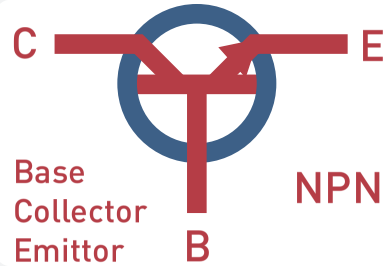
TRANSISTOR

TRANSFERT RESISTOR



• SYMBOLE •

A transistor is a semiconductor device used to amplify and switch electrical signals and electrical power. The power comes in trough the emittor, is controlled/amplified by the base and goes out trough the collector.

• SUBSTITUTION •

The transistor can be used as a vacuum tube, but without any of his inconveniences:
- high consumption
- fragility
- volume
- overheating

In the fifties, a vacuum tube costs 75 cents and a transistor 8$. Nowadays, a transistor costs about 0.0001$ only.

Vacuum Tube
• 1904 •
amplifies or stops the power

Bell's Laboratory
• New York •
Physics research lab of the American Telecom company Bell

W. Shockley
1910•1989
Research team leader

J. Bardeen
1908•1991
Researcher

W. Brattain
1902•1987
Researcher

1st transistor
• 1947 •
Bardeen and Brattain invent this transistor to replace vacuum tubes

PN Junction
• 1949 •
W. Shockley models the PN junction

Bipolar transistor
• 1951 •
W. Shockley improves Bardeen and Brattain's transistor

Nobel prize
• 1956 •
Received by Shockley, Bardeen and Brattain for their research about transistor

Silicium
replace germanium
• 1960 •
+ economical
+ steady
+ manipulable

Graphen
new material to replaces silicium
+ conductor
+ resistant
+ fine

Germanium
Main component

US Air Force
subsidises the TRADIC for an embedded use

IBM SSEC
• 1948 •
W. J. Eckert
1st computer using vacuum tubes, takes up many rooms

Moore's law
• 1975 •
number of transistors on integrated circuits double approximately every two years

This prediction is checked: between 1970 and 2001, the number of transistors has indeed doubled every two years.

TRADIC
• 1956 •
Built in the Bell's laboratory
1st computer using transistors
+ efficient
+ the size of a cupboard

• 1965 •
1st radio using transistors

since
• 1893 •
vacuum tube radio

a microprocessor
• 2013 •
is formed by more than a billion of transistors

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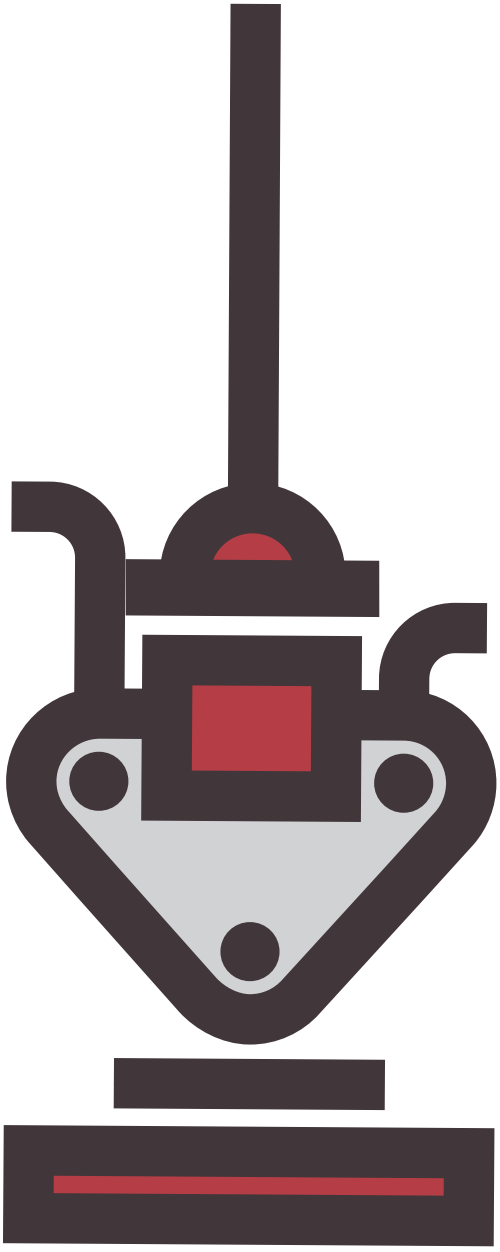

• NOBEL PRIZE •

• 1956 •

• THE TRANSISTOR •