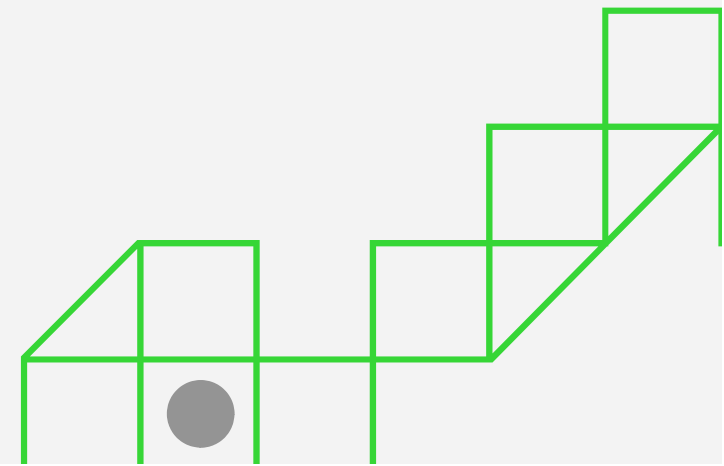
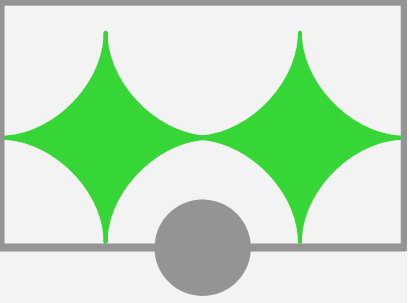




