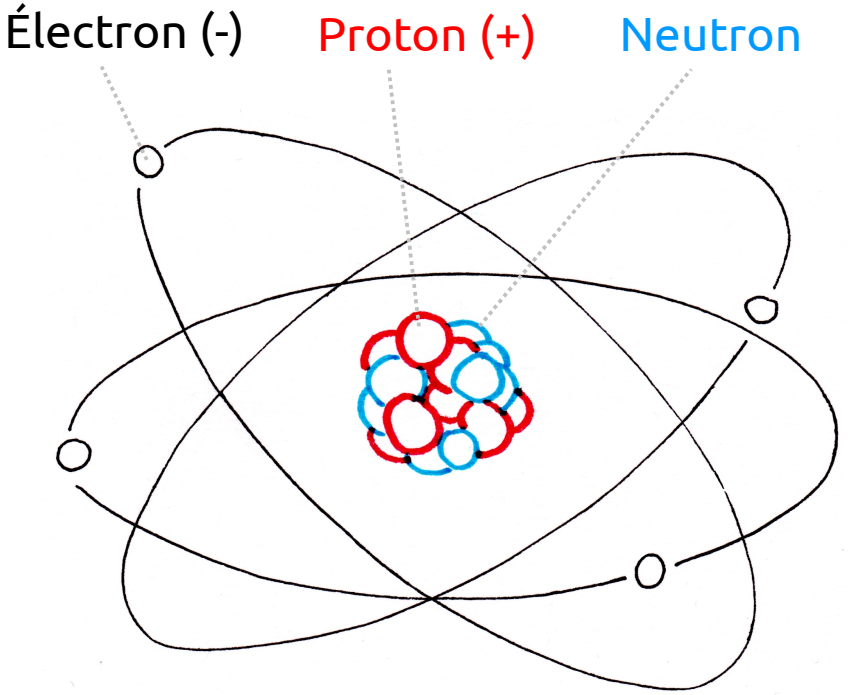
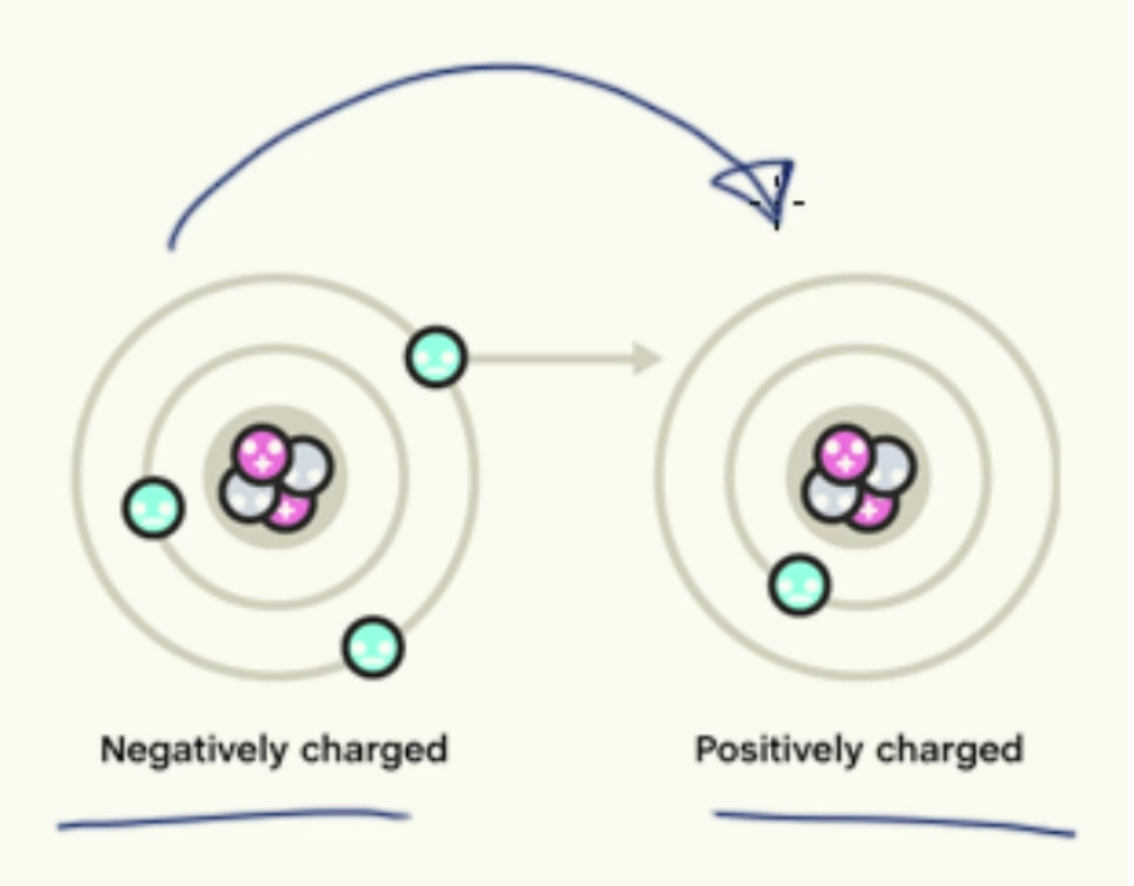
Atome



Modèle de Bohr
(1913)

