



# Power and Power factor



## Reactive Power

We know that reactive loads such as [inductors](#) and [capacitors](#) dissipate zero power, yet the fact that they drop [voltage](#) and draw current gives the deceptive impression that they actually *do* dissipate power.

This “phantom power” is called *reactive power*, and it is measured in a unit called *Volt-Amps-Reactive (VAR)*, rather than watts.

The mathematical symbol for reactive power is (unfortunately) the capital letter Q.

## True Power

The actual amount of power being used, or dissipated, in a circuit is called *true power*, and it is measured in watts (symbolized by the capital letter P, as always).

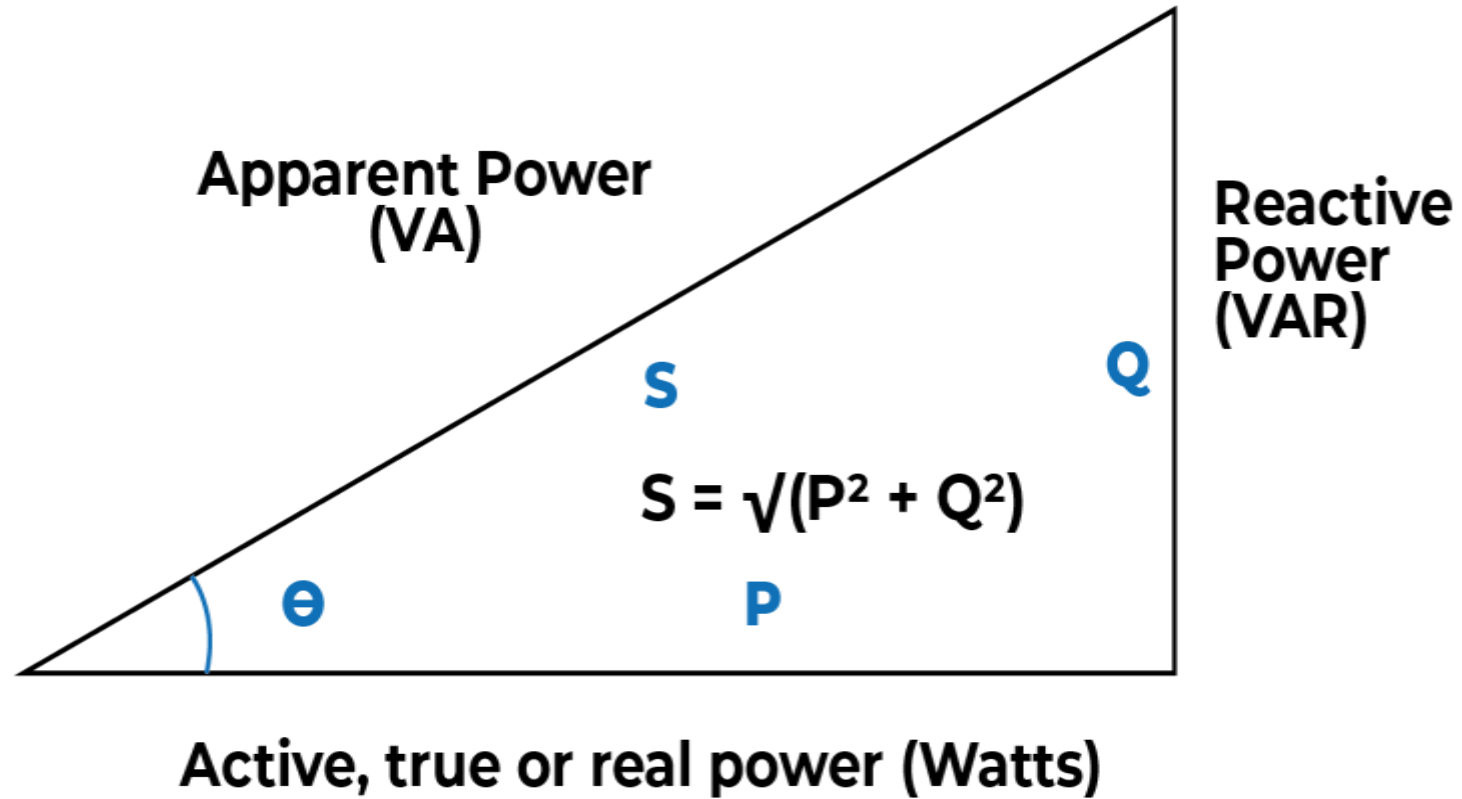
## Apparent Power

The combination of reactive power and true power is called *apparent power*, and it is the product of a circuit’s voltage and current, without reference to phase angle.

Apparent power is measured in the unit of *Volt-Amps (VA)* and is symbolized by the capital letter S.



# Power Triangle





# Difference between Active Power and Reactive Power

Basis of Difference	Active Power	Reactive Power
Definition	The fraction of total electric power which is used to do useful work and is consumed in the electric circuit is known as active power.	The fraction of total power which flows back and forth from source to load in the electric circuit is called reactive power.
Alternate name	Active power is also known as real power or <i>true power</i> or <i>useful power</i> or <i>watt-full power</i> .	Reactive power is also called <i>imaginary power</i> or <i>useless power</i> or <i>watt-less power</i> .
Notation	Active power is usually denoted by letter "P".	Reactive power is usually denoted by "Q".
Expression	$P = V \times I \times \cos\phi$	$Q = V \times I \times \sin\phi$