

# DC-DC Converter

## <What is a DC-DC converter?>

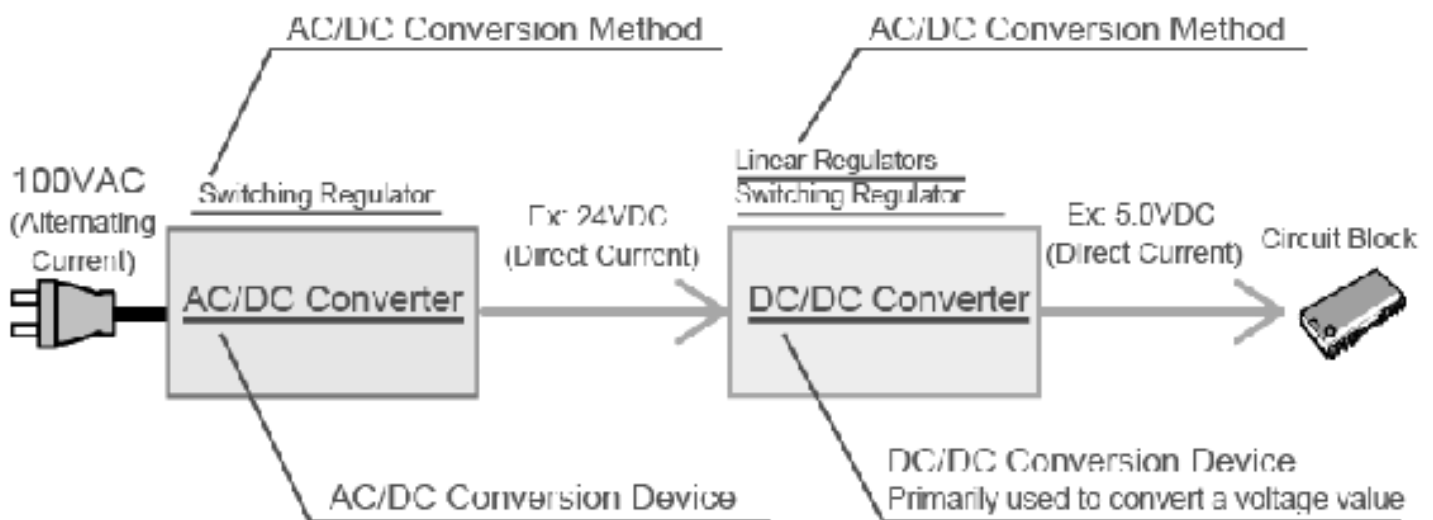
As its name implies, a DC-DC converter converts one DC voltage to another.

The operating voltage of different electronic devices such as ICs can vary over a wide range, making it necessary to provide a voltage for each device.

A Buck Converter outputs a lower voltage than the original voltage, while a Boost Converter supplies a higher voltage.

### Linear or Switching Regulators

DC-DC converters are also referred to as linear or switching regulators, depending on the method used for conversion.



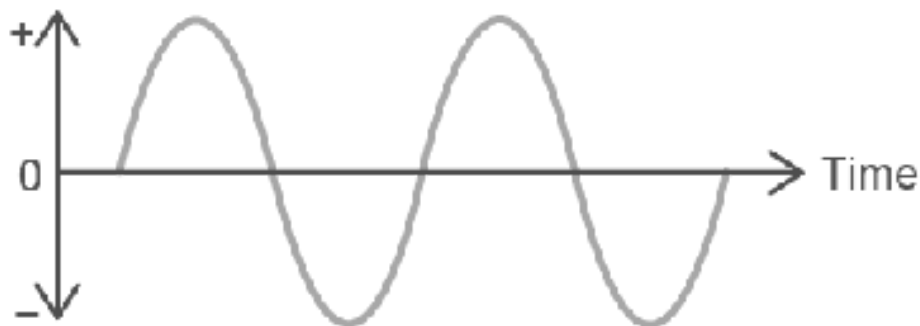
- **Device for converting to a lower voltage**  
Buck or Step-Down converter
- **Device for converting to a higher voltage**  
Boost or Step-Up Converter
- **Device capable of converting to a higher or lower voltage**  
Boost-Buck Converter
- **Device for supplying a negative voltage**  
Negative Voltage or Inverting Converter

### AC vs. DC

#### What is AC?

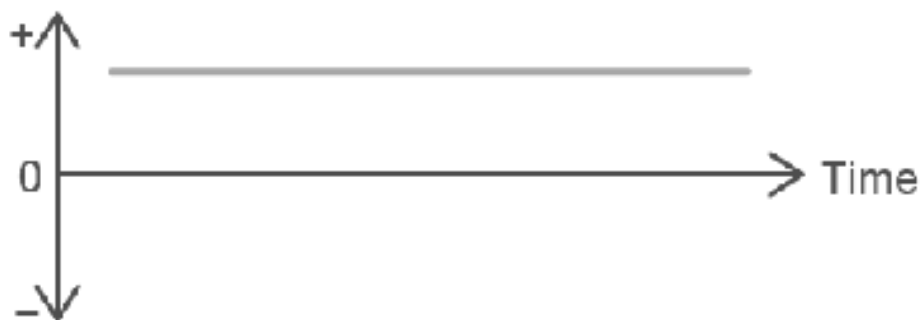
Short for Alternating Current, AC refers to current that changes in magnitude and polarity (orientation) with time.