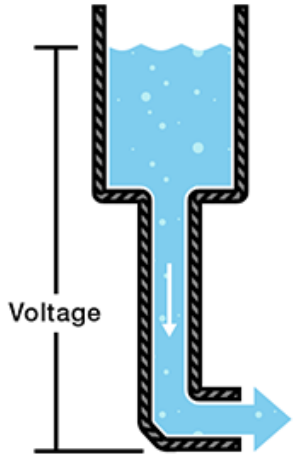
Modèle actuel

Courant



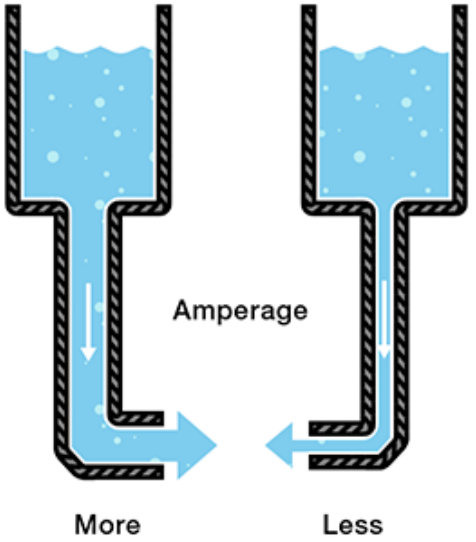
> Valence, électron libre, bandes d'énergie (quantum)
> Déplacement de charges (par convention positives)

Analogie hydraulique



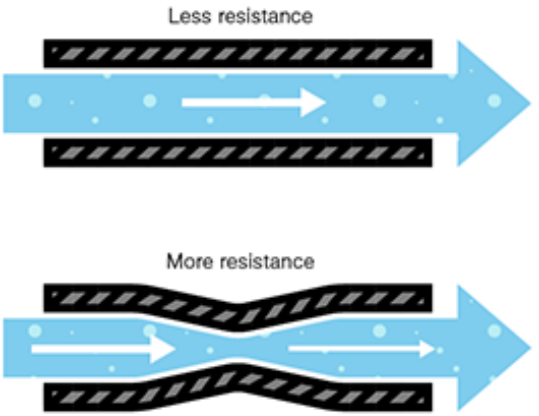
Tension / Volt
Différence de potentiel
(Terre = référence commune)
Pression