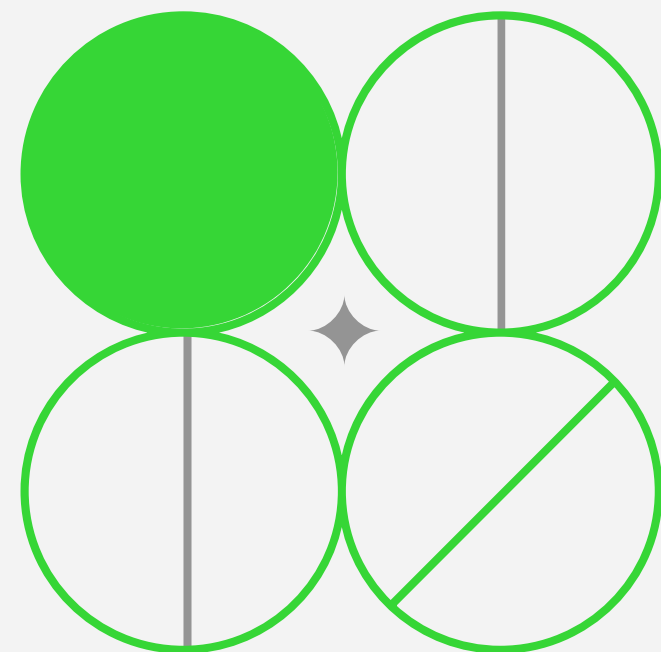
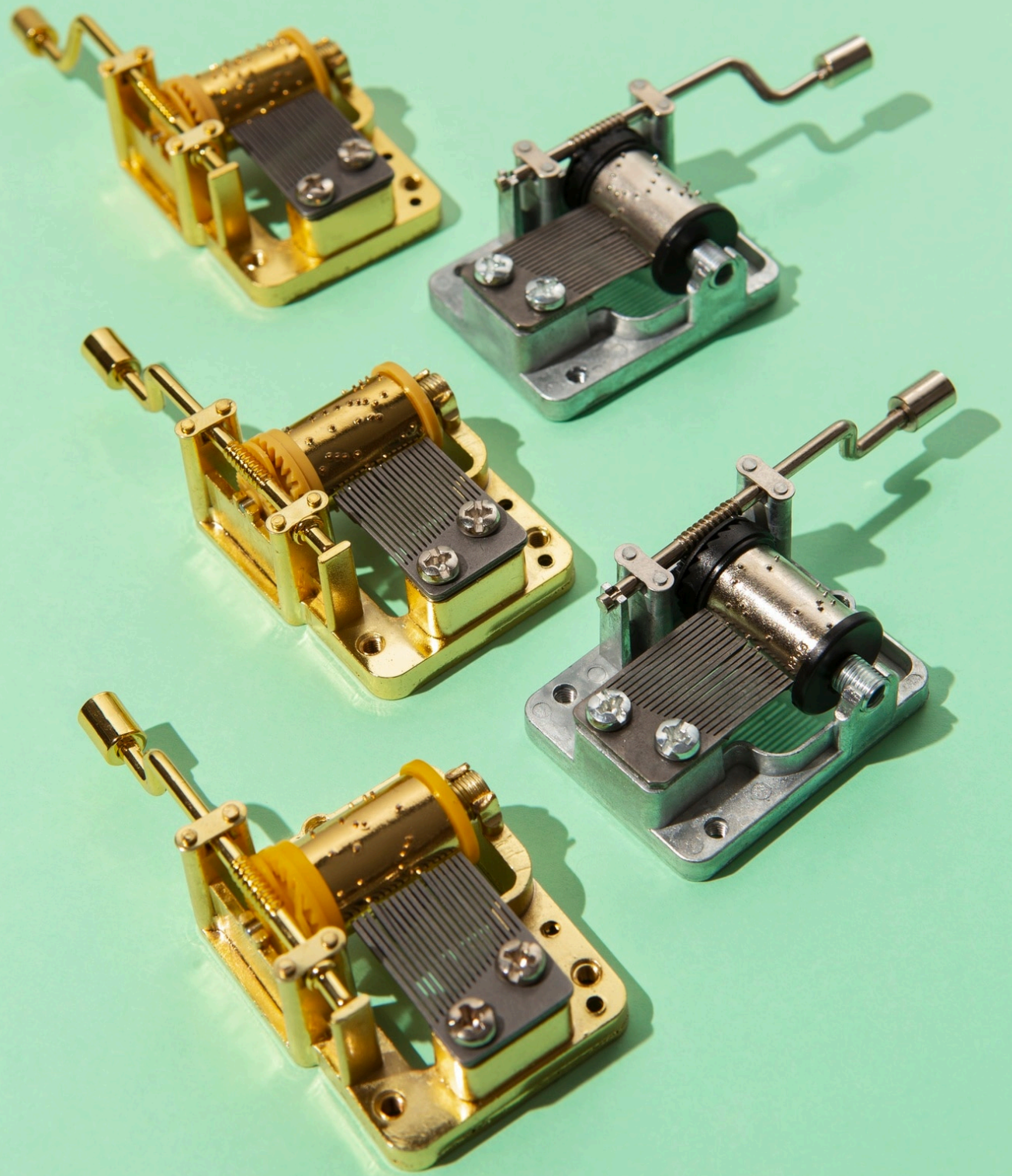
An Exploration of Transistors: Functionality, Symbols, and Diagrams of Transistors as **Switches**

