

# Art of Electronics

## Ohm's law

- $V = I * R$  (o Z)
- $R = V / I$
- $I = V / R$
- $P = I \times V$
- $P = I^2 * R$
- $P = V^2 / R$
- $R_{dyn} = \frac{\Delta V}{\Delta I}$

## Kirchoff's law

- **Serie:**  $I_{total} = I_1 = I_2$
- **Parallelo:**  $I_{total} = I_1 + I_2$
- **Serie:**  $V_{total} = V_1 + V_2$
- **Parallelo:**  $V_{total} = V_1 = V_2$

## Resistenze in parallelo

$$R_{tot} = (R_1 * R_2) / (R_1 + R_2) \quad R_1 \parallel R_2: R_{tot} = R_1 / 2 \quad R_1 \parallel R_2 \parallel R_3: R_{tot} = 2R_1 / 3 \quad \text{## Voltage Divider}$$

$$V_{out} = V_{in} * R_2 / (R_1 + R_2)$$

## Thevenin

$$V_{th} = V_{opencircuit} \text{ (no load)} = V_{in} * R_2 / (R_1 + R_2) \quad R_{th} = R_1 \parallel R_2 = (R_1 * R_2) / (R_1 + R_2)$$

to find impedance: apply delta V, find delta I