Multimètre en parallèle



Courant / Ampère
Transport de charges
Débit

Multimètre en série



Résistance / Ohms
Ralentir le passage du courant électrique

Multimètre en parallèle

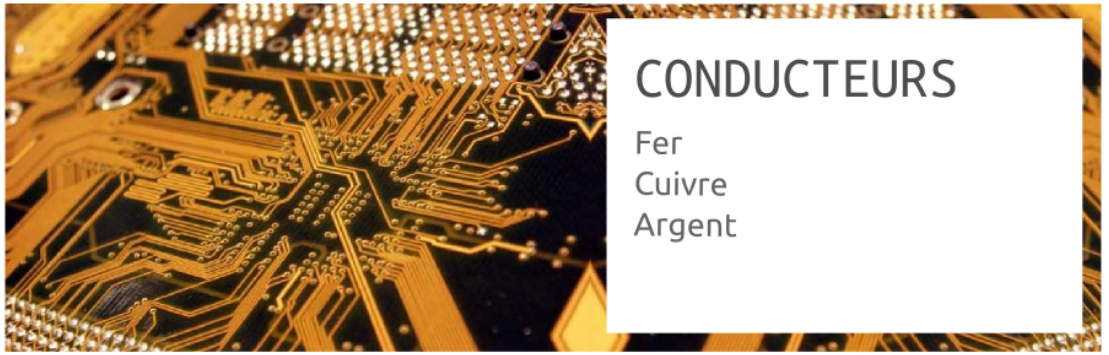
Résistivité

ISOLANTS

Quartz
Paraffine
Papier
Porcelaine
Mica
Caoutchouc
Verre

SEMI-CONDUCTEURS