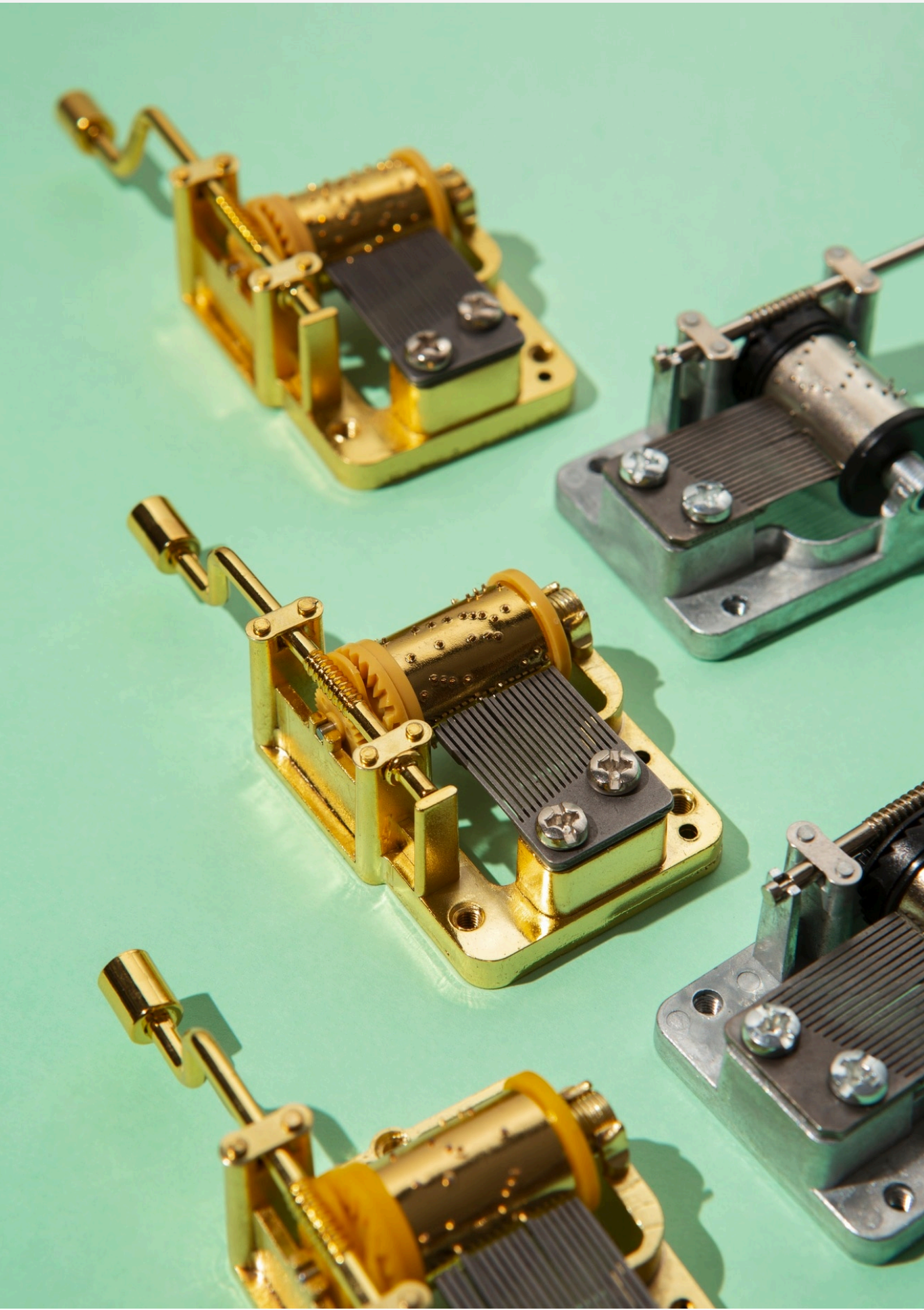
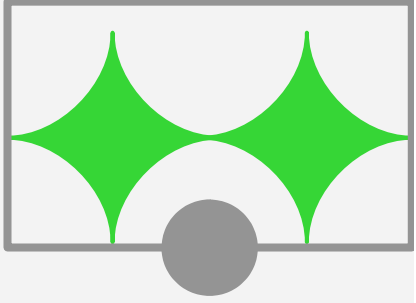




Introduction to Transistors

Transistors are fundamental components in modern electronics. They act as **switches** or amplifiers, enabling control over electrical signals. This presentation will delve into their **functionality**, symbols, and how they operate as switches, providing a comprehensive understanding of their significance in technology.



