

REVISION GUIDE

Ohm's Law and Electrical Fundamentals Reference Guide

A fuller printable revision guide for voltage, current, resistance, power, and conductance with unit discipline, worked examples, and quick bench-side checks.

QUICK OVERVIEW

Category: electrical electronics

Includes 1 related guide page.

Links back to 4 calculator tools.

FORMULA HIGHLIGHTS

Voltage

$$V = I \times R$$

Current

$$I = V / R$$

Resistance

$$R = V / I$$

Power

$$P = V \times I$$

Power variant

$$P = I^2 \times R$$

Conductance

$$G = 1 / R$$

WHAT THIS PACK IS FOR

Use this guide when you need the core V-I-R-P-G relationships in a printable form that is still practical enough for bench checks, worksheet revision, and first-pass troubleshooting.

It is designed to support the online calculators, not replace them. The pack helps you decide which relationship to use, what the symbols mean, and what to sanity-check before trusting the number.

CORE FORMULA MAP

- $V = I \times R$

- $I = V / R$
- $R = V / I$
- $P = V \times I$
- $P = I^2 \times R$
- $P = V^2 / R$
- $G = 1 / R$

UNITS AND PREFIXES TO KEEP STRAIGHT

Volts, amps, ohms, watts, and siemens are the natural base units. Convert milli, micro, and kilo prefixes before combining values from different sources.

Most shocking answers in introductory circuit work are really prefix mistakes rather than algebra mistakes.

- mA to A: divide by 1000
- kOhm to ohms: multiply by 1000
- mW to W: divide by 1000

WORKED EXAMPLE: CHOOSING RESISTANCE AND RATING

A 12 V drop at 2 A implies 6 ohms and 24 W dissipation. The resistance value solves the operating point, but the power value decides whether the component choice is realistic.

WORKED EXAMPLE: CHECKING A MEASUREMENT SET

If V, I, and R are all recorded, check whether V really equals $I \times R$. Any mismatch is a warning that the readings came from different points, different units, or a non-ohmic operating condition.

QUICK CHECKS BEFORE TRUSTING THE ANSWER

- Use the voltage across the component, not just the source label.
- Check that the current is in amps before using power formulas.
- Compare the resulting wattage against the likely component rating.
- State clearly if the circuit is only being treated as a simple resistive model.

BEST OFFLINE USE

Keep this pack nearby for bench work, revision, and design reviews where the same small family of electrical relationships appears repeatedly and needs to stay readable under time pressure.