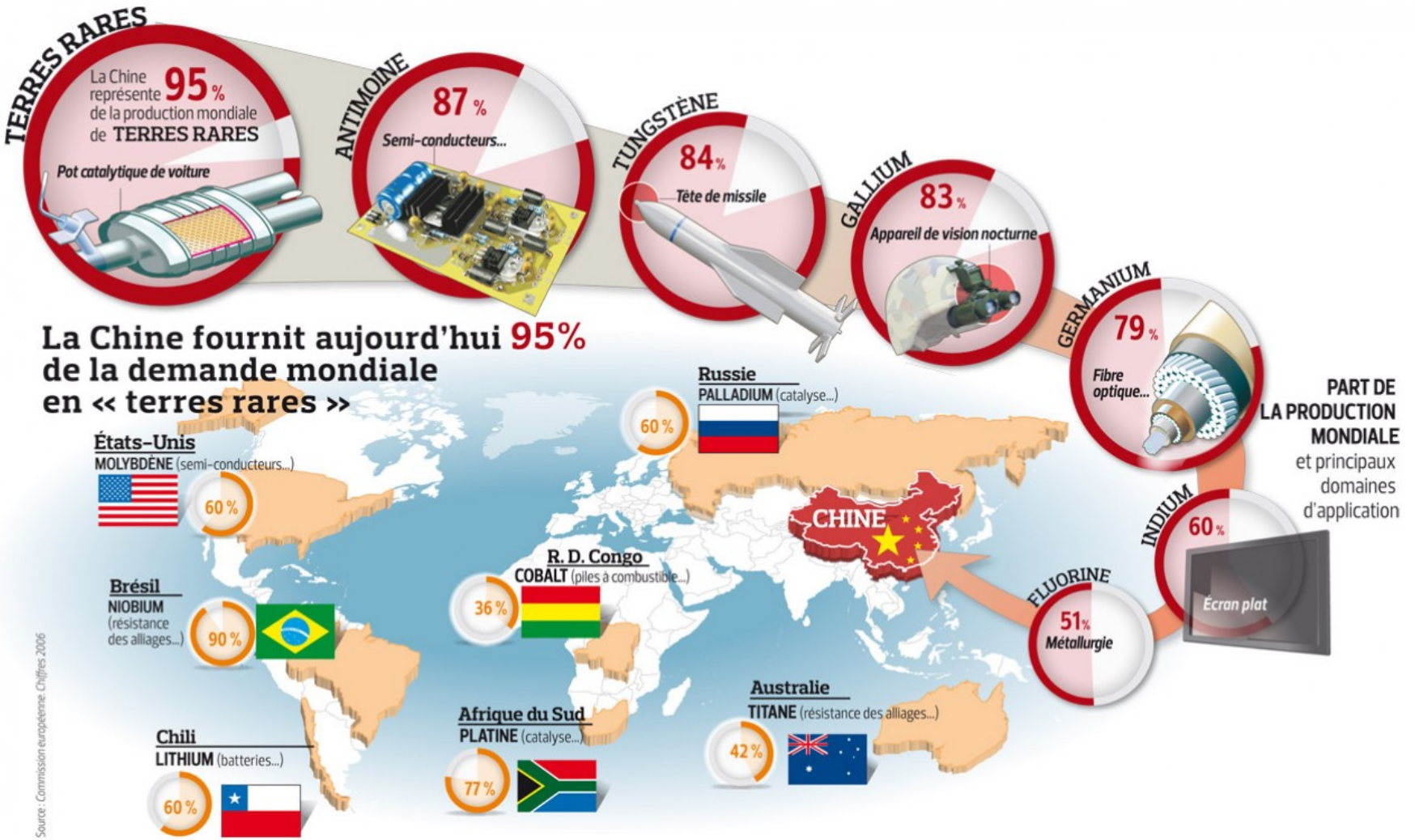
Oxyde de cuivre
Sélénium
Germanium
Silicium



CONDUCTEURS

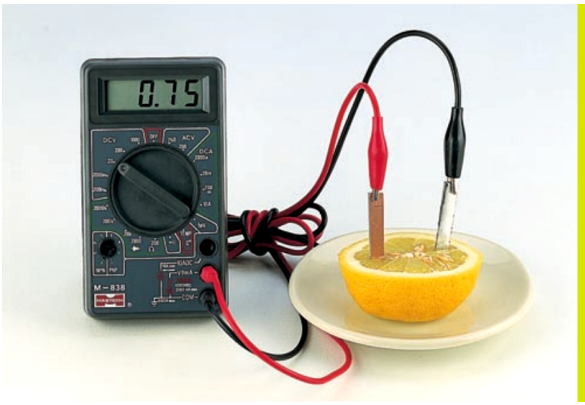
Fer
Cuivre
Argent

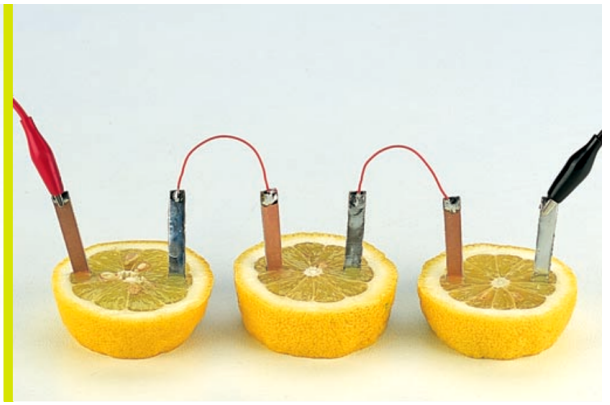
Terres rares



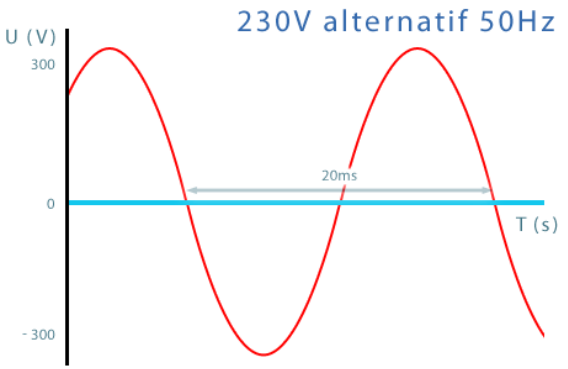
Générateur

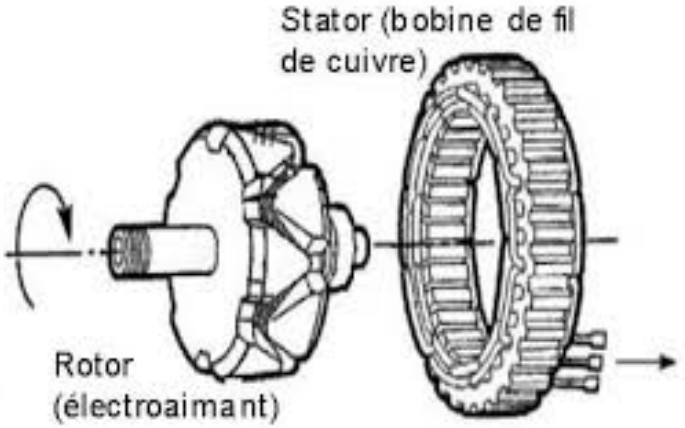
Courant continu
Piles, batteries
VCC, DC