It is often expressed in Hertz (Hz), the SI unit of frequency, which is the number of oscillations per second.

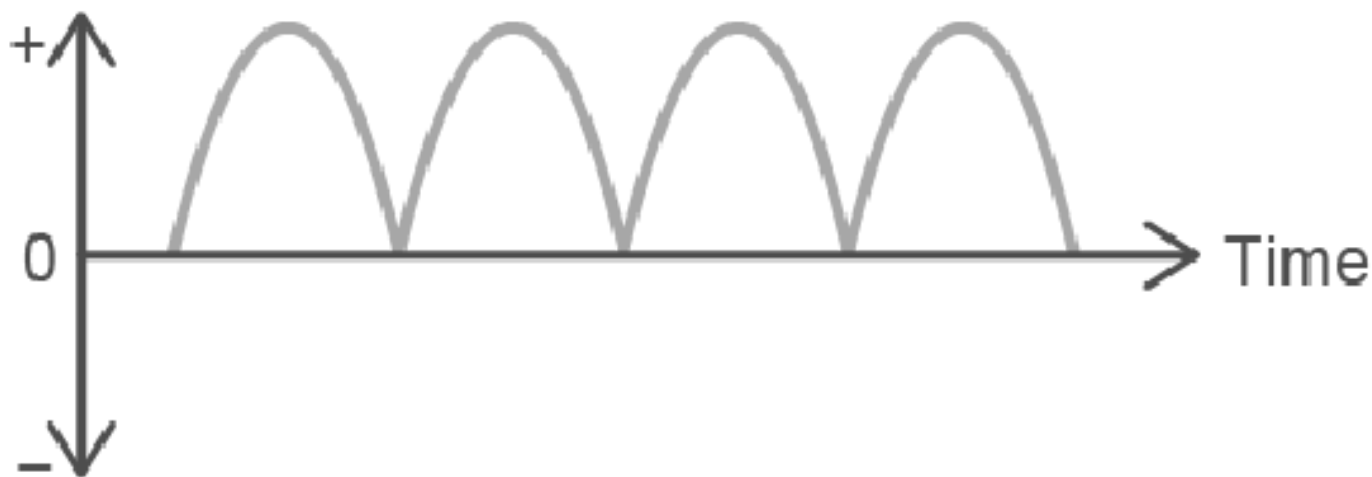


### What is DC?

DC, which stands for Direct Current, is characterized by current that does not change in polarity over time.



However, there are small changes in magnitude that are also DC, called ripple current.



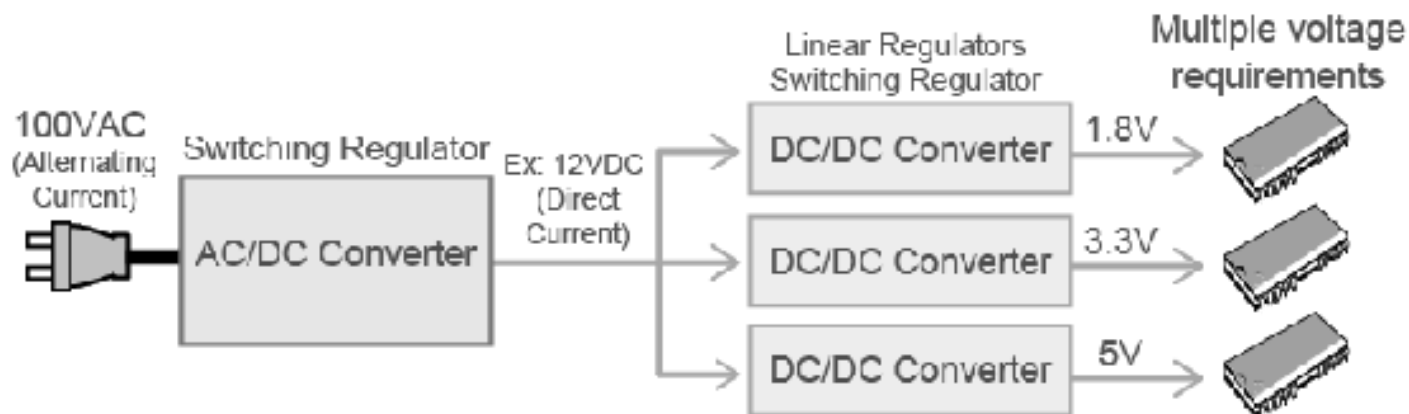
Electrical appliances that plug into an outlet require an AC-DC converter to convert from AC to DC.

This is because most semiconductor devices can operate only using DC.

ICs and other components mounted on substrates used in sets feature specific operating voltage ranges that require different voltage accuracies.

Unstable or improper voltage supplies can lead to characteristics degradation and even malfunction.

To prevent this, a DC-DC converter is needed to convert and stabilize the voltage.



A device that stabilizes the voltage using a DC-DC converter is referred to as a voltage regulator.

Power Management ICs (Product Group Page including DC-DC Converters)

DC-DC Converter ICs (Product Search Page)

Axial Leaded DC-DC Converters (Product Search Page)

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## Electronics Basics

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What is a DC/DC converter?

What is the Difference Between Linear and Switching Regulators?

Operating Principle of Linear Regulators

Linear Regulator Classifications

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