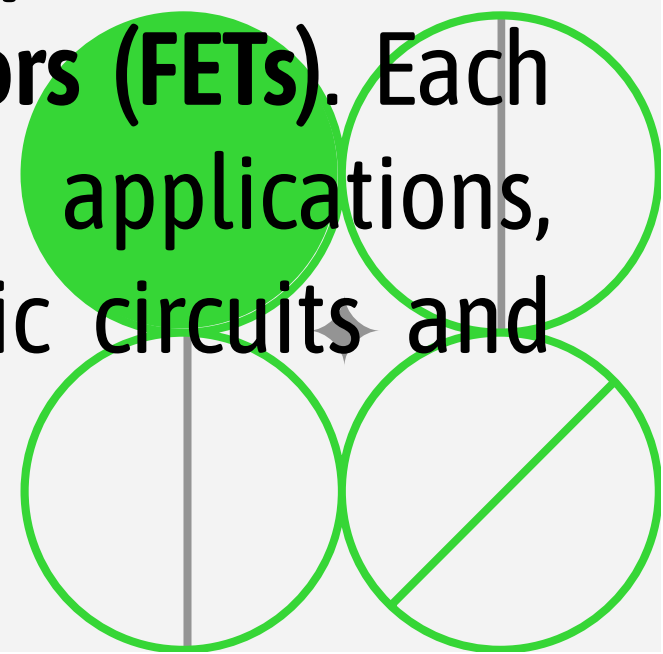


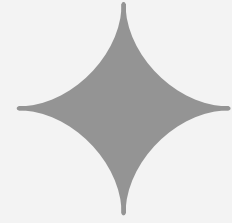
What is a Transistor?

A **transistor** is a semiconductor device that can **control** electrical current. It consists of three layers of semiconductor material, typically **silicon**, and can function as a **switch** or an amplifier, making it essential in numerous electronic applications.