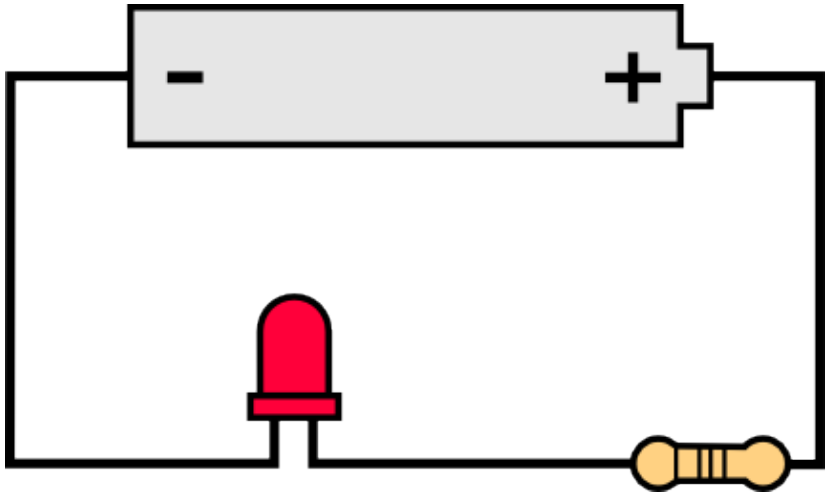


Courant alternatif
Alternateurs,
Transformateurs
VAC, AC





Premier circuit

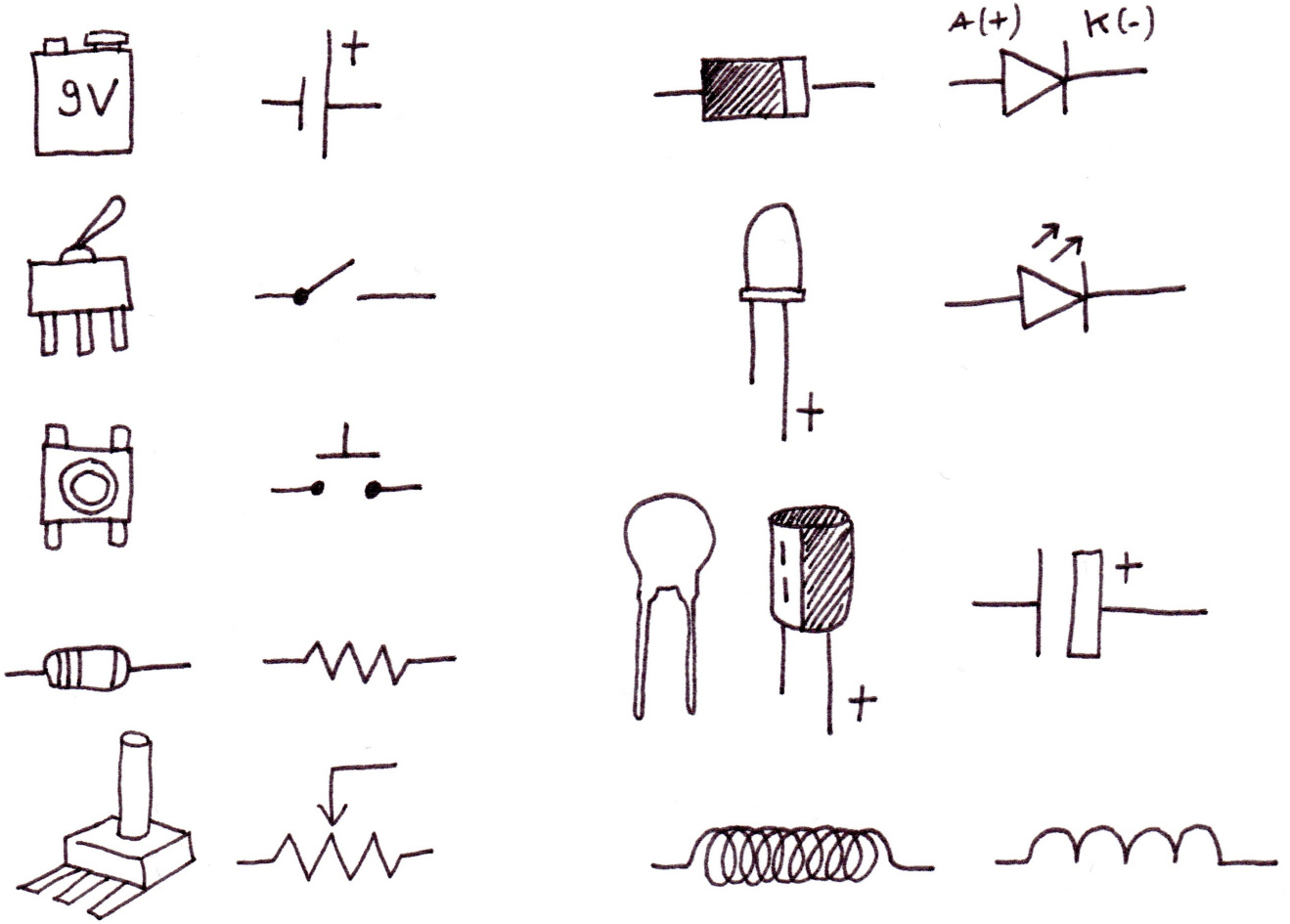


Loi d'Ohm : U=R.I

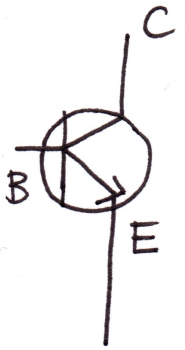
Si pas de résistance :
I = 9V / 0 = infini !

