- **Passive Buzzer**:
  - The lack of an enclosure allows flexibility for input signals. Passive buzzers rely on external signals (like PWM) to generate sound, and the exposed design makes it easier to tune and interact with those signals.

Which Buzzer Has a Built-In Oscillating Source?

- **Active Buzzer**:
    - It includes a built-in **oscillating circuit** that generates the frequency required to produce sound.
    - This oscillator converts the supplied DC power into an oscillating AC signal internally, which vibrates the diaphragm to produce sound.

What is an Oscillating Source?

- An **oscillating source** generates an alternating signal with a specific frequency. In the context of buzzers:
    - The oscillator produces an AC signal with a frequency in the audible range (e.g., 2 kHz), driving the buzzer diaphragm to vibrate and create sound.
    - In an active buzzer, this oscillation happens inside the buzzer itself.
    - In a passive buzzer, you must provide this oscillation externally using PWM or a signal generator.

Does a Passive Buzzer Use a DC Source?

- **No, a passive buzzer does not work with a constant DC source.**
    - It requires an alternating signal, such as a square wave from a PWM pin on a microcontroller.
    - A constant DC signal will not produce any sound because there is no oscillation to vibrate the diaphragm.

Summary

- **Active buzzers** are simpler to use (just turn ON/OFF with DC power) and are enclosed for sound amplification.
- **Passive buzzers** are more versatile (can generate various tones) but require an external oscillating signal.
- The built-in **oscillating source** in active buzzers simplifies usage by eliminating the need for external signal generation, while passive buzzers are designed for advanced, tunable applications.

What Is Buzzer?

Active and Passive Buzzer- Discussed

How to Use Buzzers (Active and Passive) with an Arduino (Lesson #20)