Types of Transistors

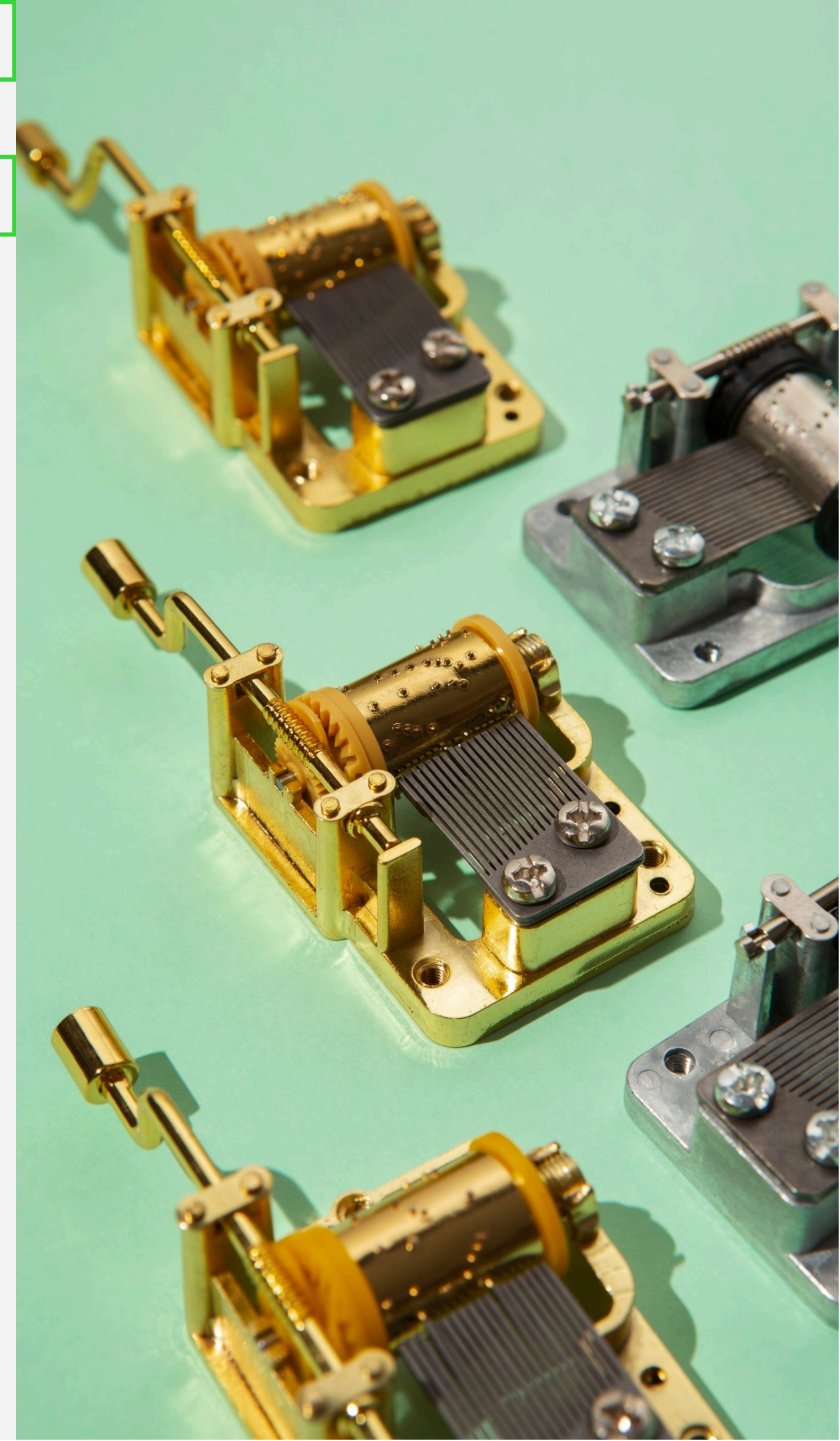
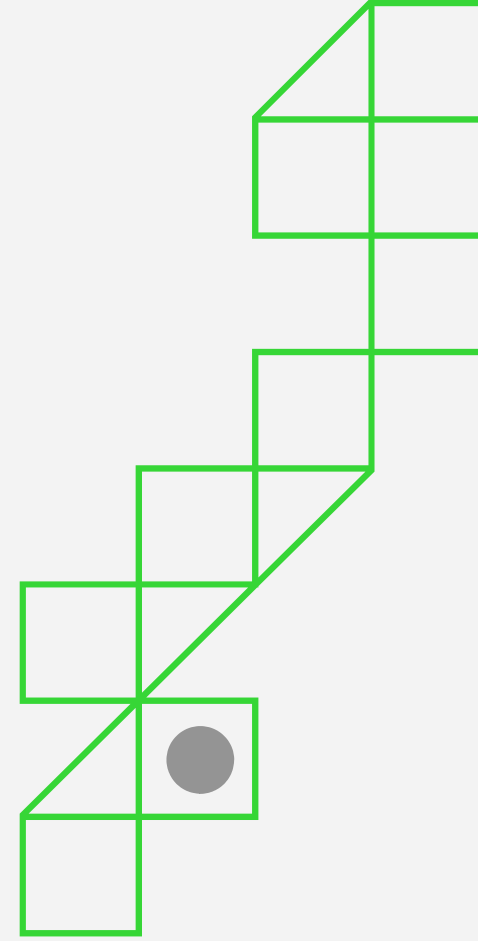
There are two main types of transistors: **Bipolar Junction Transistors (BJTs)** and **Field Effect Transistors (FETs)**. Each type has unique characteristics and applications, influencing their use in various electronic circuits and systems.