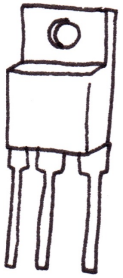
But : trouver R
R = 9V / 0.020A = **450Ω**

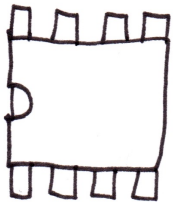
Composants passifs

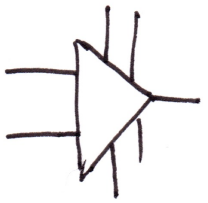


Composants actifs





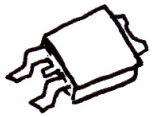




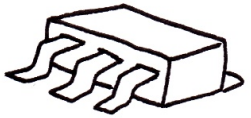
Transistors :
Amplification/saturation

Circuits intégrés :
Portes logiques, ...

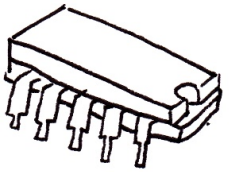
Package



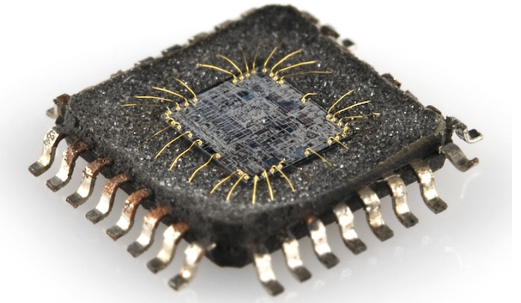
To252

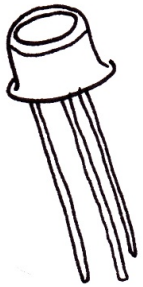


DPAK

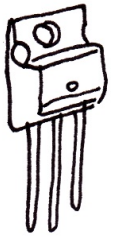


DIP

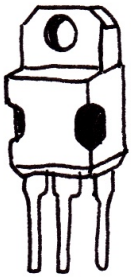




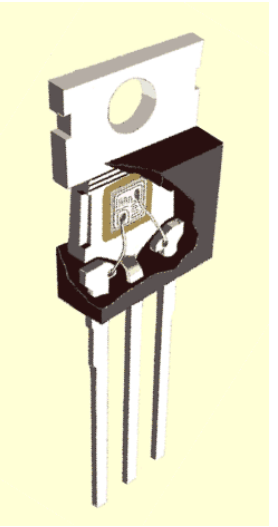
To52

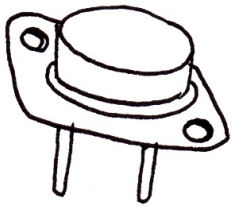


TO220ISO

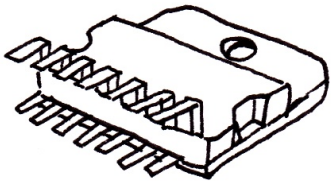


TO220



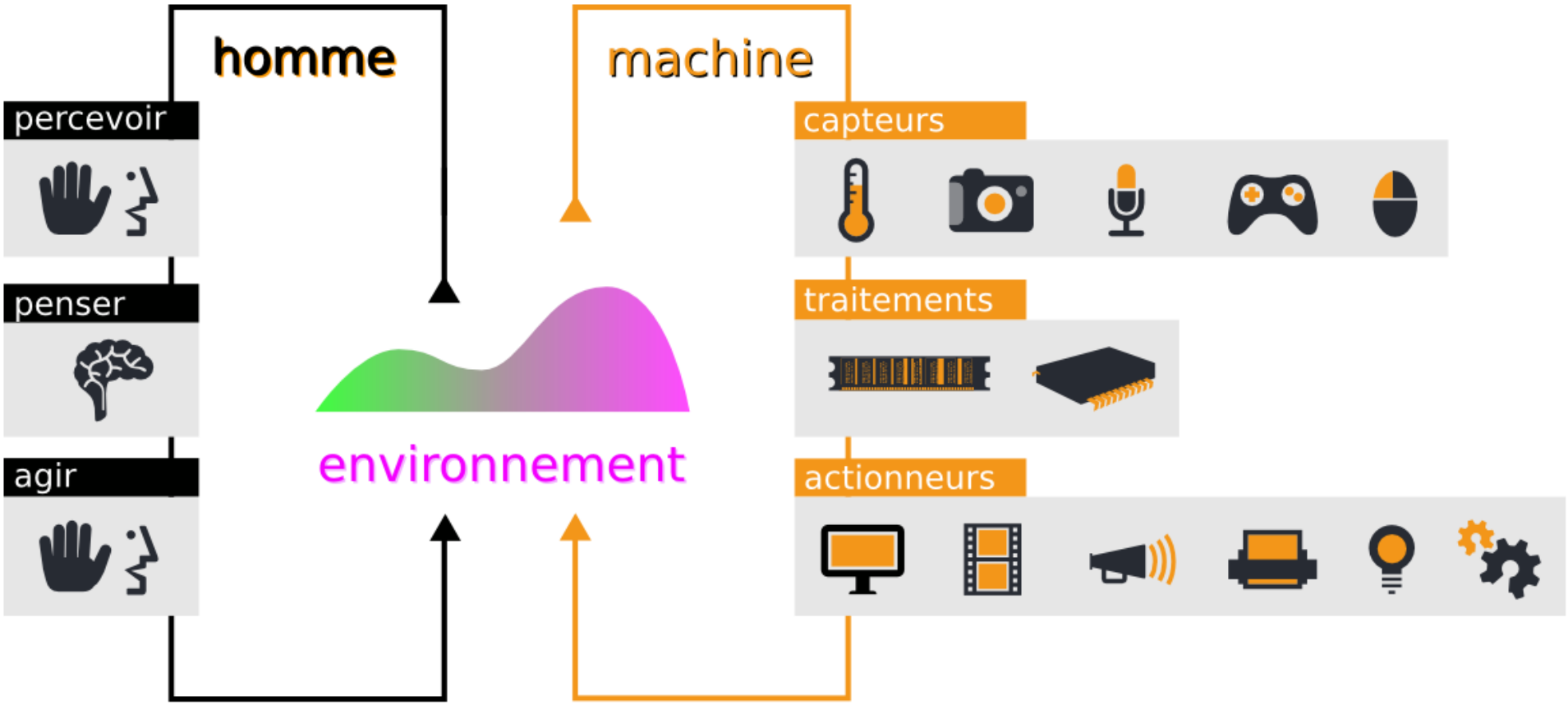


To3



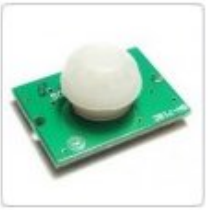
SQL

IHM


homme
machine
percevoir
penser
agir
capteurs
traitements
actionneurs
environnement