Transistor as a Switch

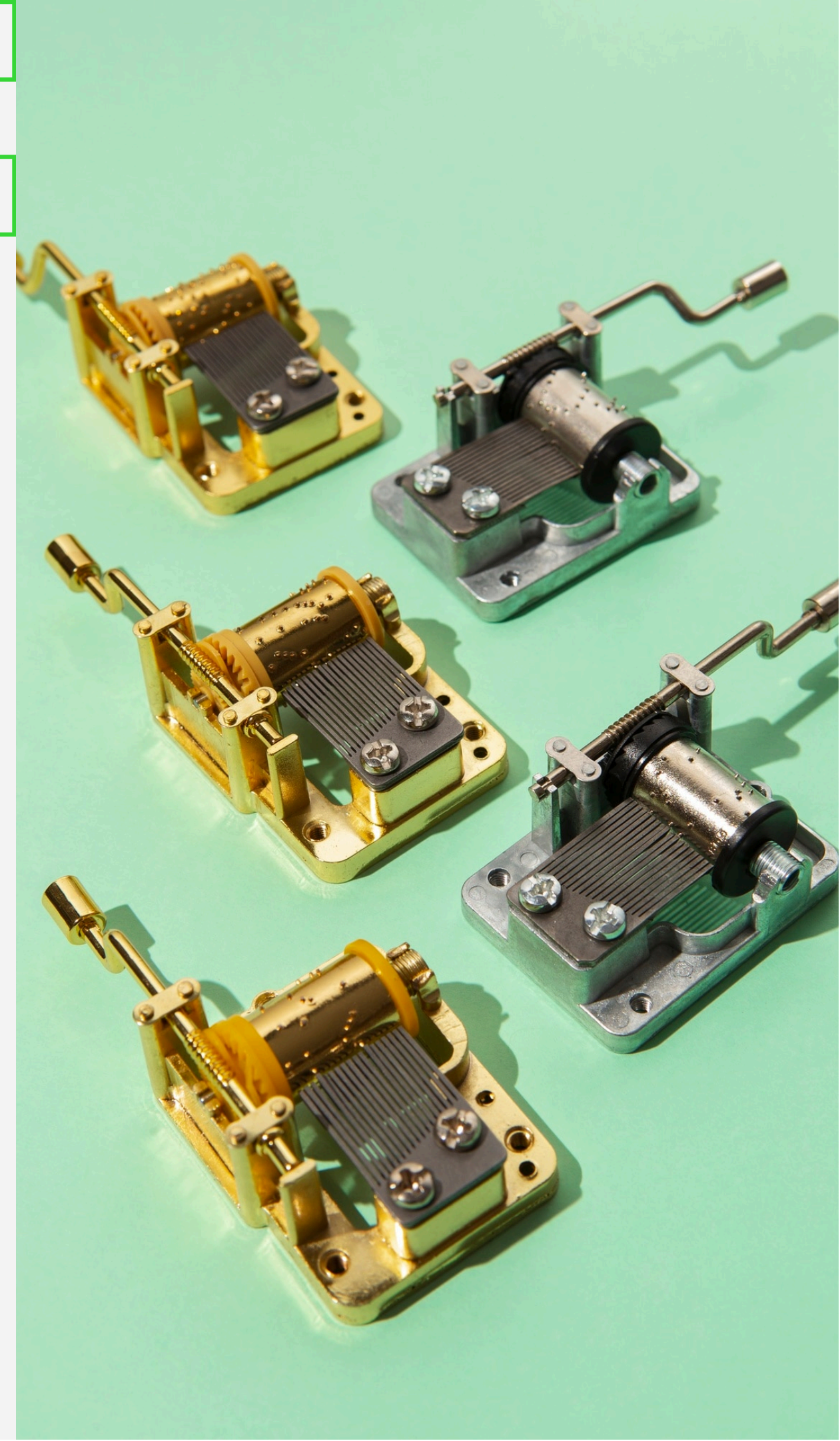
When used as a **switch**, a transistor can either allow or block the flow of current. This ability to control current makes transistors vital in **digital circuits**, where they represent binary states of **on** and **off**.

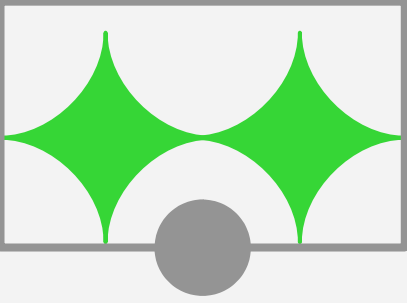




Advantages of Transistors

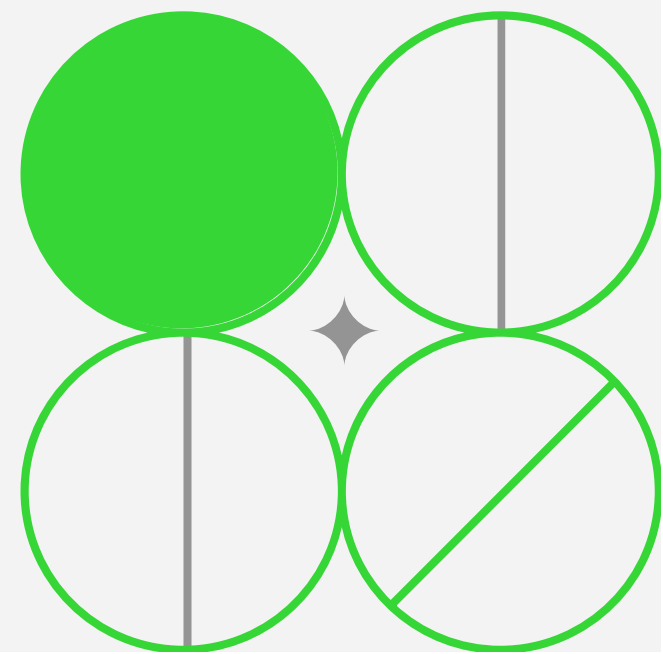
Transistors offer numerous advantages over traditional electronic components, including **compact size**, **low power consumption**, and **high reliability**. These benefits have led to their dominance in modern electronic design.