Capteurs

Distance



Infrarouges

Ultrasons

Courant

Tension

Accéléromètres

Température

Air

Boussoles

Gaz

Caméras

Couleur

Lumière

Bruit

Humidistances

Déplacement

Force

Fin de course

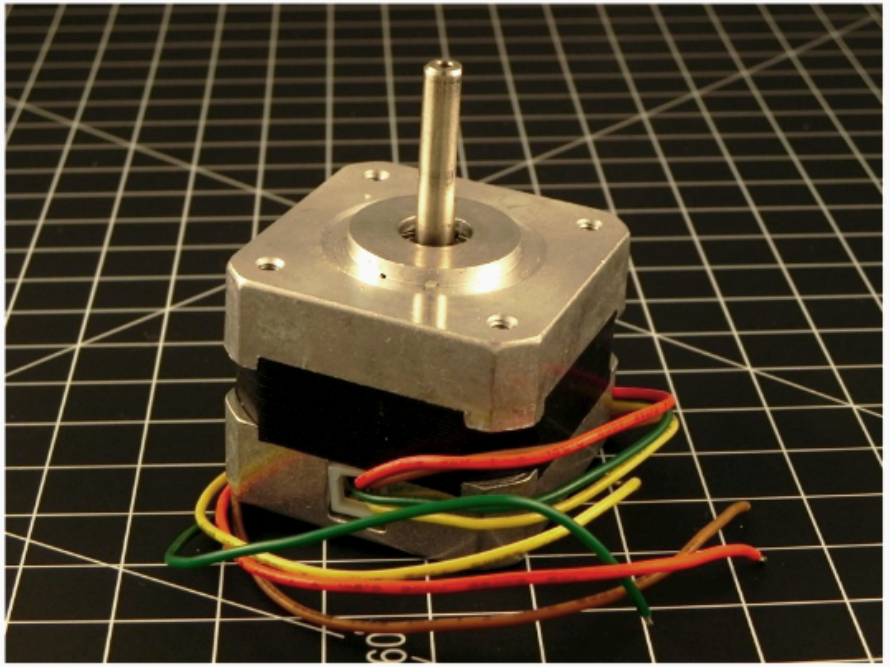
Flexion

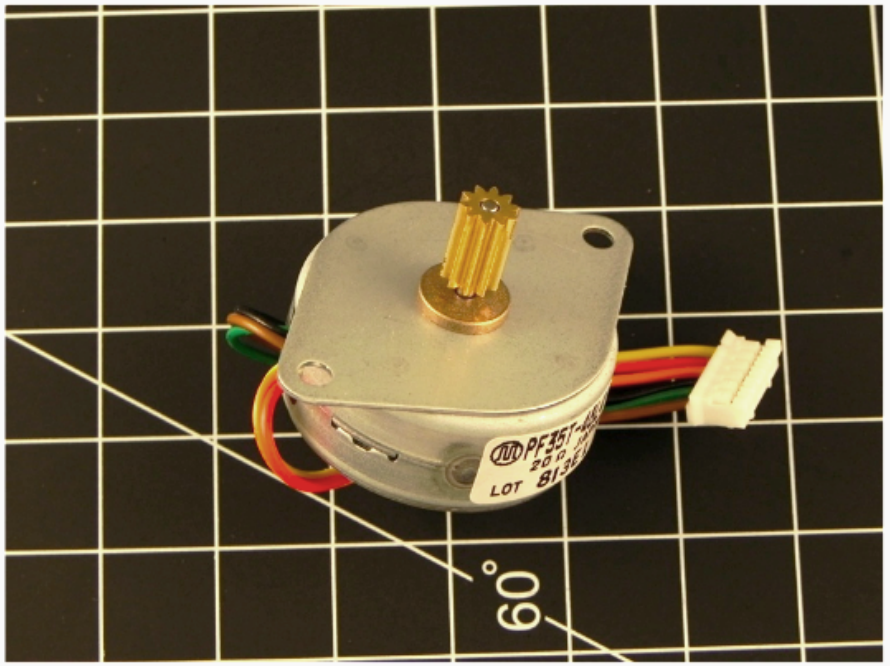
Tactiles

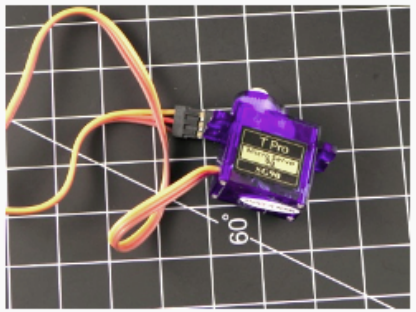
Rotation