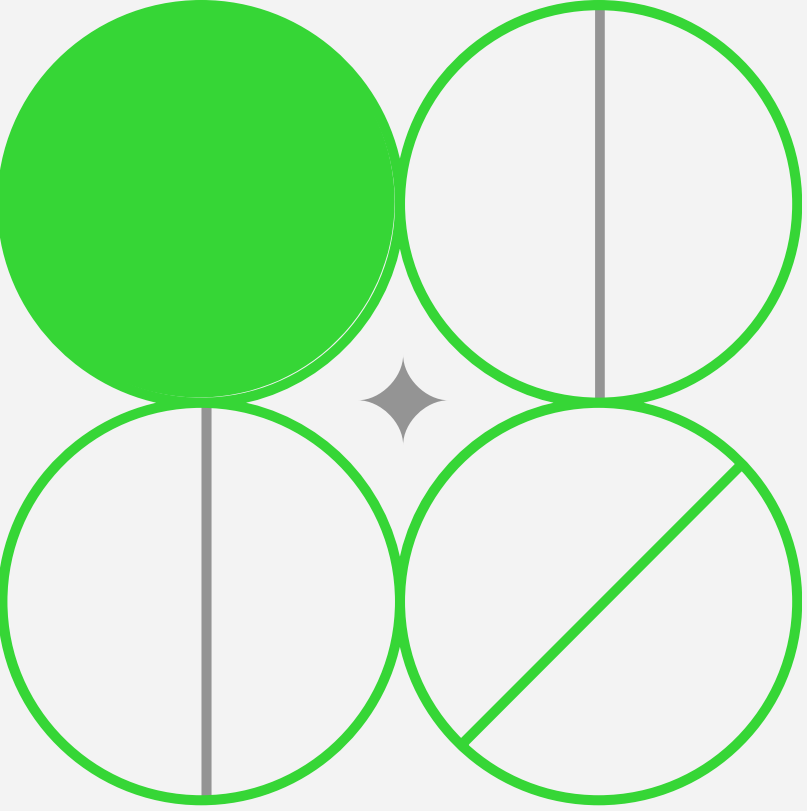




Challenges in Transistor Design

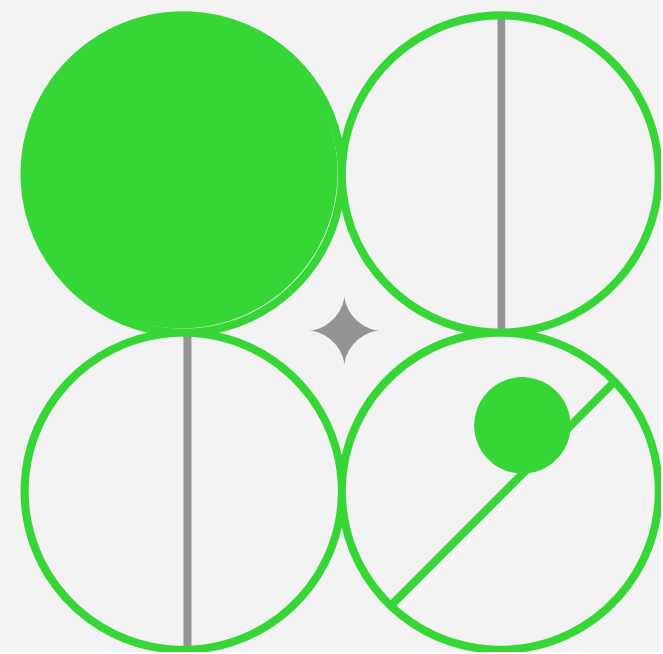
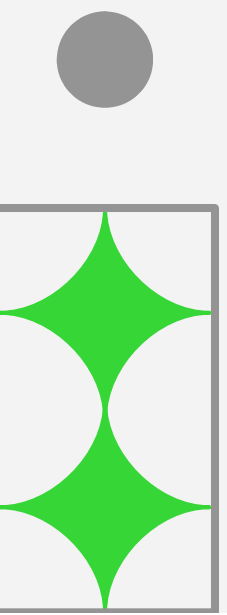
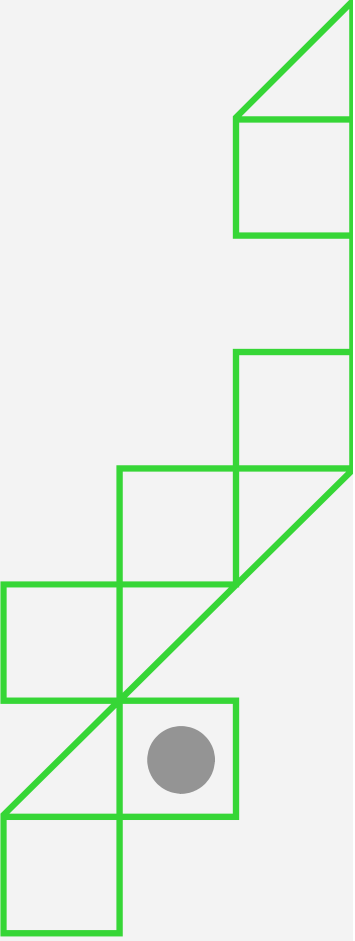
Despite their advantages, designing transistors poses challenges such as **heat dissipation**, **scalability**, and **material limitations**. Addressing these issues is critical for advancing technology and improving performance.

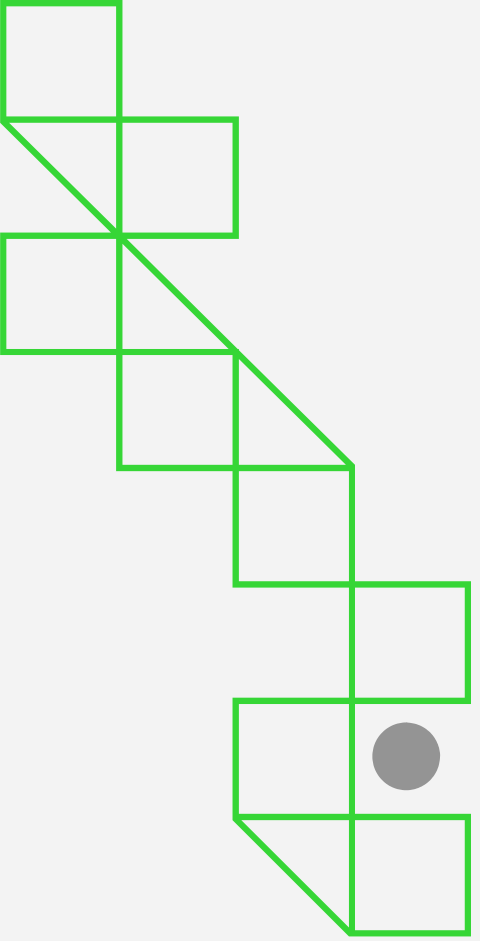




CONCLUSION

In conclusion, **transistors** are essential components in electronics, functioning as switches and amplifiers. Understanding their **functionality**, symbols, and applications is crucial for anyone involved in electronic design and innovation.





Thanks!