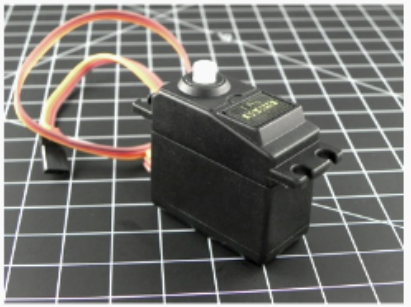
Encodeurs rotatifs

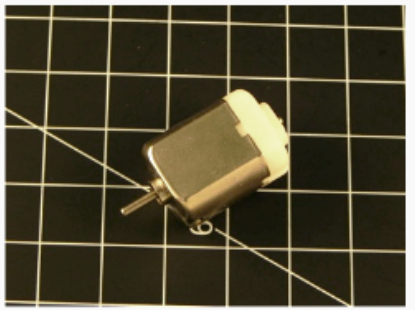
Actionneurs

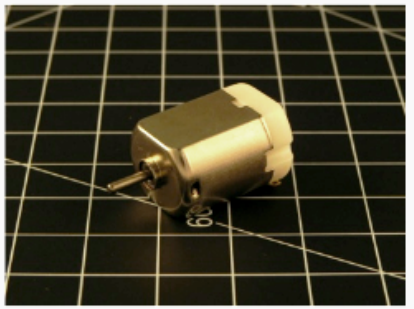




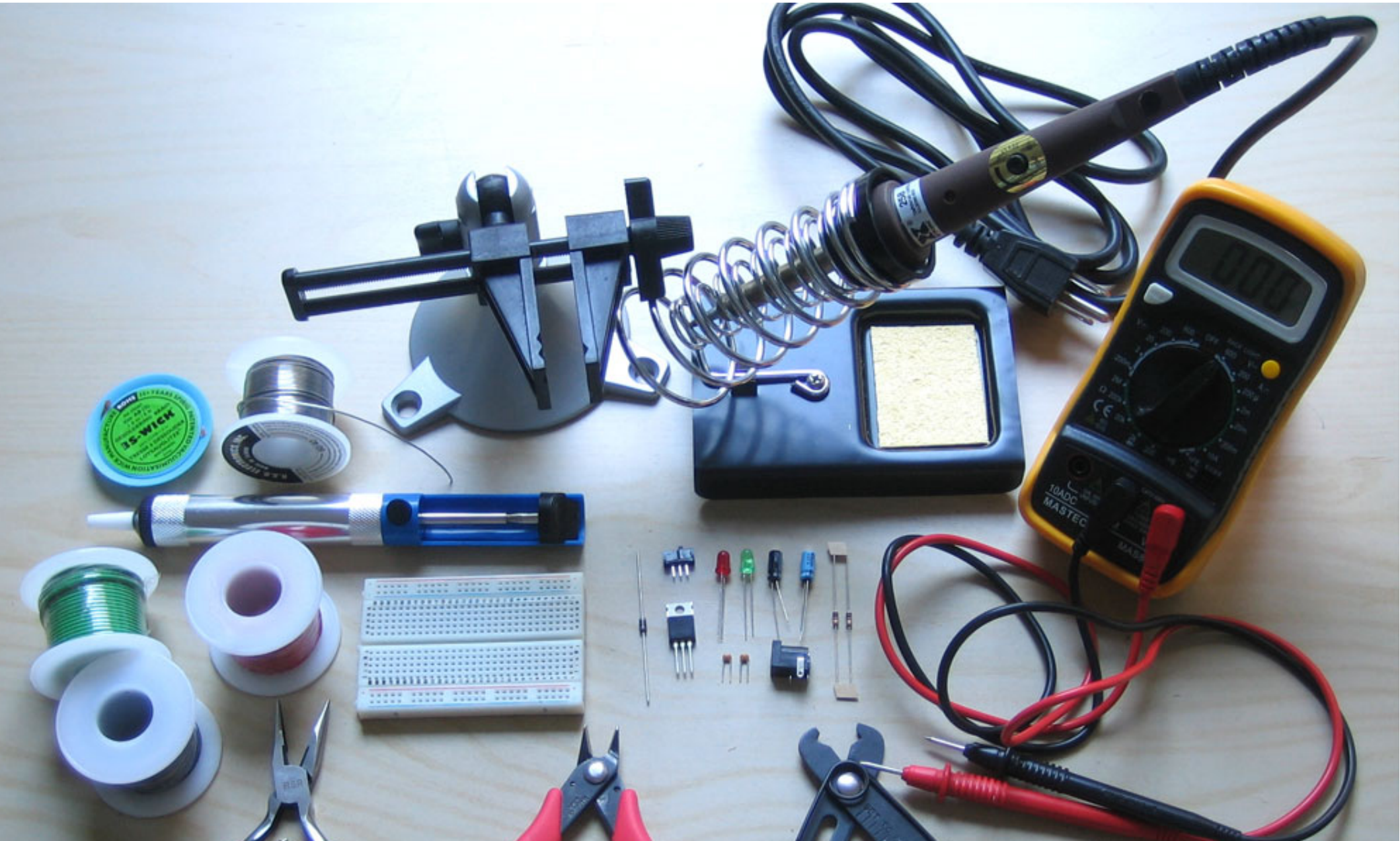








Outils de prototypage



Plaque à essais

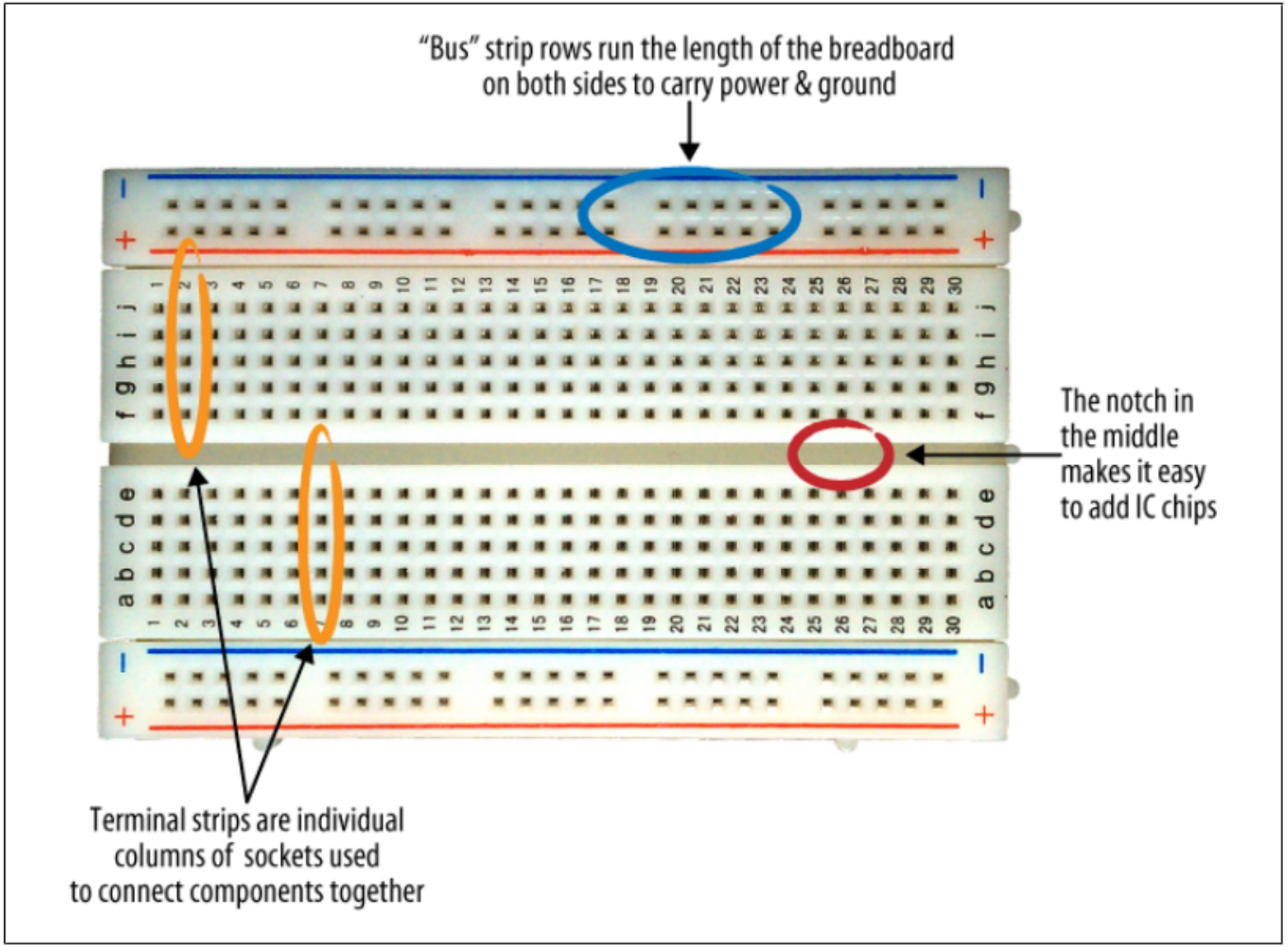


Figure 1-6. Breadboard with bus strips and terminal strips indicated